GREENWICH
PHOTO-HELIOGRAPHIC RESULTS

1928

SUPPLIED FOR PUBLIC SERVICE.

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

1928

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GREENWICH PHOTO-HELIOGRAPHIC RESULTS, 1928.

INTRODUCTION.

§1. *Positions and Areas of Sun Spots and Faculæ for each Day in the Year* 1928.

The photographs from which these measures were made were taken at the Royal Observatories of Greenwich or of the Cape, and at the Kodaikánal 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 Kodaikánal 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 Kodaikánal a Cooke photo-visual object-glass of 6 inches aperture was used, the image of the Sun being on about the same scale.

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Photographs of the Sun were available for measurement upon each day in 1928, except November 23, those finally selected for measurement being supplied by the different observatories as under:

Greenwich	236
Cape	123
Kodaikánal	6
Total	365

The Superintendent of the U.S. Naval Observatory, Washington kindly lent for measurement a plate taken on November 23. The measures made from this plate 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 1928 are as follows:

H. W. Newton	Hilda Jackson
H. Barton	S. Judd

At the principal focus of the Photo-heliographs, excepting that at Kodaikánal, 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 Kodaikánal 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 the Zero of Position-Angles.

Month, 1928.	Greenwich.		Cape	
	Photographic.	Visual.	Photographic.	Visual.
	° ′	° ′	° ′	° ′
January	+2 43 (2)	+2 30 (2)	−0 34 (2)	−0 22 (5)
February	31 (3)	30 (2)	21 (2)	20 (4)
March	30 (2)	29 (2)	18 (2)	20 (4)
April	32 (2)	31 (2)	16 (2)	19 (4)
May	33 (4)	29 (2)	22 (2)	18 (5)
June	28 (4)	30 (2)	23 (2)	15 (4)
July	30 (3)	28 (3)	21 (2)	16 (5)
August	29 (2)	31 (8)	22 (2)	17 (4)
September	34 (3)	31 (13)	25 (2)	18 (4)
October	32 (3)	29 (4)	21 (2)	22 (5)
November	30 (2)	33 (3)	16 (2)	21 (4)
December	30 (2)	33 (1)	28 (2)	20 (4)

The suffixes indicate the number of zero plates or the number of sets of transits, usually 3 to a set.

The zero-corrections used during the year 1928 in the reduction of the photographs taken at Greenwich were as follows :

		°
4-inch Photo-heliograph—	January 1 to December 31	+2·5
9-inch Photo-heliograph—	February	+2·35
	May	+2·3
	September and October	+2·4
	November and December	+2·2

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

	°
January 1 to February 29	−0·35
March 1 to August 31	−0·3
September 1 to December 31	−0·35

The zero-corrections adopted during 1928 for the six Kodaikánal photographs were :

Jan. 2, 0°·0. Apr. 15, May 1, 2, Aug. 3, + 0°·5. Dec. 16, + 0°·4.

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 has been made in the practice during years previous to 1916, where in this section components of groups are given separately and combined into groups in the Ledgers.

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

The calculations of heliographic longitude and latitude are made by use of the formulæ given in " Researches on Solar Physics : Heliographical Positions and Areas of 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,

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

The position-angle χ 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. 546 of the *Nautical Almanac* for 1928.

The inclination of the Sun's axis to the ecliptic is assumed to be 82°45′, the longitude of the ascending node of the Sun's equator on the ecliptic for 1928·0 to be 74°45′·3, 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* 1928.

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 1927 and previous years. Groups seen only once are not included, but appear in the Daily Results with a distinctive numeration.

During the year 1928, 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* 1928.

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 $\xi = 14°{\cdot}37 - 2°{\cdot}60 \sin^2\phi$, 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* 1928.

Particulars relating to this section are given in the headings on pages C 136, and 140-1.

F. W. DYSON.

Royal Observatory, Greenwich,
1929, *December* 12.

ROYAL OBSERVATORY, GREENWICH.

Positions and Areas of Sun Spots and Faculæ

For each Day in the Year

1928

Positions and Areas of Sun Spots and Faculæ for each Day in the Year 1928.

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), Kodaikánal (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 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
0·464		·964	251·0					139
		·963	261·8					99
		·812	292·6					201
		·751	305·6					149
	10475	·941	284·5	132·3	+12·5	67	366	767*c*
	10478	·849	257·6	121·5	−12·2	2	8	261*p*
	10480	·569	289·4	96·4	+ 8·2	10	33	
	10476	·258	154·0	57·0	−16·4	51	289	
	10477	·521	102·3	32·8	− 9·0	120	534	
G	10481	·698	103·5	20·0	−11·6	1	3	629*f*
	10479	·931	98·7	355·2	− 9·2	20	70	249*c*
	10482	·971	78·8	348·6	+10·1	4	8	122*nf*
		·761	74·5					186
		·850	127·4					132
		·874	83·2					120
		·918	73·0					59
		·987	95·0					182
Jan. 1			(+2·4)	(63·7)	(−3·1)	(275)	(1311)	(3295)
1·117		·893	290·8					158
	10475	·976	284·4	131·1	+13·3	12	179	258*c*
	10478	·925	257·8	122·7	−12·5	5	31	106*c*
	10480	·676	285·6	96·1	+ 8·1	7	35	
	10476	·238	184·0	56·1	−16·8	59	326	
	993e	·243	12·6	52·0	+10·6	6	27	
K	10477	·391	105·6	32·8	− 8·9	108	494	
	10481	·531	109·8	24·4	−13·0	7	35	
	10479	·867	99·0	355·1	− 9·3	16	84	181*f*
	10482	·931	77·2	347·8	+10·7	8	35	130*c*
		·866	71·0					79
		·963	95·6					275
		·974	69·8					195
Jan. 2			(+2·0)	(55·1)	(−3·1)	(228)	(1246)	(1382)
2·542		·967	284·8					122
		·933	296·1					115
		·910	240·9					181
		·853	284·1					211
	10476	·407	232·8	56·1	−17·3	92	569	
	10477	·113	149·7	33·0	− 8·9	95	450	
C	10481	·307	123·3	21·1	−12·9	9	38	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
2·542	10479	·662	100·7	355·2	− 9·5	17	76	
C	10482	·750	73·6	349·6	+10·0	10	24	135*f*
	993f	·827	95·5	347·6	− 6·4	0	4	399*c*
	10483	·946	107·3	325·4	−17·4	12	38	112*f*
		·869	86·6					106
		·875	59·7					113
		·909	70·0					231
		·913	116·5					76
		·943	81·2					281
		·949	97·7					140
		·957	57·1					65
Jan. 3			(+1·3)	(36·3)	(−3·3)	(235)	(1199)	(2287)
3·494		·965	243·5					150
		·956	295·5					99
		·898	310·5					90
		·852	299·2					70
	10480	·973	279·3	99·5	+ 8·2	4	36	206*c*
	10476	·571	243·7	56·1	−17·5	61	474	
	10477	·188	239·7	33·2	− 8·7	92	498	
	10481	·166	173·3	22·7	−12·8	15	75	
C	10479	·487	103·5	355·2	− 9·5	7	54	
	10482	·600	67·7	349·6	+10·3	9	21	
	10483	·865	108·5	324·6	−17·6	25	160	160*c*
		·818	65·5					190
		·852	80·3					290
		·869	98·1					178
		·953	80·3					171
		·970	100·5					59
Jan. 4			(+0·9)	(23·8)	(−3·4)	(213)	(1318)	(1663)
4·495		·934	297·0					95
		·929	254·8					138
	10476	·747	249·8	57·7	−17·3	69	278	182*p*
	10477	·393	256·6	33·2	− 8·4	100	461	
	10481	·277	230·8	23·3	−13·5	24	86	
	10484	·251	341·2	15·3	+10·2	29	65	
	10479	·278	112·0	355·5	− 9·3	12	55	
	10482	·419	57·0	349·8	+ 9·9	7	12	
	10485	·580	97·2	335·3	− 7·0	2	10	
G	10483	·737	111·0	324·5	−17·7	59	298	76*c*
		·763	80·4					102

Group 10475. 1927, Dec. 24—1928, Jan. 2. A couple of small spots developing suddenly between Dec. 25 and 26 into a long stream with a regular spot as leader. This leader has grown to a large spot on Dec. 29, but by the following day it has split into two which, together with the other spots of the stream, are disappearing as they pass out of sight round the west limb.

Group 10476. 1927, Dec. 27—1928, Jan. 7. An unusual group. A medium-sized regular spot which contracts considerably between Dec. 31 and Jan. 1, and then slowly diminishes to a dot by Jan. 7. Meanwhile, great activity is observed in the immediate region southwards of this spot. On Dec. 31 an increasing number of small spots make their appearance, and from some of these a fairly large composite spot emerges by Jan. 3 south of the original regular spot with which it almost coalesces. This new spot is, however, unstable, and the whole disturbance except for the surrounding faculæ is dying out by the time the west limb is reached.

Group 10477. 1927, Dec. 28—1928, Jan. 9. A large regular spot, both preceded and followed by small companions until Jan. 6.

Group 10478. 1927, Dec. 30—1928, Jan. 2. One or two very small spots.

Group 10479. 1927, Dec. 31—1928, Jan. 9. A small regular spot slowly diminishing.

Group 10480. 1928, Jan. 1–4. A pair of spots not seen on the photograph of Jan. 3.

Group 10481. Jan. 1–9. Scattered spots of unstable character in a large area of faculæ *sf* Group 10477.

Group 10482. Jan. 1–8. A small umbral spot with an occasional companion.

Group 10483. Jan. 3–14. A stream led by a regular spot. The group originates on Jan. 3 from a single spot that has increased and has become a double spot by Jan. 4.

Group 10484. Jan. 5–10. A moderate-sized stream appearing suddenly and soon dying away.

Group 10485. Jan. 5–11. Intermittent; a faint spot on Jan. 5; a diminutive stream on Jan. 8–11.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
4·495		·875	113·2					133
G		·918	82·4					81
		·958	97·0					193
		·967	75·5					116
		·970	103·4					87
Jan. 5			(+0·4)	(10·6)	(−3·5)	(302)	(1265)	(1203)
5·451		·959	299·5					66
		·881	239·2					88
		·760	261·7					380
	10476	·859	251·9	56·6	−17·3	33	216	545*p*
	10477	·582	260·7	33·3	− 8·3	85	429	
	10481	·403	240·3	19·1	−14·8	2	13	
	10484	·372	309·5	14·9	+10·2	34	168	
C	10479	·107	160·5	355·9	− 9·3	7	49	
	10482	·267	30·9	350·0	+ 9·6	6	14	
	10483	·585	116·5	324·7	−18·1	40	220	
	10486	·890	73·1	297·2	+13·2	19	73	83*c*
		·867	97·3					189
		·922	105·3					113
		·937	77·1					89
Jan. 6			(−0·1)	(358·0)	(−3·6)	(226)	(1182)	(1553)
6·315		·920	282·7					74
	10476	·936	253·4	55·9	−16·8	30	121	735*c*
	10477	·733	262·7	33·6	− 7·9	80	456	433*p*
	10481	·544	251·4	18·4	−13·1	0	10	
	10484	·522	295·2	15·1	+ 9·6	33	168	
	10479	·189	239·9	356·1	− 9·0	7	32	
	10482	·238	344·5	350·3	+ 9·5	4	10	
C	10483	·433	126·1	325·1	−18·2	32	188	
	10486	·770	70·1	298·9	+12·7	10	31	68*c*
		·740	98·9					121
		·834	105·5					76
		·853	74·7					60
		·930	96·5					90
		·966	103·7					80
Jan. 7			(−0·5)	(346·6)	(−3·7)	(196)	(1016)	(1737)
7·457		·989	251·1					269
		·976	257·6					97
		·966	242·1					124
		·860	241·7					94
	10477	·886	263·1	34·0	− 7·9	86	424	476*c*
	10481	·715	252·6	16·4	−15·0	3	9	54*c*
	10484	·723	287·8	15·8	+10·0	37	168	225*p*
	10479	·427	256·9	356·4	− 9·0	5	21	
	10482	·402	308·2	350·3	+10·7	5	18	
	994a	·350	320·8	344·6	+12·0	2	5	
G	10485	·045	200·6	332·5	− 6·2	13	38	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
7·457	*994b*	·105	146·3	328·2	− 8·8	2	7	
G	10483	·269	158·2	325·6	−18·2	35	204	
	994c	·343	99·5	311·8	− 6·8	2	5	
	10486	·590	61·4	299·6	+13·1	5	18	
	10487	·645	69·9	293·8	+ 9·7	6	14	
	10488	·969	98·7	255·7	− 9·4	4	12	133*f*
		·808	98·9					63
		·892	127·5					95
		·900	104·5					152
		·900	93·8					93
Jan. 8			(−1·1)	(331·6)	(−3·8)	(205)	(943)	(1875)
8·495		·953	248·4					140
		·898	275·0					44
	10477	·971	263·0	34·2	− 7·8	76	441	225*f*
	10481	·887	255·9	20·3	−14·3	2	28	448*c*
	10484	·866	284·5	16·1	+10·4	28	137	1036*c*
	10479	·627	260·8	356·5	− 8·9	3	6	
	994d	·386	253·8	339·9	− 9·8	0	5	
G	10485	·252	257·6	332·2	− 7·0	22	60	
	10483	·279	210·0	326·3	−17·9	33	167	
	10487	·469	63·2	293·0	+ 8·5	32	99	
	10488	·890	98·8	255·0	− 9·7	10	12	125*sf*
		·906	112·4					76
		·927	61·5					71
		·942	73·4					101
Jan. 9			(−1·6)	(317·9)	(−4·0)	(206)	(955)	(2266)
9·340		·945	255·4					829
		·902	269·2					48
		·894	238·3					141
	10484	·945	282·2	16·3	+10·1	19	57	404*c*
	10485	·465	262·0	334·3	− 7·3	14	54	
	10483	·402	231·6	326·1	−18·3	27	164	
C	10487	·307	47·6	293·6	+ 7·9	45	219	
	10489	·547	102·0	274·0	−10·0	5	27	
	10490	·563	106·6	273·4	−12·7	8	13	
	10488	·784	99·5	255·3	−10·0	10	15	88*sf*
	10491	·976	72·2	231·5	+16·3	0	18	237*f*
		·861	71·0					134
		·881	56·8					62
Jan. 10			(−2·0)	(306·8)	(−4·1)	(128)	(567)	(1943)
10·469		·989	281·0					177
		·980	257·2					160
		·963	243·1					198
		·911	261·8					168
		·881	282·3					163
		·797	262·4					155
G		·791	298·1					139

Group 10486. Jan. 6–8. A pair of smallish spots that separate widely in longitude and then disappear when Group 10487 develops southwards.
Group 10487. Jan. 8–17. An irregular stream of changing spots *sf* the position of Group 10486.
Group 10488. Jan. 8–13. A small but definite spot.
Group 10489. Jan. 10–19. A stream with sudden growth of which the largest and most stable spot is the leader. The group is adjacent to Group 10490 and develops with it.
Group 10490. Jan. 10–18. A stream of unstable spots associated with Group 10489.
Group 10491. Jan. 10–19. A short-lived stream dying away after Jan. 15. One or two small spots appear in the neighbourhood on Jan. 16 and 19.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
10·469	10485	·674	263·5	334·2	− 7·5	12	35	
G	10483	·621	245·5	328·3	−18·3	19	138	
	10487	·217	354·9	293·0	+ 8·2	44	331	
	10489	·299	113·8	275·8	−11·0	71	380	
	10490	·387	119·5	271·6	−14·9	3	15	
	10488	·599	100·1	255·3	− 9·5	2	8	
	10491	·900	69·3	230·7	+16·6	15	76	359*f*
		·946	109·7					310
Jan. 11			(−2·5)	(291·9)	(−4·2)	(166)	(983)	(1829)
11·329		·963	259·1					185
		·946	285·1					176
		·896	298·3					106
		·844	290·7					153
		·841	273·9					101
		·840	262·9					398
	10483	·746	248·9	327·6	−18·5	27	168	
C	10487	·302	315·3	292·9	+ 8·1	33	250	
	10489	·150	141·5	275·2	−11·0	70	410	
	10490	·239	141·1	271·7	−15·0	14	53	
	10488	·433	102·7	255·4	− 9·4	4	10	
	10491	·812	66·6	229·9	+16·1	15	44	229*f*
	10492	·929	107·5	212·3	−17·8	3	11	203*n*
		·918	114·9					171
Jan. 12			(−2·9)	(280·6)	(−4·3)	(166)	(946)	(1722)
12·434		·974	263·0					223
		·942	297·9					121
		·904	282·4					249
		·873	262·5					187
	10483	·886	251·2	328·1	−18·7	24	162	276*f*
	10487	·500	294·5	293·2	+ 8·0	31	209	
	10489	·208	235·7	276·0	−11·0	48	257	
G	10490	·206	205·8	271·3	−15·0	36	186	
	10488	·201	117·7	255·6	− 9·7	2	5	
	10491	·666	58·7	229·7	+16·7	10	55	
		·848	113·0					105
		·922	71·6					138
		·937	106·4					348
		·972	71·7					226
Jan. 13			(−3·4)	(266·0)	(−4·4)	(151)	(874)	(1873)
13·469		·957	261·1					213
		·949	280·9					203
		·879	243·5					78
	10483	·964	251·9	327·3	−18·6	24	135	381*f*
	10487	·674	286·3	293·0	+ 7·5	54	224	
	10489	·420	254·2	276·6	−10·7	48	247	
	10490	·366	238·1	271·1	−15·4	46	234	
G	10493	·554	200·4	266·1	−35·5	2	8	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
13·469	10491	·517	47·3	229·2	+16·3	5	22	
G	10494	·892	70·1	192·2	+15·4	2	12	169*c*
		·810	69·1					132
		·870	110·4					234
		·959	107·3					244
Jan. 14			(−3·9)	(252·4)	(−4·5)	(181)	(882)	(1654)
14·458		·984	251·2					118
		·959	245·4					104
		·873	287·7					114
		·832	259·2					178
	10487	·832	281·6	294·4	+ 6·9	63	342	293*c*
	10489	·611	258·2	276·7	−10·8	44	235	
	10490	·566	249·2	272·5	−15·4	45	209	
G	10493	·637	216·4	266·7	−34·8	3	6	
	10491	·403	25·0	229·2	+16·9	1	5	
	10492	·524	116·8	210·1	−17·6	2	8	
	10495	·659	61·2	202·9	+14·8	3	11	
	10494	·782	65·9	191·8	+15·5	17	41	174*c*
		·867	105·8					254
Jan. 15			(−4·4)	(239·4)	(−4·6)	(178)	(857)	(1235)
15·356		·955	285·2					158
		·945	261·8					89
	10487	·935	279·8	295·6	+ 7·4	56	297	531*c*
	10489	·754	260·0	276·5	−10·6	35	214	
	10490	·705	252·9	271·7	−15·3	32	169	
	10493	·740	227·0	268·1	−33·8	1	6	
C	10491	·344	8·1	224·7	+15·1	2	6	
	10492	·358	129·0	210·7	−17·5	11	41	
	10495	·511	50·8	203·6	+14·5	2	16	
	10494	·659	59·4	191·6	+15·7	29	117	
	10496	·959	73·3	156·2	+14·5	7	33	} 189*c*
	10497	·984	72·6	149·9	+16·1	63	406	
		·981	108·8					489
Jan. 16			(−4·8)	(227·6)	(−4·7)	(238)	(1305)	(1456)
16·324		·902	277·7					109
		·889	297·7					80
		·828	230·3					102
	10487	·990	278·1	295·6	+ 7·3	27	211	656*c*
	10489	·882	260·3	276·8	−10·8	26	198	204*c*
	10490	·865	255·5	274·6	−14·9	16	82	171*c*
	10492	·245	157·7	209·2	−17·8	3	22	
C	10495	·419	31·6	201·6	+16·1	8	53	
	10494	·499	45·8	193·1	+15·8	14	65	
	10496	·880	70·1	156·1	+15·0	6	18	} 298*c*
	10497	·956	72·0	144·3	+15·6	126	1353	
	10498	·952	108·3	142·3	−18·8	0	13	541*c*
		·961	80·1					57
Jan. 17			(−5·3)	(214·8)	(−4·8)	(226)	(2015)	(2218)

Group 10492. Jan. 12–17. One or two small spots not present on Jan. 13 and 14.
Group 10493. Jan. 14–16. A couple of tiny spots in high southern latitude.
Group 10494. Jan. 14–18. A short-lived stream *f* Group 10495.
Group 10495. Jan. 15–19. Small unstable spots *p* Group 10494.
Group 10496. Jan. 16–20. A small spot *p* Group 10497.
Group 10497. Jan. 16–28. A very large stream of active spots covering 15° of solar longitude. The stream is diminishing rapidly when nearing the west limb.
Group 10498. Jan. 17–25. One or two small spots not seen on Jan. 20, 21 and 23.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
17·338		·977	276·0					145
		·909	233·8					100
	10489	·963	260·0	276·2	−10·9	36	172	321*c*
	10490	·949	255·8	273·5	−15·0	5	33	432*c*
	10495	·349	355·6	203·1	+15·4	4	25	
	10494	·382	19·2	194·0	+16·2	7	23	
C	10496	·756	65·6	156·3	+14·7	3	16	
	10497	·864	69·3	144·9	+15·2	234	1489	501*c*
	10498	·836	109·5	145·3	−18·9	6	14	471*c*
		·951	77·6					128
		·962	103·4					92
		·979	70·9					110
Jan. 18			(−5·8)	(201·5)	(−4·9)	(295)	(1772)	(2300)
18·338		·982	254·2					316
		·970	295·4					65
		·969	235·2					135
		·938	286·1					127
		·909	250·8					81
		·909	264·7					88
	10489	·985	261·0	268·8	− 9·7	25	130	202*c*
	10491	·636	302·8	221·9	+16·0	1	4	
C	10495	·443	323·0	204·3	+15·8	4	11	
	10496	·614	57·4	156·0	+15·0	3	8	
	10498	·693	113·4	146·0	−19·6	3	9	
	10497	·740	63·9	144·9	+15·3	164	1362	283*f*
	10499	·975	82·8	112·0	+ 5·9	36	232	995*c*
		·852	73·8					170
		·888	102·8					114
		·961	66·4					142
Jan. 19			(−6·2)	(188·3)	(−5·0)	(236)	(1756)	(2718)
19·340		·947	286·9					97
		·860	291·9					133
	10496	·471	43·6	155·5	+15·0	2	5	
C	10497	·596	55·4	144·7	+15·4	183	1377	
	10499	·904	80·7	111·5	+ 6·1	31	233	1186*c*
		·831	64·1					109
		·940	62·7					107
Jan. 20			(−6·7)	(175·1)	(−5·1)	(216)	(1615)	(1632)
20·318		·921	289·6					241
	10500	·672	252·5	203·7	−15·5	3	7	
	10497	·450	39·2	145·1	+15·4	137	1333	
C	10499	·791	78·3	111·3	+ 5·9	35	239	624*c*

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
20·318	10501	·920	77·9	96·8	+ 9·0	3	5	64*f*
C		·877	114·1					70
		·889	61·9					73
		·951	120·3					128
Jan. 21			(−7·1)	(162·2)	(−5·2)	(178)	(1584)	(1200)
21·415		·962	289·1					122
		·903	250·6					199
		·795	294·4					277
	10500	·832	254·5	204·0	−15·8	4	19	102*c*
	10498	·226	178·4	147·4	−18·3	2	11	
	10497	·358	7·6	145·0	+15·4	142	1151	
C	10499	·620	73·4	111·3	+ 5·9	38	358	
	10501	·773	75·0	99·1	+ 8·0	0	5	109*f*
		·790	51·9					94
		·928	63·4					98
		·953	122·3					165
		·974	102·1					297
Jan. 22			(−7·6)	(147·8)	(−5·3)	(186)	(1544)	(1463)
22·309		·950	249·3					160
		·892	290·7					376
		·827	253·6					112
	10500	·930	254·4	204·8	−16·4	0	11	132*c*
C	10497	·387	335·0	145·7	+15·2	138	854	
	10499	·460	66·0	111·1	+ 6·0	52	444	
	10501	·657	72·2	97·1	+ 7·4	17	92	
		·944	103·3					735
		·949	60·6					107
Jan. 23			(−8·0)	(136·0)	(−5·3)	(207)	(1401)	(1622)
23·314		·978	254·9					125
		·956	289·1					230
		·931	257·8					143
		·896	247·6					90
		·825	258·3					97
	10502	·509	260·9	153·3	− 9·3	32	114	
	10498	·470	239·2	147·9	−18·8	1	2	
	10497	·521	311·6	146·5	+15·3	122	757	
	10499	·276	46·1	111·3	+ 5·7	51	404	
	10501	·445	61·0	99·8	+ 7·5	24	135	
C	*994e*	·886	108·1	60·4	−18·5	2	4	117*sf*

Group 10499. Jan. 19–30. A spot—tending to composite structure—surrounded by a large area of dense faculæ. A temporary increase of area of the spot takes place about Jan. 23. Group 10501 develops immediately following this group.
Group 10500. Jan. 21–23. A tiny spot.
Group 10501. Jan. 21–31. A group undergoing transformation, *f* Group 10499. On Jan. 21–22 there is one tiny spot; on Jan. 23 a cluster; on Jan. 24 there are two partially formed regular spots that separate considerably in longitude, whilst a connecting stream of small spots forms between them on the following days. The *f* part of the stream then begins to disappear, but the leader shows a marked increase after Jan. 28.
Group 10502. Jan. 24–27. A short-lived stream of usual formation.
Group 10503. Jan. 24–28. A small spot with companions on Jan. 25.
Group 10504. Jan. 24–Feb. 5. A large spot with multiple umbræ, usually with small companions which are numerous on Jan. 30 and 31.
Group 10505. Jan. 24–31. A diminishing stream of smallish spots *n* Group 10504.
Group 10506. Jan. 24–Feb. 5. Return of Group 10477; third appearance. A stable regular spot decreasing, with small attendant spots from Jan. 29 to Feb. 2.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
23·314	10503	·962	118·8	48·2	−29·1	4	14	103*f*
C	10504	·965	110·7	47·4	−21·3	83	468	321*c*
	10505	·979	104·5	43·8	−15·4	28	166	242*c*
	10506	·998	97·4	36·1	− 7·7	15	434	
		·826	101·1					436
		·890	73·3					74
		·910	84·9					75
		·951	124·1					94
		·957	96·9					172
Jan. 24			(−8·5)	(122·8)	(−5·4)	(362)	(2498)	(2319)
24·460		·944	257·2					135
		·904	247·0					145
	10502	·726	262·0	154·3	− 9·6	23	100	
	10498	·657	246·1	147·2	−19·6	0	6	
	10497	·691	299·3	146·2	+15·5	138	916	
	10499	·211	340·2	111·8	+ 5·9	42	329	
	10501	·271	31·0	99·6	+ 7·9	42	234	
	10507	·658	119·0	69·2	−22·8	7	22	
G	10503	·887	119·4	46·4	−28·5	10	42	83*c*
	10504	·882	111·4	46·0	−21·5	102	601	457*f*
	10505	·900	104·7	43·3	−15·6	30	160	193*c*
	10506	·949	96·2	35·8	− 7·7	82	341	254*sf*
		·716	103·7					275
		·860	96·6					192
		·880	123·7					116
		·911	131·2					98
		·989	104·2					141
Jan. 25			(−9·0)	(107·7)	(−5·5)	(476)	(2751)	(2089)
25·420		·967	255·1					102
		·781	247·6					110
	10502	·852	261·6	153·8	−10·1	24	115	92*c*
	10497	·838	292·8	148·3	+15·5	104	816	350*c*
	10499	·352	304·4	112·0	+ 6·1	37	308	
	10501	·258	337·8	100·7	+ 8·2	56	248	
	10507	·505	125·6	68·9	−22·0	12	30	
C	10503	·768	122·2	47·9	−28·0	3	9	57*c*
	10504	·773	113·7	45·7	−21·7	132	642	355*f*
	10505	·782	106·0	43·9	−16·0	34	213	99*c*
	10506	·860	95·7	35·6	− 7·8	68	369	132*sf*
		·948	105·2					752
		·950	78·4					183
		·956	117·5					114
		·959	91·2					110
Jan. 26			(−9·4)	(95·1)	(−5·6)	(470)	(2750)	(2456)
26·327		·870	249·2					235
	10502	·944	261·2	154·2	−10·1	6	30	145*c*
C	10497	·929	289·0	148·5	+15·3	102	896	649*c*
	10499	·518	291·4	112·0	+ 5·9	34	273	
C	10501	·411	304·4	103·0	+ 8·0	62	336	
	10507	·353	144·7	70·4	−22·2	11	36	
	10503	·653	127·2	47·2	−27·8	1	3	
	10504	·646	118·0	45·3	−22·1	148	662	
	10505	·639	108·6	44·2	−16·2	22	111	
	10506	·735	95·6	35·7	− 8·0	65	356	
		·885	73·9					249
		·886	105·1					454
		·936	60·1					83
Jan. 27			(−9·8)	(83·1)	(−5·7)	(451)	(2703)	(1815)
27·335		·982	261·6					83
		·950	248·9					269
		·838	295·6					67
	10497	·985	287·3	147·4	+15·8	71	431	621*c*
	10499	·699	285·0	112·4	+ 6·2	46	224	141*p*
	10501	·610	291·8	104·6	+ 8·4	62	329	
	10508	·088	199·2	71·5	−10·4	17	51	
	10507	·267	182·6	70·5	−21·1	13	37	
	10503	·515	136·8	46·5	−27·2	1	2	
C	10504	·483	126·4	45·2	−21·8	100	496	
	10505	·456	113·8	44·2	−15·7	16	53	
	10506	·559	95·5	35·8	− 7·8	60	356	
		·715	104·0					150
		·828	108·4					217
		·780	68·4					203
		·924	118·4					159
		·936	70·0					104
		·942	97·4					156
		·948	89·0					59
Jan. 28			(−10·2)	(69·8)	(−5·7)	(395)	(1979)	(2229)
28·411		·985	286·3					240
		·922	252·5					95
		·921	294·2					108
		·862	289·5					141
	10499	·856	280·7	113·2	+ 6·0	20	142	328*p*
	10501	·788	284·8	105·8	+ 7·9	92	525	239*p*
	10508	·295	252·0	72·2	−10·8	24	121	
C	10507	·379	222·8	71·7	−21·7	7	48	
	10504	·326	147·7	44·9	−21·7	90	418	
	10505	·303	131·7	42·1	−17·2	3	9	
	10506	·343	97·5	35·7	− 8·0	54	377	
		·837	67·5					96
		·908	97·1					188
		·943	75·6					120
		·969	109·1					147
Jan. 29			(−10·7)	(55·7)	(−5·8)	(290)	(1640)	(1702)

Group 10507. Jan. 25–Feb. 1. A small stream ; the leading pair of spots remains after Jan. 29.
Group 10508. Jan. 28–Feb. 2. A smallish stream ; the leader alone survives after Jan. 31, although the follower is at first the largest component.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
29·324		·938	296·7					176	31·322		·763	98·3					111
	10499	·945	279·0	113·4	+ 6·5	20	134	776*c*	C		·804	110·7					124
	10501	·899	281·9	106·1	+ 8·0	81	659	384*f*			·869	52·9					74
	10507	·541	238·8	73·4	−21·4	5	20				·883	64·1					175
	10508	·477	257·8	71·9	−11·0	24	157				·928	114·1					108
	10509	·161	231·8	51·1	−11·5	2	12				·943	98·5					101
	10504	·275	184·0	44·9	−21·8	68	487		Feb. 1			(−11·9)	(17·3)	(−6·0)	(174)	(982)	(2035)
C	10505	·201	174·9	42·6	−17·4	2	15										
	10506	·142	105·4	35·8	− 8·0	55	354		32·470		·916	248·8					213
		·797	95·1					252			·828	251·6					131
		·901	72·3					169			·720	257·8					179
		·922	62·8					122		10508	·955	259·3	75·6	−12·0	18	100	212*nf*
		·923	109·3					273		10504	·690	244·7	44·2	−21·7	52	353	82*c*
		·956	99·4					136		10506	·555	264·8	36·0	− 8·0	65	337	
		·974	80·1					148	G	*994h*	·236	236·0	13·8	−13·5	3	18	
Jan. 30			(−11·1)	(43·7)	(−5·9)	(257)	(1838)	(2436)		10511	·718	107·4	316·7	−16·7	1	6	
										10512	·840	76·8	306·8	+ 7·6	11	55	423*f*
30·425		·963	305·0					88		10513	·982	101·2	282·4	−12·1	26	198	299*c*
	10501	·978	279·5	105·8	+ 8·0	130	1036	590*f*			·845	98·7					97
	10507	·721	246·1	74·0	−21·3	9	25				·940	111·3					110
	10508	·703	259·8	73·9	−11·4	37	138		Feb. 2			(−12·4)	(2·2)	(−6·1)	(176)	(1067)	(1746)
	10509	·382	253·2	51·0	−11·9	2	19										
	10504	·369	222·6	44·7	−21·5	92	448		33·426		·951	253·0					318
	10505	·284	223·5	41·0	−17·7	5	19				·929	236·0					102
	10506	·118	252·4	35·7	− 8·0	74	342				·861	259·9					265
G	10510	·793	66·5	340·7	+14·5	3	7	67*c*		10514	·949	273·1	60·8	+ 0·9	3	14	189*nf*
	10511	·948	105·5	317·0	−16·6	10	47	179*f*		10504	·815	247·7	43·6	−21·7	56	277	326*c*
	10512	·993	81·4	307·2	+ 7·8	0	8	116*s*		10506	·721	265·2	35·9	− 7·8	65	318	
		·789	111·4					96	G	*995a*	·577	254·2	24·4	−14·1	0	2	
		·853	61·1					66		10510	·351	21·0	342·2	+12·9	2	9	
		·876	98·6					155		*995b*	·564	104·1	315·6	−13·0	0	2	
		·900	109·6					168		10511	·591	110·6	314·4	−17·0	4	12	
		·909	79·6					159		10512	·722	72·9	305 6	+ 7·8	11	43	244*f*
		·943	66·4					121		10513	·911	100·6	283 5	−12·1	34	157	442*f*
Jan. 31			(−11·6)	(29·2)	(−6·0)	(362)	(2089)	(1805)			·930	77·8					65
									Feb. 3			(−12·8)	(349·6)	(−6·2)	(175)	(834)	(1951)
31·322		·992	279·7					447	34·338		·948	259·0					270
		·761	246·9					62			·940	295·7					99
	10508	·846	260·1	75·4	−11·5	16	83	103*f*			·763	288·0					90
	10507	·844	248·5	74·5	−21·3	2	10	94*n*			·724	254·2					107
	10509	·545	253·9	49·8	−13·8	0	2			10514	·986	273·4	57·5	+ 2·3	6	12	321*s*
	10504	·507	236·7	44·3	−21·5	70	462		C	10504	·907	249·0	43·1	−21·7	47	315	483*sf*
	10506	·314	263·1	35·6	− 7·8	59	337			10506	·850	264·8	36·1	− 7·7	68	333	109*c*
	994f	·221	215·5	24·9	−16·3	2	7			10512	·551	65·0	307·5	+ 8·1	2	5	
	994g	·616	114·0	340·9	−19·3	1	5			10513	·799	100·7	284·5	−12·3	26	161	340*f*
	10510	·675	60·7	340·0	+14·5	3	5			10515	·915	109·0	271·0	−19·9	5	16	218*f*
	10511	·868	105·5	316·9	−16·4	8	19	124*f*			·828	74·0					42
C	10512	·952	79·6	306·6	+ 8·0	13	52	512*sf*	Feb. 4			(−13·2)	(337·7)	(−6·2)	(154)	(842)	(2079)

Group 10509. Jan. 30–Feb. 1. One or two small spots in a fairly large area of faculæ, *n* Group 10504 and associated with Group 10505.
Group 10510. Jan. 31–Feb. 3. A small spot on Jan. 31 and Feb. 1.; a pair on Feb. 3.
Group 10511. Jan. 31–Feb. 3. One or two very small spots.
Group 10512. Jan. 31–Feb. 6. A small spot with two or three companions, followed by a fairly large area of faculæ. No spots are seen on Feb. 5, but a faint cluster appears in the region on Feb. 6.
Group 10513. Feb. 2–11. Revival rather than a return of Group 10489. Two diminishing regular spots, 10° apart in longitude, of which the leader lasts the longer and is crossed by a bright "bridge." The group is accompanied by considerable faculæ.
Group 10514. Feb. 3–4. The beginning of a group at the west limb.
Group 10515. Feb. 4–10. Two or three tiny spots, not seen on Feb. 8, *sf* Group 10513.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
35·424		·897	282·6					106	39·461	10513	·281	248·5	285·6	−12·2	15	64	
		·873	256·4					216	G	10516	·423	132·8	250·6	−22·8	3	12	
		·863	292·2					87			·810	63·5					106
		·772	251·0					74			·834	104·9					136
C	10504	·979	249·4	42·8	−21·4	41	269	464*sf*			·933	69·0					171
	10506	·955	264·0	36·4	− 7·6	38	314	169*c*			·935	113·6					96
	10513	·605	102·2	286·2	−12·4	34	129	151*f*			·962	102·6					175
	10515	·811	111·5	269·5	−21·1	7	43	77*c*	Feb. 9			(−15·1)	(270·2)	(−6·6)	(18)	(76)	(1558)
		·951	121·7					102									
Feb. 5			(−13·6)	(323·3)	(−6·3)	(120)	(755)	(1446)	40·354		·967	250·9					91
											·932	281·1					144
36·490		·952	283·4					146			·917	261·2					197
		·935	255·1					406			·896	249·5					72
		·899	243·8					93			·760	284·5					98
	10512	·261	24·6	303·1	+ 7·3	5	22			10513	·432	255·3	283·6	−12·2	9	45	
G	10513	·401	106·8	286·2	−12·5	22	95			10515	·280	215·3	268·2	−19·6	2	9	
	10515	·662	115·0	269·4	−21·2	4	20			*995d*	·168	163·3	255·5	−15·8	4	19	
		·867	113·1					69	C	10517	·816	64·3	208·5	+16·4	4	10	50*c*
		·952	70·4					138			·762	104·8					60
Feb. 6			(−14·0)	(309·3)	(−6·4)	(31)	(137)	(852)			·845	117·7					79
											·901	80·6					48
37·308		·959	252·7					266			·910	98·9					151
		·893	264·3					140			·918	67·1					119
		·865	245·7					105			·934	110·8					146
		·769	259·0					149			·974	75·3					128
	10513	·238	117·4	286·1	−12·5	24	99		Feb. 10			(−15·5)	(258·4)	(−6·6)	(19)	(83)	(1422)
C	10515	·515	119·9	270·2	−20·5	3	12										
	10516	·752	115·1	251·0	−23·0	10	42	82*c*	41·340		·972	260·2					98
	995c	·916	62·9	237·4	+21·7	7	18	100*c*			·934	304·1					102
		·964	69·7					196			·884	261·0					86
		·980	106·4					93			·847	282·7					201
Feb. 7			(−14·3)	(298·5)	(−6·4)	(44)	(171)	(1131)		10513	·622	258·6	283·8	−12·2	17	64	
									C	10517	·681	56·8	209·1	+16·6	27	76	
38·316		·930	265·5					281			·805	99·4					86
		·865	289·0					94			·823	66·9					93
		·858	253·7					119			·928	110·2					118
		·854	302·5					77			·931	72·0					143
	10513	·108	200·7	287·5	−12·3	17	73		Feb. 11			(−15·8)	(245·4)	(−6·6)	(44)	(140)	(927)
C	10515	·314	137·5	272·3	−19·7	2	4										
	10516	·589	120·9	252·1	−23·0	1	7										
		·785	60·3					65	42·428		·978	261·0					110
		·893	66·7					112			·944	280·3					381
		·951	105·3					264			·804	258·4					240
		·976	72·5					95		10518	·724	292·3	273·9	+11·0	22	101	
Feb. 8			(−14·7)	(285·3)	(−6·5)	(20)	(84)	(1107)		10517	·524	42·9	209·4	+16·3	57	296	
									C		·861	68·6					100
39·461		·971	285·4					111			·868	109·6					102
		·971	265·5					168			·929	118·0					61
		·944	293·9					168			·946	98·0					144
		·944	253·3					188			·972	107·8					178
		·862	282·7					106			·973	70·6					398
G		·854	260·9					133	Feb. 12			(−16·2)	(231·1)	(−6·7)	(79)	(397)	(1744)

Group 10516. Feb. 7–9. A pair of small spots.
Group 10517. Feb. 10–19. A stream of normal type, the leading and following components showing marked separation in longitude during the first few days of development.
Group 10518. Feb. 12–15. A group forming near the west limb.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
43·307		·978	280·9					160	46·348	10519	·716	115·2	135·1	−22·7	6	23	
		·922	302·9					82	C	10521	·863	64·2	124·9	+18·1	13	75	373*c*
		·920	282·8					67		10522	·938	81·8	111·0	+ 5·2	182	1288	710*c*
		·828	256·0					603			·834	75·0					221
	10518	·850	288·1	275·0	+11·5	44	221	123*c*	Feb. 16			(−17·6)	(179·5)	(−6·9)	(251)	(1636)	(1843)
C	10517	·424	23·3	209·6	+16·2	41	281										
	10519	·988	111·7	136·5	−22·5	13	66	91*c*	47·331		·962	290·3					117
		·909	106·4					106			·863	292·4					79
		·916	95·5					92		10517	·763	297·5	211·1	+15·7	28	132	
		·927	67·5					247		10523	·166	109·2	157·5	−10·0	26	198	
		·964	74·3					216		10524	·304	126·1	151·8	−16·9	7	37	
Feb. 13			(−16·5)	(219·6)	(−6·7)	(98)	(568)	(1787)		10520	·612	44·1	139·8	+19·9	3	16	
									C	10519	·565	120·8	135·0	−22·6	5	9	
44·315		·930	254·9					647		10521	·757	57·3	124·4	+19·0	20	83	91*c*
	10518	·937	284·5	273·6	+11·0	61	372	200*c*		10522	·843	79·7	110·5	+ 4·8	170	1241	512*nf*
	10517	·396	352·7	209·3	+16·2	37	245				·782	68·9					128
	10519	·937	111·7	135·9	−22·6	16	48	256*f*			·914	58·1					65
		·750	64·0					67	Feb. 17			(−17·9)	(166·6)	(−6·9)	(259)	(1716)	(992)
C		·841	109·5					82									
		·890	63·1					314	48·472		·968	289·1					120
		·922	71·5					381			·954	260·5					79
		·981	80·3					118			·887	254·7					158
		·986	71·5					126		10517	·898	291·5	211·6	+15·8	38	147	354*c*
Feb. 14			(−16·9)	(206·3)	(−6·8)	(114)	(665)	(2191)		10523	·113	245·7	157·5	− 9·6	35	207	
										10524	·176	182·7	152·0	−17·1	11	38	
45·433		·960	251·1					282		*995e*	·378	19·5	144·1	+13·8	1	5	
		·919	285·7					33	G	10520	·484	25·3	138·9	+19·0	2	11	
		·844	247·2					119		10519	·373	138·8	136·1	−23·0	0	2	
		·794	297·7					73		10521	·585	46·1	125·4	+17·6	17	40	
	10518	·994	282·2	273·4	+11·2	106	530	439*c*		10522	·677	74·6	110·7	+ 5·0	162	1240	
	10517	·502	320·4	210·9	+16·3	37	199				·895	120·3					97
C	10520	·845	60·9	139·8	+20·1	8	21	83*c*			·959	106·5					226
	10519	·836	112·7	135·0	−22·6	15	62	170*f*			·967	113·1					147
	10521	·942	66·7	125·3	+19·2	19	39	313*c*			·976	97·7					122
	10522	·990	83·4	110·7	+ 5·5	255	1255	524*c*	Feb. 18			(−18·3)	(151·5)	(−7·0)	(266)	(1690)	(1303)
		·829	67·7					151									
		·864	99·9					80	49·431		·955	253·2					209
		·921	79·1					149			·882	295·2					91
Feb. 15			(−17·3)	(191·5)	(−6·8)	(440)	(2106)	(2416)			·844	257·9					105
											·791	291·8					109
46·348		·937	248·6					234		10517	·971	288·4	212·0	+15·9	19	83	489*c*
		·897	294·0					139		10523	·332	260·9	158·2	− 9·6	33	190	
		·770	297·4					83		10524	·292	232·8	152·9	−16·9	37	142	
	10517	·635	306·0	211·7	+16·0	25	167			10525	·376	358·0	139·7	+15·0	2	15	
	10523	·389	100·0	156·7	−10·3	20	70			*995f*	·255	358·0	139·4	+ 7·7	0	5	
C	10520	·745	55·2	139·1	+19·9	5	13	83*c*	G	10520	·455	0·0	138·9	+19·9	31	137	

Group 10519. Feb. 13–18. A small regular spot disappearing as a dot.
Group 10520. Feb. 15–23. A couple of small spots which have almost disappeared by Feb. 18; on Feb. 19 a pair of clusters or composite spots have formed but these soon dissipate.
Group 10521. Feb. 15–20. A few small spots in stream formation.
Group 10522. Feb. 15–27. Return of Group 10501. A large regular spot with a compact cluster of imperfectly formed spots almost touching it on its southern side. This cluster, which is preceded by a fairly stable spot, lengthens out and has practically disappeared by Feb. 25. An extensive area of faculæ accompanies the group.
Group 10523. Feb. 16–23. A stream of usual formation, composed of a regular spot as leader and a small cluster as the follower.
Group 10524. Feb. 17–24. A stream of rather unstable components *sf* Group 10523.
Group 10525. Feb. 19–20. One or two tiny spots *s* Group 10520.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
49·431	10521	·483	29·0	124·7	+18·1	4	13	
G	10522	·508	66·2	111·2	+ 5·6	172	1108	
	10526	·989	101·8	56·3	−12·7	30	200	720*p*
		·856	241·1					108
		·879	105·8					276
		·917	114·4					122
		·929	191·9					35
		·931	60·8					93
		·962	90·0					234
Feb. 19			(−18·6)	(138·9)	(−7·0)	(328)	(1893)	(2591)
50·396		·993	288·2					220
		·928	288·9					101
		·898	257·7					93
	10523	·536	263·2	158·7	− 9·6	31	164	
	995g	·597	315·3	152·4	+18·8	1	6	
	10524	·461	245·5	152·1	−17·3	69	342	
	10525	·450	328·9	140·1	+15·8	1	5	
	10520	·497	335·9	138·6	+20·1	20	68	
	995h	·085	278·8	131·0	− 6·2	1	4	
G	10527	·301	171·5	123·4	−24·2	12	38	
	10521	·457	9·1	121·8	+19·7	2	11	
	10522	·333	50·7	111·3	+ 5·3	148	923	
	10526	·932	100·7	56·7	−12·5	30	129	} 564*c*
	10528	·956	105·1	52·3	−16·4	7	29	
	10529	·995	95·1	41·6	− 5·8	0	19	138*c*
	10530	·993	109·7	41·3	−20·3	28	195	185*p*
		·843	112·3					150
		·919	84·9					131
Feb. 20			(−18·9)	(126·2)	(−7·0)	(350)	(1933)	(1582)
51·407		·970	283·8					87
		·934	253·1					113
		·809	295·2					74
		·756	304·0					83
	10523	·729	262·6	160·0	−10·3	22	137	
	10524	·643	251·2	152·4	−17·5	57	267	
	10520	·593	320·0	136·8	+20·4	8	32	
	995i	·432	225·0	132·4	−24·5	2	7	
	10531	·349	323·8	124·9	+ 9·3	1	5	
	10527	·326	209·9	123·0	−23·3	29	131	
	10522	·216	7·6	111·3	+ 5·2	145	798	
	10526	·826	100·3	56·8	−12·5	15	103	} 592*c*
	10528	·874	105·0	51·5	−16·5	4	13	
	10529	·942	93·7	42·2	− 5·9	13	38	} 207*c*
	10532	·967	96·8	37·1	− 8·4	42	210	
G	10530	·948	108·9	40·4	−20·1	23	127	141*f*

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
51·407		·826	82·9					92
G		·947	127·8					106
		·956	117·6					262
Feb. 21			(−19·2)	(112·9)	(−7·1)	(361)	(1868)	(1757)
52·533		·980	288·5					187
		·942	249·9					112
		·918	290·5					185
		·777	291·5					103
	10523	·876	262·1	159·6	−10·3	13	118	200*f*
	10524	·835	253·5	154·9	−17·6	46	193	144*c*
	995j	·836	298·9	148·7	+19·4	2	4	268*n*
	10520	·732	306·1	136·9	+20·1	7	19	45*c*
	10531	·601	300·9	129·7	+11·9	6	19	
	10527	·492	234·9	123·7	−22·8	32	144	
	10522	·308	314·9	110·6	+ 5·6	103	709	
	995k	·155	151·7	93·6	−14·9	2	5	
	10526	·643	98·9	57·8	−11·1	31	144	
G	10528	·720	105·5	52·0	−16·0	14	59	
	10533	·748	95·9	49·3	− 9·1	7	11	68*c*
	10529	·822	92·1	42·6	− 5·8	8	13	} 200*c*
	10532	·869	95·9	37·3	− 8·6	35	228	
	10530	·845	109·5	40·1	−20·2	24	133	419*f*
		·782	111·5					87
		·872	117·9					274
		·894	130·5					68
		·923	71·1					79
		·924	82·1					89
		·944	95·1					130
		·957	118·8					148
		·975	129·5					106
Feb. 22			(−19·5)	(98·0)	(−7·1)	(330)	(1799)	(2912)
53·561		·945	295·0					418
		·874	290·4					326
		·717	306·7					245
	10523	·961	261·4	159·1	−10·2	23	90	188*f*
	10524	·944	253·3	156·2	−18·1	34	223	400*c*
	10520	·848	300·0	136·1	+20·7	4	32	235*c*
	10531	·760	291·8	130·4	+11·4	7	26	204*f*
	10527	·669	242·2	124·5	−23·6	50	159	
	10522	·490	295·8	110·7	+ 5·9	73	496	
	10526	·434	102·4	59·0	−11·7	14	54	
	10528	·554	109·6	51·6	−16·7	4	20	
C	10533	·563	95·4	50·1	− 8·9	4	8	

Group 10526. Feb. 19–Mar. 2. At first a small diminishing regular spot with companions in a large area of faculæ. On Feb. 25 a new group begins to develop, and by Feb. 27 this has become a very large stream of normal type; a decrease follows immediately.
Group 10527. Feb. 20–26. A stream of small unstable spots, originating with its axis nearly at right-angles to the sun's equator. On Feb. 23 an outlying spot to the stream makes its appearance southwards.
Group 10528. Feb. 20–29. A few small spots *sf* Group 10526.
Group 10529. Feb. 20–26. A small regular spot, disappearing as a pair of dots on Feb. 22. On Feb. 25 and 26 another small spot appears in its place.
Group 10530. Feb. 20–Mar. 3. Return of Group 10504. A regular spot shrinking rapidly after Feb. 29.
Group 10531. Feb. 21–25. Small spots in a disturbed region *p* Group 10522.
Group 10532. Feb. 21–Mar. 4. Return of Group 10506; fourth appearance. A stable regular spot.
Group 10533. Feb. 22–26. A small spot until Feb. 24; then a small group.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
53·561	10530	·702	111·7	40·7	−20·2	15	128	292*f*
C	10532	·728	95·2	37·5	− 8·6	19	198	102*c*
		·771	133·1					83
		·786	72·4					87
		·880	105·8					310
		·902	118·5					147
		·910	65·4					76
		·931	131·4					101
Feb. 23			(−19·8)	(84·5)	(−7·1)	(247)	(1434)	(3214)
54·534		·987	261·0					100
		·984	295·1					227
		·944	290·5					530
		·872	257·1					121
		·826	297·9					320
	10524	·990	253·7	155·1	−17·2	34	151	343*c*
	10531	·871	288·4	129·2	+12·2	4	31	181*sf*
	10527	·810	244·9	125·1	−24·4	30	199	111*c*
	10522	·665	287·7	111·1	+ 6·1	92	492	
	10526	·171	113·9	62·6	−11·0	11	44	
G	*995l*	·284	49·0	59·4	+ 3·7	0	2	
	10528	·356	116·9	52·5	−16·0	7	25	
	10533	·421	97·9	46·8	− 9·7	1	2	
	10530	·549	116·1	40·2	−20·0	23	128	
	10532	·559	95·0	37·6	− 8·7	31	217	
	995m	·899	92·7	7·5	− 5·6	2	5	97*sf*
		·773	108·1					264
		·901	132·7					112
		·914	111·3					133
		·944	71·8					92
		·959	97·5					151
Feb. 24			(−20·1)	(71·7)	(−7·1)	(235)	(1296)	(2782)
55·439		·991	292·0					379
		·956	257·4					118
		·919	294·5					682
	10531	·952	285·3	129·5	+12·1	3	21	269*c*
	10527	·900	246·7	124·5	−24·1	32	190	458*c*
	10522	·800	283·3	111·1	+ 6·1	102	494	1051*c*
	10534	·400	215·5	74·7	−25·9	6	19	
	10526	·084	204·8	61·9	−11·5	62	217	
	10528	·196	142·9	52·8	−16·1	7	16	
G	10533	·208	105·0	48·1	−10·1	0	12	
	10529	·298	87·2	42·5	− 6·1	3	17	
	10530	·391	126·2	40·3	−20·1	20	132	
	10532	·373	95·7	37·8	− 8·8	38	205	
	10535	·984	108·8	338·5	−19·7	29	85	225*c*
		·853	135·8					62
		·871	115·4					143
		·896	95·6					293
		·956	123·8					102
		·966	72·7					116
Feb. 25			(−20·4)	(59·8)	(−7·2)	(302)	(1408)	(3898)
1928.			°	°	°			
56·437		·980	289·5					268
		·906	300·7					97
	10527	·971	247·0	124·4	−24·0	30	179	299*c*
	10522	·916	279·9	111·5	+ 6·0	82	427	642*c*
	10534	·532	229·0	73·2	−26·8	15	58	
	10526	·267	252·2	61·6	−11·7	85	468	
	10528	·184	210·5	52·2	−16·3	4	16	
	10533	·073	228·5	49·8	−10·0	2	11	
G	10529	·063	59·9	43·5	− 5·4	2	6	
	10530	·249	154·1	40·0	−20·0	16	118	
	10532	·158	100·3	37·6	− 8·7	35	173	
	10535	·927	108·0	337·7	−19·4	17	62	226*c*
	10536	·995	96·3	321·8	− 6·9	0	148	
		·907	73·9					109
		·963	81·5					60
		·967	96·1					106
Feb. 26			(−20·7)	(46·6)	(−7·2)	(288)	(1666)	(1807)
57·396		·930	295·4					123
	10522	·981	277·7	111·6	+ 6·0	71	373	884*f*
	10534	·668	237·7	73·0	−26·6	11	41	
	10526	·463	258·0	61·4	−11·9	173	931	
	10537	·317	276·3	52·4	− 4·9	5	25	
	10530	·243	202·6	39·7	−20·1	18	111	
	10532	·072	246·2	37·8	− 8·9	33	168	
G	10535	·819	108·7	338·9	−19·4	30	151	} 214*c*
	995n	·871	104·5	332·9	−16·1	4	13	
	10536	·948	94·9	322·2	− 6·9	35	226	355*c*
		·875	77·0					67
		·883	66·7					69
		·937	115·9					99
		·938	104·5					140
		·970	82·7					154
Feb. 27			(−20·9)	(34·0)	(−7·2)	(380)	(2039)	(2105)
58·433		·980	279·4					96
		·959	289·2					94
		·836	254·6					138
	10534	·798	241·3	71·9	−27·1	18	54	196*c*
	10526	·650	259·6	61·0	−12·2	148	988	
	10528	·538	249·2	51·9	−17·2	2	6	
	10537	·506	272·0	50·7	− 5·2	48	223	
G	10530	·382	233·8	39·3	−19·8	16	96	
	10532	·298	263·2	37·6	− 8·9	27	165	
	10535	·642	111·8	341·3	−19·4	35	143	281*f*
	10536	·840	93·4	322·9	− 6·7	43	358	887*c*
		·874	117·8					70
		·924	79·2					285
		·941	67·7					48
		·989	77·4					128
Feb. 28			(−21·2)	(20·3)	(−7·2)	(337)	(2033)	(2223)

Group 10534. Feb. 25–29. A stream of small unstable spots.
Group 10535. Feb. 25–Mar. 8. A stream in which the following spot is the longest lived.
Group 10536. Feb. 26–Mar. 9. A large regular spot followed by a cluster of tiny companions that have died out by Mar. 7.
Group 10537. Feb. 27–Mar. 3. A stream of changing spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
59·519		·938	254·5					172	62·444		·923	280·2					146
	10534	·908	243·3	71·5	−27·2	11	46	262*c*	G		·883	244·6					536
	10526	·824	260·1	61·9	−12·2	119	781	240*c*			·856	258·3					255
	10528	·716	255·9	51·8	−15·1	3	12			10537	·992	267·3	50·4	− 3·6	34	126	394*s*
	10537	·713	270·3	51·5	− 4·8	54	337			10530	·947	252·3	39·8	−19·0	0	6	142*c*
	10530	·570	245·4	39·3	−19·8	19	104			10532	·940	263·3	38·0	− 8·7	22	145	177*c*
G	10532	·525	264·9	37·8	− 8·8	28	157			10535	·285	225·2	339·8	−18·5	13	39	
	10535	·454	119·1	341·3	−19·3	27	123			10536	·053	72·2	324·6	− 6·3	59	321	
	10536	·680	91·7	323·0	− 6·4	59	362	109*f*		10538	·851	76·2	271·2	+ 7·8	4	16	79*c*
		·799	74·5					127			·801	113·7					127
		·935	73·8					152			·822	99·4					124
		·961	102·8					262			·858	70·4					159
		·964	58·1					72			·899	107·7					128
Feb. 29			(−21·5)	(6·0)	(−7·2)	(320)	(1922)	(1396)			·916	100·5					59
											·919	117·4					132
60·327		·965	247·3					290			·970	75·6					79
		·924	280·1					160	Mar. 3			(−22·2)	(327·5)	(−7·2)	(132)	(653)	(2846)
		·823	252·7					207									
	996a	·951	242·4	68·5	−28·4	3	14	192*c*	63·469		·960	247·1					~~444~~
	10526	·915	259·2	62·3	−12·8	93	793	471*c*			·959	294·7					84
	10537	·827	269·1	51·3	− 4·8	72	498	134*c*			·947	274·9					119
	10530	·699	249·1	39·1	−19·7	12	51				·946	234·5					100
C	10532	·670	264·9	37·7	− 8·7	23	152				·871	245·3					150
	10535	·326	132·1	340·6	−19·6	23	77				·857	259·5					115
	10536	·529	90·4	323·4	− 6·4	51	356			10532	·993	261·9	38·0	− 8·9	37	179	220*sf*
		·836	71·3					156		10535	·468	243·7	340·1	−18·5	7	16	
		·884	101·0					159	G	10536	·181	276·4	324·4	− 6·0	59	317	
		·960	101·7					132		10539	·376	111·3	292·9	−14·7	1	5	
		·961	111·0					83		10538	·731	69·7	270·1	+ 9·4	5	16	
Mar. 1			(−21·7)	(355·4)	(−7·2)	(277)	(1941)	(1984)		10540	·724	73·4	269·9	+ 6·7	32	114	
										10541	·983	71·9	237·5	+16·2	29	104	368*c*
61·331		·964	275·5					128			·801	107·9					100
		·922	256·0					462			·895	70·7					43
		·806	286·7					118			·956	109·9					66
	10526	·983	258·6	62·7	−12·5	99	608	665*c*			·959	101·5					45
	10537	·950	267·9	54·1	− 4·2	36	442	423*c*	Mar. 4			(−22·5)	(314·0)	(−7·3)	(170)	(751)	(1854)
	10530	·840	251·6	39·6	−19·3	12	16	229*c*									
	10532	·824	264·4	38·0	− 8·7	26	148	150*f*	64·402		·962	253·9					256
C	10535	·215	163·3	338·5	−19·0	11	39				·950	228·9					70
	10536	·313	89·0	323·9	− 6·5	54	363				·947	243·1					202
	10538	·939	78·5	274·1	+ 8·1	6	16	102*f*			·885	265·3					112
		·768	102·0					184		10535	·640	250·5	340·9	−18·0	2	9	
		·894	106·2					377		10536	·377	272·5	323·9	− 5·9	62	295	
		·940	72·8					212	G	10542	·530	355·9	304·1	+24·5	2	6	
		·974	108·8					178		10539	·190	131·2	293·2	−14·4	2	8	
		·981	115·8					53		10538	·571	61·3	271·3	+ 9·6	7	19	
Mar. 2			(−22·0)	(342·2)	(−7·2)	(244)	(1632)	(3281)		10540	·563	67·4	270·3	+ 6·3	75	315	
										10541	·932	69·5	236·6	+16·0	31	190	355*c*
62·444		·979	256·6					106		10543	·979	100·3	222·5	−11·5	5	10	88*sf*
		·978	248·8					78			·912	110·3					75
G		·932	230·8					125	Mar. 5			(−22·7)	(301·7)	(−7·3)	(186)	(852)	(1158)

Group 10538. Mar. 2–14. A few small scattered spots of which the rear one alone remains on Mar. 7. On the following day the development of a new group begins; this becomes a large and active stream which practically coalesces with Group 10540.
Group 10539. Mar. 4–5. A single small spot.
Group 10540. Mar. 4–13. An active stream. The leader spot is the most stable member; the following part of the stream unites with Group 10538.
Group 10541. Mar. 4–15. A stream in continual change.
Group 10542. Mar. 5–10. A stream with the largest spot at the rear.
Group 10543. Mar. 5–10. A small but distinct spot, showing considerable proper motion in longitude.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
65·319		·982	253·5					101	67·347		·967	104·5					147
		·935	261·5					179	C		·975	68·9					104
		·916	227·2					111	Mar. 8			(−23·3)	(262·9)	(−7·2)	(205)	(1147)	(2283)
		·886	298·2					134									
		·876	241·9					106									
		·819	253·0					206	68·423		·983	257·7					146
	10536	·549	270·9	322·9	− 5·6	47	282				·976	248·9					137
C	10542	·580	341·7	301·3	+26·1	5	32				·949	279·3					144
	10540	·394	56·0	270·5	+ 5·8	73	408				·842	259·9					81
	10538	·452	52·3	268·5	+ 9·2	5	12			10536	·965	267·3	323·6	− 4·5	49	256	411*sf*
	10541	·834	66·1	237·6	+15·2	35	196	270*c*		10542	·862	307·5	298·7	+27·1	21	103	182*c*
	10543	·905	98·7	224·1	−11·0	10	26	253*s*		10538	·463	307·1	270·6	+ 9·5	45	248	
		·819	100·7					131		10540	·431	300·2	270·6	+ 5·8	81	455	
		·977	73·5					469		10541	·395	17·9	241·5	+14·8	48	221	
Mar. 6			(−22·9)	(289·6)	(−7·3)	(175)	(956)	(1960)		10543	·368	99·7	227·2	−10·3	2	4	
									G	10544	·481	93·3	219·8	− 7·9	6	15	
										10545	·743	102·9	200·5	−14·4	7	10	
66·343		·946	226·1					91		10546	·998	109·3	160·1	−19·6	96	368	111*p*
		·943	240·4					102			·793	59·3					134
		·931	253·6					227			·847	100·5					98
		·914	295·5					110			·896	119·6					39
		·838	264·3					188			·897	110·7					74
	10535	·855	253·5	335·3	−17·8	6	21	275*s*			·922	62·5					61
	10536	·739	269·8	323·8	− 5·0	54	277				·968	98·1					86
C	10542	·663	325·3	300·9	+26·4	33	150				·969	70·7					121
	10540	·241	22·3	270·8	+ 5·6	58	496		Mar. 9			(−23·5)	(248·7)	(−7·2)	(355)	(1680)	(1825)
	10538	·311	22·5	269·2	+ 9·5	2	7										
	10541	·678	58·7	239·4	+14·8	42	266										
	10543	·770	97·5	225·4	−10·3	9	17	226*sf*	69·391		·976	261·1					322
		·859	93·6					42			·922	285·5					192
		·921	70·4					724			·817	255·7					136
		·953	104·6					98		10542	·935	301·9	298·2	+26·4	6	21	231*c*
Mar. 7			(−23·1)	(276·1)	(−7·2)	(204)	(1234)	(1983)		10540	·648	287·5	274·2	+ 5·6	66	373	
										10538	·620	296·2	270·2	+ 9·9	101	640	
									G	10541	·394	347·4	241·1	+15·4	55	212	
67·347		·985	249·9					333		10543	·154	111·5	227·7	−10·4	2	5	
		·964	289·5					80		10544	·233	94·9	222·5	− 8·2	13	44	
		·940	262·6					212		10545	·578	105·2	201·0	−14·6	2	5	
		·938	299·6					86		10546	·964	108·1	160·2	−19·3	74	529	349*c*
		·917	310·5					86			·941	98·9					123
		·837	282·1					94			·965	70·9					117
	10535	·960	253·4	337·8	−17·9	2	30	340*f*	Mar. 10			(−23·7)	(236·0)	(−7·2)	(319)	(1829)	(1470)
	10536	·872	268·7	323·7	− 4·7	53	251	312*f*									
	10542	·763	314·7	300·2	+26·7	21	106	75*c*									
	10540	·268	326·7	271·4	+ 5·7	69	465		70·370		·982	299·4					290
	10538	·316	336·5	270·2	+ 9·6	20	77				·957	285·9					102
	10541	·528	45·5	240·1	+15·0	30	170				·928	256·5					178
	10543	·591	97·5	226·5	−10·2	2	7				·874	244·0					78
	10544	·709	92·8	217·6	− 7·1	4	18				·802	256·9					81
	10545	·867	101·8	202·2	−13·8	4	23	114*c*		10540	·804	282·7	274·9	+ 5·8	70	411	} 253*c*
C		·835	66·1					300	C	10538	·768	289·3	270·2	+ 9·8	107	853	

Group 10544. Mar. 8–17. A few small spots, developing between Mar. 10 and 11 into a regular spot, followed by a train of small spots which have disappeared by Mar. 14.
Group 10545. Mar. 8–10. A couple of small spots on Mar. 8; the follower remains on Mar. 9 and 10.
Group 10546. Mar. 9–22. A large, almost regular spot diminishing in area both by shrinkage and by the breaking away of small portions from its *np* edge.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
70·370	10541	·489	320·7	241·8	+15·4	34	211	
C	*996b*	·309	328·7	232·4	+ 8·2	0	5	
	10544	·023	182·0	223·2	− 8·5	30	177	
	996c	·402	4·8	221·1	+16·3	1	5	
	996d	·369	21·8	215·1	+12·8	1	2	
	10546	·884	108·5	160·4	−19·7	55	417	386*f*
	10547	·994	112·7	137·3	−23·2	26	132	
		·943	68·3					218
Mar. 11			(−23·9)	(223·1)	(−7·2)	(324)	(2213)	(1586)
71·421		·977	253·7					193
		·915	255·9					95
		·913	245·5					106
		·816	255·3					123
	10540	·915	280·9	273·8	+ 6·9	90	661	} 605*c*
	10538	·898	285·3	270·7	+10·3	82	674	
	10541	·629	306·5	240·8	+15·8	53	268	
	996e	·504	251·9	238·8	−15·2	2	5	
	10544	·260	262·7	224·3	− 8·9	43	231	
G	10548	·235	216·7	217·6	−17·9	9	29	
	996f	·563	41·7	186·1	+18·1	0	4	
	10546	·760	110·3	160·0	−20·1	51	383	
	10547	·970	111·7	131·7	−22·8	86	706	334*c*
		·820	109·9					479
		·892	61·4					254
		·928	70·4					263
		·933	102·0					247
		·962	80·0					198
Mar. 12			(−24·1)	(209·2)	(−7·2)	(416)	(2961)	(2897)
72·328		·962	256·9					137
		·859	248·1					136
	10540	·996	276·9	281·0	+ 6·1	59	277	} 901*c*
	10538	·959	283·5	268·7	+10·7	96	885	
	10541	·762	298·3	241·4	+16·0	30	301	88*c*
	10544	·450	264·3	224·1	− 9·0	34	220	
	10548	·398	238·7	218·2	−18·6	22	82	
	10546	·624	113·6	159·9	−20·2	50	326	103*f*
C	10547	·907	111·9	131·6	−22·8	99	632	645*f*
	10549	·981	74·3	121·1	+13·8	5	23	522*nf*
		·837	99·9					177
		·844	56·1					241
		·877	77·3					138
		·884	65·5					195
		·968	83·9					306
		·969	94·5					107
Mar. 13			(−24·3)	(197·3)	(−7·2)	(395)	(2746)	(3696)

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
73·402		·959	250·9					207
	10538	·996	282·9	266·0	+12·1	48	207	134*c*
	10541	·895	290·4	243·0	+14·7	21	161	689*c*
	10544	·672	264·2	225·6	− 9·2	26	191	
	10548	·626	249·5	221·1	−18·4	22	142	
	996g	·498	42·7	162·8	+14·7	1	5	
	10546	·442	122·3	159·7	−20·2	48	279	
	10547	·797	113·6	130·7	−23·1	90	642	338*f*
C	10549	·899	70·6	122·4	+13·9	60	462	252*c*
	10550	·967	78·7	109·6	+ 9·0	118	592	937*c*
		·751	62·2					78
		·753	73·4					65
		·813	51·0					95
		·875	80·8					267
		·895	61·8					186
		·941	92·5					152
Mar. 14			(−24·4)	(183·1)	(−7·2)	(434)	(2681)	(3400)
74·637		·949	248·7					97
		·815	292·0					189
	10541	·988	285·5	245·4	+14·0	13	82	588*nf*
	10544	·854	263·8	225·9	− 9·0	25	209	211*f*
	10548	·821	252·9	222·2	−18·1	28	146	137*c*
	10546	·270	152·0	159·0	−20·8	46	237	
G	10551	·501	106·8	137·2	−14·5	18	51	
	10547	·628	118·7	130·1	−23·2	94	531	
	10549	·743	63·3	123·7	+14·3	93	603	182*c*
	10550	·862	75·3	109·4	+ 8·9	98	617	1060*f*
		·740	79·4					195
		·840	91·6					101
Mar. 15			(−24·6)	(166·8)	(−7·1)	(415)	(2476)	(2760)
75·397		·974	289·5					278
		·869	289·9					165
		·809	302·7					75
	10544	·931	263·1	225·9	− 9·0	24	173	253*f*
	10548	·907	253·7	222·6	−17·8	21	104	181*f*
	10552	·322	187·3	159·4	−25·7	10	35	
G	10546	·240	189·1	159·1	−20·7	32	169	
	10551	·351	115·5	137·7	−15·4	36	192	
	10547	·498	125·7	130·8	−23·2	86	550	
	10549	·617	56·2	125·0	+14·0	99	641	
	10550	·762	72·2	109·8	+ 8·7	126	597	761*f*
		·964	101·8					163
		·973	112·7					211
Mar. 16			(−24·7)	(156·8)	(−7·1)	(434)	(2461)	(2087)

Group 10547. Mar. 11–24. An unusual group consisting of three regular spots nearly in line with each other. There are numerous small companions until Mar. 21. Rather dense faculæ follow the group.
Group 10548. Mar. 12–17. A small stream of which the leader is the only stable spot.
Group 10549. Mar. 13–24. A large stream of normal type.
Group 10550. Mar. 14–25. Return or revival of Group 10522. A large regular spot closely followed by companions of irregular outline ; on Mar. 17–20 a cluster of these links up with the large spot.
Group 10551. Mar. 15–21. An unstable stream.
Group 10552. Mar. 16–17. A small stream *s* Group 10546.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
76·430		·950	288·5					174
		·909	298·5					83
		·844	260·4					82
	10544	·992	261·8	226·7	− 9·0	27	126	294*f*
	10548	·979	253·5	222·9	−17·6	22	122	197*f*
	10552	·405	219·8	159·7	−24·8	7	22	
	10546	·354	226·3	159·0	−21·0	25	145	
G	10551	·177	147·3	137·5	−15·6	27	211	
	10547	·349	146·0	130·9	−23·7	110	536	
	10549	·469	40·5	125·0	+14·1	115	695	
	10550	·596	65·0	110·2	+ 8·6	90	584	
		·926	116·0					461
		·934	103·1					592
		·972	84·6					92
Mar. 17			(−24·9)	(143·2)	(−7·1)	(423)	(2441)	(1975)
77·470		·972	292·4					92
		·940	257·1					122
		·871	291·1					89
	10546	·523	240·9	158·7	−20·9	30	130	
	10553	·383	250·5	151·2	−13·9	17	52	
	10551	·200	219·7	137·1	−15·8	34	211	
G	10547	·289	183·8	130·7	−23·8	84	441	
	10549	·372	10·3	125·6	+14·3	138	852	
	10550	·419	51·5	110·2	+ 8·4	91	589	
	996h	·892	101·5	65·8	−13·4	2	8	} 651*c*
	10554	·928	94·1	61·1	− 6·5	0	5	
		·881	114·8					624
Mar. 18			(−25·1)	(129·5)	(−7·1)	(396)	(2288)	(1578)
78·369		·887	296·1					58
		·764	300·0					58
	996i	·952	288·0	186·8	+14·7	3	11	104*c*
	10546	·668	245·6	158·2	−21·3	17	101	
	10553	·564	255·0	151·6	−14·2	29	302	
	10551	·360	244·0	137·1	−15·7	16	73	
	10547	·348	214·0	129·8	−23·5	76	416	
C	10549	·398	338·8	126·1	+14·8	161	796	
	10550	·292	26·6	110·0	+ 8·1	103	558	
	996j	·616	32·1	96·5	+24·8	3	4	
		·815	115·0					491
		·837	95·1					711
		·968	97·8					135
		·971	110·6					141
Mar. 19			(−25·2)	(117·6)	(−7·0)	(408)	(2261)	(1698)
79·444		·897	291·3					136
		·823	302·1					132
	10546	·816	249·3	158·1	−20·9	22	106	162*c*
	10553	·742	256·9	151·5	−14·4	55	367	106*c*
	10551	·577	252·6	138·2	−15·7	2	7	
	10547	·503	233·5	129·6	−23·6	56	359	
	10549	·519	315·9	125·4	+15·3	145	872	
G	*996k*	·261	313·4	114·4	+ 3·4	2	7	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
79·444	10550	·294	334·7	110·8	+ 8·4	97	620	
G	*996l*	·449	348·9	108·7	+19·1	0	5	
	10554	·664	92·5	61·7	− 6·9	3	12	
		·727	114·2					83
		·775	90·9					96
		·866	97·5					126
		·917	79·9					87
		·945	129·9					106
		·952	116·1					301
		·953	103·9					233
Mar. 20			(−25·3)	(103·5)	(−7·0)	(382)	(2355)	(1568)
80·333		·966	290·1					124
		·917	299·0					129
		·813	296·6					286
		·800	247·0					220
	10546	·907	250·2	157·4	−20·9	11	103	351*c*
	10553	·875	257·6	153·3	−14·2	58	341	412*c*
	10551	·725	255·5	138·2	−15·3	0	6	
C	10547	·648	241·6	130·0	−23·5	47	322	
	10549	·647	304·0	125·4	+15·4	123	849	
	10550	·405	309·2	110·1	+ 8·1	75	584	
	996m	·861	116·4	32·7	−26·2	2	9	271*c*
		·886	104·0					197
		·934	91·6					75
		·961	115·1					193
Mar. 21			(−25·4)	(91·7)	(−7·0)	(316)	(2214)	(2258)
81·657		·942	286·4					212
		·939	299·3					216
		·876	256·8					262
		·788	283·2					179
	10546	·989	250·0	157·6	−20·7	13	72	282*f*
	10553	·980	256·8	153·9	−14·2	56	405	399*c*
	10547	·830	246·2	130·0	−23·5	47	306	354*c*
G	10549	·823	293·6	125·4	+14·9	116	869	561*c*
	10550	·636	291·9	110·7	+ 8·2	72	451	
	10554	·233	91·4	60·8	− 7·1	2	12	
	10555	·950	67·4	6·5	+18·9	28	161	192*c*
		·822	112·6					177
		·855	126·8					95
		·945	98·6					149
		·948	116·0					136
Mar. 22			(−25·6)	(74·3)	(−6·9)	(334)	(2276)	(3214)
82·497		·982	295·9					142
		·979	246·3					202
		·965	282·7					145
		·946	256·7					228
		·891	280·5					181
	10547	·918	247·3	130·4	−23·5	45	249	515*f*
	10549	·914	289·7	125·9	+14·8	127	785	504*c*
	10550	·767	286·8	110·9	+ 8·2	76	477	224*c*
G	10554	·041	87·1	60·8	− 6·8	0	12	

Group 10553. Mar. 18–22. A stream of normal type.
Group 10554. Mar. 18–25. Probably a remnant of Group 10537. A pair of small spots on Mar. 18; a small cluster on Mar. 20, 22, 23 and 25.
Group 10555. Mar. 22–28. Two spots joining one another which shrink and disappear as three small nuclei.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
82·497	10555	·878	64·1	6·9	+18·8	25	241	182*c*
G	10556	·966	99·1	347·4	−10·6	21	122	203*s*
	10557	·999	103·1	334·7	−13·4	41	223	374*s*
		·883	118·8					99
Mar. 23			(−25·7)	(63·2)	(−6·9)	(335)	(2109)	(2999)
83·369		·984	255·5					148
		·960	280·4					343
		·910	263·5					108
	10547	·972	247·4	129·5	−23·5	32	111	868*f*
C	10549	·972	287·6	125·3	+15·1	123	875	597*c*
	10550	·875	283·5	110·8	+ 8·2	71	454	1205*c*
	10555	·774	58·8	7·5	+18·7	24	164	108*c*
	10556	·894	98·3	347·9	−10·5	19	130	371*s*
	10557	·964	102·3	336·2	−13·7	41	309	646*c*
	10558	·988	108·9	329·2	−19·6	28	151	493*c*
Mar. 24			(−25·7)	(51·7)	(−6·9)	(338)	(2194)	(4887)
84·456		·977	246·5					639
		·963	266·9					55
	10550	·967	280·7	111·0	+ 8·5	75	326	1783*c*
	10559	·673	255·3	79·6	−14·9	5	11	
	10554	·429	263·9	62·8	− 8·7	1	6	
	996n	·049	218·2	39·1	− 8·4	6	16	
C	10555	·631	48·6	7·5	+18·7	18	140	
	10556	·760	98·5	347·7	−10·8	23	137	220*s*
	10557	·877	102·1	335·7	−13·8	44	313	504*c*
	10558	·931	108·1	328·0	−19·3	18	73	710*c*
	10560	·947	90·5	326·2	− 2·7	6	17	212*c*
		·960	77·5					121
		·963	97·9					199
Mar. 25			(−25·9)	(37·4)	(−6·8)	(196)	(1039)	(4443)
85·419		·974	280·9					610
		·963	293·2					81
		·817	253·7					256
	10555	·513	32·9	7·6	+18·9	18	79	
	10556	·600	99·5	347·8	−11·1	25	131	
G	10557	·749	102·7	336·1	−14·0	40	335	409*c*
	10558	·838	108·9	327·7	−19·5	14	80	593*c*
	10560	·853	88·9	326·3	− 2·6	7	9	169*c*
		·903	97·0					198
		·908	74·9					99
Mar. 26			(−25·9)	(24·7)	(−6·8)	(104)	(634)	(2415)

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1928.			°	°	°			
86·454		·933	259·4					173
		·877	241·0					337
		·834	261·0					436
		·758	242·9					240
	10555	·441	7·8	7·4	+19·1	8	27	
	10556	·400	103·4	347·7	−11·5	19	142	
	10557	·567	104·7	336·8	−13·8	35	330	
C	10558	·698	111·2	327·5	−19·5	12	104	
	10560	·707	86·3	326·3	− 2·2	3	6	
	10561	·980	81·9	293·7	+ 6·5	10	64	92*c*
	10562	·999	67·6	286·9	+21·8	112	446	
		·932	75·0					88
		·956	107·2					118
		·962	62·0					110
Mar. 27			(−26·0)	(11·0)	(−6·7)	(199)	(1119)	(1594)
87·446		·952	341·0					214
		·934	279·7					91
		·866	266·0					136
		·855	247·9					132
	10559	·964	256·5	73·4	−14·8	4	13	246*c*
	10555	·465	341·7	6·8	+19·5	5	17	
	10556	·193	115·9	347·7	−11·4	27	140	
G	10557	·365	111·7	337·5	−14·0	33	188	
	10558	·533	116·7	327·7	−19·6	13	44	
	10560	·525	82·9	326·6	− 2·0	2	5	
	10561	·906	79·7	294·4	+ 6·4	15	57	190*f*
	10562	·969	65·2	286·7	+21·9	69	345	229*c*
		·891	108·9					84
		·922	56·2					156
		·984	78·8					195
Mar. 28			(−26·1)	(357·9)	(−6·7)	(168)	(809)	(1673)
88·347		·954	265·8					207
		·940	252·0					252
		·836	262·5					129
	10556	·091	199·4	347·9	−11·5	25	130	
	10557	·191	131·0	337·6	−13·7	26	188	
	10558	·368	129·4	328·6	−19·8	5	19	
	10560	·349	80·1	326·1	− 2·8	2	7	
C	10561	·799	76·8	294·8	+ 6·4	14	80	190*f*
	10562	·907	62·9	286·3	+21·2	66	471	295*c*
	10563	·966	78·6	272·8	+ 9·1	21	99	525*c*
		·762	110·0					81
		·871	52·0					110
		·915	105·6					102
		·941	274·2					143
Mar. 29			(−26·2)	(346·1)	(−6·6)	(159)	(994)	(2034)

Group 10556. Mar. 23–Apr. 4. A stable regular spot with two or three small companions *s* of it on Mar. 30–Apr. 1.
Group 10557. Mar. 23–Apr. 2. A composite spot with double nucleus, dividing into two spots that separate.
Group 10558. Mar. 24–Apr. 2. A small partially formed regular spot with companions *f* Group 10557.
Group 10559. Mar. 25–28. A pair of small spots on Mar. 25 and a single spot on Mar. 28 possibly related to one another.
Group 10560. Mar. 25–30. Return of Group 10536. One small spot with an attendant on Mar. 29 and 30.
Group 10561. Mar. 27–Apr. 7. A regular spot rapidly shrinking to a dot after Apr. 2. A small cluster northwards accompanies the spot from Mar. 31–Apr. 3.
Group 10562. Mar. 27–Apr. 8. A stream of normal type.
Group 10563. Mar. 29–Apr. 9. Return of Group 10538 or 10540. A regular spot with an occasional tiny companion.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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1928.			°	°	°			
89·396		·936	263·5					171
		·936	251·4					155
		·828	241·7					206
		·820	258·7					144
	10556	·284	250·6	348·0	−11·7	32	156	
	10557	·138	218·4	337·2	−12·8	36	153	
	10558	·222	161·4	327·9	−18·7	2	7	
	10560	·119	47·0	327·2	− 1·9	2	6	
G	10561	·636	71·8	294·9	+ 6·2	10	68	
	10562	·794	56·4	287·1	+21·4	55	301	301*c*
	10563	·887	75·6	271·8	+ 9·5	19	116	703*c*
		·825	45·4					78
		·872	92·5					201
		·893	104·5					141
		·947	116·4					71
		·951	64·1					88
		·991	75·4					224
Mar. 30			(−26·2)	(332·2)	(−6·6)	(156)	(807)	(2483)
90·400		·914	256·2					211
		·900	242·1					215
		·791	300·7					81
		·790	247·5					54
	10556	·497	257·7	348·6	−11·7	28	137	
	10557	·321	251·1	337·0	−12·1	14	85	
	10558	·270	220·2	329·5	−18·2	5	19	
	10561	·463	60·6	295·1	+ 7·2	17	98	
G	10562	·673	47·3	287·0	+21·6	44	286	
	10563	·763	71·6	271·9	+ 9·6	17	109	252*f*
	10564	·984	68·1	242·8	+20·1	11	36	223*f*
		·796	100·6					82
		·852	115·6					85
		·901	55·9					89
		·947	113·5					103
		·948	101·1					144
		·949	72·3					366
Mar. 31			(−26·3)	(319·0)	(−6·5)	(136)	(770)	(1905)
91·456		·959	255·9					172
		·932	247·4					233
		·926	228·1					80
		·900	237·3					120
		·883	295·2					135
		·855	264·5					95
	10556	·686	260·5	348·5	−11·2	24	144	
	10557	·530	256·2	336·7	−12·8	5	36	
	10558	·424	239·1	327·5	−18·5	2	30	
	10561	·299	34·0	295·3	+ 7·9	17	107	
	10562	·548	32·0	286·9	+21·4	34	221	
C	10565	·389	56·3	286·1	+ 5·7	4	10	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
91·456	10566	·510	65·1	277·4	+ 6·5	18	81	
C	10563	·602	64·3	271·8	+ 9·6	14	87	
	10564	·917	64·5	243·3	+20·2	11	22	488*f*
	10567	·969	97·5	228·8	− 8·9	26	105	156*c*
		·841	68·8					423
		·847	100·7					126
		·949	107·8					121
Apr. 1			(−26·3)	(305·0)	(−6·5)	(155)	(843)	(2149)
92·394		·962	246·5					128
		·962	293·1					112
		·948	264·9					110
		·932	235·6					76
		·826	250·2					146
	10556	·826	260·7	348·7	−11·2	27	135	149*p*
	10557	·693	260·1	336·7	−11·5	3	12	
	10558	·606	245·2	328·4	−19·9	6	11	
	10561	·230	345·0	296·1	+ 6·4	13	47	
	10565	·240	20·3	287·9	+ 6·6	2	10	
G	10562	·477	10·5	287·4	+21·5	30	201	
	997a	·339	23·3	284·9	+11·7	2	10	
	10566	·345	49·7	277·4	+ 6·7	34	124	
	10563	·443	52·3	272·0	+ 9·7	12	72	
	10564	·825	59·8	243·4	+20·4	8	11	250*f*
	10567	·893	96·7	229·1	− 8·9	30	136	171*c*
	10568	·993	107·1	207·9	−17·7	90	586	183*c*
		·934	108·0					108
		·941	79·3					156
		·961	71·3					87
		·979	115·4					161
Apr. 2			(−26·3)	(292·7)	(−6·4)	(257)	(1355)	(1837)
93·399		·927	249·4					238
		·829	256·0					312
		·741	243·4					357
	10556	·934	260·2	349·0	−11·4	25	142	247*s*
	10561	·368	306·9	296·6	+ 6·6	12	39	
	10562	·484	345·6	286·8	+21·5	39	208	
	10566	·233	13·2	276·3	+ 6·7	61	258	
	10563	·308	24·7	271·9	+ 9·8	10	42	
C	10564	·706	52·1	243·0	+20·5	3	6	107*f*
	10567	·763	96·6	229·5	− 9·1	22	108	88*f*
	10569	·945	114·9	207·8	−25·6	14	39	233*c*
	10568	·949	105·8	207·0	−17·0	116	932	456*c*
		·827	72·9					97
		·863	105·6					124
		·949	126·0					69
		·955	69·2					128
Apr. 3			(−26·4)	(279·4)	(−6·4)	(302)	(1774)	(2456)

Group 10564. Mar. 31–Apr. 3. A small definite spot.
Group 10565. Apr. 1–4. A few unstable spots.
Group 10566. Apr. 1–9. A stream with the largest spot at the rear.
Group 10567. Apr. 1–12. Return of Group 10544. A regular spot diminishing rapidly after Apr. 9.
Group 10568. Apr. 2–15. A large and somewhat unusual stream. There is a lag of several days in the full development of the following part of the stream, which comprises a cluster of spots (possibly a separate but allied disturbance) at the rear, and a large composite spot between this and the big leader.
Group 10569. Apr. 3–10. A stream of small unstable spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
94·667		·951	248·2					107
		·905	285·4					103
		·890	249·1					569
		·872	268·1					235
	10556	·996	259·0	348·5	−11·5	21	48	312*f*
	10561	·591	289·6	296·6	+ 6·1	6	11	
	10565	·475	294·8	288·3	+ 5·7	4	13	
	10562	·598	320·6	286·7	+21·7	29	171	
G	10566	·330	313·6	276·6	+ 6·9	52	345	
	10563	·328	332·8	271·4	+10·7	6	31	
	10570	·382	33·3	250·4	+12·4	1	5	
	10567	·546	96·7	229·6	− 8·9	13	91	
	10569	·815	116·6	209·3	−25·2	12	31	116*c*
	10568	·826	106·6	207·0	−17·2	167	877	240*c*
	10571	·940	70·8	195·8	+15·6	45	200	272*f*
	10572	·932	99·6	193·4	−11·3	3	10	103*f*
		·871	61·4					90
Apr. 4			(−26·4)	(262·7)	(−6·3)	(359)	(1833)	(2147)
95·486		·957	283·0					151
		·953	249·4					670
		·912	265·0					236
		·848	286·4					94
	10561	·726	284·6	296·7	+ 6·1	6	9	90*nf*
	10562	·689	310·6	286·0	+21·4	20	177	
	10566	·476	298·0	276·9	+ 7·2	59	387	
	10563	·440	311·0	271·6	+10·9	7	15	
	10573	·292	234·2	266·1	−15·8	2	7	
G	10570	·346	359·2	252·2	+14·0	6	23	
	10567	·381	98·2	229·6	− 8·9	15	99	
	10569	·710	120·0	209·2	−25·3	6	38	79*c*
	10568	·715	107·2	206·6	−16·6	150	955	220*c*
	10571	·866	67·8	195·7	+15·7	22	165	348*f*
	10572	·849	99·5	193·5	−11·3	4	8	62*f*
		·817	62·2					61
		·932	112·1					60
		·951	60·2					78
Apr. 5			(−26·4)	(251·9)	(−6·2)	(297)	(1883)	(2149)
96·414		·982	248·2					184
		·964	262·6					144
		·950	283·3					123
		·907	300·0					126
		·847	251·9					155
	10561	·852	281·2	296·6	+ 6·1	4	7	181*n*
	10562	·809	302·6	286·6	+21·6	39	172	220*nf*
	10566	·644	289·4	277·2	+ 7·4	68	329	
	10563	·591	298·4	271·4	+11·0	7	11	
G	10573	·446	247·0	264·7	−15·7	2	7	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
96·414	10570	·399	331·8	250·8	+14·4	7	25	
G	10567	·179	104·7	229·6	− 8·7	14	101	
	10569	·565	126·6	209·7	−25·0	11	53	
	10568	·582	109·4	204·9	−16·2	185	1048	
	10571	·760	62·7	195·1	+16·0	33	186	309*s*
	10572	·724	100·0	193·1	−11·5	1	5	
	10574	·997	105·4	152·9	−15·8	43	134	282*s*
		·939	105·4					177
		·960	70·2					150
Apr. 6			(−26·4)	(239·6)	(−6·2)	(414)	(2078)	(2051)
97·425		·908	252·6					205
	10561	·950	278·6	296·9	+ 6·1	3	6	224*n*
	10562	·911	297·2	286·8	+21·7	24	155	296*nf*
	10566	·787	284·1	276·4	+ 7·1	34	216	233*p*
	10563	·749	290·9	271·6	+11·2	5	10	
	10570	·535	309·6	251·4	+14·4	8	24	
	10567	·076	232·6	229·8	− 8·7	16	82	
	10575	·097	103·5	220·9	− 7·4	6	14	
G	10569	·426	142·0	209·5	−25·3	26	130	
	10568	·416	114·4	203·3	−15·5	186	1085	
	10571	·601	53·6	196·3	+15·5	35	229	
	10576	·651	99·0	185·6	−10·5	3	6	
	10574	·952	104·8	153·5	−15·9	29	180	364*sf*
		·894	109·4					284
		·897	66·8					112
		·935	57·1					78
Apr. 7			(−26·4)	(226·3)	(−6·1)	(375)	(2137)	(1796)
98·422		·943	251·2					182
		·928	267·4					104
		·793	255·2					113
	10562	·974	293·6	286·2	+21·3	9	59	296*nf*
	10566	·897	281·2	275·3	+ 7·2	30	154	322*c*
	10563	·875	286·4	271·7	+11·2	9	13	220*n*
	10570	·686	297·3	251·8	+13·7	3	12	
	10567	·287	259·8	229·6	− 8·6	14	99	
	10575	·130	258·0	220·4	− 7·5	23	43	
G	10569	·342	168·1	208·6	−25·4	17	120	
	10568	·234	135·9	203·4	−15·5	191	1192	
	10571	·460	38·6	195·9	+15·2	31	158	
	10576	·415	102·4	188·9	−10·5	2	10	
	10574	·859	105·0	153·7	−16·0	26	173	520*sf*
	10577	·960	106·0	138·5	−17·0	0	7	160*f*
	10578	·997	76·7	129·4	+12·7	55	275	254*p*
		·804	113·8					225
		·947	69·5					234
		·976	117·4					140
Apr. 8			(−26·4)	(213·1)	(−6·0)	(410)	(2315)	(2770)

Group 10570. Apr. 4–9. A stream of feeble development.
Group 10571. Apr. 4–14. An imperfectly formed spot with small distant followers.
Group 10572. Apr. 4–6. A small definite spot.
Group 10573. Apr. 5–6. A pair of small spots.
Group 10574. Apr. 6–17. Return of Group 10553. A regular spot, whose umbra becomes double on Apr. 13, dividing, on Apr. 14, into two parts which separate appreciably in latitude.
Group 10575. Apr. 7–10. A small short-lived stream.
Group 10576. Apr. 7–8. One small spot on Apr. 7, with another on Apr. 8.
Group 10577. Apr. 8–15. A small stream.
Group 10578. Apr. 8–19. Return of Group 10549. A fairly large spot dividing up and, with small companions, making an extensive cluster. The group is followed by considerable faculæ.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
99·547		·924	262·6					101	101·408		·799	78·5					268
		·918	253·2					195	G		·869	117·3					468
		·753	308·0					153			·932	66·7					409
	10566	·976	279·0	274·4	+ 7·4	20	101	228*c*	Apr. 11			(−26·3)	(173·7)	(−5·8)	(430)	(2618)	(3080)
	10563	·967	283·6	271·6	+11·5	4	14	231*n*									
	10570	·823	289·2	250·7	+12·0	0	4	281*n*	102·353		·976	293·8					239
	10567	·524	263·0	229·9	− 8·7	15	88				·957	247·2					94
	10575	·398	265·1	221·8	− 7·5	7	21				·901	282·5					146
	10569	·364	206·4	208·5	−24·8	10	63				·891	294·7					108
G	10568	·181	206·4	203·1	−15·3	169	1038				·883	252·2					121
	10571	·361	3·7	196·9	+15·0	16	120				·869	265·7					121
	10574	·707	106·6	153·7	−15·9	27	169	255*sf*			·772	244·4					146
	10577	·880	107·3	136·4	−18·1	38	145	163*c*		10567	·931	262·7	230·1	− 8·9	3	9	184*s*
	10578	·947	74·1	129·4	+12·9	42	350	584*c*		10568	·687	253·7	204·2	−15·4	114	701	
		·846	80·4					87		10571	·654	300·2	196·8	+14·4	16	101	
		·852	68·6					85	C	10581	·217	212·7	168·2	−16·3	2	7	
		·940	60·5					145		10574	·218	144·3	153·6	−15·9	13	101	
		·953	115·5					310		10577	·423	120·7	138·8	−17·8	12	24	
Apr. 9			(−26·4)	(198·3)	(−6·0)	(348)	(2113)	(2818)		10578	·595	58·1	130·1	+13·4	47	298	
										997b	·743	57·1	119·9	+19·4	1	7	231*f*
100·431		·987	286·6					121		10579	·780	74·1	112·1	+ 8·5	56	244	281*f*
		·969	254·1					155		10580	·756	97·7	112·0	− 9·6	86	581	185*c*
		·926	287·3					380			·777	119·7					165
		·861	300·0					339			·893	68·9					339
	10567	·682	263·6	229·7	− 8·6	12	39				·961	107·1					266
	10575	·594	265·6	223·1	− 7·4	2	15		Apr. 12			(−26·3)	(161·2)	(−5·8)	(350)	(2073)	(2626)
	10569	·471	229·0	209·3	−23·4	0	5										
	10568	·349	239·0	204·6	−15·9	149	937		103·504		·978	287·9					183
G	10571	·393	333·6	197·0	+14·7	20	90				·977	276·4					113
	10574	·555	109·8	153·9	−15·8	24	145				·966	251·1					192
	10577	·759	109·0	137·7	−18·2	31	88	263*c*			·961	263·4					198
	10578	·868	71·2	129·3	+13·1	54	493	1336*f*			·901	298·5					76
	10579	·972	79·6	111·6	+ 8·6	56	242	302*sf*			·886	244·9					599
	10580	·978	99·5	108·1	−10·5	82	475	433*c*		10568	·839	255·6	203·1	−15·1	99	563	498*c*
		·909	116·8					677		10571	·821	291·7	197·7	+14·1	10	17	474*f*
		·977	68·1					196	G	10581	·377	239·0	165·6	−16·5	1	5	
Apr. 10			(−26·4)	(186·6)	(−5·9)	(430)	(2529)	(4202)		10574	·218	215·1	153·5	−15·9	19	80	
										10577	·275	145·9	136·7	−18·8	19	50	
101·408		·965	284·9					218		10578	·418	39·9	130·1	+13·2	42	175	
		·944	261·9					101		10579	·594	67·9	112·3	+ 8·2	56	283	
		·928	296·9					261		10580	·573	98·8	111·1	− 9·6	96	584	
		·792	285·0					95			·753	59·9					383
		·768	249·3					108			·936	113·9					298
		·709	264·4					76			·941	101·1					491
	10567	·827	263·3	229·7	− 8·8	8	24	144*s*	Apr. 13			(−26·3)	(146·0)	(−5·7)	(342)	(1757)	(3505)
	10568	·531	249·5	204·7	−15·7	149	846										
	10571	·514	310·7	197·3	+14·2	17	119		104·416		·972	295·6					92
	10574	·376	118·7	153·7	−15·8	31	147				·955	245·6					372
	10577	·601	111·5	138·0	−17·4	17	72			10568	·927	255·8	202·4	−15·2	98	592	438*c*
	10578	·743	65·6	129·7	+13·7	59	492	174*f*		10571	·926	288·0	199·1	+14·3	5	14	533*nf*
	10579	·897	77·3	111·6	+ 8·7	69	269	393*f*		10582	·753	299·0	177·5	+17·3	10	30	62*c*
G	10580	·898	98·5	109·5	−10·2	80	649	365*c*		10574	·368	240·6	153·4	−15·7	17	64	
									C	10578	·321	10·1	130·7	+12·8	35	149	

Group 10579. Apr. 10–22. Return of Group 10550. A stable regular spot, usually with a number of small companions.
Group 10580. Apr. 10–21. A stream approximately of normal type but of unusual length.
Group 10581. Apr. 12–13. One or two very small spots.
Group 10582. Apr. 14–16. A smallish group near the west limb.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
104·416	10577	·231	197·8	138·2	−18·2	6	10	
C	10580	·367	101·6	112·7	− 9·4	78	522	
	10579	·436	57·4	112·3	+ 8·3	52	276	
		·887	102·2					424
		·902	114·8					392
		·971	105·6					113
Apr. 14			(−26·2)	(134·0)	(−5·6)	(301)	(1657)	(2426)
105·110		·943	288·4					425
	10568	·975	256·2	202·8	−14·7	114	545	517*s*
	10582	·838	295·2	177·3	+17·5	26	72	203*c*
	10574	·507	248·2	153·9	−15·7	17	48	
	10577	·314	223·8	138·0	−18·4	6	12	
K	10578	·326	343·6	130·2	+12·7	27	125	
	10580	·194	108·4	114·1	− 8·9	71	378	
	10579	·320	41·2	112·5	+ 8·5	53	268	
		·819	104·0					506
		·874	118·6					456
		·936	102·4					151
		·938	64·0					24
Apr. 15			(−26·2)	(124·8)	(−5·5)	(314)	(1448)	(2282)
106·368		·987	284·3					212
		·985	293·8					186
		·972	250·7					184
		·885	258·7					122
		·791	242·8					214
	10582	·951	290·5	177·1	+17·6	29	182	169*c*
	10574	·732	253·6	154·8	−15·6	7	21	
	10578	·486	310·9	130·3	+13·5	27	120	
C	10580	·119	225·8	113·1	−10·1	53	289	
	10579	·257	343·1	112·5	+ 8·8	48	245	
	997c	·371	1·5	107·6	+16·3	2	5	
	10583	·213	22·5	103·5	+ 5·9	2	9	
	10584	·871	99·8	47·4	−11·2	9	13	116*f*
		·779	107·8					304
		·781	124·7					202
		·911	115·7					84
		·965	107·2					165
Apr. 16			(−26·1)	(108·2)	(−5·4)	(177)	(884)	(1958)
107·404		·980	287·8					155
		·906	246·6					275
		·873	302·0					233
		·820	285·8					165
	10574	·867	254·6	154·7	−16·0	4	9	349*sf*
	10578	·657	299·7	130·5	+14·6	20	92	
	10580	·343	258·0	114·3	− 9·1	45	236	
	10579	·392	307·4	112·8	+ 8·6	47	224	
	10583	·253	319·2	104·0	+ 5·7	2	9	
G	10584	·714	101·0	49·0	−11·6	3	3	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
107·404		·911	108·2					236
G		·926	118·9					249
Apr. 17			(−26·0)	(94·5)	(−5·4)	(121)	(573)	(1662)
108·391		·940	249·1					568
		·919	296·6					184
		·904	280·7					208
		·850	251·1					299
		·799	291·8					108
	10578	·796	290·9	131·1	+13·1	6	29	801*f*
	10580	·561	262·5	115·2	− 8·6	36	192	
G	10579	·563	293·9	112·7	+ 8·6	46	217	
	997d	·493	287·2	109·5	+ 3·7	1	5	
	10584	·541	104·5	49·2	−12·2	1	2	
		·894	107·9					162
		·906	119·9					340
		·931	93·7					146
		·966	66·1					93
Apr. 18			(−25·9)	(81·5)	(−5·3)	(90)	(445)	(2909)
109·404		·940	251·4					455
		·936	238·8					109
		·827	241·5					276
	10578	·923	289·7	132·5	+15·9	3	9	1177*f*
	10580	·758	263·8	117·5	− 8·0	29	153	116*f*
	10579	·726	287·7	112·4	+ 9·0	48	229	
	997e	·134	232·6	74·3	− 9·8	2	9	
	10585	·100	121·2	63·2	− 8·1	5	16	
G	10586	·972	99·7	351·2	−10·7	8	27	} 317*p*
	10587	·992	101·9	344·5	−12·5	69	393	}
		·763	121·6					83
		·842	103·7					93
		·904	122·4					364
		·907	76·2					79
		·908	87·6					85
		·910	63·8					80
		·953	109·4					274
Apr. 19			(−25·8)	(68·1)	(−5·2)	(164)	(836)	(3508)
110·403		·969	250·0					143
		·953	281·0					478
		·919	294·5					326
		·883	248·3					275
		·850	235·1					233
		·785	298·9					225
	10580	·888	263·7	117·7	− 7·9	40	154	291*f*
	10579	·860	283·4	112·5	+ 8·7	47	219	220*sf*
	10585	·144	248·9	62·7	− 8·0	5	19	
	10586	·895	99·3	351·2	−10·6	10	20	} 288*c*
G	10587	·933	101·5	345·6	−12·5	49	290	}

Group 10583. Apr. 16–17. Two or three small faint spots *f* Group 10579.
Group 10584. Apr. 16–18. A small spot.
Group 10585. Apr. 19–21. A diminutive group.
Group 10586. Apr. 19–24. Return of Group 10556. A small distinct spot *p* Group 10587.
Group 10587. Apr. 19–May 1. A regular spot with occasional companions.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
110·403		·818	124·3					107	114·361		·930	282·1					97
G		·886	111·5					169			·922	250·8					461
		·969	110·9					135			·917	262·8					341
Apr. 20			(−25·7)	(54·9)	(−5·1)	(151)	(702)	(2890)			·879	240·2					651
										10586	·227	113·6	350·5	− 9·8	3	5	
111·412		·944	247·8					254		10587	·320	115·1	345·4	−12·3	48	321	
		·914	236·8					193		10588	·549	67·2	332·0	+ 8·2	18	44	
		·911	293·4					784	G	10589	·982	104·2	282·9	−14·8	60	275	239*f*
	10580	·975	263·0	119·1	− 7·9	20	155	513*f*			·764	115·3					147
	10579	·953	280·7	112·6	+ 8·6	44	205	398*sf*			·784	128·7					189
	997f	·493	248·7	69·8	−14·7	3	5				·866	78·1					397
	10585	·346	260·2	61·6	− 8·0	4	17				·908	112·7					155
	10586	·773	99·1	351·0	−10·2	7	11	182*s*			·929	60·0					55
G	10587	·831	101·4	345·4	−12·2	53	285	275*f*			·972	79·1					462
		·791	114·5					210			·980	66·7					212
		·916	70·6					42	Apr. 24			(−25·3)	(2·6)	(−4·7)	(129)	(645)	(3406)
		·920	92·2					127									
		·936	108·0					277									
		·960	78·0					95	115·347		·968	253·8					169
		·967	116·8					340			·967	263·1					152
		·977	97·6					145			·957	295·6					68
Apr. 21			(−25·6)	(41·6)	(−5·0)	(131)	(678)	(3835)			·939	243·2					266
											·861	258·0					111
112·407		·969	357·5					350		10587	·148	152·6	345·6	−12·1	46	287	
		·960	292·1					468		10588	·386	55·0	331·0	+ 8·4	9	51	
		·957	243·1					364	G	10589	·922	104·4	282·3	−15·0	80	335	} 276*c*
		·832	251·1					223		10590	·972	104·4	272·7	−15·1	19	48	
	10579	·999	278·9	114·7	+ 8·6	51	201	326*f*		10591	·990	107·8	267·0	−18·2	17	93	
	10586	·614	100·1	350·7	−10·1	3	9				·807	117·9					95
	10587	·686	102·8	345·4	−12·3	55	317				·807	76·6					174
G	10588	·866	76·5	330·1	+ 9·1	32	103	164*c*			·911	64·0					175
		·820	93·3					98			·949	79·0					371
		·841	109·7					270			·970	63·4					145
		·910	97·0					167	Apr. 25			(−25·2)	(349·6)	(−4·6)	(171)	(814)	(2002)
		·915	118·9					438									
		·941	105·8					105									
		·986	79·9					184	116·452		·969	257·6					135
Apr. 22			(−25·5)	(28·4)	(−4·9)	(141)	(630)	(3157)			·954	242·6					130
											·840	259·9					66
											·801	243·4					127
113·348		·911	249·6					270		10587	·225	233·2	345·6	−12·1	37	266	
		·836	259·8					188		10588	·219	12·0	332·4	+ 7·8	9	23	
		·774	240·1					382		*998a*	·430	28·2	322·7	+17·8	3	15	
	10586	·435	103·2	350·6	−10·0	3	5		G	10589	·791	105·2	283·1	−14·7	67	332	} 130*c*
	10587	·519	105·8	345·4	−12·2	46	298			10590	·889	104·5	272·3	−14·9	19	76	
G	10588	·724	73·6	331·6	+ 8·3	10	45			10591	·940	108·4	264·8	−18·8	39	242	333*c*
		·836	122·0					185			·801	54·8					84
		·850	111·3					110			·818	75·6					151
		·950	79·8					327			·934	58·6					149
		·968	113·0					155			·953	75·4					202
Apr. 23			(−25·4)	(16·0)	(−4·8)	(59)	(348)	(1617)	Apr. 26			(−25·0)	(335·0)	(−4·5)	(174)	(954)	(1507)

Group 10588. Apr. 22–28. A stream of feeble activity.
Group 10589. Apr. 24–May 6. A stream led by a large regular spot which alone remains after Apr. 29.
Group 10590. Apr. 25–May 2. A small diminishing spot *f* Group 10589.
Group 10591. Apr. 25–May 3. A composite spot, with companions, expanding to a cluster that soon dies away.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
117·359		·888	254·2					186
		·860	241·0					225
	10587	·400	248·9	345·4	−12·3	47	299	
	998b	·420	215·5	338·4	−24·1	2	5	
	10588	·270	318·6	333·3	+ 7·3	6	16	
	10589	·654	107·9	283·1	−15·0	65	349	}149*c*
	10590	·784	105·5	271·8	−14·8	14	41	
C	10591	·854	109·7	265·0	−19·0	29	340	596*c*
	10592	·983	79·7	244·8	+ 9·3	24	189	217*sf*
		·709	73·9					149
		·774	50·1					122
		·823	63·9					98
		·907	54·1					177
		·922	74·3					594
Apr. 27			(−24·9)	(323·0)	(−4·4)	(187)	(1239)	(2513)
118·349		·931	246·3					184
		·895	264·3					63
		·860	237·1					176
		·757	228·7					106
	998c	·967	257·2	25·5	−13·5	4	17	90*f*
	998d	·975	291·9	24·3	+20·2	0	15	77*c*
	10587	·594	255·5	345·8	−12·1	38	234	
	10588	·444	295·3	333·6	+ 6·8	3	5	
	998e	·447	231·2	331·6	−20·3	0	3	
G	10589	·471	113·5	283·5	−14·7	71	331	
	10590	·630	108·0	271·8	−14·7	12	38	
	10591	·732	112·3	264·3	−19·1	39	289	330*f*
	10592	·923	77·9	244·0	+ 9·4	40	282	462*sf*
	10593	·970	66·2	237·2	+21·8	10	28	488*c*
	10594	·987	112·1	228·3	−22·5	6	27	81*c*
		·785	45·1					154
		·851	53·8					107
		·941	102·3					215
		·943	78·9					662
Apr. 28			(−24·7)	(309·9)	(−4·4)	(223)	(1269)	(3195)
119·435		·929	236·5					267
		·879	256·5					414
	10587	·773	258·0	346·0	−11·9	33	214	164*f*
	998f	·267	16·6	291·2	+10·5	1	5	
	10589	·267	132·2	283·9	−14·4	54	295	
	10590	·435	115·5	271·8	−14·6	7	16	
	10591	·569	119·0	263·9	−19·5	19	137	
	10595	·679	65·2	256·5	+13·2	6	18	159*nf*
	10592	·801	75·6	244·2	+ 9·3	49	379	642*c*
C	10593	·887	62·7	237·7	+21·8	16	90	221*n*

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
119·435	10594	·908	113·2	231·0	−22·8	2	15	65*c*
C		·867	100·1					203
		·958	72·9					76
		·981	102·8					234
Apr. 29			(−24·6)	(295·6)	(−4·2)	(187)	(1169)	(2445)
120·410		·949	237·2					181
		·789	281·6					108
		·779	246·8					137
		·739	296·6					132
	10587	·896	258·5	346·4	−12·1	35	244	582*c*
	10596	·318	215·4	293·9	−19·0	6	32	
	10589	·181	187·0	284·0	−14·4	50	285	
	10590	·256	136·0	272·2	−14·6	7	11	
C	10597	·342	121·2	265·2	−14·1	0	4	
	10591	·413	132·0	263·7	−19·8	16	66	
	10595	·511	54·6	257·5	+13·4	4	13	
	10592	·645	70·6	244·8	+ 9·1	64	378	
	10593	·781	57·2	237·7	+22·1	23	73	195*c*
	10598	·978	101·9	204·3	−12·5	34	338	929*s*
		·804	100·9					140
		·819	115·6					145
		·873	68·6					86
Apr. 30			(−24·4)	(282·7)	(−4·1)	(239)	(1444)	(2635)
121·101		·873	248·0					150
		·855	282·1					181
		·820	297·9					64
		·819	267·5					73
		·805	238·8					141
	10587	·954	258·7	346·4	−12·0	38	254	368*c*
	10596	·440	231·9	295·1	−19·5	10	55	
	10589	·252	224·3	284·0	−14·4	55	271	
	10590	·183	172·9	272·3	−14·5	4	8	
	10591	·306	150·0	264·3	−19·3	11	23	
K	10597	·243	138·7	264·1	−14·5	1	11	
	10595	·397	40·6	258·3	+13·5	2	16	
	10592	·509	64·1	246·1	+ 9·1	61	500	
	10593	·702	52·3	236·9	+22·1	12	29	
	10594	·659	119·7	235·5	−22·3	9	26	
	10598	·940	101·9	203·4	−12·6	44	284	762*s*
	10599	·988	109·6	192·0	−19·9	6	13	197*c*
		·884	66·5					63
		·960	120·5					104
		·965	73·3					197
May 1			(−24·3)	(273·6)	(−4·1)	(253)	(1490)	(2300)

Group 10592. Apr. 27–May 9. A large active stream of irregular formation.
Group 10593. Apr. 28–May 4. A small unstable stream not seen on May 3.
Group 10594. Apr. 28–May 10. One or two small spots on Apr. 28–29; on May 1 a fairly large stream of irregular spots develops.
Group 10595. Apr. 29–May 1. A spot on Apr. 29; a tiny stream on Apr. 30 and May 1.
Group 10596. Apr. 30–May 4. A short stream of small unstable spots.
Group 10597. Apr. 30–May 1. One or two tiny spots ≈ Group 10591.
Group 10598. Apr. 30–May 12. Probably a return of Group 10568, but continuity not certain. A long stream with a small regular spot as leader, until May 7, and a large composite spot as trailer.
Group 10599. May 1–3. One small spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
122·103		·934	281·7					102	124·346	10600	·776	104·9	180·3	−13·9	166	906	628*c*
		·911	245·0					408	G		·836	63·1					227
		·895	264·3					175			·954	72·2					67
		·753	286·3					296			·955	112·0					300
	10596	·613	241·7	295·2	−20·1	8	55		May 4			(−23·6)	(230·7)	(−3·7)	(452)	(2580)	(2492)
	10589	·433	244·5	284·0	−14·4	52	275										
	10590	·278	228·1	272·6	−14·5	4	9		125·347		·974	250·2					137
	10591	·285	188·4	262·8	−20·3	4	57				·957	294·0					231
	10592	·328	48·1	246·1	+ 8·7	75	639				·914	281·4					400
K	10594	·505	128·8	235·3	−22·0	37	173				·827	306·1					159
	10593	·598	42·3	234·6	+22·6	2	18				·826	292·8					139
	10598	·835	102·3	203·8	−12·5	36	371	501*p*			·734	248·7					239
	10599	·929	109·9	192·2	−19·9	5	11	218*c*		10589	·917	256·4	283·8	−13·9	40	224	314*sf*
	10600	·977	103·4	182·3	−13·9	62	507	388*c*	G	10592	·535	291·6	247·4	+ 8·2	54	462	
		·814	118·3					130		10594	·396	216·2	232·0	−22·1	53	349	
		·888	71·5					390		10598	·296	125·7	203·2	−13·4	72	572	
		·923	122·7					95		10600	·616	108·0	180·5	−13·8	180	1023	
		·943	83·5					124			·909	113·0					471
		·982	70·5					98			·909	78·4					54
May 2			(−24·1)	(260·3)	(−4·0)	(285)	(2115)	(2925)			·986	77·1					184
											·987	66·9					152
123·467		·957	243·8					262	May 5			(−23·4)	(217·4)	(−3·6)	(399)	(2630)	(2480)
		·920	255·6					86									
		·915	233·6					153	126·425		·964	277·7					266
		·910	284·5					350			·959	289·2					117
		·776	299·9					224			·938	300·8					164
		·765	281·2					182			·854	249·9					692
	10596	·828	247·6	296·9	−20·5	8	26	159*c*			·845	288·8					340
	10589	·671	253·6	283·6	−13·7	59	275			10589	·985	256·4	283·6	−14·0	37	189	323*s*
	10591	·425	229·2	262·2	−19·6	3	20			10592	·701	285·8	246·0	+ 8·4	57	434	
G	10592	·220	343·4	245·9	+ 8·3	84	619			10594	·551	233·9	231·8	−22·0	43	401	
	10594	·342	157·0	234·1	−22·0	96	446		C	10598	·180	181·2	203·4	−13·8	52	442	
	10601	·445	109·7	217·1	−12·0	4	15			10600	·426	116·4	180·1	−14·1	150	1072	
	10598	·629	105·6	204·1	−12·7	56	361			10602	·912	63·9	141·4	+22·0	5	33	168*c*
	10599	·777	112·6	192·8	−19·8	2	7	218*n*			·804	115·6					420
	10600	·888	103·9	179·8	−14·1	182	1086	532*c*			·826	76·0					78
		·756	64·8					215			·928	73·8					290
		·784	80·8					72			·932	109·5					97
		·806	127·6					123			·937	82·7					329
		·896	67·9					304			·985	103·0					189
May 3			(−23·8)	(242·3)	(−3·8)	(494)	(2855)	(2880)	May 6			(−23·2)	(203·2)	(−3·5)	(344)	(2571)	(3473)
124·346		·955	280·2					337	127·345		·943	250·8					722
		·873	298·4					139			·937	301·2					257
		·815	284·0					311			·934	286·6					313
		·766	306·6					139			·795	306·9					335
	10596	·916	249·1	296·5	−20·5	7	19	219*c*			·777	255·8					140
	10589	·804	255·4	283·8	−13·9	50	264	125*sf*		10592	·834	282·4	246·2	+ 8·3	62	412	593*c*
	10592	·336	307·5	246·3	+ 8·2	84	474			10594	·692	241·6	231·8	−21·7	55	363	102*p*
	10593	·434	348·0	236·2	+21·3	3	18			10598	·276	227·0	203·0	−14·1	79	385	
	998g	·285	349·0	233·9	+12·5	0	5			*998h*	·322	325·3	201·8	+11·9	3	10	
	10594	·322	188·2	233·5	−22·2	69	480			10600	·282	134·2	179·0	−14·6	180	1152	
	10601	·254	124·8	218·4	−11·9	3	6			10602	·812	59·6	142·1	+22·0	23	50	227*f*
G	10598	·478	110·4	203·5	−12·9	70	408		G	10603	·982	81·3	112·8	+ 7·9	23	70	238*f*

Group 10600. May 2–14. An unusually long and active stream of numerous spots with its axis inclined 15° to the sun's equator.
Group 10601. May 3–4. A pair of small spots *p* Group 10598.
Group 10602. May 6–11. A small stream.
Group 10603. May 7–12. Return of Group 10579. A small regular spot dying out.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
127·345		·816	69·2					175
G		·838	114·2					197
		·859	80·4					348
		·933	91·0					100
		·942	102·0					428
		·949	67·8					292
		·950	118·2					251
		·953	55·6					129
May 7			(−23·0)	(191·0)	(−3·4)	(425)	(2442)	(4847)
128·363		·986	286·0					196
		·979	246·8					214
		·892	257·0					167
		·889	299·7					337
	10592	·940	280·0	246·6	+ 8·2	56	259	725*c*
	10594	·822	245·5	231·1	−21·8	32	229	392*c*
	10598	·433	242·4	200·9	−14·5	54	342	
C	10600	·199	184·1	178·4	−14·7	194	1332	
	10604	·467	111·0	151·2	−12·5	1	4	
	10602	·680	51·6	142·6	+22·2	24	82	
	10603	·911	79·6	113·0	+ 8·0	13	65	275*f*
		·740	75·2					173
		·831	101·6					218
		·910	66·6					305
		·921	116·5					198
		·921	102·5					325
May 8			(−22·8)	(177·6)	(−3·3)	(374)	(2313)	(3525)
129·346		·969	257·3					227
		·965	294·6					256
		·941	302·8					126
		·820	257·0					158
		·783	244·8					127
	10592	·991	278·8	246·1	+ 8·2	64	215	598*c*
	10594	·914	247·6	229·8	−21·7	17	85	529*c*
	10598	·617	249·9	201·3	−14·8	64	339	148*p*
	10600	·317	231·2	179·3	−14·5	227	1474	
	10604	·304	125·0	149·9	−13·1	8	21	
	10605	·405	56·7	144·6	+ 9·8	0	4	
G	10606	·362	108·8	144·3	− 9·7	3	12	
	10602	·555	38·6	142·7	+22·6	15	52	
	10607	·742	81·4	117·4	+ 4·1	5	10	
	10603	·800	77·6	112·6	+ 7·9	17	64	230*f*
		·781	62·6					263
		·789	127·2					220
		·844	106·1					285
		·913	122·4					206
		·917	66·2					501
		·955	109·1					131
May 9			(−22·6)	(164·6)	(−3·2)	(420)	(2276)	(4005)

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
130·368		·978	259·1					150
		·972	302·5					213
		·866	246·2					198
		·766	291·1					149
	10594	·974	248·8	227·9	−21·3	11	30	262*c*
	998i	·847	254·9	208·5	−14·4	2	13	387*c*
	10598	·767	253·2	200·3	−14·8	82	461	179*c*
	10600	·516	247·8	179·7	−14·4	205	1371	
	10604	·168	181·7	151·4	−12·7	12	28	
G	10605	·233	12·5	148·2	+10·0	0	4	
	10606	·153	131·2	144·4	− 8·8	5	8	
	10602	·457	15·5	143·5	+23·0	13	36	
	10607	·561	77·1	118·0	+ 4·6	1	4	
	10603	·642	73·7	112·8	+ 7·9	15	56	
		·815	123·8					152
		·830	64·2					353
		·913	131·1					151
		·931	106·9					246
May 10			(−22·3)	(151·1)	(−3·1)	(346)	(2011)	(2440)
131·353		·959	254·0					612
		·896	289·4					292
	10598	·887	254·5	200·1	−15·1	50	349	801*c*
	10600	·695	252·2	181·0	−14·2	136	891	
	10604	·291	231·1	151·4	−13·4	5	14	
	10606	·200	237·3	147·8	− 9·1	3	9	
	10602	·443	351·5	142·1	+22·9	3	15	
G	*998j*	·446	125·1	115·6	−17·6	1	4	
	10603	·467	66·3	112·5	+ 8·1	8	18	
		·764	55·9					193
		·859	104·2					194
		·863	116·1					93
		·949	106·9					232
		·953	118·5					277
		·963	80·9					33
May 11			(−22·1)	(138·0)	(−3·0)	(206)	(1300)	(2727)
132·344		·958	288·8					332
		·913	241·4					143
		·836	292·9					155
	10598	·969	255·2	200·6	−15·1	118	598	790*c*
	10600	·853	255·6	182·9	−13·9	148	900	829*c*
G	10604	·481	248·7	152·1	−12·6	8	31	
	10603	·283	49·0	112·5	+ 7·8	4	8	
		·796	110·2					214
		·924	106·7					205
		·926	120·7					253
May 12			(−21·8)	(124·9)	(−2·9)	(278)	(1537)	(2921)

Group 10604. May 8–15. A feeble stream showing a slight increase on May 13.
Group 10605. May 9–10. A tiny spot.
Group 10606. May 9–11. One or two very small spots *n* Group 10604.
Group 10607. May 9–10. One small spot *np* Group 10603.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
133·578		·937	289·0					164
		·797	244·9					106
		·744	234·3					104
	10600	·963	257·3	185·1	−12·6	71	638	864*c*
	10604	·699	255·7	152·2	−11·9	32	100	
C	*998k*	·587	299·5	140·3	+14·5	2	7	
	10608	·986	102·7	28·2	−12·9	32	234	276*c*
		·775	122·5					185
		·917	123·7					216
		·953	82·9					116
May 13			(−21·5)	(108·6)	(−2·7)	(137)	(979)	(2031)
134·438		·954	290·1					216
		·850	296·1					124
		·842	239·6					240
		·823	283·1					170
		·739	304·7					210
	10600	·959	252·7	170·5	−17·3	16	59	715*c*
G	10604	·826	256·9	152·4	−12·3	16	50	293*c*
	10608	·937	102·5	27·8	−12·6	20	199	513*c*
		·748	128·7					196
		·872	127·7					110
		·945	67·9					110
		·949	116·6					149
May 14			(−21·3)	(97·2)	(−2·6)	(52)	(308)	(3046)
135·352		·928	244·4					176
		·926	284·6					96
		·857	300·2					156
		·856	232·8					91
		·810	286·5					299
G	10604	·927	257·8	153·0	−12·2	7	24	257*c*
	998l	·455	344·8	92·6	+23·5	4	18	
	10608	·842	103·4	28·4	−12·6	13	135	251*c*
		·872	66·8					115
		·917	116·4					141
May 15			(−21·0)	(85·2)	(−2·5)	(24)	(177)	(1582)
136·614		·984	259·1					156
		·950	296·8					270
		·925	282·4					438
		·917	247·8					155
		·819	257·5					274
G		·817	297·1					304
	10608	·662	107·1	28·2	−13·0	11	45	
	10609	·925	102·6	1·1	−12·5	7	12	622*c*
		·815	120·3					127
		·933	121·3					132
May 16			(−20·7)	(68·5)	(−2·4)	(18)	(57)	(2478)
137·605		·967	281·0					131
		·925	294·2					213
G		·884	234·4					109

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
137·605		·868	255·2					217
G		·817	277·8					133
		·797	297·1					146
	10608	·505	114·0	27·2	−13·8	6	20	
	10609	·813	104·0	1·7	−12·7	2	9	195*f*
		·896	124·6					158
		·943	103·3					185
		·967	84·6					79
May 17			(−20·4)	(55·4)	(−2·3)	(8)	(29)	(1566)
138·355		·958	292·8					316
		·950	238·8					183
		·922	256·0					539
		·909	277·0					253
		·846	297·3					427
		·833	237·2					333
	998m	·776	253·2	95·3	−14·3	2	3	48*f*
C	10608	·368	123·3	27·0	−13·7	5	11	
	10609	·707	105·8	1·4	−12·7	1	5	460*f*
		·847	129·8					121
		·864	101·2					150
		·934	82·7					117
		·938	96·0					122
		·964	110·6					228
May 18			(−20·2)	(45·4)	(−2·2)	(8)	(19)	(3297)
139·353		·970	261·3					115
		·954	276·2					187
		·952	250·6					147
		·924	293·7					288
		·918	239·6					165
		·853	257·4					108
	10608	·212	160·9	28·1	−13·6	0	4	
G	10610	·732	103·0	345·8	−10·9	5	13	
	998n	·875	112·1	332·6	−20·2	2	7	176*c*
		·768	116·4					62
		·824	78·8					50
		·939	120·8					262
		·939	99·4					72
		·964	109·5					105
		·971	79·0					150
May 19			(−19·8)	(32·2)	(−2·1)	(7)	(24)	(1887)
140·383		·959	240·5					167
		·959	295·1					218
		·924	226·5					88
		·860	256·7					195
		·836	243·1					108
		·788	231·1					120
	998o	·343	162·9	12·4	−21·0	1	5	
		·786	114·0					157
		·903	121·7					250
G		·917	110·7					108

Group 10608. May 13–19. A double spot breaking up into a stream which rapidly diminishes.
Group 10609. May 16–21. One small definite spot on May 16–18; on May 21 there is a spot near its place.
Group 10610. May 19–23. Intermittent; a pair of small spots seen only on May 19 and 23.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
140·383		·937	73·3					219
G		·950	83·3					72
May 20			(−19·5)	(18·6)	(−2·0)	(1)	(5)	(1702)
141·437		·925	256·0					178
		·891	243·6					161
		·836	231·0					108
		·834	289·6					82
	10609	·179	174·9	3·8	−12·0	2	8	
G	10611	·965	110·2	290·5	−19·9	0	9	139*p*
	10612	·987	106·0	284·1	−16·1	27	97	157*p*
		·839	72·8					120
		·864	126·8					124
		·952	80·0					238
		·965	67·9					107
May 21			(−19·2)	(4·7)	(−1·8)	(29)	(114)	(1414)
142·387		·945	250·0					332
		·933	235·8					190
		·857	234·9					189
	10611	·873	112·1	292·9	−20·1	11	22	104*c*
C	10612	·937	106·7	283·2	−16·2	25	89	432*c*
	10613	·959	76·7	279·7	+12·2	10	69	344*c*
		·856	78·1					155
		·898	119·6					81
		·911	64·5					175
May 22			(−18·9)	(352·1)	(−1·7)	(46)	(180)	(2002)
143·361		·953	232·2					256
		·946	244·0					198
		·773	252·4					196
	10610	·208	210·6	345·4	−11·8	2	14	
	10611	·718	116·4	296·3	−19·7	3	8	
C	10614	·795	113·4	288·7	−19·4	5	14	} 169*c*
	10612	·839	108·6	283·4	−16·4	16	114	}
	10613	·877	74·2	279·4	+13·0	12	77	223*c*
		·938	63·2					160
		·958	108·8					494
		·964	76·4					228
May 23			(−18·6)	(339·2)	(−1·6)	(38)	(227)	(1924)
144·628		·913	256·6					401
		·879	241·3					202
	10611	·563	127·6	293·9	−21·3	0	3	
	10614	·605	119·4	288·8	−18·5	8	50	
	10612	·657	114·0	283·8	−16·6	30	108	
	10613	·700	70·0	280·2	+12·7	18	51	
	10615	·945	81·2	252·1	+ 7·8	21	97	392*f*
G	*999a*	·961	106·1	249·0	−15·8	0	9	289*f*

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
144·628		·836	60·4					197
G		·848	110·0					568
		·885	72·1					330
		·901	45·8					83
		·937	118·9					193
May 24			(−18·2)	(322·4)	(−1·5)	(77)	(318)	(2655)
145·358		·963	257·1					313
		·905	244·1					217
		·755	252·0					225
	10614	·479	128·5	289·6	−18·5	5	18	
	10612	·535	119·9	284·0	−16·7	26	138	
	10613	·579	65·5	280·3	+12·7	8	34	
	999b	·737	110·7	267·1	−16·1	1	5	166*f*
	10615	·877	80·1	252·3	+ 7·9	24	108	391*f*
G		·838	70·9					170
		·858	55·7					115
		·881	122·9					120
		·904	108·0					225
		·965	100·5					120
		·965	119·5					94
		·972	65·3					105
		·977	109·9					147
May 25			(−17·9)	(312·8)	(−1·4)	(64)	(303)	(2408)
146·335		·968	250·4					141
		·949	241·4					170
		·863	253·2					340
		·830	229·0					180
	10614	·376	146·5	287·3	−19·3	8	40	
	10612	·380	135·0	283·7	−16·6	14	103	
C	10613	·435	56·0	278·3	+12·9	2	5	
	10615	·747	78·2	252·5	+ 7·9	26	87	291*f*
	10616	·966	101·1	225·1	−11·1	24	143	836*c*
		·787	110·6					218
		·860	101·2					87
		·923	62·2					188
		·936	114·4					423
May 26			(−17·6)	(299·9)	(−1·2)	(74)	(378)	(2874)
147·386		·957	254·8					330
		·907	232·0					80
		·896	246·4					90
		·878	258·2					130
	10614	·308	191·0	289·5	−18·6	29	115	
	10612	·274	171·4	283·6	−16·7	18	95	
	10615	·570	74·2	252·5	+ 8·0	14	61	
	10616	·882	101·8	224·7	−10·9	58	194	702*c*
G	10617	·996	102·1	201·4	−12·1	48	312	280*p*

Group 10611. May 21–24. One or two small spots *sp* Group 10612.
Group 10612. May 21–June 2. Return of Group 10589. A stable regular spot with a few small companions preceding it from May 24–27.
Group 10613. May 22–June 2. A feeble group disappearing by May 27; a well-defined stream suddenly appears in its place on May 28, but this soon diminishes.
Group 10614. May 23–June 1. A couple of small spots, *sp* Group 10612, increasing to a moderate sized group about May 28–29.
Group 10615. May 24–June 4. Return of Group 10592. A regular spot slowly diminishing.
Group 10616. May 26–June 4. A stream which becomes a pair of clusters, each lengthening into a short unstable stream.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
147·386		·841	56·6					95	150·564	10619	·559	72·5	211·4	+ 9·0	40	161	
G		·848	114·6					150	G	10617	·719	107·6	199·4	−13·1	119	956	
		·959	111·4					270		10618	·780	79·3	193·4	+ 7·8	59	317	307*c*
		·970	78·2					115		10620	·893	107·9	181·9	−16·3	34	145	933*f*
May 27			(−17·2)	(286·0)	(−1·1)	(167)	(777)	(2242)			·819	97·9					95
											·855	113·0					284
148·361		·965	257·8					205			·946	99·9					122
		·951	245·7					139			·988	81·9					180
		·944	233·2					144	May 30			(−16·1)	(243·9)	(−0·7)	(380)	(2193)	(2861)
		·907	278·5					80									
		·835	245·7					226	151·635		·957	281·7					136
	10614	·415	223·7	290·5	−18·4	30	139				·950	237·3					188
	10612	·327	212·4	283·5	−16·9	18	82				·850	276·0					139
G	10613	·274	328·4	281·4	+12·4	43	161				·838	297·3					162
	10615	·383	65·5	252·5	+ 8·2	12	57			10614	·882	248·7	289·8	−19·0	23	76	244*c*
	10616	·791	103·2	221·5	−11·0	65	235	657*c*		10613	·826	286·7	283·9	+13·4	36	132	337*c*
	10617	·958	103·1	200·2	−12·8	169	1156	635*c*		10612	·822	250·2	283·3	−16·5	16	91	110*c*
	10618	·986	81·3	193·1	+ 8·4	75	322	373*c*		10615	·404	292·9	251·7	+ 8·5	10	15	
		·880	79·3					185		10616	·202	153·7	224·5	−11·0	16	103	
		·908	102·1					166		10619	·370	59·7	210·9	+10·1	26	113	
		·913	112·1					607	G	10617	·550	113·9	198·7	−13·4	126	792	
May 28			(−16·9)	(273·0)	(−1·0)	(412)	(2152)	(3417)		10618	·607	76·4	193·3	+ 7·7	55	266	
										10620	·763	111·1	182·0	−16·3	28	112	1120*f*
149·408		·931	248·7					185			·874	130·7					163
		·929	259·2					91			·907	99·1					80
		·893	238·7					151			·913	57·5					77
		·837	287·9					135			·935	80·6					238
		·836	227·3					66			·947	70·9					99
	10614	·580	238·5	290·5	−18·4	44	222				·957	102·2					175
	10612	·483	235·1	283·5	−16·8	18	99				·974	113·3					89
	10613	·434	302·8	281·1	+12·7	48	298		May 31			(−15·7)	(229·7)	(−0·6)	(336)	(1700)	(3357)
G	10615	·203	37·9	252·0	+ 8·3	8	37										
	10616	·607	106·4	223·0	−10·6	56	214		152·397		·974	237·6					124
	10619	·759	76·7	210·9	+ 9·4	12	31	77*c*			·942	273·2					175
	10617	·859	104·5	200·9	−12·9	180	1064	392*c*			·922	295·3					111
	10618	·919	80·6	193·4	+ 8·3	66	389	431*c*			·883	239·2					92
	10620	·980	106·9	181·7	−16·4	12	123	522*c*			·745	243·4					188
		·782	102·4					77		10614	·957	250·4	291·7	−18·9	15	54	360*c*
		·832	114·8					431		10613	·920	284·8	285·5	+13·4	26	147	598*c*
		·888	62·3					160		10612	·908	251·8	283·6	−16·7	13	65	139*c*
May 29			(−16·5)	(259·2)	(−0·9)	(444)	(2477)	(2718)		10615	·553	286·4	251·9	+ 8·6	11	19	
										10616	·220	215·2	227·0	−10·8	15	112	
150·564		·962	245·3					247		10619	·225	37·6	211·6	+ 9·7	28	137	
		·936	278·8					122		10617	·413	123·2	198·9	−13·5	112	657	
		·933	288·3					132		10618	·452	72·2	194·0	+ 7·5	55	260	
		·904	234·5					357		10620	·648	115·1	182·1	−16·3	27	108	437*f*
	10614	·748	244·8	289·4	−19·0	27	127	82*c*		10621	·993	74·6	137·0	+15·2	0	20	176*sp*
	10612	·669	245·6	283·2	−16·5	15	88				·816	100·5					69
	10613	·642	291·1	281·6	+12·8	39	210				·848	68·4					64
	10615	·208	318·6	251·9	+ 8·2	9	26				·851	79·8					200
G	10616	·386	116·9	223·5	−10·7	38	163		G		·920	105·2					173

Group 10617. May 27–June. 8. Return or revival of Group 10598. A large stream of unusual formation changing rapidly in appearance after June 2.
Group 10618. May 28–June 9. A regular spot followed at some distance by a small double spot. The former divides into two parts on June 5, a few small companions having appeared near it on June 3.
Group 10619. May 29–June 6. A stream with the largest spot in the rear.
Group 10620. May 29–June 7. Return of Group 10600. A diminishing regular spot with tiny companions on June 2 and 5. Extensive faculæ follow the spot.
Group 10621. June 1–3. A very small spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
152·397		·948	116·4					99
G		·952	68·2					109
		·968	81·7					233
June 1			(−15·4)	(219·6)	(−0·5)	(302)	(1579)	(3347)
153·349		·979	293·9					98
		·946	243·8					156
		·901	299·3					125
		·871	286·1					208
		·856	248·5					392
	10612	·976	253·1	283·7	−16·6	11	41	259*c*
	10613	·986	283·7	281·1	+13·4	11	91	596*c*
	10615	·717	282·7	251·8	+ 8·7	5	13	
	10616	·403	244·7	228·6	−10·3	6	36	
	10622	·344	194·7	212·3	−19·8	6	19	
	10619	·198	336·1	211·7	+10·0	26	110	
	999c	·201	201·8	211·3	−11·1	3	12	
G	10617	·261	150·1	199·3	−13·4	116	577	
	10618	·260	57·2	194·3	+ 7·7	39	234	
	10620	·491	124·1	182·0	−16·3	18	80	
	10623	·659	71·6	167·5	+11·7	6	18	
	10624	·660	78·3	166·5	+ 7·4	3	12	
	10621	·949	73·2	136·5	+15·8	3	14	330*p*
		·839	110·3					129
		·903	124·8					79
		·908	81·9					329
		·920	57·9					139
		·959	111·3					99
		·968	102·2					125
June 2			(−15·1)	(207·0)	(−0·4)	(253)	(1257)	(3064)
154·391		·950	284·3					188
		·948	297·7					171
		·941	249·5					368
		·894	236·2					140
		·861	308·6					56
		·851	290·8					152
		·842	249·5					131
	10615	·859	280·3	251·7	+ 8·6	5	11	229*f*
	10616	·572	253·3	226·8	− 9·7	4	10	
	10625	·428	244·9	216·3	−10·7	8	48	
	10619	·376	296·9	213·0	+ 9·4	23	66	
	10622	·411	214·2	207·4	−20·1	7	17	
	10617	·250	202·2	198·8	−13·6	74	437	
	10618	·146	350·1	194·6	+ 7·9	54	282	
	10620	·336	145·5	181·8	−16·3	10	37	
	10623	·464	63·9	168·2	+11·4	18	65	
G	*999d*	·498	108·1	164·7	− 9·1	2	8	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
154·391	10621	·870	71·7	134·4	+15·7	10	18	268*p*
G		·852	82·3					87
		·870	55·9					144
		·871	101·1					70
		·951	70·3					184
		·955	104·6					198
		·969	83·3					101
June 3			(−14·7)	(193·2)	(−0·3)	(215)	(999)	(2487)
155·371		·947	251·6					243
		·944	235·6					129
		·929	263·9					96
		·928	288·7					194
		·894	304·3					125
		·855	240·7					91
	10615	·951	279·1	251·8	+ 8·6	3	14	272*p*
	10616	·796	256·5	232·1	−10·8	2	7	112*c*
	10625	·597	253·0	215·6	−10·2	3	20	
	10619	·579	286·3	214·4	+ 9·1	18	43	
	10622	·547	231·9	207·4	−19·8	6	19	
C	10617	·389	231·6	198·5	−14·1	53	268	
	10618	·286	298·9	194·9	+ 7·8	55	302	
	10620	·277	184·7	181·6	−16·1	9	35	
	10623	·274	43·1	169·3	+11·3	11	38	
	10624	·300	61·5	164·9	+ 8·0	8	33	
		·807	107·3					72
		·894	68·3					138
		·923	84·7					116
		·938	107·0					252
		·960	75·3					158
		·978	63·7					186
June 4			(−14·3)	(180·3)	(−0·2)	(168)	(779)	(2184)
156·360		·962	279·5					414
		·931	298·9					258
		·931	244·0					210
	10625	·785	257·2	218·0	−10·0	15	63	477*c*
	10619	·764	279·7	216·4	+ 7·4	6	31	127*c*
	10617	·549	245·1	197·8	−13·3	60	471	
	10618	·484	285·9	195·1	+ 7·6	40	271	
C	10620	·365	217·9	180·7	−16·7	9	29	
	10623	·209	348·9	169·5	+11·8	10	37	
	10624	·145	5·9	166·3	+ 8·3	26	96	
	10626	·468	41·4	148·0	+20·5	21	99	
		·891	109·6					245
		·903	85·2					124
		·918	63·9					268
		·938	126·5					162
June 5			(−13·9)	(167·2)	(0·0)	(187)	(1097)	(2294)

Group 10622. June 2–7. Intermittent; scattered unstable spots, none being seen on June 5 and 6.
Group 10623. June 2–10. A wide pair of spots; the leader dies out and another pair replaces the original follower. The leader of this new pair moves forwards appreciably in longitude.
Group 10624. June 2–11. A small spot on June 2 that has disappeared on June 3; on June 4 a stream begins its development. The leader and follower show temporarily the usual divergence in longitude.
Group 10625. June 3–7. A stream of small unstable spots *f* Group 10616, with which it appears to be associated.
Group 10626. June 5–12. A stream in which the leader is the only significant spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928			°	°	°			
157·429		·956	302·3					155	159·580		·818	118·2					118
		·911	247·9					490	G		·927	80·2					166
		·793	241·0					292			·942	94·6					297
	10625	·912	259·6	218·2	− 9·4	16	99	871*c*	June 8			(−12·6)	(124·6)	(+0·3)	(199)	(1004)	(2687)
	10619	·898	279·9	216·3	+ 8·9	3	12	351*f*									
	10617	·729	252·3	198·2	−12·7	47	294	334*p*									
	10618	·687	280·5	195·7	+ 7·2	35	190		160·403		·899	250·5					1061
	10620	·537	237·9	181·2	−16·4	11	35			10618	·991	276·8	195·7	+ 6·8	18	97	297*nf*
	10623	·350	305·0	170·0	+11·7	7	33			10623	·879	283·1	174·4	+11·7	17	81	150*c*
G	10624	·293	299·3	167·9	+ 8·3	91	426			10624	·819	279·5	168·1	+ 8·0	83	473	202*c*
	10626	·336	10·1	149·4	+19·3	32	108			10626	·685	297·8	153·3	+18·8	14	95	
		·851	61·6					544	G	10631	·541	304·2	141·6	+18·0	1	3	
		·890	126·0					145		10630	·770	103·9	64·4	−10·4	21	90	282*f*
		·904	89·1					146			·858	122·4					233
		·943	115·0					163			·859	78·5					100
		·968	103·5					143			·951	125·3					238
		·980	97·3					283			·978	104·5					150
June 6			(−13·5)	(153·0)	(+0·1)	(242)	(1197)	(3917)	June 9			(−12·3)	(113·7)	(+0·4)	(154)	(839)	(2713)
158·563		·967	279·7					332	161·359		·956	293·1					134
		·901	285·2					73			·944	249·7					860
	10625	·985	260·6	217·6	− 9·2	0	59	539*f*		10623	·964	282·3	175·1	+12·0	20	146	237*c*
	10622	·973	250·0	213·4	−19·3	9	38	355*c*		10624	·923	278·5	168·0	+ 8·0	66	415	338*c*
	10617	·882	256·2	198·9	−12·0	28	143	738*c*		10626	·831	292·5	155·0	+18·8	15	91	313*f*
	10618	·854	278·2	196·2	+ 7·1	22	140	408*c*	G	*999f*	·254	9·7	98·5	+15·0	1	5	
	10620	·716	246·0	180·9	−16·7	6	10			10630	·613	107·9	64·8	−10·4	14	58	
	10623	·546	291·1	169·2	+11·5	22	88				·839	128·0					208
	10624	·504	286·5	167·1	+ 8·4	75	628				·935	103·6					207
G	10626	·398	324·1	152·2	+18·9	24	107				·960	129·8					141
	10627	·721	105·6	93·2	−11·0	4	6		June 10			(−11·9)	(101·0)	(+0·6)	(116)	(715)	(2438)
	10628	·927	103·2	70·8	−12·1	7	15	177*p*									
	10629	·928	96·8	70·3	− 6·3	3	9	175*p*									
	10630	·964	101·0	64·0	−10·5	17	152	334*f*	162·349		·965	248·9					481
		·856	116·0					114			·886	279·5					184
		·886	59·4					135		10624	·987	278·1	168·2	+ 7·9	45	371	387*c*
		·956	116·0					239		10626	·937	290·1	156·1	+19·0	13	52	312*nf*
		·973	72·2					38	G	10630	·424	117·0	65·4	−10·4	5	25	
June 7			(−13·0)	(138·0)	(+0·2)	(217)	(1395)	(3657)			·798	135·7					133
											·860	104·7					133
											·983	102·7					152
159·580		·813	248·2					389	June 11			(−11·5)	(87·9)	(+0·7)	(63)	(448)	(1782)
	10617	·974	258·6	201·0	−11·1	11	89	657*s*									
	999e	·971	284·0	200·2	+13·7	4	18	131*f*									
	10618	·954	277·0	196·9	+ 6·8	23	105	449*f*									
	10623	·751	284·8	172·2	+11·2	17	67		163·361		·928	282·6					340
	10624	·683	281·4	166·9	+ 8·0	88	478			10626	·991	289·2	156·4	+19·1	0	32	247*nf*
	10626	·555	305·0	153·2	+18·7	20	121			10630	·254	140·1	65·0	−10·4	3	16	
	10631	·516	320·2	140·9	+18·8	3	5		G		·899	119·1					150
	10627	·575	109·2	90·8	−13·5	1	5				·916	104·5					155
	10628	·818	104·6	70·9	−11·7	4	12	83*c*			·928	76·4					36
	10629	·813	98·2	70·7	− 6·5	4	9	89*c*			·979	108·7					89
G	10630	·877	102·0	64·2	−10·3	24	95	308*f*	June 12			(−11·0)	(74·5)	(+0·8)	(3)	(48)	(1017)

Group 10627. June 7–8. A close pair of tiny spots; only one remains on June 8.
Group 10628. June 7–8. A small spot.
Group 10629. June 7–8. A pair of small spots; only one remains on June 8.
Group 10630. June 7–14. A small composite spot breaking up into a cluster or stream.
Group 10631. June 8–9. A tiny isolated spot *f* Group 10626.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
164·348		·976	282·8					299	167·349		·837	116·0					163
		·962	299·1					166	G		·899	77·9					246
		·855	291·6					154			·947	112·5					205
	10630	·209	193·7	64·4	−10·8	9	43				·948	122·2					113
G	10632	·795	103·6	10·0	−10·1	4	24	99*c*			·979	63·9					137
	10633	·809	74·9	8·5	+12·7	8	43	100*c*			·991	76·9					332
		·791	110·6					148	June 16			(−9·3)	(21·7)	(+1·3)	(144)	(671)	(2265)
		·901	94·8					109									
		·933	108·4					267	168·324		·953	298·7					156
June 13			(−10·6)	(61·5)	(+0·9)	(21)	(110)	(1342)			·933	254·3					188
											·903	240·4					184
165·437		·949	289·4					173			·834	255·7					248
		·905	253·6					208			·801	225·1					133
		·849	298·8					323		10634	·310	203·5	16·1	−15·1	3	5	
	10630	·312	233·5	61·7	− 9·7	5	18			10633	·202	349·0	11·1	+12·8	72	391	
	10632	·609	108·4	11·2	−10·2	1	9		G	10635	·284	184·7	10·2	−15·0	69	376	
	10633	·651	71·4	7·9	+12·7	79	262			10636	·956	75·6	296·4	+14·1	15	101	353*c*
G		·827	109·0					272		10637	·972	81·1	292·6	+ 9·0	44	215	262*c*
		·856	128·5					106			·826	75·7					97
		·889	118·4					94			·836	114·3					108
		·936	128·0					129			·931	62·6					86
		·969	103·4					251			·939	126·8					181
		·973	74·8					400			·968	110·4					233
June 14			(−10·2)	(47·0)	(+1·0)	(85)	(289)	(1956)	June 17			(−8·9)	(8·8)	(+1·4)	(203)	(1088)	(2229)
166·356		·930	253·4					201	169·610		·950	260·4					333
		·924	240·8					133			·946	246·2					157
		·908	284·8					109			·884	230·7					267
		·885	298·2					368		10633	·388	300·2	11·8	+12·7	62	375	
		·861	231·8					85		10635	·412	226·5	9·7	−15·0	51	263	
	10634	·373	131·2	18·2	−13·1	3	9			10638	·382	320·6	6·6	+18·5	8	18	
G	10635	·498	124·2	9·8	−15·1	19	36			10636	·819	73·8	297·8	+14·1	14	88	295*c*
	10633	·468	64·6	9·3	+12·7	83	404		G	10637	·859	80·5	293·0	+ 8·9	36	258	679*f*
		·917	74·4					398		10639	·916	74·8	286·1	+14·5	6	11	521*c*
		·918	131·0					166			·812	57·8					78
		·920	100·6					87			·888	113·4					334
		·947	115·0					246			·895	129·8					122
		·975	87·8					102			·948	59·6					78
June 15			(−9·8)	(34·9)	(+1·2)	(105)	(449)	(1895)			·989	108·4					226
									June 18			(−8·4)	(351·8)	(+1·5)	(177)	(1013)	(3090)
167·349		·981	253·3					161									
		·949	236·9					115	170·490		·982	259·0					207
		·943	295·5					281			·946	233·7					321
		·842	253·1					274		10633	·553	291·2	12·0	+12·8	103	577	
	10634	·263	161·5	16·8	−13·1	7	29			10635	·557	239·2	9·8	−15·1	45	230	
	10635	·336	146·3	10·6	−14·9	55	263			10638	·526	305·0	7·2	+18·9	31	132	
	10633	·276	43·6	10·5	+12·8	82	379			10640	·390	285·6	2·4	+ 7·5	17	82	
G		·784	71·1					238	G	10636	·687	70·6	298·4	+14·3	16	86	

Group 10632. June 13–14. Two or three small faint spots.
Group 10633. June 13–23. A stream in continual change. The leader is at first a regular spot but becomes composite.
Group 10634. June 15–17. A few spots *p* Group 10635.
Group 10635. June 15–22. A group of stream formation in which the leader and follower instead of separating in longitude come closer together. There is a rapid break-up of the group after June 20.
Group 10636. June 17–24. An elongated cluster or short stream of faint spots.
Group 10637. June 17–29. A regular spot with companions after June 20; these become specially numerous about June 24 and of appreciable size on June 27–28.
Group 10638. June 18–23. A stream *n* Group 10633.
Group 10639. June 18–20. A small, definite spot with a companion on June 19 in the faculæ *f* Group 10636.
Group 10640. June 19–22. A smallish stream *sf* Group 10633.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
170·490	10637	·741	79·2	292·9	+ 9·0	37	247	464*f*	173·458		·988	263·1					120
G	10639	·813	73·4	286·9	+14·4	8	23	539*f*			·857	245·4					131
		·772	120·8					140		10633	·943	283·2	11·2	+13·1	111	839	456*c*
		·830	110·9					142		10635	·942	253·4	9·8	−14·9	13	60	574*c*
		·946	109·4					286		10640	·920	278·4	7·6	+ 8·5	6	14	200*f*
		·959	76·0					238		10638	·911	289·3	5·6	+18·4	15	57	331*c*
		·966	117·8					182		*1000c*	·149	0·4	300·8	+10·5	0	5	
June 19			(−8·0)	(340·2)	(+1·6)	(257)	(1377)	(2519)		10636	·238	16·8	296·8	+15·1	9	28	
									C	10637	·201	42·4	293·0	+10·5	36	242	
										10643	·360	66·6	281·4	+10·1	4	14	
171·342		·944	235·5					268		10641	·538	62·0	271·4	+16·3	5	21	
		·872	257·6					111		10642	·935	103·0	232·8	−11·4	38	214	551*p*
	10633	·700	286·8	12·2	+12·9	113	641			10644	·997	109·4	216·7	−19·1	43	250	390*p*
	10635	·693	245·6	9·6	−15·2	38	217				·832	80·8					65
	10638	·658	297·8	6·8	+19·3	15	90				·902	127·0					91
	10640	·569	281·0	3·0	+ 7·7	24	88				·961	61·4					101
	1000a	·273	9·2	326·3	+17·3	1	5				·972	78·4					274
	10636	·534	65·3	299·0	+14·4	11	55				·988	99·8					413
G	10637	·599	76·6	292·9	+ 9·4	37	199		June 22			(−6·6)	(300·9)	(+2·0)	(280)	(1744)	(3697)
	10639	·705	71·4	285·5	+14·2	3	6	334*f*									
		·851	73·4					113	174·363		·986	254·4					201
		·869	111·7					394			·964	277·6					246
		·870	82·5					93			·917	250·2					148
		·937	72·9					162			·916	262·1					85
		·939	115·3					369			·897	238·5					115
		·954	81·6					180		10633	·990	282·8	11·0	+13·0	74	722	414*c*
		·970	102·6					147		10638	·971	288·6	4·7	+18·5	10	76	323*c*
June 20			(−7·6)	(328·9)	(+1·8)	(242)	(1301)	(2171)		10636	·262	325·8	297·6	+14·5	5	43	
									G	10637	·165	336·2	292·8	+10·7	54	392	
										10643	·188	45·4	281·1	+ 9·6	3	12	
172·334		·972	257·5					94		10641	·358	52·0	272·0	+14·7	5	12	
	1000b	·905	262·5	19·9	− 6·0	6	8	61*p*		10645	·687	79·8	245·9	+ 8·5	11	32	
	10633	·835	284·5	11·6	+13·1	90	778	301*c*		10642	·843	105·2	233·0	−11·5	34	215	309*p*
	10635	·826	250·1	9·1	−15·1	26	159	259*c*		10646	·909	78·0	223·9	+11·7	11	30	341*c*
	10638	·790	292·9	5·8	+19·0	7	29	171*c*		10644	·974	110·5	213·8	−19·4	86	606	815*c*
	10640	·747	279·1	3·7	+ 8·0	17	53	136*c*		10647	·985	75·6	208·9	+14·5	25	130	408*f*
	10636	·384	53·1	297·2	+15·1	9	42				·944	101·8					370
C	10637	·408	69·7	292·9	+ 9·8	37	229		June 23			(−6·2)	(288·9)	(+2·1)	(318)	(2270)	(3775)
	10641	·728	69·5	270·7	+16·1	4	17										
	10642	·993	101·6	233·4	−11·2	28	204	448*p*	175·397		·960	250·0					250
		·752	117·9					172			·923	229·0					148
		·845	75·9					105			·833	287·2					176
		·877	119·9					209			·817	244·8					157
		·877	107·0					128		10636	·444	299·1	298·7	+14·4	5	41	
		·919	84·3					214		10637	·338	295·4	293·2	+10·4	75	387	
		·940	71·8					125		10643	·181	319·2	282·1	+10·0	1	7	
June 21			(−7·1)	(315·7)	(+1·9)	(224)	(1519)	(2423)	G	10641	·219	14·4	272·0	+14·4	13	54	

Group 10641. June 21–27. An irregular stream of minor importance.
Group 10642. June 21–July 3. A stable regular spot preceded at some distance by one or two spots from June 25–29.
Group 10643. June 22–24. A few faint spots *f* Group 10637.
Group 10644. June 22–July 5. A group of stream type (probably beginning as Group 10622) in which the leader becomes very large whilst the rear spot breaks into a cluster and rapidly fades. The leader becomes elongated in an E-W direction, and a cluster of small companions comes in front of it. *See* also Group 10654.
Group 10645. June 23–July 2. A stream in which the leader (a regular spot) and the follower (a cluster) tend to approach one another.
Group 10646. June 23–July 3. A small regular spot, with a follower which suddenly appears between June 23 and 24 and then dissolves into a cluster that tends to approach the leader.
Group 10647. June 23–July 2. A group of a few spots *p* Group 10649.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
175·397	*1000d*	·424	161·0	266·7	−21·3	3	8	
G	10648	·314	83·2	257·1	+ 4·2	3	10	
	10645	·487	75·8	246·8	+ 8·8	34	92	
	10642	·699	109·6	233·1	−11·9	32	205	
	10646	·799	77·0	222·8	+11·7	52	259	304*c*
	10644	·906	113·0	213·0	−19·7	115	655	1316*c*
	10647	·921	74·6	208·6	+15·0	29	113	259*c*
	10649	·970	72·2	199·6	+17·8	121	861	274*c*
		·788	54·9					121
		·837	103·8					313
		·908	55·4					195
		·939	101·8					181
		·947	82·0					265
June 24			(−5·8)	(275·2)	(+2·2)	(483)	(2692)	(3959)
176·360		·943	257·5					86
		·922	286·2					200
		·892	247·4					101
		·884	226·8					103
	10637	·528	286·2	293·4	+10·4	57	342	
	10641	·280	320·6	273·0	+14·7	30	111	
	10648	·093	65·6	257·6	+ 4·5	17	47	
	10645	·263	65·2	248·6	+ 8·6	47	174	
G	*1000e*	·468	75·8	235·3	+ 8·6	1	5	
	10642	·532	116·7	233·6	−11·8	51	254	
	10646	·643	74·2	223·5	+11·8	36	201	
	10644	·798	117·6	213·8	−20·1	114	625	937*c*
	1000f	·812	106·4	210·0	−11·8	8	12	123*f*
	10647	·823	72·9	208·1	+15·3	33	117	225*c*
	10649	·905	71·2	198·5	+17·9	122	1008	410*c*
		·890	81·2					557
		·955	104·5					237
		·964	94·9					85
		·971	113·8					178
June 25			(−5·4)	(262·5)	(+2·3)	(516)	(2896)	(3242)
177·387		·968	246·1					180
		·950	286·1					164
		·910	230·9					124
		·834	219·7					129
		·820	285·9					560
		·805	241·7					309
	10637	·709	283·0	293·3	+11·0	45	284	
	10641	·447	297·3	272·9	+14·1	13	59	
	10648	·162	286·4	257·7	+ 5·0	7	19	
	10645	·110	5·1	248·2	+ 8·7	19	170	
	10642	·357	133·9	233·6	−11·8	31	214	
G	10646	·453	68·3	223·4	+11·9	30	145	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
177·387	10644	·647	125·5	214·9	−19·9	88	599	
G	10647	·677	69·9	207·7	+15·3	25	125	
	10649	·794	69·3	197·7	+17·9	141	921	138*c*
	10650	·975	82·1	171·6	+ 8·3	20	62	298*c*
		·776	114·3					137
		·859	106·9					161
		·861	78·9					113
		·923	115·9					208
		·941	77·7					194
		·941	66·2					60
		·960	98·0					162
		·969	107·7					320
June 26			(−4·9)	(248·8)	(+2·5)	(419)	(2598)	(3257)
178·422		·973	249·2					147
		·951	237·8					130
		·938	272·1					132
		·917	285·2					742
		·899	299·7					84
		·893	227·2					157
		·874	247·2					300
	10637	·856	281·2	293·8	+11·0	68	360	1010*nf*
	10651	·683	276·2	278·1	+ 6·1	6	10	
	10641	·620	290·0	272·0	+14·3	12	29	
	10648	·367	278·5	256·5	+ 5·5	1	3	
	10645	·266	293·1	249·5	+ 8·5	36	178	
	10642	·247	175·6	234·1	−11·6	44	228	
G	10646	·251	46·9	224·4	+12·4	22	125	
	10644	·494	139·7	215·5	−19·6	140	726	
	10647	·493	61·4	208·6	+16·0	21	51	
	10652	·576	76·8	200·7	+ 9·7	1	4	
	10649	·637	64·0	198·3	+18·2	122	859	
	1000g	·793	120·5	188·0	−21·9	0	4	144*f*
	10650	·896	81·8	171·7	+ 8·5	16	49	343*c*
	10653	·983	70·8	155·7	+19·4	37	74	384*c*
		·808	78·0					197
		·863	98·8					73
		·910	111·0					558
		·915	66·6					100
		·960	122·8					153
		·989	84·4					285
June 27			(−4·4)	(235·2)	(+2·6)	(526)	(2700)	(4939)
179·351		·970	286·0					415
		·967	298·4					133
		·948	229·8					143
		·943	248·4					272
		·894	291·7					230
G		·861	281·4					501

Group 10648. June 24–27. A small stream *p* Group 10645.
Group 10649. June 24–July 5. A single composite spot or two spots close together at the east limb. These increase and separate, the leader streaming out in longitude. The decline of the group is rapid.
Group 10650. June 26–July 5. Return of Group 10624. A small regular spot diminishing slowly to a dot. There are tiny companions *s* on July 4.
Group 10651. June 27–28. A pair of small spots.
Group 10652. June 27–July 1. Intermittent; a very small spot on June 27 and July 1.
Group 10653. June 27–July 8. Return of Group 10626. A small broken spot fading out; a faint cluster occupies its position on July 2; a small spot on July 4; and a pair on July 8.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
179·351	10637	·945	280·6	293·7	+10·9	62	444	511*c*	181·384	10654	·637	83·8	156·6	+ 6·1	15	45	
G	10651	·824	275·0	278·3	+ 5·7	4	20	74*c*	G		·837	54·1					147
	10645	·459	283·6	249·6	+ 8·6	37	200				·840	70·6					186
	10642	·311	217·5	234·0	−11·5	38	219				·957	69·9					78
	10646	·178	347·7	225·1	+12·7	16	102		June 30			(−3·1)	(196·0)	(+2·9)	(340)	(1738)	(2265)
	10644	·391	162·2	215·7	−19·1	128	710										
	10647	·326	42·9	209·6	+16·4	10	37		182·365		·971	284·8					166
	10649	·470	55·1	199·1	+18·0	136	909				·965	244·8					239
	10650	·779	80·9	172·0	+ 8·8	11	64	166*nf*			·964	273·2					118
	10653	·911	69·8	158·0	+19·5	11	49	661*f*			·962	255·8					67
		·718	101·6					125			·927	304·2					54
		·830	112·8					256			·926	293·4					166
		·830	62·4					102			·919	233·6					102
		·922	123·7					124			·798	266·4					129
		·944	83·4					570			·782	281·0					129
June 28			(−4·0)	(222·9)	(+2·7)	(453)	(2754)	(4283)		10645	·927	279·0	250·9	+ 9·5	12	49	260*f*
										10642	·791	252·6	233·3	−11·8	24	149	534*p*
180·402		·950	292·1					216		10646	·676	285·0	224·8	+12·3	6	19	
		·923	249·0					302		10655	·702	234·4	220·7	−21·7	42	191	
		·907	274·9					109	G	10656	·639	248·6	220·2	−11·1	3	6	
		·891	284·8					213		10644	·620	233·8	214·8	−18·8	115	636	
		·848	238·1					194		10647	·505	297·0	210·8	+15·8	5	8	
	10637	·995	280·9	293·4	+11·1	53	263	755*f*		10652	·319	288·5	200·7	+ 8·7	0	3	
	10645	·661	280·1	250·0	+ 8·7	21	133			10649	·354	318·4	197·3	+18·2	42	266	
	10642	·476	238·9	233·5	−11·7	26	183			10657	·304	209·8	191·9	−12·2	0	3	
	10646	·310	301·7	224·6	+12·0	15	70			10650	·201	61·7	172·7	+ 8·4	12	36	
G	10644	·387	196·0	215·4	−19·0	128	705			10653	·508	52·4	157·6	+20·7	5	21	
	10647	·227	354·1	210·4	+15·8	11	21			10654	·444	81·7	156·9	+ 6·4	10	26	
	1000h	·161	13·3	206·8	+11·8	0	4			10658	·989	117·4	104·4	−26·5	151	689	224*c*
	10649	·320	34·7	198·0	+17·9	84	642				·933	65·4					182
	10650	·606	79·6	172·1	+ 8·5	11	59				·968	106·6					190
	10653	·793	67·7	158·2	+19·3	24	81	577*f*	July 1			(−2·6)	(183·0)	(+3·0)	(427)	(2102)	(2560)
	10654	·790	84·7	156·9	+ 5·9	13	40	423*f*									
		·903	55·9					66	183·376		·916	267·2					113
		·935	78·3					64			·911	280·3					138
		·952	117·3					81			·909	300·6					137
June 29			(−3·5)	(209·0)	(+2·8)	(386)	(2201)	(3000)		10645	·988	279·0	250·8	+ 9·4	0	16	345*f*
										10642	·910	255·4	233·5	−11·9	21	175	629*p*
										10646	·827	283·0	225·0	+12·5	8	20	391*c*
181·384		·972	286·0					362		10656	·793	253·0	220·1	−11·4	15	30	236*n*
		·966	250·7					122		10655	·824	240·8	220·1	−21·7	43	350	426*c*
		·918	241·6					316		10644	·760	241·6	214·4	−19·0	113	606	285*c*
		·891	275·8					175	G	10647	·675	289·9	210·7	+15·6	6	19	
		·890	285·7					156		10649	·511	300·8	197·0	+17·9	28	165	
	10645	·811	279·0	250·0	+ 9·0	22	88	207*c*		*1000i*	·280	326·0	179·0	+16·4	3	6	
	10642	·642	247·9	233·2	−11·6	27	161	218*p*		10650	·114	324·6	173·4	+ 8·4	8	18	
	10646	·496	289·9	224·4	+12·2	19	47			10653	·358	28·1	159·2	+21·4	3	15	
	10655	·572	223·4	220·9	−21·8	21	69			10654	·234	71·8	156·7	+ 7·2	8	25	
	10644	·482	220·3	215·1	−18·8	127	785			10659	·888	109·6	109·4	−15·8	2	5	294*f*
	10647	·337	312·4	210·9	+15·9	10	17			10658	·937	119·9	104·6	−26·6	97	789	377*c*
	10649	·269	350·9	198·6	+18·2	80	442				·802	57·2					168
	10650	·410	75·5	172·4	+ 8·5	10	51				·944	66·4					234
G	10653	·643	62·1	159·0	+19·8	9	33	298*f*	July 2			(−2·2)	(169·6)	(+3·1)	(355)	(2239)	(3773)

Group 10654. June 29–July 4. A feeble stream of which the following component remains alone after July 2.
Group 10655. June 30–July 4. A wide pair of spots with companions, developing immediately *sp* Group 10644.
Group 10656. July 1–4. A pair of small spots *np* Group 10644.
Group 10657. July 1–4. Intermittent; one tiny spot on July 1; a small stream on July 3, and a pair of spots on July 4.
Group 10658. July 1–13. A changing stream—in fairly high southern latitude—in which the leader, at first a large regular spot, sub-divides; the preceding portion tends to become a regular spot.
Group 10659. July 2–9. One or two unstable spots scattered over a disturbed area marked by faculæ *n* Group 10658.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
184·357		·983	247·9					93
		·951	299·5					118
		·872	307·9					139
		·798	287·9					210
	10642	·979	256·9	233·6	−12·1	34	170	245*c*
	10646	·930	281·8	225·0	+12·2	7	12	305*f*
G	10655	·932	244·7	221·8	−22·1	37	176	276*c*
	10656	·902	255·7	219·5	−11·4	16	59	373*n*
	10644	·876	246·1	214·3	−19·1	118	657	697*sf*
	10649	·674	293·5	196·9	+17·9	33	163	
	10657	·624	245·1	191·9	−12·5	9	41	
	10650	·312	287·8	174·0	+ 8·5	7	17	
	10654	·093	43·6	152·9	+ 7·1	2	16	
	10658	·862	123·9	103·5	−26·8	104	861	426*c*
		·832	112·9					197
		·928	63·5					299
		·969	101·0					173
July 3			(−1·7)	(156·6)	(+3·2)	(367)	(2172)	(3551)
185·351		·977	282·9					223
		·951	302·4					129
		·905	286·0					587
		·830	276·5					159
	10655	·987	246·8	221·6	−22·2	29	154	1384*sf*
	10644	·955	249·3	213·7	−18·7	91	535	
	10656	·972	258·1	218·6	−10·7	0	11	337*n*
	10649	·810	290·0	196·4	+18·1	24	129	621*c*
	10657	·790	252·1	193·4	−11·9	4	7	94*c*
G	10660	·549	287·9	175·6	+12·5	8	17	
	10650	·523	279·3	174·6	+ 7·7	5	17	
	10653	·362	321·7	157·1	+19·6	0	5	
	10654	·194	285·8	154·2	+ 6·3	3	14	
	10659	·638	120·2	108·5	−16·0	3	8	
	10658	·759	130·5	103·2	−26·9	105	748	294*c*
		·792	115·2					189
		·879	60·0					401
		·904	108·4					227
		·917	124·7					149
		·953	100·6					158
		·974	117·5					176
July 4			(−1·3)	(143·4)	(+3·3)	(272)	(1645)	(5128)
186·382		·964	286·5					448
		·919	277·3					238
		·906	254·2					202
		·900	302·8					84
		·847	237·6					197
	10644	·997	250·6	213·4	−19·0	55	323	732*sf*
	10649	·915	289·9	195·5	+19·5	6	11	437*f*
G	10660	·754	283·2	178·3	+12·1	9	24	142*c*

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
186·382	10661	·735	258·2	176·0	− 6·3	7	15	
G	10650	·684	279·6	172·7	+ 9·0	3	6	
	10658	·653	140·6	102·1	−27·2	93	575	
	10659	·568	126·6	101·5	−16·7	0	5	
		·812	56·8					137
		·818	118·7					169
		·867	103·3					161
		·928	120·6					275
		·937	103·4					155
July 5			(−0·8)	(129·8)	(+3·4)	(173)	(959)	(3377)
187·371		·979	254·7					209
		·976	286·7					679
		·973	292·9					136
		·973	277·3					170
		·939	243·5					171
		·866	250·5					238
		·801	239·5					181
G		·776	226·5					87
	10661	·902	260·3	180·1	− 7·1	2	16	96*f*
	10660	·873	282·1	177·3	+12·2	11	61	416*c*
	10659	·415	145·3	102·5	−16·4	1	4	
	10658	·566	154·7	101·0	−27·3	91	647	
	10662	·974	83·0	39·7	+ 7·6	139	339	438*f*
	10663	·992	101·4	35·0	−10·8	19	130	152*c*
		·853	102·9					104
		·864	120·3					234
		·972	124·6					215
July 6			(−0·3)	(116·7)	(+3·5)	(263)	(1197)	(3526)
188·366		·962	261·9					124
		·952	252·9					148
		·916	244·0					183
		·864	277·7					118
		·851	230·9					104
		·832	291·7					361
G		·756	278·5					125
	10660	·965	281·7	178·5	+12·2	9	17	362*f*
	10658	·513	176·3	101·4	−27·1	87	614	
	10662	·896	83·5	39·9	+ 7·4	144	807	1211*f*
	10663	·939	103·0	35·1	−10·8	45	248	338*c*
		·914	128·9					218
July 7			(+0·1)	(103·5)	(+3·6)	(285)	(1686)	(3292)
189·399		·973	245·2					185
		·929	232·8					147
		·909	276·6					307
		·808	306·8					112
		·797	290·2					142
	10653	·899	288·4	153·6	+18·2	8	26	479*p*
G	10659	·446	218·0	106·5	−16·9	1	5	

Group 10660. July 4–7. Two or three small spots.
Group 10661. July 5–6. One or two unstable spots.
Group 10662. July 6–18. A large group of abnormal development. At first two spots, in close juxtaposition near the east limb, both surrounded and followed by very bright faculæ. The two spots increase, the leader lengthening out in longitude and then dividing on July 11 or 12. The preceding part becomes a regular spot, whilst the following part dissolves as a cluster. The original follower, of somewhat composite structure, develops a double umbra but remains intact.
Group 10663. July 6–15. A stream with a leader that becomes double by July 12. One small spot represents the rear of the group on July 15.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
189·399	10658	·537	200·2	101·8	−26·5	86	472		192·379		·876	112·5					137
G	10662	·772	82·9	39·5	+ 7·8	215	1066	1091*f*	G		·962	80·2					92
	10663	·845	104·7	34·0	−10·3	53	256	303*c*			·991	109·1					134
	10664	·970	76·7	13·8	+13·8	46	204	422*c*	July 11			(+1·9)	(50·4)	(+4·0)	(290)	(1769)	(1255)
		·847	132·4					214									
		·953	130·8					112	193·373		·936	250·4					251
		·962	106·8					198			·908	288·4					195
July 8			(+0·6)	(89·9)	(+3·7)	(409)	(2029)	(3712)			·822	303·2					249
										10658	·946	240·8	103·7	−25·9	27	154	939*sf*
190·355		·962	277·2					216		10665	·244	185·1	38·6	− 9·9	5	31	
		·955	290·8					402		10662	·074	348·6	38·1	+ 8·2	180	1054	
		·910	301·9					115		10666	·155	155·6	33·6	− 4·0	3	7	
	10658	·621	216·6	101·5	−26·4	65	380		G	10663	·276	158·8	31·5	−10·8	31	139	
	10659	·516	223·4	99·0	−18·4	1	7			10667	·218	72·5	25·2	+ 7·8	0	3	
G	10662	·630	81·8	38·3	+ 8·1	167	1075	308*f*		10664	·441	65·2	13·1	+14·4	44	239	
	10663	·714	108·4	33·9	−10·3	31	224			10668	·759	85·9	348·0	+ 5·8	4	7	
	10664	·901	76·4	13·0	+13·9	32	204	1014*c*		10669	·952	111·8	328·1	−19·3	53	207	293*c*
		·865	112·3					132			·889	78·3					79
		·946	110·3					193			·981	69·4					116
July 9			(+1·0)	(77·2)	(+3·8)	(296)	(1890)	(2380)	July 12			(+2·4)	(37·3)	(+4·1)	(347)	(1841)	(2122)
191·362		·979	289·1					298	194·352		·963	252·0					135
		·966	300·2					110			·932	293·3					194
		·875	286·9					107			·918	273·8					115
		·869	299·5					64			·884	253·2					158
	10658	·746	229·2	102·7	−26·1	68	327				·869	235·7					173
	1000j	·445	189·1	68·2	−22·0	3	5				·833	304·3					248
G	10662	·429	79·7	38·8	+ 7·9	199	1110				·786	250·2					205
	10663	·543	116·1	34·3	−10·4	26	153			10658	·990	243·4	102·8	−25·5	48	127	875*sf*
	10664	·780	74·9	13·2	+14·2	44	214	525*f*		*1000k*	·579	233·4	53·2	−16·4	3	13	
		·815	112·2					174		10662	·246	287·9	37·9	+ 8·4	194	1039	
		·947	113·1					185		10666	·203	225·6	32·6	− 4·0	23	40	
		·955	123·5					76	G	10663	·288	208·3	32·2	−10·5	17	48	
July 10			(+1·5)	(63·9)	(+3·9)	(340)	(1809)	(1539)		*1000l*	·156	335·0	28·2	+12·2	0	3	
										10667	·060	342·1	25·4	+ 7·5	0	4	
192·379		·953	294·1					217		10664	·263	47·0	12·9	+14·4	42	230	
		·861	292·5					113		10668	·591	84·6	348·1	+ 6·5	9	17	
		·840	247·2					195		10669	·852	115·2	330·0	−18·8	91	432	414*c*
	10658	·851	235·4	101·7	−26·4	38	280	367*c*		10670	·909	108·0	321·3	−14·4	0	11	112*f*
	10662	·222	71·2	38·2	+ 8·0	186	1070			10671	·984	81·2	304·3	+ 9·4	61	589	316*c*
	10665	·317	136·8	37·8	− 9·4	5	39				·899	92·2					188
	10663	·388	129·5	32·7	−10·4	20	130				·947	128·4					71
G	10664	·620	71·7	13·1	+14·4	41	250				·965	74·6					692
									July 13			(+2·8)	(24·3)	(+4·2)	(488)	(2553)	(3896)

Group 10664. July 8–20. Return of Group 10633. A stable regular spot with small attendants on July 14 and 16.
Group 10665. July 11–15. A small group, preceding Group 10663, not seen on July 13 and 14.
Group 10666. July 12–17. A small stream in which the follower is the last spot to disappear.
Group 10667. July 12–14. A few tiny spots *f* Group 10662.
Group 10668. July 12–14. A pair of spots separating in longitude.
Group 10669. July 12–23. A very large active stream (visible to the naked eye), developing from a few spots seen near the east limb on July 12. The leader becomes a very large spot, being slightly elongated in the direction of the axis of the group which is inclined about 25° to the solar equator. The rear of the stream is made up of two clusters each becoming a composite spot (from July 18–20 the two spots merge into one) containing numerous umbræ. Considering its size the group is short-lived.
Group 10670. July 13–17. One or two unstable spots.
Group 10671. July 13–26. Return or revival of Group 10637. A large stream of spots marking with its attendant faculæ an active area of very great extent. At the front of the stream there are two regular spots, at first almost touching one another and then finally coalescing. The rear of the stream, stretching over several degrees of latitude, comprises a composite spot, a small nearly regular spot, and one or two clusters.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
195·363		·940	298·7					218
		·936	254·7					258
		·929	278·7					68
		·911	239·7					187
	10662	·473	279·4	38·9	+ 8·2	168	904	
	10666	·407	250·5	33·4	− 3·8	13	56	
	10663	·448	237·3	33·3	−10·0	3	14	
	10667	·282	282·1	27·0	+ 7·5	1	7	
	10664	·182	350·3	12·7	+14·6	44	256	
G	10668	·387	82·6	348·3	+ 6·8	3	9	
	10669	·725	120·9	330·1	−18·5	163	805	345*f*
	10671	·950	81·7	298·9	+ 9·4	142	940	800*c*
		·799	111·3					67
		·906	72·9					1023
		·930	124·3					140
		·936	108·7					218
		·968	58·9					90
July 14			(+3·3)	(10·9)	(+4·3)	(537)	(2991)	(3414)
196·402		·975	255·9					141
		·957	241·8					235
		·952	301·0					177
		·901	259·7					163
		·831	220·7					277
	10662	·668	277·1	39·1	+ 8·1	169	817	
	10665	·697	250·8	38·9	− 9·9	4	10	
	10666	·591	257·7	32·5	− 3·6	11	44	
	10663	·543	243·9	26·7	− 9·8	1	5	
	10664	·317	304·3	12·8	+14·5	39	235	
	10669	·585	130·7	329·5	−18·4	176	1119	
	10670	·677	117·3	318·9	−14·5	5	22	
	10671	·843	82·2	299·7	+ 9·1	174	877	861*c*
G	*1001a*	·853	123·9	276·8	−25·6	5	15	106*f*
		·790	70·3					540
		·896	138·0					155
		·900	71·0					420
		·904	117·9					166
		·936	106·9					258
		·958	128·7					158
		·979	71·7					398
July 15			(+3·7)	(357·2)	(+4·5)	(584)	(3144)	(4055)
197·346		·973	259·9					117
		·946	240·9					97
		·895	227·0					243
	1001b	·824	254·0	48·1	−10·4	0	24	240*f*
	10662	·807	277·1	38·5	+ 8·4	122	814	686*c*
	10666	·729	260·6	30·6	− 3·7	9	17	
	10664	·493	291·5	12·8	+14·3	30	200	
	10669	·470	147·2	329·1	−18·8	223	1228	
	10670	·527	126·7	319·0	−14·2	5	12	
G	10671	·731	82·1	297·8	+ 8·8	156	910	648*f*

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
197·346	10672	·841	106·0	289·5	−10·8	26	38	85*c*
G	10673	·927	73·3	276·6	+17·2	0	3	731*f*
		·777	124·4					218
		·824	68·4					643
		·863	127·0					108
		·873	140·4					276
		·889	114·9					162
		·941	87·8					134
		·957	129·4					165
		·975	113·0					128
July 16			(+4·2)	(344·7)	(+4·5)	(571)	(3246)	(4681)
198·358		·948	230·5					285
		·934	241·5					159
		·894	255·0					511
	10662	·925	276·7	39·1	+ 7·9	183	797	890*c*
	10666	·866	263·0	30·5	− 3·7	5	16	170*p*
	10664	·673	286·2	13·0	+14·3	34	180	
	10669	·403	173·3	328·5	−18·9	245	1370	
	10670	·381	148·2	319·4	−14·3	1	5	
	1001c	·379	65·4	310·6	+13·4	3	9	
	1001d	·650	138·7	303·1	−25·1	3	7	
G	10674	·546	56·8	302·1	+21·3	3	5	
	10671	·561	81·0	297·3	+ 8·9	169	914	
	10672	·702	110·6	289·5	−10·8	16	58	
	10673	·839	71·5	274·7	+18·0	7	13	550*c*
		·810	138·0					167
		·928	133·4					184
		·938	116·4					263
		·946	76·2					245
		·980	64·4					69
July 17			(+4·6)	(331·3)	(+4·6)	(669)	(3374)	(3493)
199·354		·973	236·1					102
		·960	264·0					202
		·958	257·0					260
		·784	299·6					110
	10662	·986	277·7	38·9	+ 8·4	113	894	952*f*
	1001e	·825	250·4	20·9	−13·2	0	2	94*f*
	10664	·820	284·4	13·0	+14·5	28	191	300*c*
	10675	·391	266·6	341·1	+ 3·0	9	18	
	10669	·436	203·0	328·4	−18·9	227	1404	
G	10676	·235	18·6	313·6	+17·5	0	3	
	10674	·391	42·3	301·8	+21·2	0	3	
	10671	·354	76·7	297·8	+ 9·1	132	769	
	10672	·522	119·4	290·7	−10·6	8	24	
	10673	·712	70·1	273·7	+17·4	11	33	
		·836	88·4					52
		·887	76·2					257
		·911	120·2					220
		·957	103·9					507
July 18			(+5·0)	(318·1)	(+4·7)	(528)	(3341)	(3056)

Group 10672. July 16–20. A diminutive stream.
Group 10672.* July 22–26. A small stream led by a regular spot.
Group 10673. July 16–23. A stream of small faint spots; nothing is seen on July 22.
Group 10674. July 17–18. A tiny spot.
Group 10675. July 18–21. A small definite spot with tiny followers on July 19.
Group 10676. July 18–19. One tiny, faint spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
200·458		·976	277·2					155	202·355	10680	·946	112·2	210·8	−19·0	11	24	423*c*
		·946	254·5					182	G	10681	·956	76·2	205·2	+14·7	35	266	519*f*
		·912	298·6					111			·791	113·8					271
	10664	·937	283·7	13·4	+14·5	45	182	380*c*			·898	125·4					136
	10677	·731	275·5	350·5	+ 7·3	10	50				·916	54·8					135
	10675	·610	269·1	341·0	+ 3·2	11	40				·931	71·0					521
	10669	·561	224·7	328·1	−19·1	199	1275		July 21			(+6·4)	(278·5)	(+5·0)	(390)	(2035)	(2919)
	10676	·284	329·1	312·3	+18·8	1	4		203·386		·968	272·6					174
G	10671	·137	52·7	297·2	+ 9·5	151	756			10669	·938	248·4	331·2	−18·1	119	816	951*c*
	10672	·361	137·0	289·1	−10·6	5	10			*1001h*	·860	229·4	314·0	−30·7	5	9	134*c*
	10678	·334	72·3	284·7	+10·4	5	15			10671	·551	279·9	298·1	+ 9·7	94	502	
	10673	·531	63·4	273·7	+17·9	19	107			10672*	·585	226·8	291·5	−19·0	3	6	
		·827	80·9					126		10678	·378	295·2	285·4	+14·0	1	10	
		·846	126·7					171		*1001i*	·697	121·9	226·6	−17·6	1	4	
		·859	107·5					290		10680	·854	116·2	210·8	−19·1	7	13	467*c*
		·965	106·5					207	G	10681	·866	76·3	204·7	+14·4	43	264	1099*c*
		·965	80·1					269			·806	68·9					500
July 19			(+5·5)	(303·5)	(+4·8)	(446)	(2439)	(1891)			·933	126·8					188
201·447		·935	295·6					71			·947	122·0					211
		·918	250·2					230			·947	49·8					71
		·882	237·6					169			·961	62·9					73
	10664	·991	284·0	13·6	+14·5	32	166	423*c*			·986	77·1					120
	10677	·893	275·2	353·7	+ 6·8	6	18	186*f*	July 22			(+6·8)	(264·8)	(+5·1)	(273)	(1624)	(3988)
	10675	·789	271·2	342·4	+ 4·0	7	15	111*c*									
	10669	·704	236·2	328·5	−19·1	215	1062		204·357		·931	232·0					162
	10671	·140	303·1	297·1	+ 9·3	157	709			10669	·970	247·4	324·5	−20·3	42	301	667*c*
	10679	·276	339·7	296·2	+19·8	0	3			10671	·722	278·4	298·2	+ 9·7	85	441	877*p*
	10672	·276	173·4	288·6	−11·0	1	4			10672*	·726	236·6	291·9	−19·5	17	56	136*c*
	10678	·131	42·6	285·2	+10·4	15	55			10678	·514	273·4	282·9	+ 6·2	11	28	
G	*1001f*	·209	124·5	280·5	− 1·9	3	7			10673	·429	302·9	274·7	+18·2	0	3	
	10673	·350	49·8	274·2	+17·7	17	95			10680	·739	122·0	210·6	−19·1	7	10	278*f*
	10680	·991	110·0	210·6	−19·0	0	51	176*p*	G	10681	·731	75·3	205·4	+14·2	39	201	443*f*
	10681	·993	76·2	206·4	+14·2	28	244	173*p*			·831	49·0					77
		·787	112·7					536			·861	112·4					113
		·887	63·7					87			·873	62·6					141
		·890	82·8					239			·903	124·9					297
		·915	104·8					220			·937	79·4					179
		·943	116·6					222			·951	100·1					130
		·963	58·2					110			·967	110·8					124
		·972	71·6					336			·987	81·9					364
July 20			(+6·0)	(290·4)	(+4·9)	(481)	(2429)	(3289)	July 23			(+7·2)	(252·0)	(+5·2)	(201)	(1040)	(3988)
202·355	10677	·969	276·0	354·4	+ 7·1	10	28	165*f*	205·394		·979	243·8					319
	10675	·899	272·1	342·5	+ 4·1	6	10	140*f*			·846	223·1					112
	10669	·824	243·0	329·2	−18·8	177	949	367*c*		10671	·871	278·0	299·0	+ 9·6	63	318	1652*c*
	10671	·340	284·2	297·9	+ 9·5	130	645			10672*	·855	243·6	292·2	−19·3	49	227	163*c*
	10679	·391	312·6	296·3	+20·0	3	12			10680	·597	132·4	210·5	−19·0	3	6	
	10678	·162	318·3	284·8	+11·9	7	35			10681	·566	72·0	204·6	+14·4	33	241	
	10673	·232	17·6	274·3	+17·7	7	58			10682	·945	85·0	167·1	+ 6·5	14	69	556*n*
G	*1001g*	·807	84·2	224·6	+ 7·7	4	8	242*p*	G		·780	62·0					102

Group 10677. July 19–21. A small group *p* Group 10675.
Group 10678. July 19–23. A number of small, faint spots scattered in the wake of Group 10671.
Group 10679. July 20–21. Faint markings *n* Group 10671.
Group 10680. July 20–24. Return of Group 10644. A small spot followed by considerable faculæ.
Group 10681. July 20-Aug. 1. A spot at first with slight departure from complete regularity, followed by an insignificant train of small spots which die out after July 28.
Group 10682. July 24–Aug. 3. A persistent stream of individually unstable spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
205·394		·829	79·6					246	208·391	10685	·867	117·7	143·7	−20·6	68	521	324*c*
G		·830	130·4					189	G	10686	·870	75·5	138·0	+15·3	25	82	128*c*
		·888	103·8					187			·844	64·1					86
		·935	119·1					217			·897	85·5					83
		·968	70·6					171	July 27			(+8·9)	(198·6)	(+5·5)	(172)	(984)	(1483)
July 24			(+7·6)	(238·2)	(+5·3)	(162)	(861)	(3914)									
									209·347		·976	293·9					92
206·582		·952	234·0					140			·962	238·1					239
		·942	256·6					101			·885	251·3					319
		·879	217·8					144		10683	·993	285·6	270·3	+16·1	37	244	302*c*
	10671	·978	278·7	301·0	+ 9·6	59	276	1360*c*		10684	·469	298·1	211·5	+17·8	1	4	
	10672*	·958	247·8	292·0	−19·0	40	227	210*c*	G	10681	·358	296·7	205·1	+14·5	21	120	
	10683	·743	286·0	270·1	+15·4	5	10			10682	·287	85·7	169·2	+ 6·6	11	57	
	10684	·283	32·7	213·2	+19·0	1	4			10685	·758	123·5	143·6	−20·5	66	493	166*c*
G	10681	·347	60·3	204·4	+14·9	41	232			10686	·736	74·7	138·8	+15·0	47	215	
	10682	·819	85·8	167·5	+ 6·4	20	76	375*n*			·959	106·2					179
	10685	·988	112·0	144·4	−20·7	87	585	504*c*			·975	77·9					126
		·793	113·4					180	July 28			(+9·3)	(185·9)	(+5·6)	(183)	(1133)	(1423)
		·887	69·9					210									
		·924	122·1					119	210·402		·984	240·8					137
		·970	74·6					149			·962	254·3					486
		·974	65·2					161			·887	266·1					78
July 25			(+8·2)	(222·5)	(+5·3)	(253)	(1410)	(3653)			·879	250·5					210
											·843	280·3					201
207·368		·943	228·7					188			·825	233·7					379
		·801	230·5					258		10681	·573	287·9	206·2	+14·9	20	120	
	10671	·993	278·9	295·8	+ 9·5	37	142	1049*nf*		10682	·057	73·2	168·9	+ 6·6	7	39	
	10672*	·991	249·3	291·7	−19·6	27	144	121*c*		10687	·107	41·5	167·9	+10·3	3	5	
	10683	·853	284·9	270·7	+15·5	31	136	323*p*	G	10685	·616	134·1	144·0	−20·3	50	339	
	10681	·218	39·5	203·9	+15·0	38	181			10686	·548	72·1	139·5	+14·5	113	754	
	10682	·693	85·6	168·2	+ 6·9	14	51			10688	·955	108·6	102·0	−15·8	8	27	294*c*
G	10685	·949	113·9	144·4	−20·6	107	498	524*c*		10689	·973	118·1	100·1	−25·6	15	34	268*c*
		·803	68·3					157		10690	·959	84·0	98·2	+ 7·4	31	167	353*f*
		·877	127·9					142			·858	110·5					255
		·894	73·5					57			·889	78·9					48
		·931	58·1					62			·909	67·1					82
		·946	65·7					105			·953	99·0					93
		·965	75·5					173			·980	69·7					66
		·976	83·7					166	July 29			(+9·7)	(172·0)	(+5·7)	(247)	(1485)	(2950)
July 26			(+8·5)	(212·1)	(+5·4)	(254)	(1152)	(3325)									
									211·345		·949	254·7					173
208·391		·931	294·1					78			·942	241·9					201
		·925	215·4					113			·933	277·9					219
		·901	237·9					189			·822	238·1					295
		·780	247·1					194			·763	218·7					141
	10683	·947	284·7	270·4	+15·7	34	178	288*c*		10681	·733	284·7	206·4	+14·6	20	114	183*p*
	10681	·188	328·8	204·4	+14·7	29	144			*1001j*	·417	289·7	183·2	+13·2	1	4	
G	10682	·493	86·3	169·0	+ 6·6	16	59		G	10687	·244	288·1	173·1	+ 9·8	1	7	

Group 10683. July 25–28. A regular spot, with a small follower, developing quickly between July 25 and 26.
Group 10684. July 25–28. One very small spot seen only on July 25 and 28.
Group 10685. July 25–Aug. 5. A stream with a regular spot as leader, another as follower, and a composite spot which dissolves into a cluster near the follower. The group has almost disappeared by Aug. 2, but two new spots appear on the following day.
Group 10686. July 27–Aug. 6. A very large stream of normal type developing rapidly from a few spots on July 27, which were preceded by a patch of faculæ seen on July 26. The leader, a large regular spot, comes from the fusion of two separate spots, and a double umbra remains until July 31. The decrease of the group is rapid for so large a group, which for some days is visible to the naked eye.
Group 10687. July 29–30. A small spot, one on each day, *n* Group 10682.
Group 10688. July 29–Aug. 5. A stream represented at first by a pair of spots, the larger being in front.
Group 10689. July 29–Aug. 3. Return of Group 10658. A small regular spot dying out.
Group 10690. July 29–Aug. 7. A spot sub-dividing on Aug. 1; there is a small follower on Aug. 1.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
211·345	10682	·199	274·3	171·0	+ 6·4	11	64	
G	10685	·502	149·1	143·6	−19·9	40	220	
	10686	·367	64·1	139·6	+14·5	175	979	
	10691	·777	78·3	108·5	+12·7	4	7	50*c*
	10688	·862	112·1	103·6	−15·7	25	69	290*c*
	10689	·916	121·3	99·4	−25·7	11	37	256*f*
	10690	·872	84·7	98·7	+ 7·4	41	199	658*f*
		·738	112·4					81
		·928	70·7					106
		·939	62·7					181
		·944	102·5					138
July 30			(+10·1)	(159·5)	(+5·7)	(329)	(1700)	(2972)
212·420		·919	238·6					318
		·900	249·4					178
		·817	229·4					256
	10681	·873	283·5	206·4	+14·6	18	108	818*c*
	10682	·422	272·8	170·3	+ 6·4	23	126	
	10685	·440	182·4	146·4	−20·2	24	92	
	10686	·182	34·4	139·2	+14·4	186	1091	
	10691	·617	75·0	107·6	+13·8	4	7	
G	10688	·711	119·0	105·2	−15·7	15	74	246*c*
	10689	·819	127·0	99·0	−25·5	14	44	295*f*
	10690	·725	85·1	98·7	+ 7·5	40	208	385*f*
		·865	105·0					209
		·878	65·0					114
		·940	55·1					133
		·952	112·5					140
		·963	82·8					104
July 31			(+10·6)	(145·3)	(+5·8)	(324)	(1750)	(3196)
213·504		·960	303·6					81
		·942	249·1					209
		·925	236·3					280
		·865	300·9					72
	10681	·966	283·6	206·8	+14·7	17	114	964*f*
	10682	·632	273·0	170·3	+ 6·5	17	47	
	10685	·512	212·5	147·9	−19·9	8	33	
	10686	·226	315·0	140·5	+15·0	169	988	
	10691	·366	73·0	110·2	+11·7	10	25	
G	10688	·560	130·4	104·8	−16·0	20	99	
	10690	·538	85·2	98·4	+ 7·6	30	187	
	10689	·705	136·0	98·3	−25·5	6	16	260*f*
	1001k	·914	86·4	64·8	+ 5·7	2	6	87*f*
	10692	·993	84·4	47·5	+ 6·3	20	73	230*nf*
		·851	110·0					109
		·910	54·9					186
		·944	117·9					138
Aug. 1			(+11·0)	(131·0)	(+5·9)	(299)	(1588)	(2616)
214·583		·983	252·7					109
		·970	290·0					556
G		·961	240·8					251

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
214·583		·918	281·6					171
G		·896	250·2					205
	10682	·808	273·2	170·7	+ 6·1	8	42	404*c*
	10685	·618	225·4	144·6	−20·4	7	21	
	10686	·429	291·2	141·0	+14·4	152	820	
	10691	·126	46·0	111·4	+11·0	5	19	
	10688	·437	150·0	103·6	−16·3	26	110	
	10690	·291	82·7	99·8	+ 7·9	26	148	
	10689	·598	150·2	97·6	−25·5	4	9	
	10693	·710	102·2	72·8	− 4·3	4	6	
	10692	·936	85·9	47·1	+ 5·9	15	62	430*np*
	10694	·970	82·8	40·3	+ 8·5	69	362	647*f*
		·796	86·2					113
		·878	123·0					120
		·919	54·6					168
		·967	102·4					141
Aug. 2			(+11·4)	(116·7)	(+6·0)	(316)	(1599)	(3315)
215·267		·957	284·9					109
	10682	·900	273·8	171·9	+ 6·0	10	30	243*n*
	10685	·671	232·9	141·9	−18·8	17	63	
	10686	·565	286·2	141·5	+14·0	161	794	
	10691	·111	319·5	111·8	+10·8	6	14	
K	10688	·393	170·5	103·7	−16·7	28	132	
	10690	·130	76·9	100·3	+ 7·7	30	183	
	10689	·555	162·5	97·0	−25·9	5	10	
	10693	·585	105·3	73·3	− 3·9	20	48	
	10692	·869	86·7	47·1	+ 5·9	17	85	237*p*
	10694	·922	83·3	40·1	+ 8·5	68	335	545*f*
		·949	105·3					94
Aug. 3			(+11·7)	(107·6)	(+6·0)	(362)	(1694)	(1728)
216·353		·971	277·1					853
		·967	246·1					122
		·935	233·9					150
		·928	291·3					299
		·894	252·5					112
	10685	·816	242·1	142·6	−18·5	17	66	426*s*
	10686	·750	283·6	141·9	+14·2	123	695	
	1001l	·773	247·1	140·1	−13·3	4	12	
	10691	·336	286·1	112·4	+11·1	6	12	
C	10688	·416	205·3	103·9	−16·0	16	50	
	10690	·128	286·1	100·4	+ 8·0	26	120	
	10693	·373	115·4	73·7	− 3·4	11	27	
	1001m	·740	110·6	48·7	−10·7	4	17	
	10692	·715	87·1	47·6	+ 6·4	10	43	
	10694	·799	83·5	40·1	+ 8·9	64	364	590*f*
	10695	·981	105·4	16·7	−13·8	32	99	407*c*
	10696	·981	76·2	13·5	+14·7	13	23	186*c*
		·886	106·9					156
		·926	126·7					148
Aug. 4			(+12·1)	(93·3)	(+6·1)	(326)	(1528)	(3449)

Group 10691. July 30–Aug. 7. A pair of spots on July 30; a single spot on the following day; a very small stream on Aug. 1 in which the leader is the only survivor afterwards.
Group 10692. Aug. 1–10. With Group 10694 a return of Group 10662. A small regular spot.
Group 10693. Aug. 2–6. A small stream; the leader is the sole survivor after Aug 4.
Group 10694. Aug. 2–14. With Group 10692 a return of Group 10662. A stable regular spot with tiny followers on Aug. 6, 7 and 11.
Group 10695. Aug. 4–15. At first small spots which are rather scattered over an area marked by faculæ; by Aug. 7 two groupings of spots have appeared, and these develop into a large stream of approximately normal type that quickly passes through the usual phases.
Group 10696. Aug. 4–11. Return of Group 10664; third appearance. One small spot seen on Aug. 4, 5 and 11.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
217·376		·971	277·9					94	220·474		·984	255·1					126
		·965	290·3					194			·952	279·7					177
		·865	296·1					86			·874	230·5					175
	10685	·925	247·3	143·6	−18·2	12	42	572*s*			·850	274·7					431
	10686	·880	283·5	141·8	+14·8	107	630	512*c*		10697	·854	249·2	94·0	−14·1	5	20	461*p*
	10691	·550	280·9	113·0	+11·1	5	8			10692	·169	273·9	48·5	+ 6·8	5	12	
	10690	·366	275·1	101·3	+ 7·5	27	115		G	10694	·056	328·2	40·5	+ 9·0	54	270	
	10688	·502	223·1	100·6	−15·7	1	8			10699	·255	16·1	34·5	+20·4	3	7	
G	10693	·177	161·5	76·6	− 3·5	5	12			10695	·497	137·1	18·3	−15·4	145	740	
	10692	·526	87·5	48·0	+ 6·5	12	64			10698	·876	114·7	342·2	−18·1	19	71	397*c*
	10694	·635	83·5	40·3	+ 8·8	66	330	340*f*			·967	112·9					274
	10695	·902	109·2	18·5	−14·4	29	84	496*c*			·987	74·8					473
	10696	·910	76·5	13·8	+14·8	6	17	129*c*	Aug. 8			(+13·7)	(38·8)	(+6·3)	(231)	(1120)	(2514)
		·909	131·4					190									
		·963	70·5					84	221·370		·935	275·0					334
		·982	82·5					60			·923	234·0					201
Aug. 5			(+12·5)	(79·8)	(+6·1)	(270)	(1310)	(2757)			·886	293·6					123
											·850	255·4					90
										10697	·939	252·6	94·1	−13·9	18	50	421*p*
218·387		·972	247·0					263		*1001n*	·505	271·8	57·3	+ 6·4	6	10	
		·935	292·6					143		10692	·374	272·4	48·9	+ 6·8	6	17	
	10686	·967	283·8	142·5	+14·9	98	538	646*c*	G	10694	·238	281·4	40·5	+ 8·9	49	262	
	10691	·733	279·1	113·7	+10·9	4	8			10699	·279	329·7	35·5	+20·2	10	24	
	10690	·573	273·7	101·4	+ 7·2	10	51			10695	·398	162·1	19·6	−15·8	98	675	
	10697	·568	235·6	95·1	−13·2	5	14			10698	·775	119·8	342·0	−18·1	9	58	235*c*
	10693	·247	225·1	76·5	− 3·9	3	9				·952	114·3					369
	10692	·313	87·8	48·1	+ 6·6	11	54				·957	77·8					740
G	10694	·439	82·1	40·4	+ 9·0	72	344				·966	61·4					95
	10695	·795	115·2	18·2	−15·7	49	144	362*c*	Aug. 9			(+14·0)	(26·9)	(+6·4)	(196)	(1096)	(2608)
		·795	76·4					112									
		·827	137·1					222	222·345		·968	274·7					221
		·882	70·1					216			·957	255·0					211
		·918	82·7					253			·942	243·1					132
		·930	110·5					211			·938	296·7					154
		·953	137·7					196			·845	258·8					126
Aug. 6			(+12·9)	(66·4)	(+6·2)	(252)	(1162)	(2624)			·826	306·2					95
										10692	·579	272·6	49·3	+ 6·7	3	9	
										10694	·445	277·2	40·5	+ 8·9	40	240	
219·586		·972	283·7					134		10699	·413	306·9	34·6	+20·3	5	28	
		·944	251·6					110	C	10695	·390	194·2	19·8	−15·7	123	668	
		·794	224·9					131		10698	·642	129·2	342·6	−18·4	6	44	
	10691	·885	278·4	113·1	+10·3	5	17	66*f*		10700	·973	87·7	297·4	+ 3·7	38	253	312*f*
	10690	·780	272·8	101·9	+ 6·1	4	14	127*c*			·787	62·4					70
G	10697	·757	246·4	95·8	−13·2	4	14	204*p*			·876	73·8					428
	10692	·039	76·2	48·3	+ 6·8	9	23				·890	86·0					392
	10694	·187	72·6	40·1	+ 9·4	62	343				·901	119·8					539
	10695	·623	124·9	18·6	−15·5	80	435				·947	63·8					166
	10698	·950	111·5	342·3	−18·1	14	33	318*c*			·964	74·7					326
		·910	120·3					95			·974	110·6					219
Aug. 7			(+13·4)	(50·5)	(+6·3)	(178)	(879)	(1185)	Aug. 10			(+14·4)	(14·1)	(+6·4)	(215)	(1242)	(3391)

Group 10697. Aug. 6–9. One or two spots in an area already marked by faculæ.
Group 10698. Aug. 7–17. A small but persistent group of few spots.
Group 10699. Aug. 8–10. A few small spots.
Group 10700. Aug. 10–22. A regular spot diminishing rapidly after Aug. 17, when small companions appear near it.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
223·372		·948	295·7					141	225·358	10704	·755	85·7	285·0	+ 7·6	31	155	88*c*
		·948	265·2					135	G		·840	140·0					67
		·941	250·3					159			·862	71·4					655
		·916	236·1					162			·864	119·0					136
		·808	275·9					287			·937	53·0					96
	10694	·639	276·1	40·3	+ 8·9	54	263				·955	82·3					133
	10695	·492	221·1	20·0	−15·5	107	522				·957	135·6					155
	10696	·263	310·5	12·5	+16·1	1	9				·963	105·6					188
G	10698	·483	147·3	344·7	−17·6	5	15				·970	118·3					115
	10701	·617	60·1	325·1	+23·2	3	9		Aug. 13			(+15·4)	(334·2)	(+6·6)	(235)	(1133)	(3739)
	10702	·906	114·0	299·9	−18·5	13	32	404*c*									
	10700	·895	88·8	297·0	+ 4·0	38	253	513*nf*	226·360		·957	289·9					202
		·779	88·4					423			·938	233·2					130
		·816	69·0					421			·792	283·8					165
		·837	126·4					477		10694	·983	277·6	41·0	+ 8·7	48	181	490*f*
		·924	72·1					691		10695	·904	249·0	22·0	−15·7	59	242	772*c*
Aug. 11			(+14·7)	(0·5)	(+6·5)	(221)	(1103)	(3813)		10706	·757	244·2	5·6	−14·4	12	19	
										10698	·580	226·0	346·9	−17·7	1	3	
224·581		·974	240·0					148		*1002a*	·152	75·2	312·5	+ 8·8	3	18	
		·966	303·2					51		10702	·493	141·6	302·5	−16·3	15	29	
		·940	279·2					291	G	10703	·458	55·8	297·2	+21·0	15	38	
		·885	229·4					127		10700	·405	94·9	297·2	+ 4·2	36	228	
		·873	253·8					89		10705	·565	118·0	290·7	− 9·6	3	8	
		·800	292·2					76		10704	·574	86·5	285·8	+ 7·5	35	173	
	10694	·829	276·1	40·8	+ 8·7	49	241	572*c*		10707	·876	83·0	259·4	+ 9·4	5	11	96*c*
	10695	·662	237·0	19·6	−15·7	94	443				·769	68·0					285
	10698	·410	183·2	345·9	−17·5	8	23				·939	106·7					500
G	10702	·767	120·6	300·6	−18·2	11	50	198*c*			·949	130·1					100
	10700	·739	90·5	296·9	+ 4·1	34	240	297*f*			·956	121·2					210
	10703	·751	67·4	296·7	+21·2	17	35	197*c*	Aug. 14			(+15·8)	(321·0)	(+6·7)	(232)	(950)	(2950)
	10704	·871	83·6	283·6	+ 8·8	25	51	180*c*									
		·783	104·0					73	227·357		·967	236·3					89
		·822	72·6					456			·947	226·7					88
		·927	114·8					115			·920	276·3					130
		·930	72·0					517			·912	265·9					166
		·951	132·3					91			·859	286·3					195
Aug. 12			(+15·2)	(344·5)	(+6·6)	(238)	(1083)	(3478)			·797	275·7					102
										10695	·987	253·4	26·0	−15·1	33	206	960*f*
225·358		·966	275·2					382		10706	·873	248·7	4·9	−14·9	24	70	208*c*
		·942	241·0					134		10698	·618	234·5	339·1	−15·2	3	6	
		·938	255·5					114	G	10702	·409	171·0	304·0	−17·0	10	18	
		·884	291·2					92		10703	·266	35·6	298·4	+19·1	3	5	
		·881	225·0					228		10700	·184	104·7	297·6	+ 4·0	28	186	
	10694	·914	276·6	40·6	+ 8·7	44	228	749*f*		10704	·372	86·1	285·9	+ 7·7	27	142	
	10695	·771	242·8	19·5	−16·0	73	388	407*f*		10707	·724	84·6	261·2	+ 8·5	0	4	69*f*
	10698	·457	207·0	346·7	−17·5	3	5			10708	·985	106·5	230·2	−14·9	0	20	383*c*
	10701	·352	31·0	322·8	+24·0	3	7				·869	139·7					217
	10702	·668	126·8	300·1	−18·1	17	42				·898	110·5					438
	10703	·625	64·4	297·3	+20·9	22	44				·927	80·2					120
	10700	·607	92·1	296·9	+ 4·0	35	238				·932	126·0					170
G	10705	·730	110·2	290·3	− 9·8	7	26		Aug. 15			(+16·1)	(307·8)	(+6·7)	(128)	(657)	(3335)

Group 10701. Aug. 11–13. Two spots on Aug. 11; one on Aug. 13.
Group 10702. Aug. 11–19. A very small stream of which the leader—at first a double spot—is left after Aug. 15.
Group 10703. Aug. 12–16. A small short-lived stream.
Group 10704. Aug. 12–19. A stream, led for a few days by a small regular spot, *f* Group 10700.
Group 10705. Aug. 13–14. A tiny group.
Group 10706. Aug. 14–17. A group forming near the west limb.
Group 10707. Aug. 14–15. A pair of very small spots on Aug. 14; one spot on Aug. 15.
Group 10708. Aug. 15–25. A small irregular stream or cluster. Group 10709 develops northwards.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
228·355		·991	252·5					412	231·351	10700	·691	269·3	298·7	+4·5	22	126	
		·926	288·9					215	G	10704	·495	276·4	284·7	+9·1	3	18	
		·914	277·9					83		10708	·566	130·8	228·7	−15·5	16	39	
	10706	·960	252·3	5·5	−14·8	92	445	285*c*		10709	·542	123·4	227·6	−11·2	28	142	
	10698	·773	241·3	339·6	−17·1	6	11	327*p*		10710	·960	86·5	181·0	+5·3	32	273	461*c*
	10702	·430	202·9	304·6	−16·7	4	8				·834	128·4					168
	10703	·222	343·9	298·3	+19·0	3	5				·865	68·7					395
	10700	·073	231·0	297·8	+4·1	30	176				·936	108·7					167
G	10704	·146	84·1	286·2	+7·5	20	78				·943	124·9					152
	10708	·930	108·7	229·3	−14·7	29	148	585*c*			·955	72·7					234
		·826	115·1					281	Aug. 19			(+17·5)	(255·0)	(+6·9)	(105)	(606)	(3456)
		·864	130·0					169									
		·939	140·5					230									
		·943	66·9					74	232·340		·948	238·2					361
		·959	77·5					207			·931	283·5					693
		·980	68·9					167			·931	268·6					169
Aug. 16			(+16·5)	(294·6)	(+6·7)	(184)	(871)	(3035)			·898	215·6					149
											·890	247·5					278
229·397		·951	279·0					43			·847	300·2					180
	10706	·993	254·8	1·6	−14·1	37	147	70*c*			·775	286·3					307
	10698	·929	247·8	345·2	−17·7	0	7	359*c*		10700	·839	270·4	298·9	+4·1	15	99	187*f*
	10702	·560	226·0	305·6	−16·7	5	16		G	10708	·472	151·3	228·2	−17·6	38	152	
	10700	·307	262·4	298·5	+4·2	28	195			10709	·395	142·0	227·6	−11·4	81	436	
G	10704	·096	275·4	286·3	+7·3	9	44			10710	·872	87·9	181·1	+5·2	36	295	861*c*
	10708	·824	112·8	229·3	−14·4	25	121	291*c*		10711	·972	101·2	167·2	−9·1	29	134	372*f*
		·902	67·1					189			·785	65·8					416
		·913	79·1					263			·904	116·2					225
		·964	119·1					168			·929	130·4					122
Aug. 17			(+16·8)	(280·8)	(+6·8)	(104)	(530)	(1383)			·980	67·5					224
									Aug. 20			(+17·8)	(241·9)	(+6·9)	(199)	(1116)	(4544)
230·468		·970	250·6					252									
		·854	240·6					325									
		·786	223·8					323									
	1002b	·676	289·4	308·6	+18·1	1	6		233·358		·986	271·6					207
	10702	·710	238·3	305·6	−16·6	4	13				·979	285·9					300
	10700	·534	267·0	298·9	+4·1	32	119				·976	234·7					232
G	10704	·338	273·2	286·5	+7·5	8	22				·962	250·3					274
	10708	·681	120·8	229·6	−15·0	12	53				·922	299·8					120
	10709	·699	114·2	226·3	−11·5	28	143				·889	258·3					92
	10710	·999	84·6	178·5	+5·7	51	365	237*p*			·884	286·9					709
		·798	73·8					284		10700	·940	271·7	298·6	+4·1	13	87	388*f*
		·925	123·0					296	C	10708	·424	179·9	228·4	−18·1	34	169	
		·936	69·4					511		10709	·325	175·1	226·9	−11·9	94	656	
Aug. 18			(+17·2)	(266·7)	(+6·8)	(136)	(721)	(2228)		10710	·727	89·3	181·8	+5·3	39	228	533*f*
										10711	·903	103·3	165·9	−8·9	38	234	484*c*
231·351		·929	273·1					76		10712	·990	110·9	149·9	−19·4	14	106	137*c*
		·900	240·5					559		10713	·993	75·5	143·9	+15·2	65	236	277*p*
		·868	224·9					223			·869	132·3					357
		·846	282·5					699			·876	116·7					207
		·823	267·3					136			·919	67·6					210
G	10702	·824	244·5	305·7	−16·4	4	8	186*f*	Aug. 21			(+18·1)	(228·5)	(+6·9)	(297)	(1716)	(4527)

Group 10709. Aug. 18–27. A large stream of normal type developing north of Group 10708. The leader emerges as a small regular spot, is joined by another spot on Aug. 20, with which it coalesces on Aug. 21, and then assumes a nearly regular outline.
Group 10710. Aug. 18–29. A spot, with multiple umbræ, partly breaking up on Aug. 23 and 24, when a few small spots appear in the rear.
Group 10711. Aug. 20–29. A regular spot with a follower at some distance. A bright marking invades the former on Aug. 24, after which its dissolution is rapid.
Group 10712. Aug. 21–Sept. 1. A stream in which the following part has disappeared after Aug. 27. The leader is a regular spot.
Group 10713. Aug. 21–Sept. 3. Return of Group 10686. A large regular spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
234·348		·961	300·0					182
		·934	275·9					246
		·933	287·8					681
		·796	290·4					178
	10700	·993	273·0	298·8	+ 3·8	28	110	199*f*
	10708	·459	207·4	228·1	−17·2	41	100	
	10709	·373	213·0	227·3	−11·3	111	680	
	10714	·524	48·0	189·6	+26·8	2	5	
G	10710	·543	90·5	182·5	+ 5·6	35	221	
	10711	·781	106·8	166·5	− 8·5	40	217	323*c*
	10712	·947	113·9	148·6	−19·9	39	239	510*c*
	10713	·945	76·1	143·6	+15·4	35	251	667*c*
		·802	68·5					155
		·947	126·4					105
		·982	86·9					249
Aug. 22			(+18·4)	(215·4)	(+7·0)	(331)	(1823)	(3495)
235·360		·961	225·9					198
		·943	241·9					166
		·942	279·9					165
		·924	294·1					461
		·828	278·1					149
		·827	244·3					304
		·822	224·8					252
	10708	·588	227·7	228·9	−17·0	25	112	
C	10709	·520	234·3	227·3	−11·2	99	767	
	10714	·423	16·9	193·8	+30·7	1	5	
	10710	·330	93·0	182·8	+ 5·6	31	156	
	10711	·626	113·1	166·5	− 8·5	36	181	
	10712	·858	118·8	148·9	−20·2	40	263	201*c*
	10713	·848	76·4	143·6	+15·2	38	276	364*f*
	10715	·954	73·5	128·4	+17·8	21	197	209*c*
		·916	89·1					219
		·956	112·0					168
Aug. 23			(+18·7)	(202·0)	(+7·0)	(291)	(1957)	(2856)
236·572		·968	295·7					223
		·966	252·2					217
		·954	281·5					157
		·895	230·5					304
		·890	248·7					485
	10708	·761	240·9	229·8	−16·6	35	126	199*p*
	10709	·713	245·6	227·4	−11·8	130	905	
	10710	·064	113·4	182·6	+ 5·6	32	119	
	10711	·419	130·1	167·2	− 8·9	24	133	
	10712	·697	128·9	150·8	−20·1	49	223	
G	10713	·679	74·9	143·3	+15·4	46	237	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
236·572	10715	·849	73·8	127·5	+17·5	97	535	246*c*
G	10716	·992	85·9	103·0	+ 4·9	34	103	141*p*
		·791	90·0					286
		·852	119·7					217
		·941	105·3					174
		·956	76·3					84
Aug. 24			(+19·1)	(186·0)	(+7·1)	(447)	(2381)	(2733)
237·369		·966	252·7					325
		·943	241·5					277
	10708	·851	246·8	229·6	−15·5	22	86	457*c*
	10709	·820	250·2	227·3	−11·8	155	993	
	10710	·130	259·7	182·9	+ 5·7	21	92	
	10711	·314	151·0	166·7	− 8·9	29	137	
G	10712	·588	140·7	152·2	−20·5	34	198	
	10713	·540	72·5	143·4	+15·4	47	266	
	10715	·740	72·6	127·9	+17·6	92	586	228*c*
	10716	·949	87·3	103·8	+ 4·8	22	126	549*nf*
	10717	·981	106·1	99·2	−14·2	5	23	570*c*
		·868	112·7					125
		·960	114·5					113
Aug. 25			(+19·3)	(175·5)	(+7·1)	(427)	(2507)	(2644)
238·389		·974	232·3					139
		·966	279·9					108
		·940	216·6					106
		·855	235·9					164
		·765	225·7					158
	10709	·928	253·6	227·5	−12·3	148	1019	947*c*
	1002c	·811	285·8	216·5	+17·0	2	8	292*f*
	10710	·366	266·4	183·4	+ 5·3	22	83	
	10711	·291	194·8	166·3	− 9·2	13	73	
G	10712	·498	160·3	151·7	−20·9	29	184	
	10713	·348	64·3	143·1	+15·4	47	244	
	10718	·491	137·6	142·1	−14·5	3	10	
	10715	·573	68·4	128·1	+18·1	107	503	
	10716	·846	88·5	104·1	+ 5·0	21	146	406*nf*
	10717	·901	109·5	101·1	−14·1	13	99	514*c*
	10719	·951	102·4	91·9	− 9·4	3	14	360*c*
		·887	71·0					103
		·992	67·6					96
Aug. 26			(+19·6)	(162·0)	(+7·1)	(408)	(2383)	(3393)
239·379		·984	246·3					236
		·918	279·7					165
		·900	290·3					363
		·893	235·3					275
G		·774	287·1					179

Group 10714. Aug. 22–23. One small spot on each day differing somewhat in position, but probably related.
Group 10715. Aug. 23–Sept. 3. A stream, approximately of normal type when fully developed, growing rapidly from a few small spots near the east limb on Aug. 23. On Aug. 24 a composite spot has formed in front, and by Aug. 25 this has become two separate spots. The preceding spot is fairly large and regular; the other smaller and not completely formed. The latter spot shows appreciable drifts in longitude and latitude, and by Aug. 30 it has reached the cluster of spots which make up the rear of the stream.
Group 10716. Aug. 24–Sept. 4. A regular spot dividing into two parts just before extinction. A small spot follows it at some distance on Sept. 3.
Group 10717. Aug. 25–Sept. 2. An ill-formed spot, in a bright patch of faculæ, breaking up after Aug. 28.
Group 10718. Aug. 26–30. Two or three spots *nf* Group 10712.
Group 10719. Aug. 26–29. One or two very small unstable spots; none seen on Aug. 27.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
239·379	10709	·987	256·4	227·5	−12·1	188	863	771*c*	241·349	10721	·434	139·0	106·0	−12·2	1	8	
G	10710	·568	268·5	183·5	+ 5·0	15	51		G	10716	·307	94·0	105·1	+ 5·6	23	101	
	10711	·394	225·5	165·4	− 9·1	15	52			10717	·518	133·9	100·3	−14·4	6	17	
	10712	·473	184·5	151·2	−20·9	29	167			10719	·607	114·2	89·0	− 8·4	0	3	
	10713	·172	34·6	143·1	+15·2	48	245			10722	·959	72·8	48·2	+18·5	9	16	84*c*
	10718	·394	163·1	142·1	−15·0	8	29			10723	·973	83·0	45·6	+ 8·5	30	130	194*n*
	10715	·396	59·8	127·9	+18·1	118	582			10724	·993	70·6	38·0	+20·0	0	37	79*c*
	10716	·698	89·9	104·6	+ 5·2	25	151	258*f*			·778	65·0					230
	10717	·799	114·2	100·3	−14·4	12	86	563*c*			·888	82·0					319
	10720	·951	67·3	75·7	+23·8	11	40	272*c*			·912	90·8					253
		·877	105·7					444			·920	56·3					171
		·934	116·5					195			·956	122·5					144
		·943	126·7					108	Aug. 29			(+20·4)	(122·9)	(+7·2)	(224)	(1183)	(3501)
		·949	58·9					124									
		·969	101·0					171	242·351		·970	253·7					137
Aug. 27			(+19·9)	(148·9)	(+7·1)	(469)	(2266)	(4124)			·963	294·9					199
											·959	242·9					127
240·345		·948	239·8					211			·944	232·1					198
		·946	290·4					397			·940	275·2					544
		·927	230·2					84			·819	252·4					385
		·880	252·4					119		10712	·755	234·5	150·6	−20·5	21	121	
		·844	290·6					440		10713	·560	286·3	143·4	+15·0	35	193	
		·832	225·4					220		10718	·646	235·9	143·2	−15·2	5	27	
	10710	·746	271·4	184·6	+ 5·8	5	12			10715	·362	300·0	128·8	+17·2	75	390	
	10711	·577	243·0	167·4	− 9·1	5	15		G	10721	·339	172·7	107·2	−12·4	5	14	
	10712	·524	207·4	151·1	−20·8	21	168			10716	·078	105·9	105·4	+ 6·0	19	89	
	10713	·184	319·8	143·2	+15·1	34	259			10717	·411	152·6	98·5	−14·2	4	20	
G	10718	·396	192·0	141·1	−15·6	4	10			10722	·875	72·8	48·1	+18·5	5	14	110*f*
	10715	·223	34·8	128·6	+17·6	94	563			10723	·895	84·3	45·8	+ 8·3	28	133	224*f*
	10716	·522	91·4	104·7	+ 5·3	19	123			10724	·941	70·7	38·5	+20·5	7	13	428*nf*
	10717	·653	121·4	101·3	−14·0	18	90				·815	85·1					312
	10719	·704	110·2	94·4	− 8·7	4	11	332*f*			·881	56·5					148
	10720	·894	66·8	72·4	+23·9	6	18	248*c*			·892	109·6					275
		·852	54·9					90			·943	92·5					151
		·924	118·8					117			·987	106·7					312
		·954	57·0					149	Aug. 30			(+20·7)	(109·7)	(+7·2)	(204)	(1014)	(3550)
		·963	81·6					353									
Aug. 28			(+20·2)	(136·2)	(+7·1)	(210)	(1269)	(2760)	243·448		·974	273·2					124
											·966	283·2					129
											·932	257·1					408
241·349		·981	238·7					184			·905	290·3					126
		·935	292·6					395		10712	·882	242·0	151·2	−20·5	19	96	371*f*
		·915	245·2					369		10713	·745	283·6	143·5	+14·9	41	198	
		·896	228·6					293		10715	·579	289·2	129·9	+16·9	68	262	
		·883	258·0					96		10721	·404	214·0	108·5	−12·5	3	5	
		·836	287·4					161		10716	·185	266·6	150·9	+ 6·4	15	77	
	10710	·879	272·7	184·6	+ 5·8	5	9	529*c*		10717	·382	180·6	95·4	−15·1	3	17	
	10711	·737	250·8	167·5	− 8·9	4	7			*1002d*	·360	157·9	87·3	−12·3	3	5	
	10712	·630	224·0	150·7	−20·5	22	140			10722	·733	71·2	48·3	+18·7	4	7	
	10713	·366	293·4	143·2	+15·1	46	231			10723	·752	85·3	46·2	+ 8·3	21	103	409*f*
G	10715	·205	333·5	128·4	+17·7	78	484		G	10724	·830	69·8	39·0	+20·7	8	16	247*f*

Group 10720. Aug. 27–Sept. 7. Intermittent. One or two very small spots; none seen on Aug. 29–31 and Sept. 3–6.
Group 10721. Aug. 29–Sept. 2. One or two tiny spots not seen on Sept. 1.
Group 10722. Aug. 29–31. A single spot.
Group 10723. Aug. 29–Sept. 9. Return of Group 10694; third appearance. A stable regular spot with a distant companion on Sept. 3.
Group 10724. Aug. 29–Sept. 1. A small but definite spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
243·448	10725	·949	109·0	26·9	−15·4	3	15	466*c*
G		·922	89·4					140
		·981	73·5					144
Aug. 31			(+21·0)	(95·2)	(+7·2)	(188)	(801)	(2564)
244·361		·977	259·8					271
		·941	294·6					193
		·812	267·6					158
		·807	235·7					168
	10712	·956	245·8	151·5	−20·5	8	15	514*f*
	10713	·862	283·0	143·2	+14·8	33	182	652*c*
	10715	·735	286·4	130·4	+16·9	30	171	
	10716	·386	270·3	105·9	+ 6·8	14	64	
G	10720	·301	21·9	76·1	+23·3	3	3	
	10723	·599	85·8	46·1	+ 8·3	21	101	
	10724	·702	68·0	39·3	+20·5	3	6	
	10725	·862	111·6	27·4	−14·5	5	9	300*s*
	10726	·972	105·6	9·2	−13·2	19	75	312*f*
		·806	71·1					168
		·905	74·0					118
		·920	113·3					457
		·934	128·8					131
		·960	88·0					180
		·977	68·1					46
Sept. 1			(+21·2)	(83·1)	(+7·2)	(136)	(626)	(3668)
245·393		·951	248·1					326
		·925	313·9					118
		·919	270·7					214
		·894	257·4					101
		·873	241·4					157
	10713	·955	283·1	143·2	+14·6	38	169	514*c*
	10715	·875	285·1	131·1	+16·7	35	210	465*n*
	10721	·680	242·5	107·5	−12·6	1	3	
	10716	·592	271·7	105·9	+ 6·8	14	64	
	10717	·598	230·9	98·2	−15·8	3	11	
G	10720	·305	339·3	76·2	+23·6	3	6	
	10723	·391	85·9	46·4	+ 8·2	17	98	
	10725	·735	117·5	27·3	−14·5	7	13	
	10726	·897	108·6	8·9	−13·1	12	60	454*f*
		·809	70·7					100
		·822	114·5					188
		·877	124·5					152
		·878	87·3					137
		·919	135·1					115
		·927	68·9					120
		·959	80·5					127
Sept. 2			(+21·5)	(69·5)	(+7·2)	(130)	(634)	(3288)

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
246·387		·971	248·0					234
		·957	311·7					76
		·957	274·1					109
		·803	245·6					411
	10713	·997	283·7	143·1	+14·1	30	238	558*c*
	10715	·958	285·1	130·7	+16·4	24	172	685*n*
G	10727	·826	281·1	112·5	+13·2	8	28	104*p*
	10716	·744	273·1	104·7	+ 7·1	11	34	182*p*
	10728	·699	255·4	98·1	− 7·5	24	114	
	10729	·245	233·9	67·8	− 1·2	3	10	
	10723	·170	84·0	46·6	+ 8·2	18	100	
	10725	·589	126·9	27·4	−14·4	3	7	
	10726	·782	113·0	9·0	−12·9	11	69	394*f*
	10730	·981	107·6	340·4	−15·6	30	57	266*c*
		·953	114·9					178
Sept. 3			(+21·7)	(56·4)	(+7·2)	(162)	(829)	(3197)
247·349		·973	288·8					266
		·879	248·5					744
	10727	·923	281·6	111·7	+13·5	23	70	93*c*
	10716	·883	274·2	105·9	+ 7·1	0	10	480*f*
	10728	·821	255·6	96·7	− 7·5	28	152	142*c*
	10731	·531	274·0	75·8	+ 8·2	3	5	
	10729	·445	253·2	68·7	− 0·9	18	56	
G	10723	·057	282·8	46·8	+ 7·9	16	93	
	10732	·350	46·4	27·9	+20·9	0	6	
	10726	·646	120·2	8·8	−13·0	13	70	
	10730	·906	111·3	342·5	−15·8	19	66	455*c*
		·868	120·0					159
		·955	67·6					68
		·979	78·4					190
Sept. 4			(+22·0)	(43·6)	(+7·2)	(120)	(528)	(2597)
248·355		·929	251·2					651
		·928	274·6					391
	10727	·983	282·8	111·0	+13·9	5	40	192*c*
	10728	·930	258·9	97·1	− 7·5	24	128	287*c*
	10731	·758	273·8	79·9	+ 7·6	4	17	
	10729	·662	260·4	71·0	− 0·9	10	55	
G	10723	·286	272·8	47·1	+ 7·7	23	89	
	10732	·228	2·4	29·8	+20·3	3	7	
	10726	·491	133·4	9·0	−12·9	14	70	
	10730	·796	115·8	342·5	−15·5	14	46	256*c*
	1002c	·949	73·8	317·8	+17·6	3	8	649*s*
		·942	64·3					93
		·968	112·6					221
Sept. 5			(+22·2)	(30·4)	(+7·2)	(100)	(460)	(2740)

Group 10725. Aug. 31–Sept. 6. Return of Group 10695. Intermittent; two small spots on Aug. 31, of which one survives until Sept. 3; a dot appears in its place on Sept. 6.
Group 10726. Sept. 1–12. Probable return of Group 10706. A stable regular spot.
Group 10727. Sept. 3–5. A pair of small spots.
Group 10728. Sept. 3–6. A group forming near the west limb.
Group 10729. Sept. 3–7. A short-lived stream; the leader alone survives on Sept. 6.
Group 10730. Sept. 3–9. A feeble stream.
Group 10731. Sept. 4–5. One small spot on each day—not identical in position but probably related.
Group 10732. Sept. 4–5. A close pair of small spots on Sept. 4; a wide pair on Sept. 5.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
249·351		·976	254·6					396
		·971	277·2					135
		·858	275·1					105
		·804	295·1					190
	10728	·987	261·1	96·5	− 7·5	27	179	239*p*
	10729	·843	264·2	74·0	− 0·9	8	17	114*f*
	10723	·498	272·8	47·2	+ 7·7	15	95	
	10725	·407	200·3	25·6	−15·1	3	4	
G	10726	·371	158·4	9·2	−12·9	15	69	
	10730	·660	124·4	342·9	−15·8	18	45	
	10733	·992	75·6	292·8	+15·2	34	309	228*p*
		·866	78·8					936
		·941	119·4					272
		·942	107·4					106
		·961	64·8					48
		·972	86·8					165
Sept. 6			(+22·4)	(17·2)	(+7·3)	(120)	(718)	(2934)
250·358		·957	256·2					107
		·956	274·8					114
		·915	299·2					145
		·882	232·3					194
		·861	276·6					111
	10729	·946	266·2	74·4	− 1·1	11	21	199*f*
	10720	·927	290·2	72·7	+21·4	7	12	141*c*
	10723	·682	273·1	47·1	+ 7·4	18	95	
	10734	·496	294·9	32·1	+18·4	8	34	
G	10726	·357	194·4	9·1	−12·9	10	67	
	10730	·518	138·3	343·0	−15·8	13	38	
	10733	·952	77·3	290·7	+14·3	100	606	538*c*
		·778	78·4					670
		·836	123·8					318
		·865	109·8					179
		·880	88·8					235
		·922	59·7					202
		·939	123·9					276
		·957	70·0					287
Sept. 7			(+22·6)	(3·9)	(+7·3)	(167)	(873)	(3716)
251·364		·982	291·8					363
		·975	266·0					274
		·950	301·2					179
		·948	239·4					122
		·914	281·0					412
		·905	265·3					230
		·879	253·1					118
G		·866	305·6					78

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
251·364	10723	·836	273·8	47·6	+ 7·2	13	74	388*sf*
G	10734	·670	289·7	32·1	+18·5	6	21	
	10726	·464	222·8	9·4	−12·9	8	48	
	10730	·413	163·6	343·7	−16·0	3	17	
	1003a	·499	139·5	331·0	−15·4	3	5	
	10735	·453	175·5	324·0	+13·0	3	8	
	1003b	·600	99·2	314·4	+ 0·4	3	9	
	10736	·592	85·6	314·1	+ 8·5	44	152	
	10733	·851	77·2	291·8	+14·7	129	648	575*c*
		·749	90·7					161
		·841	129·6					445
		·852	69·0					342
		·861	91·8					176
		·908	56·8					165
		·959	112·4					451
		·959	67·8					322
		·960	129·0					167
Sept. 8			(+22·8)	(350·6)	(+7·3)	(212)	(982)	(4968)
252·552		·984	277·3					211
		·973	254·3					141
		·964	291·1					142
		·879	224·9					114
		·824	238·9					272
		·821	252·9					173
	10723	·949	275·0	46·9	+ 7·1	6	35	440*f*
	10734	·848	287·7	33·3	+18·8	4	27	132*c*
C	10726	·644	238·9	9·3	−13·4	10	46	
	10730	·424	201·5	344·2	−16·0	2	7	
	10735	·234	63·5	322·5	+13·1	4	12	
	10736	·381	84·9	312·4	+ 8·7	63	368	
	10733	·680	76·2	292·0	+14·8	128	899	166*f*
	10737	·878	117·3	279·1	−19·8	2	7	367*c*
		·773	62·3					215
		·924	65·3					214
		·964	105·8					163
Sept. 9			(+23·1)	(334·9)	(+7·3)	(219)	(1401)	(2750)
253·346		·945	278·0					409
		·912	289·1					356
		·892	226·7					144
		·888	245·8					639
		·874	270·0					46
	10726	·755	245·2	9·1	−13·2	12	45	
	10738	·426	277·7	349·8	+ 9·8	3	4	
	10735	·108	27·9	321·5	+12·7	1	3	
	10736	·208	82·5	312·5	+ 8·7	80	370	
G	10733	·532	74·5	292·7	+14·3	161	1096	

Group 10733. Sept. 6–19. A very large, active, and complex stream. The group is developing as it rounds the eastern limb, when it is led by a large and nearly regular spot that remains the most stable component. On Sept. 9 a small spot appears in front, and this has grown and becomes regular by Sept. 12; between Sept. 13 and 15 it expands considerably and changes shape. Meanwhile transformations occur in the middle and rear of the stream; a large composite formation is conspicuous on Sept. 11 and 12; this diminishes and tends to break up, but it has reformed as a composite spot on Sept. 16.
Group 10734. Sept. 7–9. A small cluster.
Group 10735. Sept. 8–13. A disturbed area, *np* Group 10736, producing small unstable spots.
Group 10736. Sept. 8–16. A stream of normal type with marked separation between leader and follower.
Group 10737. Sept. 9–11. A small spot not visible on Sept. 10.
Group 10738. Sept. 10–13. A pair of dots on Sept. 10; a closer pair on Sept. 13.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928			°	°	°			
253·346		·795	123·9					250	257·374		·984	278·9					93
G		·859	65·2					171			·964	250·6					353
		·949	106·8					242			·807	281·6					284
Sept. 10			(+23·3)	(324·5)	(+7·2)	(257)	(1518)	(2257)			·766	230·3					277
										10736	·670	274·2	313·6	+ 8·2	34	154	
254·351		·979	280·0					173		10733	·404	290·0	294·3	+14·6	162	989	
		·974	290·3					319	G	10739	·677	114·0	232·5	−10·3	63	288	214*f*
		·960	248·1					477			·765	69·9					156
		·933	232·3					216			·856	71·6					147
	10726	·874	250·3	8·7	−13·4	9	23	356*sf*			·940	120·6					287
G	10735	·216	298·1	322·4	+12·8	3	18				·944	73·9					243
	10736	·041	310·0	313·0	+ 8·7	76	361				·972	87·6					211
	10733	·332	65·3	293·1	+14·8	179	1203		Sept. 14			(+24·0)	(271·3)	(+7·2)	(259)	(1431)	(2265)
	10737	·679	129·6	277·6	−19·6	3	10										
	10739	·986	101·6	232·6	−10·1	67	289	301*c*									
		·937	113·0					399	258·443		·918	281·3					423
Sept. 11			(+23·5)	(311·2)	(+7·2)	(337)	(1904)	(2241)			·884	292·2					139
											·866	249·4					178
255·361		·962	288·7					113			·857	236·2					173
		·957	240·6					146			·811	283·5					150
		·954	229·1					277			·801	219·3					159
		·909	215·9					113		10736	·838	274·8	314·4	+ 7·9	32	182	290*c*
		·802	240·8					523	G	10733	·622	285·0	295·5	+14·9	178	1085	
	10726	·960	253·7	8·9	−13·4	9	25	432*sf*		10739	·501	125·6	232·8	−10·3	45	235	
	10735	·505	284·5	327·8	+13·5	5	21				·824	78·8					89
	10736	·255	275·9	312·6	+ 8·5	62	308				·907	124·8					199
G	10733	·159	35·0	292·4	+14·7	175	1060				·909	65·8					214
	10739	·924	104·2	232·5	−10·1	61	316	673*sf*			·921	103·4					128
		·854	117·3					427			·930	85·2					319
		·917	78·6					190	Sept. 15			(+24·2)	(257·2)	(+7·2)	(255)	(1502)	(2461)
		·944	139·1					186									
		·952	127·1					200									
		·959	116·7					157	259·459		·979	282·9					281
		·971	69·2					277			·944	267·8					162
Sept. 12			(+23·7)	(297·8)	(+7·2)	(312)	(1730)	(3714)			·924	283·6					169
											·923	252·6					130
											·919	241·4					213
256·370		·977	253·0					145			·913	293·3					120
		·952	290·6					116			·885	228·8					150
		·943	228·6					182			·860	214·9					127
		·897	246·9					526			·838	271·0					139
	10738	·927	278·3	353·1	+10·4	5	17	76*f*		10736	·958	275·8	317·5	+ 7·6	35	88	291*c*
	10735	·592	279·3	320·9	+11·3	2	6		G	10733	·784	283·3	295·6	+14·9	241	1314	258*p*
	10736	·472	274·5	312·8	+ 8·5	46	286			10739	·355	148·0	232·7	−10·4	34	219	
	1003c	·275	264·7	300·4	+ 5·5	2	5				·825	88·0					416
G	10733	·197	314·7	292·8	+15·1	146	974				·839	130·0					236
	10739	·819	107·9	232·3	−10·2	55	324	677*sf*			·844	102·8					167
		·772	122·3					192			·845	66·9					303
		·903	132·9					212			·934	88·8					77
		·913	67·8					195			·949	56·0					170
		·916	145·9					111			·950	118·6					142
		·926	121·5					161			·967	103·0					195
		·932	76·9					137			·972	71·4					142
Sept. 13			(+23·9)	(284·5)	(+7·2)	(256)	(1612)	(2730)	Sept. 16			(+24·4)	(243·7)	(+7·2)	(310)	(1621)	(3888)

Group 10739. Sept. 11–23. Return of Group 10709. A stable regular spot with small dots *sf* on Sept. 16.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
260·368		·979	277·5					190
		·976	286·3					126
		·972	255·8					142
		·967	242·1					174
		·940	230·3					294
		·938	296·1					154
		·931	273·9					128
		·815	237·3					435
G	10733	·886	282·8	294·7	+14·7	220	1362	578*c*
	10739	·303	183·7	232·8	−10·4	34	200	
	10740	·926	103·4	166·0	− 9·5	7	7	325*c*
	10741	·986	107·9	154·2	−16·2	41	269	210*c*
	10742	·997	74·3	144·5	+16·1	85	207	145*c*
		·935	122·9					250
		·942	68·7					206
		·982	80·4					205
Sept. 17			(+24·5)	(231·7)	(+7·2)	(387)	(2045)	(3562)
261·418		·973	265·0					168
		·913	242·5					196
	10733	·969	283·5	294·7	+14·9	152	1466	1312*c*
	10743	·675	288·3	259·9	+17·5	9	28	
	10739	·395	220·9	233·1	−10·4	29	187	
	10740	·808	107·3	166·6	− 9·5	0	4	163*c*
	10741	·925	110·8	153·9	−16·1	44	240	517*c*
G	10744	·989	109·2	139·5	−17·7	102	447	879*c*
	10742	·980	75·6	138·0	+15·6	241	1539	641*c*
		·875	69·7					135
		·901	130·1					201
		·920	82·9					170
		·929	52·5					75
		·973	65·0					183
Sept. 18			(+24·7)	(217·9)	(+7·1)	(577)	(3911)	(4640)
262·433		·967	294·5					139
		·967	244·9					218
		·873	242·2					149
		·853	299·7					133
		·770	237·9					229
	10733	·997	284·9	291·3	+15·3	55	329	566*f*
	10743	·839	286·5	261·9	+17·7	19	115	182*c*
	10739	·557	238·5	233·3	−10·7	27	157	
	10741	·823	115·3	153·9	−16·1	44	236	267*sf*
	10742	·906	75·7	138·9	+15·9	206	1426	527*c*
G	10744	·943	112·3	138·0	−18·2	155	882	942*c*

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
262·433	10745	·985	75·6	123·2	+15·4	39	533	236*c*
G		·800	80·9					127
		·867	138·4					191
		·901	65·3					115
		·977	63·8					165
Sept. 19			(+24·9)	(204·5)	(+7·1)	(545)	(3678)	(4186)
263·368		·951	252·0					187
		·946	296·6					144
		·858	243·3					178
	10743	·936	286·4	262·4	+17·8	19	78	191*c*
	10739	·703	246·9	233·1	−10·7	29	161	
	10741	·701	122·0	154·0	−16·2	44	256	
G	10742	·795	75·3	139·3	+16·0	229	1339	401*c*
	10744	·859	116·4	138·0	−18·3	143	869	646*c*
	10745	·928	76·0	123·2	+15·6	60	407	611*f*
		·925	63·3					248
		·948	84·6					122
		·956	107·2					143
		·982	100·9					220
Sept. 20			(+25·0)	(192·1)	(+7·1)	(524)	(3110)	(3091)
264·358		·971	298·6					100
		·933	244·4					208
		·891	222·5					142
	10743	·989	287·1	262·2	+17·9	13	72	369*f*
	10739	·838	252·2	233·2	−10·7	23	159	188*sf*
	10741	·557	133·1	154·2	−15·8	39	234	
	10742	·641	73·4	139·5	+16·0	209	1309	
G	10744	·755	123·1	137·2	−19·1	129	731	327*f*
	10745	·828	75·9	122·8	+15·7	42	335	603*f*
	10746	·987	105·8	100·7	−14·3	12	103	441*n*
		·919	125·1					136
		·924	103·3					173
		·968	116·7					88
		·972	80·9					196
Sept. 21			(+25·1)	(179·1)	(+7·1)	(467)	(2943)	(2971)
265·362		·920	229·9					118
		·830	290·3					109
	10739	·937	255·8	233·1	−10·7	38	164	413*sf*
	10741	·435	153·4	154·2	−16·0	33	195	
	10742	·465	68·7	139·1	+16·0	213	1100	
	10744	·598	131·9	138·1	−17·3	108	781	
G	10745	·686	74·2	122·6	+15·9	41	314	260*f*

Group 10740. Sept. 17–18. One very small spot.

Group 10741. Sept. 17–29. A spot, crossed by a bright marking, appreciably elongated in a direction E–W on Sept. 21, but becoming circular after a small part has broken away on the *f* side. At the east limb the spot is followed by a sinuous line of faculæ.

Group 10742. Sept. 17–30. Revival of Group 10713. A very large regular spot followed by two spots spreading one into the other, as at first, or linked together by numerous companion spots. The following and more southern of these two spots is fairly stable throughout; the other becomes a suitable spot for separate measurement on Sept. 24. The group is a naked-eye object.

Group 10743. Sept. 18–21. A small group of stream type.

Group 10744. Sept. 18–30. An irregular stream of considerable extent with the largest spot at the rear. The cluster of spots, excentrically situated north of the main stream, is perhaps a separate but intermingling group.

Group 10745. Sept. 19–29. Revival of Group 10715. A fairly large spot, with double umbra, separating into two parts on Sept. 27. Small spots in front form an appreciable cluster on Sept. 25–26.

Group 10746. Sept. 21–Oct. 3. An unusually large and complicated group of stream type. The group appears to be developing in the normal manner when it comes round the east limb, but a remarkable change, which completely alters the group, takes place between Sept. 24 and 25. The group then comprises a fairly stable regular spot as leader, closely followed by a shapeless mass of umbral points and penumbral markings, somewhat arbitrarily separated from the leader on some days for purposes of measurement. The following part of the group is made up of irregularly shaped spots arranged nearly as a square with its diagonal along the axis of the stream. The decline of the group is rapid.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
265·362	10746	·943	108·3	98·3	−14·6	87	534	475*c*
G	10747	·945	101·9	96·7	− 8·8	6	20	202*c*
		·813	107·8					105
		·910	87·0					181
		·937	73·3					237
Sept. 22			(+25·3)	(165·8)	(+7·0)	(526)	(3108)	(2100)
266·418		·953	236·5					147
		·921	256·2					108
		·915	290·3					317
		·841	228·7					289
	10739	·994	258·1	233·9	−10·9	18	127	386*sf*
	10741	·394	185·8	154·3	−16·0	39	227	
	10742	·272	54·3	138·7	+15·9	217	1208	
G	10744	·486	151·4	137·8	−18·4	116	763	
	10745	·501	70·5	122·7	+15·7	61	318	
	10746	·846	113·0	98·3	−15·2	260	1278	632*c*
	10747	·851	105·0	95·8	− 8·9	4	34	294*c*
		·855	81·5					129
		·986	65·8					105
		·988	82·2					85
Sept. 23			(+25·4)	(151·9)	(+7·0)	(715)	(3955)	(2492)
267·387		·990	258·8					244
		·974	222·5					154
		·957	292·2					219
		·950	237·3					240
		·931	213·8					128
		·930	280·9					174
		·895	229·3					161
		·869	247·7					145
		·819	270·1					165
G	10741	·467	213·5	154·6	−16·1	22	161	
	10742	·156	0·8	139·0	+15·9	190	1016	
	10744	·443	175·5	137·0	−19·1	87	658	
	10745	·312	59·1	123·0	+15·9	54	276	
	10746	·720	119·1	98·6	−15·1	224	1588	
		·924	95·5					159
		·935	66·5					186
		·942	81·7					344
Sept. 24			(+25·5)	(139·1)	(+7·0)	(577)	(3699)	(2319)
268·620		·947	290·8					156
		·945	232·4					202
		·923	273·4					557
		·852	296·2					127
	10741	·631	233·5	154·6	−16·1	31	136	
G	10742	·311	301·8	138·7	+16·0	196	1081	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
268·620	10744	·491	209·1	137·3	−18·6	93	409	
G	10745	·156	355·2	123·6	+15·8	54	268	
	10748	·220	37·9	114·7	+16·8	2	7	
	10746	·541	132·9	98·6	−15·2	412	2321	
		·816	84·1					356
		·835	65·4					192
		·872	97·8					147
		·942	84·1					270
		·943	122·6					126
		·946	72·2					357
		·950	104·8					106
Sept. 25			(+25·6)	(122·8)	(+6·9)	(788)	(4222)	(2596)
269·361		·959	274·1					233
		·923	294·8					254
		·901	233·4					148
		·883	252·5					297
		·865	218·0					145
	10741	·734	240·1	154·4	−16·3	23	129	
	10742	·448	292·9	138·3	+16·3	174	1085	
	10744	·576	221·8	136·9	−19·1	73	310	
	10745	·238	312·0	123·6	+15·9	49	225	
G	10748	·167	352·9	114·2	+16·4	5	28	
	10746	·449	147·8	98·6	−15·6	383	2460	
	10749	·480	117·3	87·7	− 6·4	7	26	
	1003d	·759	100·4	64·8	− 3·3	2	3	
		·805	85·3					128
		·905	71·0					403
		·926	106·1					161
		·926	85·3					426
		·928	121·1					144
		·982	70·8					202
Sept. 26			(+25·7)	(113·0)	(+6·9)	(716)	(4266)	(2541)
270·350		·940	236·7					113
		·938	258·4					217
		·924	223·0					188
	10741	·856	246·2	154·5	−16·3	21	125	479*sf*
	10742	·633	286·8	138·9	+16·1	166	957	
	10744	·712	233·8	137·4	−19·4	54	238	
	10745	·420	294·0	123·4	+16·1	26	116	
G	10748	·297	301·8	115·1	+15·5	1	4	
	10746	·385	177·7	99·1	−15·7	381	2587	
	10749	·303	137·6	88·2	− 6·2	4	7	
	10750	·885	73·0	37·1	+18·2	12	58	356*c*
		·784	70·4					176
		·883	82·8					337
		·944	109·6					296
Sept. 27			(+25·8)	(100·0)	(+6·8)	(665)	(4092)	(2162)

Group 10747. Sept. 22–23. Possibly the return of Group 10728. One or two outlying spots to Group 10746.
Group 10748. Sept. 25–27. Small spot *f* Group 10745.
Group 10749. Sept. 26–29. A pair of small spots on Sept. 26 and 27; one spot on Sept. 29.
Group 10750. Sept. 27–Oct. 4. A small stream with the largest spot at the rear.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
271·367		·963	226·6					221
		·913	284·5					324
		·895	269·3					122
	10741	·945	250·3	154·2	−16·1	23	119	539*sf*
	10742	·793	285·0	139·2	+16·0	150	764	317*c*
	10744	·831	240·3	136·6	−20·0	40	198	785*c*
C	10745	·587	289·0	121·8	+16·6	8	35	
	10746	·431	209·3	99·2	−15·4	295	2248	
	10751	·592	123·5	56·3	−13·1	8	22	
	10750	·783	71·2	35·2	+18·9	20	102	365*c*
		·753	83·5					226
		·855	121·9					137
		·870	53·9					160
		·889	109·3					345
		·960	123·7					213
Sept. 28			(+25·9)	(86·6)	(+6·8)	(544)	(3488)	(3754)
272·409		·972	283·6					230
		·735	287·4					200
	10741	·994	252·8	154·0	−16·1	18	57	305*sf*
	10742	·914	284·8	139·5	+16·3	116	678	570*c*
	10744	·921	244·4	134·9	−20·3	22	112	806*c*
C	10745	·767	287·2	122·8	+17·5	3	14	
	10746	·573	230·4	100·0	−15·3	234	1933	
	10749	·327	227·6	86·8	− 6·1	0	2	
	10751	·424	142·7	57·6	−13·1	7	18	
	10750	·651	68·4	33·1	+19·1	22	130	
		·816	116·6					169
		·929	112·6					176
		·940	127·1					160
Sept. 29			(+26·0)	(72·8)	(+6·8)	(422)	(2944)	(2616)
273·374		·915	300·7					178
		·852	252·7					229
		·843	285·7					759
	10742	·978	285·1	139·2	+16·1	113	561	880*c*
	10744	·971	246·1	132·1	−21·2	18	59	764*sp*
	10746	·719	240·8	100·6	−15·4	247	1799	
G	10752	·334	229·9	74·9	− 5·9	1	7	
	10751	·347	175·7	58·6	−13·4	2	10	
	10753	·463	144·7	44·0	−15·7	5	25	
	10750	·499	62·6	32·3	+19·1	33	113	
		·855	112·9					111
		·881	131·6					206
		·969	112·3					257
Sept. 30			(+26·1)	(60·1)	(+6·7)	(419)	(2574)	(3384)

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
274·380		·992	242·9					126
		·942	284·4					754
		·935	271·9					78
		·933	295·0					214
		·931	256·5					265
		·925	303·7					179
		·830	275·9					228
		·774	256·8					132
G	10746	·849	247·0	100·8	−15·4	191	1614	748*c*
	10752	·529	246·5	75·9	− 6·3	2	4	
	10751	·425	216·3	61·7	−13·5	4	7	
	10753	·387	173·3	44·1	−15·8	24	77	
	10750	·330	47·1	32·0	+19·4	16	97	
		·766	118·4					197
		·903	116·9					423
		·924	136·3					230
		·958	79·7					365
Oct. 1			(+26·1)	(46·8)	(+6·7)	(237)	(1799)	(3939)
275·554		·984	284·8					329
		·941	274·3					185
		·893	261·8					168
		·889	283·8					95
	10746	·959	251·7	101·9	−15·4	196	1110	1203*c*
	10753	·435	208·6	43·8	−15·9	31	143	
C	10750	·232	2·4	30·7	+19·9	13	100	
	10754	·881	75·0	329·1	+16·3	4	14	897*sf*
	10755	·922	108·8	327·1	−14·5	5	17	178*f*
		·831	124·6					370
		·885	142·2					140
		·944	66·0					158
Oct. 2			(+26·2)	(31·3)	(+6·6)	(249)	(1384)	(3723)
276·368		·961	261·3					119
		·956	279·0					113
	10746	·980	249·8	96·0	−18·2	42	271	1161*c*
	10753	·539	224·9	43·9	−16·3	13	56	
	10750	·285	324·8	30·6	+19·9	20	86	
	10754	·774	74·6	329·8	+16·1	3	7	112*c*
G	10755	·841	112·2	327·2	−14·6	10	17	167*f*
	10756	·813	84·0	325·9	+ 8·7	11	26	353*c*
	10757	·986	76·8	299·3	+14·1	53	310	537*c*
		·910	68·0					112
		·968	119·4					122
Oct. 3			(+26·2)	(20·6)	(+6·6)	(152)	(773)	(2796)

Group 10751. Sept. 28–Oct. 1. A small stream with marked separation between leader and follower.
Group 10752. Sept. 30–Oct. 1. One small spot.
Group 10753. Sept. 30–Oct. 5. A short stream with the largest spot in the rear. On Oct. 5 a spot marks the preceding part of the disturbance.
Group 10754. Oct. 2–5. A small spot in the same area of faculæ containing Group 10756.
Group 10755. Oct. 2–4. A small well-defined spot.
Group 10756. Oct. 3–6. Two or three small spots.
Group 10757. Oct. 3–15. Return of Group 10733. Two regular spots—the larger one leading—keeping the same distance apart in longitude. Small companions, present on most days southwards, make up a wide cluster on Oct. 11 and 12. A large area of faculæ accompanies the group.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
277·388		·977	248·7					179
		·882	279·1					187
		·842	294·1					106
		·819	250·2					131
	10753	·678	235·9	42·9	−17·0	7	12	
	10750	·441	302·9	30·2	+19·8	6	40	
	1003e	·554	204·1	21·4	−24·0	4	24	
	10754	·605	71·5	330·6	+16·3	4	7	
G	10756	·642	83·1	327·0	+ 9·4	5	14	
	10755	·712	118·5	326·9	−14·9	5	13	160*f*
	1003f	·730	86·5	320·1	+ 7·0	1	3	
	10757	·924	77·4	299·0	+14·1	60	361	1010*c*
		·793	78·7					237
		·854	64·4					116
		·902	105·7					102
		·906	119·3					177
		·926	91·4					81
		·968	67·5					282
Oct. 4			(+26·3)	(7·1)	(+6·5)	(92)	(474)	(2768)
278·500		·956	278·7					395
		·946	255·9					182
		·944	296·5					170
		·876	287·2					135
		·868	275·6					142
	10753	·845	247·3	46·1	−15·2	4	8	317*sf*
C	10758	·088	189·4	353·2	+ 1·4	4	8	
	10754	·479	65·8	325·3	+17·0	1	7	
	10757	·797	77·2	299·4	+14·1	61	319	1016*c*
	10759	·979	95·9	275·0	− 4·4	17	67	150*f*
		·827	125·4					106
		·926	67·9					472
		·957	126·1					156
Oct. 5			(+26·3)	(352·4)	(+6·4)	(87)	(409)	(3241)
279·397		·955	276·5					178
		·937	290·6					172
		·924	248·4					310
		·900	266·4					101
		·854	278·5					143
		·813	245·4					317
		·768	291·1					234
	10756	·273	88·2	324·7	+ 6·6	2	4	
	10757	·655	76·2	299·9	+13·8	47	320	500*f*
	10759	·923	97·6	274·2	− 4·5	20	64	192*c*
	10760	·979	73·0	261·2	+17·9	43	271	377*f*
		·850	65·3					563
		·885	130·0					131
G		·938	52·6					102

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
279·397		·941	82·7					72
G		·968	107·2					71
Oct. 6			(+26·4)	(340·6)	(+6·4)	(112)	(659)	(3463)
280·396		·978	249·7					251
		·938	278·4					112
		·929	255·2					163
		·906	242·6					151
		·894	290·0					216
	10761	·353	159·0	320·0	−12·9	4	16	
	10757	·471	72·8	299·9	+13·6	59	349	
G	10759	·802	100·6	275·3	− 4·6	14	36	97*c*
	10760	·916	73·0	260·5	+18·1	33	284	423*nf*
	10762	·987	83·4	246·2	+ 7·5	49	193	330*c*
		·864	81·7					77
		·887	136·9					107
		·946	109·2					185
		·951	57·9					99
Oct. 7			(+26·4)	(327·4)	(+6·3)	(159)	(878)	(2211)
281·498		·973	252·5					151
		·965	290·2					271
		·947	279·4					95
		·903	242·2					192
	1004a	·656	236·1	347·3	−16·2	6	15	
	10761	·361	197·4	319·3	−13·8	4	25	
	10757	·261	59·7	299·5	+13·7	56	348	
G	10759	·620	105·6	276·3	− 4·5	14	26	
	10760	·795	71·9	260·4	+18·2	40	221	372*nf*
	10762	·918	84·4	246·0	+ 7·7	40	298	475*c*
		·900	55·4					147
		·912	111·2					416
		·974	80·3					588
		·979	102·8					96
Oct. 8			(+26·4)	(312·9)	(+6·3)	(160)	(933)	(2803)
282·460		·975	251·6					186
		·907	248·3					157
		·804	238·2					298
	10761	·464	222·0	318·8	−14·2	2	9	
	1004b	·202	308·7	309·5	+13·4	1	5	
	10757	·130	3·9	299·7	+13·6	56	326	
	10759	·445	113·4	276·1	− 4·5	16	42	
G	10760	·657	69·0	260·1	+18·4	29	208	
	10762	·812	85·3	245·7	+ 7·4	83	555	344*c*
		·832	115·9					329
		·904	81·4					612
		·941	104·3					292
		·954	68·8					80
		·966	113·4					169
Oct. 9			(+26·4)	(300·2)	(+6·2)	(187)	(1145)	(2467)

Group 10758. Oct. 5–11. A pair of small spots on Oct. 5; a small group seen in their place on Oct. 10 and 11.
Group 10759. Oct. 5–11. A group of stream type.
Group 10760. Oct. 6–18. Return or revival of Group 10743. A stable regular spot followed by a tiny cluster of dots on Oct. 13.
Group 10761. Oct. 7–9. One or two faint spots.
Group 10762. Oct. 7–19. A large stream of abnormal development. The leader, at first a single regular spot, is represented later by a cluster; the follower grows rapidly to a composite spot possessing multiple umbræ, whilst a cluster in the middle of the group attains the dimensions of a small stream on Oct. 12 and 13.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
283·418		·914	245·3					203
		·894	222·4					184
		·889	233·6					203
	10758	·890	269·8	350·3	+ 2·6	19	119	142*c*
	10757	·245	302·6	299·8	+13·5	52	306	
	10759	·279	132·5	275·7	− 4·9	8	31	
	10763	·308	74·4	270·1	+10·5	12	46	
G	10760	·500	63·0	259·7	+18·5	38	213	
	10762	·665	85·2	245·8	+ 7·8	140	803	
	10764	·786	82·2	235·6	+ 9·9	2	7	529*c*
		·812	110·0					197
		·915	67·1					267
		·920	117·2					251
		·924	102·6					370
		·934	77·9					68
Oct. 10			(+26·4)	(287·6)	(+6·1)	(271)	(1525)	(2414)
284·400		·973	248·4					228
		·951	237·6					195
		·818	282·6					493
		·766	240·0					256
	10758	·972	271·4	351·0	+ 2·8	27	76	108*c*
	1004c	·641	239·0	309·0	−14·2	5	8	
	10757	·421	288·0	298·8	+13·0	65	380	
	10759	·184	177·0	274·0	− 4·5	2	5	
	10763	·106	41·3	270·5	+10·7	20	77	
G	10760	·333	48·2	259·5	+18·7	38	207	
	10762	·490	86·0	245·2	+ 7·3	162	920	
	10764	·631	81·6	235·4	+10·0	1	3	
	10765	·804	104·2	222·9	− 7·7	2	3	338*s*
		·790	121·0					171
		·871	67·1					123
		·912	128·2					139
		·930	77·5					144
		·967	89·1					266
		·968	119·6					96
Oct. 11			(+26·4)	(274·6)	(+6·1)	(322)	(1679)	(2557)
285·497		·966	242·3					124
		·911	282·2					312
		·904	252·3					196
		·874	238·8					129
		·784	247·6					83
		·777	288·8					100
	10757	·639	284·3	299·6	+13·5	53	306	
	10763	·216	286·8	272·1	+ 9·4	9	44	
	10760	·225	4·1	259·1	+18·9	35	215	
	10762	·251	84·1	245·6	+ 7·3	131	754	
	10764	·441	80·2	234·1	+ 9·7	2	10	
C	10765	·626	110·8	224·0	− 7·9	3	6	

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
285·497		·811	72·8					107
C		·911	86·1					229
		·922	111·6					161
		·929	69·8					139
		·930	139·0					111
		·936	127·6					137
Oct. 12			(+26·4)	(260·1)	(+6·0)	(233)	(1335)	(1828)
286·523		·983	282·5					367
		·963	250·2					243
		·960	225·5					125
		·952	271·2					100
		·930	237·6					155
		·901	284·8					334
		·885	248·8					90
		·866	296·9					106
		·860	272·3					104
	10757	·802	282·3	300·0	+13·4	56	287	334*c*
G	10763	·430	279·2	272·0	+ 9·3	20	79	
	10760	·309	318·6	259·0	+19·1	38	217	
	10766	·377	188·0	249·7	−16·0	7	12	
	10762	·044	54·6	244·5	+ 7·4	84	632	
	10764	·218	72·8	234·5	+ 9·4	3	28	
	10765	·449	121·4	223·9	− 8·0	2	5	
	10767	·995	108·8	164·9	−17·9	19	43	84*c*
		·823	83·6					133
		·884	113·5					177
		·935	126·4					170
		·946	86·0					163
		·958	98·5					144
Oct. 13			(+26·4)	(246·6)	(+5·9)	(229)	(1303)	(2829)
287·439		·969	238·4					167
		·956	286·7					464
		·930	255·0					119
	10757	·911	282·3	300·5	+13·7	56	254	937*c*
	10763	·620	277·4	272·9	+ 9·2	14	45	
	10760	·461	302·0	258·9	+19·4	32	208	
G	10762	·176	279·1	244·5	+ 7·4	101	546	
	10768	·379	67·3	213·5	+13·9	6	17	
	10767	·948	111·3	166·5	−18·0	14	34	324*f*
		·869	85·9					166
		·883	100·0					118
		·890	130·5					101
		·979	77·5					118
Oct. 14			(+26·3)	(234·5)	(+5·9)	(223)	(1104)	(2514)
288·496		·959	234·9					108
		·941	302·1					96
		·885	226·3					189
		·825	293·0					243
G·		·823	259·7					159

Group 10763. Oct. 10–16. A small stream of variable components.
Group 10764. Oct. 10–18. A disturbed region, *nf* Group 10762, marked by faculæ and small ephemeral spots (none seen on Oct. 14 and 16).
Group 10765. Oct. 11–13. A small spot.
Group 10766. Oct. 13–19. A pair of spots on Oct. 13; on Oct. 19 a small spot comes near their position.
Group 10767. Oct. 13–20. A group of feeble activity.
Group 10768. Oct. 14–16. A small stream.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
288·496	10757	·982	283·0	300·7	+13·7	68	223	990*c*	290·612		·949	101·0					347
G	10763	·798	276·9	273·7	+ 9·0	9	20	98*c*	G		·958	61·7					122
	10760	·641	294·1	258·9	+19·7	30	207				·959	74·2					270
	10762	·407	275·6	244·6	+ 7·5	81	479				·969	117·2					265
	10764	·236	289·5	233·6	+10·1	0	5		Oct. 17			(+26·2)	(192·7)	(+5·6)	(268)	(1307)	(4395)
	10768	·182	40·3	213·7	+13·7	11	25										
	10767	·872	114·2	164·2	−17·8	18	85	269*c*	291·403		·950	249·6					216
	10769	·991	74·3	137·2	+16·3	79	375	293*p*			·823	250·6					165
		·898	87·3					55		10760	·967	289·0	258·3	+19·8	35	137	367*n*
		·911	73·4					292		10762	·866	274·5	242·3	+ 6·7	18	104	687*c*
		·940	125·9					71		10764	·770	280·0	232·7	+11·3	0	3	
		·959	111·1					416		10770	·657	283·2	223·0	+12·9	74	476	
Oct. 15			(+26·3)	(220·6)	(+5·8)	(296)	(1419)	(3279)		10767	·467	145·4	166·2	−17·2	4	7	
										10769	·707	72·4	137·8	+16·3	64	307	
									G	10772	·781	75·5	130·9	+14·8	44	218	147*c*
289·340		·970	283·0					329		10773	·864	102·4	124·0	− 7·8	0	4	211*f*
		·955	294·5					188			·857	120·9					356
		·942	230·9					223			·909	57·0					163
		·907	263·2					153			·915	74·3					402
		·891	289·9					130			·952	122·0					124
	10763	·908	276·6	275·0	+ 8·4	2	8	228*f*			·955	103·4					367
	10760	·767	290·9	258·8	+19·6	34	193				·976	111·4					349
	10762	·566	274·5	244·0	+ 7·2	53	355		Oct. 18			(+26·2)	(182·2)	(+5·6)	(239)	(1256)	(3554)
C	10770	·257	300·6	222·6	+13·1	9	46										
	10768	·154	334·8	213·3	+13·7	5	20		292·340		·979	294·5					156
	10767	·781	117·9	163·3	−17·5	24	98	165*c*			·957	244·3					117
	10769	·945	74·6	138·0	+16·4	53	294	456*c*			·863	242·7					74
		·814	73·5					177			·828	254·8					164
		·903	114·9					437		10766	·976	251·3	244·7	−16·9	0	20	135*f*
		·924	131·9					134		10762	·949	275·9	241·8	+ 7·4	14	82	599*c*
		·966	107·9					350		10770	·810	281·7	224·1	+12·7	74	435	176*c*
Oct. 16			(+26·3)	(209·5)	(+5·7)	(180)	(1014)	(2970)		10767	·390	171·3	166·4	−17·1	3	9	
										10771	·557	115·7	139·5	− 9·2	15	45	
									C	10769	·549	68·3	137·9	+16·3	47	290	
290·612		·976	288·6					149		10772	·633	73·2	131·2	+14·8	34	255	
		·975	278·5					283			·791	72·9					193
		·964	264·6					131			·842	56·3					169
		·913	223·0					75			·856	106·8					394
		·890	245·9					289			·876	127·3					123
		·864	307·3					143			·917	77·5					321
	10760	·913	289·1	258·8	+19·7	22	203	324*n*			·952	109·6					782
	10762	·781	275·2	244·2	+ 7·5	41	203	563*p*	Oct. 19			(+26·1)	(169·9)	(+5·5)	(187)	(1136)	(3403)
	10764	·646	281·4	232·8	+11·7	1	3										
	10770	·515	285·9	223·1	+12·9	93	409		293·338		·979	278·3					466
	10767	·599	129·7	163·9	−17·5	10	25				·953	246·8					112
	10769	·819	74·0	137·8	+16·3	65	321	164*c*			·921	237·6					76
	10771	·864	106·2	135·2	−11·0	2	15	82*c*			·916	258·0					199
	10772	·885	76·2	130·2	+14·8	34	128	227*c*			·898	294·0					151
		·747	119·7					207			·885	228·4					116
		·872	118·6					559		10770	·926	281·9	224·9	+13·1	54	315	381*c*
		·887	138·5					106		10767	·421	203·6	166·8	−17·3	2	6	
G		·938	52·4					89	C	*1004d*	·433	170·5	152·4	−19·8	1	3	

Group 10769. Oct. 15–27. Return of Group 10742. A fairly large regular spot with an outbreak of numerous small companions from Oct. 20. Group 10772 forms part of the same general area of disturbance.
Group 10770. Oct. 16–21. A group of stream type with rapid growth.
Group 10771. Oct. 17–24. A pair of small spots on Oct. 17; on Oct. 19 a small stream led by a small regular spot.
Group 10772. Oct. 17–27. A stream developing *sf* Group 10769. The leader is a small regular spot.
Group 10773. Oct. 18–23. One or two small spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
293·338	10774	·202	65·6	146·0	+10·1	8	14	
C	10771	·365	130·8	140·5	− 8·5	16	61	
	10769	·361	57·4	138·3	+16·3	65	327	
	10772	·438	67·6	132·1	+14·5	56	234	
	10773	·574	112·4	124·4	− 8·0	2	5	
		·821	112·6					564
		·931	115·6					1044
		·984	76·6					52
Oct. 20			(+26·0)	(156·7)	(+5·4)	(204)	(965)	(3161)
294·417		·979	260·0					238
		·940	293·1					197
		·892	225·7					174
		·827	268·7					145
	10770	·993	282·4	226·3	+12·9	28	118	554*sf*
	1004e	·528	197·8	152·7	−24·8	2	4	
	10774	·118	317·4	147·1	+10·3	4	9	
G	10771	·247	174·4	140·7	− 8·9	10	44	
	10769	·204	17·0	139·0	+16·4	60	338	
	10772	·176	35·2	136·5	+13·5	25	133	
	10775	·337	54·2	126·0	+16·4	36	162	
	10773	·382	126·3	124·5	− 8·0	2	7	
		·866	122·2					523
		·929	82·9					241
		·978	74·0					113
Oct. 21			(+26·0)	(142·5)	(+5·3)	(167)	(815)	(2185)
295·423		·966	238·8					67
		·944	217·9					72
		·936	252·7					179
		·935	269·0					189
		·891	226·5					100
		·887	282·2					113
	10771	·332	223·9	142·6	− 8·7	7	21	
G	10769	·256	319·3	139·2	+16·3	69	418	
	10772	·197	314·7	137·4	+13·1	18	110	
	10775	·199	16·7	125·8	+16·1	66	401	
	10773	·251	160·9	124·5	− 8·5	2	7	
		·781	128·9					158
		·893	83·6					117
		·924	71·1					165
		·987	82·1					145
Oct. 22			(+25·9)	(129·2)	(+5·2)	(162)	(957)	(1305)
296·391		·966	250·0					63
		·965	267·3					124
		·957	281·1					128
		·924	232·5					137
	1004f	·807	243·2	165·6	−18·0	0	3	271*c*
G	10771	·496	242·0	142·7	− 8·9	6	15	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
296·391	10776	·501	230·4	139·8	−13·9	5	15	
G	10769	·420	299·6	138·8	+16·7	70	386	
	10772	·388	292·6	138·0	+13·3	26	132	
	10775	·251	322·3	125·7	+16·4	78	369	
	10773	·277	211·0	124·8	− 8·6	5	9	
	1004g	·448	133·4	97·1	−13·0	0	2	
	10777	·952	102·7	46·0	−10·4	75	363	432*c*
	10778	·988	71·5	34·5	+19·0	6	6	149*s*
		·832	82·6					109
		·875	70·2					159
		·884	93·0					82
		·886	57·6					146
		·936	82·4					344
		·952	113·7					171
Oct. 23			(+25·8)	(116·5)	(+5·1)	(271)	(1300)	(2315)
297·395		·950	260·3					167
		·932	276·8					90
		·897	245·6					308
		·847	206·1					119
		·788	241·1					300
	10771	·636	247·5	139·7	−10·1	6	13	
	10776	·648	240·5	138·7	−14·5	3	8	
	10769	·596	290·9	138·5	+16·3	73	283	
G	10772	·587	286·9	138·4	+13·9	19	116	
	10775	·425	299·3	125·9	+16·6	79	384	
	10779	·331	214·7	114·2	−10·8	2	5	
	10777	·851	105·3	46·9	−10·2	56	349	275*c*
	10778	·923	71·9	35·7	+18·6	9	23	230*c*
		·841	83·8					239
		·907	120·1					221
		·948	105·7					153
		·970	65·0					141
Oct. 24			(+25·7)	(103·2)	(+5·0)	(247)	(1181)	(2243)
298·389		·924	247·6					619
		·895	288·2					488
		·866	234·4					207
		·774	248·8					408
		·739	232·0					133
	10772	·757	284·2	139·0	+13·9	20	84	
	10769	·753	287·4	138·4	+16·3	40	234	
G	10775	·612	290·2	126·7	+16·1	48	217	
	10780	·453	210·2	103·9	−18·2	2	15	
	10777	·712	109·5	47·3	−10·1	49	318	184*f*
	10778	·790	72·6	38·4	+16·7	2	3	415*c*
		·849	124·8					155
		·885	110·2					235
		·906	65·3					322
Oct. 25			(+25·6)	(90·1)	(+4·9)	(161)	(871)	(3166)

Group 10774. Oct. 20–21. A small group *p* Group 10769 and 10772.
Group 10775. Oct. 21–28. A stream led by a composite spot. A portion of this spot breaks away between Oct. 23 and 24 and has an appreciable motion in latitude northwards.
Group 10776. Oct. 23–26. A small group *s* Group 10771.
Group 10777. Oct. 23–Nov. 3. A stream in which the leader, a regular spot, is the only conspicuous component.
Group 10778. Oct. 23–25. One or two very small spots.
Group 10779. Oct. 24–26. A dot on Oct. 24; a cluster of dots on Oct. 26.
Group 10780. Oct. 25–27. A cluster of dots on Oct. 25; one small spot on Oct. 27.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
299·417		·977	283·9					138
		·976	252·4					331
		·943	295·3					89
		·941	241·6					385
		·921	228·6					76
		·857	242·0					384
	10776	·915	251·0	140·1	−15·2	2	5	385*n*
C	10772	·888	283·6	139·3	+14·3	14	52	} 577*c*
	10769	·882	286·4	138·5	+16·7	41	249	
	10775	·776	286·4	127·0	+15·7	38	167	312*p*
	10779	·642	251·6	114·4	− 7·9	3	25	
	10777	·532	117·6	48·1	−10·0	48	317	
		·892	59·2					114
		·959	106·7					56
		·981	86·0					81
Oct. 26			(+25·4)	(76·6)	(+4·8)	(146)	(815)	(2928)
300·361		·972	273·5					54
		·969	256·7					376
		·950	297·5					41
		·948	244·1					339
		·896	256·1					197
		·861	232·5					221
		·804	298·2					163
C		·794	252·8					261
	10772	·966	283·3	139·6	+14·1	4	32	} 611*c*
	10769	·959	285·7	138·1	+16·4	50	286	
	10775	·892	284·9	127·2	+15·4	39	142	598*c*
	10780	·712	237·3	103·2	−18·8	4	18	172*p*
	10777	·371	133·3	48·3	−10·0	44	287	
		·860	110·5					94
		·926	89·5					155
Oct. 27			(+25·3)	(64·1)	(+4·8)	(141)	(765)	(3282)
301·368		·978	256·8					141
		·970	246·4					139
		·916	234·6					106
		·902	256·2					507
		·871	304·3					141
		·861	244·0					390
		·776	249·9					289
C		·757	230·1					433
	10775	·966	284·4	126·3	+15·1	32	89	732*nf*
	1004h	·064	20·3	49·5	+ 8·2	2	5	
	10777	·247	172·4	48·9	− 9·4	43	309	
		·827	104·9					132
		·931	116·5					131
		·955	78·0					292
		·972	68·6					98
Oct. 28			(+25·2)	(50·8)	(+4·7)	(77)	(403)	(3531)

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
302·440		·976	256·1					252
		·956	302·5					116
		·950	245·4					272
		·945	299·6					226
		·916	278·9					79
		·887	252·1					272
		·855	234·8					434
	10777	·320	221·1	49·0	− 9·4	33	262	
C	10781	·529	124·3	10·1	−13·2	5	24	
		·879	78·8					228
		·936	67·6					225
		·943	130·9					95
		·945	119·9					136
		·968	104·5					286
		·971	78·5					111
Oct. 29			(+25·1)	(36·7)	(+4·6)	(38)	(286)	(2732)
303·482		·957	260·6					180
		·952	247·8					407
		·944	293·3					182
		·921	236·9					531
	10782	·574	296·9	55·5	+18·8	2	5	
	10777	·500	242·4	49·5	− 9·3	36	199	
G	10781	·379	147·6	10·9	−14·2	12	30	
	10783	·902	76·7	318·4	+13·9	8	15	205*c*
	10784	·987	75·9	301·5	+14·7	21	167	351*c*
		·804	72·2					459
		·891	107·9					388
		·902	126·2					215
		·923	136·9					137
		·960	62·3					148
Oct. 30			(+24·9)	(22·9)	(+4·5)	(79)	(416)	(3203)
304·397		·967	247·9					135
		·967	239·1					178
		·925	223·2					91
		·882	274·7					242
		·854	288·1					145
	10782	·720	290·8	55·7	+17·9	9	41	
	10777	·658	250·3	49·6	− 9·3	29	165	
	1004i	·346	330·5	21·4	+21·8	1	2	
G	10781	·323	180·0	10·9	−14·4	23	63	
	10785	·615	71·2	334·0	+15·0	13	20	
	10786	·822	111·9	318·9	−15·1	0	3	269*c*
	10783	·792	75·8	318·8	+13·9	7	9	419*n*
	10784	·933	76·2	301·7	+14·5	27	159	636*sf*
		·890	61·1					131
		·909	137·0					214
		·938	117·8					100
		·970	65·3					257
Oct. 31			(+24·7)	(10·9)	(+4·4)	(109)	(462)	(2817)

Group 10781. Oct. 29–Nov. 4. A small unstable group.
Group 10782. Oct. 30–Nov. 2. A pair of spots.
Group 10783. Oct. 30–Nov. 3. A small distinct spot.
Group 10784. Oct. 30–Nov. 11. Return of Group 10757. A stable regular spot associated with an extensive area of faculæ.
Group 10785. Oct. 31–Nov. 2. A small ephemeral group.
Group 10786. Oct. 31–Nov. 1. A very small spot.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
305·447		·954	280·4					194
	10782	·858	288·6	55·6	+18·1	21	83	276*c*
	10777	·817	255·2	50·0	− 9·5	34	181	402*f*
	10781	·391	214·4	10·1	−14·5	8	25	
	10785	·403	63·9	335·2	+14·2	7	16	
	10783	·625	73·2	319·1	+13·8	6	7	
	10786	·679	118·2	318·8	−15·3	0	1	
C	10784	·828	75·0	301·4	+14·8	23	145	626*sf*
		·750	68·3					258
		·880	143·7					94
		·891	123·2					118
		·909	63·0					107
		·976	81·8					328
		·977	67·2					223
Nov. 1			(+24·6)	(357·0)	(+4·3)	(99)	(458)	(2626)
306·343		·941	300·3					110
		·898	281·2					174
		·882	240·8					101
	10782	·952	287·6	57·6	+18·1	21	62	202*c*
	10777	·914	257·9	49·8	− 9·3	21	170	382*sf*
	10781	·511	231·4	9·5	−14·7	12	25	
	10785	·236	42·3	335·8	+14·1	5	23	
C	10783	·466	68·0	318·9	+13·8	2	5	
	10784	·702	72·6	301·4	+15·1	24	144	473*sf*
		·912	68·0					756
		·916	144·5					164
		·918	81·4					361
		·943	125·4					133
Nov. 2			(+24·4)	(345·2)	(+4·2)	(85)	(429)	(2856)
307·413		·993	288·4					179
		·974	278·7					143
		·932	245·6					283
		·894	286·2					243
		·843	297·6					97
		·797	278·7					63
	10777	·986	259·6	50·4	− 9·5	26	178	241*f*
	10781	·679	243·6	9·8	−14·3	3	6	
G	10783	·271	50·8	319·0	+13·8	2	5	
	10784	·522	67·6	301·3	+15·0	39	163	
	10787	·763	82·8	281·4	+ 8·1	7	24	285*f*
	10788	·964	69·6	256·3	+20·7	17	78	133*n*
	10789	·974	107·4	256·2	−15·8	72	571	301*c*
		·863	64·5					467
		·946	116·1					193
		·952	79·4					311
		·973	59·4					211
Nov. 3			(+24·2)	(331·1)	(+4·1)	(166)	(1025)	(3150)

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
308·460		·965	286·2					207
		·961	253·8					195
		·944	240·4					180
		·930	277·4					149
		·895	298·4					206
	10781	·863	252·4	14·7	−13·0	4	9	329*sf*
	1005a	·320	197·8	323·1	−13·7	5	16	
	10784	·336	54·6	300·9	+15·0	28	146	
	10787	·575	81·6	282·4	+ 8·0	4	15	
G	10788	·881	68·6	256·2	+20·7	19	71	146*n*
	10789	·927	109·1	251·8	−16·0	165	1107	670*c*
		·802	107·1					145
		·824	57·0					158
		·852	119·6					177
		·878	78·8					364
		·906	131·6					185
		·925	86·9					177
		·943	58·0					210
		·969	79·1					370
Nov. 4			(+24·0)	(317·3)	(+4·0)	(225)	(1364)	(3868)
309·433		·941	293·1					223
		·931	252·8					369
	10790	·185	349·0	306·6	+14·4	5	7	
	10784	·205	17·2	300·9	+15·1	22	146	
	10787	·372	77·8	283·0	+ 8·0	2	6	
	10788	·771	66·0	255·8	+20·7	16	72	
	10789	·826	112·2	252·1	−15·8	178	960	1015*c*
G	10791	·973	77·5	227·5	+13·1	55	298	408*f*
		·777	79·0					276
		·862	88·8					218
		·872	56·8					396
		·882	67·5					87
		·893	78·6					455
		·957	90·0					289
		·976	66·0					146
Nov. 5			(+23·8)	(304·5)	(+3·8)	(278)	(1489)	(3882)
310·352		·982	253·6					166
		·897	251·6					84
		·835	237·2					208
	10790	·304	308·3	306·6	+14·4	2	9	
	10784	·246	324·6	300·9	+15·2	22	140	
	10787	·231	59·2	280·8	+10·4	3	23	
	10788	·641	61·2	255·6	+20·9	11	67	
	10789	·695	116·7	252·5	−15·3	152	1105	422*f*
	10791	·907	77·7	227·4	+12·7	35	290	451*f*
		·785	56·6					171
C		·796	77·4					488

Group 10787. Nov. 3–9. A disturbed area containing a few small unstable spots.
Group 10788. Nov. 3–14. Return of Group 10760; third appearance. A small regular spot slowly disappearing.
Group 10789. Nov. 3–15. A large group of stream type, visible to the naked eye, consisting of a large regular spot and a cluster of spots (becoming later mere penumbral markings) 15° apart in longitude. The outer and following edge of the penumbra of the leader spot appears broken on Nov. 8–11, when small companions form near it.
Group 10790. Nov. 5–6. A small spot, with a companion on Nov. 6, *p* Group 10784.
Group 10791. Nov. 5–15. Return or revival of Group 10770. A regular spot with its umbra crossed by a bright marking, that later becomes a broad cleft in the southern side of the spot which has broken apart on Nov. 14.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
310·352		·833	127·6					125	314·444		·980	251·5					150
C		·886	92·6					171			·975	284·9					241
		·924	109·3					290			·934	220·7					135
		·941	66·8					194			·932	240·5					184
Nov. 6			(+23·6)	(292·4)	(+3·7)	(225)	(1634)	(2770)			·895	270·2					174
											·885	300·1					221
311·543		·949	247·1					155		10784	·890	286·1	300·9	+15·8	16	90	604*c*
		·898	234·4					154	G	10788	·399	319·7	254·4	+20·9	7	19	
		·852	281·9					302		10789	·407	217·9	253·4	−15·4	119	760	
		·757	245·6					242		10792	·139	322·3	243·3	+ 9·6	64	302	
	10784	·450	297·6	300·9	+15·2	22	131			10791	·263	49·9	226·5	+12·9	38	234	
	10788	·457	48·2	255·3	+21·0	12	52				·951	110·7					496
G	10789	·513	129·2	252·3	−15·5	151	1083				·957	72·9					192
	10791	·766	76·0	227·1	+13·0	45	322	307*f*	Nov. 10			(+22·7)	(238·4)	(+3·3)	(244)	(1405)	(2397)
		·812	61·8					149									
		·927	63·0					145	315·590		·827	277·7					160
		·950	82·2					224			·822	297·5					171
		·982	104·6					181		10784	·977	285·8	301·2	+16·1	21	83	371*sf*
Nov. 7			(+23·4)	(276·6)	(+3·6)	(230)	(1588)	(1859)		*1005e*	·615	282·4	260·7	+10·1	3	13	
										10788	·570	303·6	253·8	+21·1	2	10	
312·432		·943	279·1					308		10789	·575	237·8	253·4	−15·0	89	822	
		·934	234·5					236	C	10792	·356	290·4	243·0	+10·1	58	528	
		·922	293·0					191		10791	·184	341·9	226·7	+13·2	14	190	
		·844	246·4					224		10793	·994	74·6	139·3	+15·6	9	83	479*p*
		·794	288·2					180			·856	113·4					489
	10784	·611	291·0	301·0	+15·4	25	124				·866	82·4					67
	10787	·274	302·0	278·6	+11·7	5	25				·970	111·1					269
	10788	·342	27·8	255·1	+21·0	14	54		Nov. 11			(+22·4)	(223·3)	(+3·2)	(196)	(1729)	(2006)
G	10789	·391	148·0	252·5	−15·9	134	1062										
	1005b	·299	81·8	247·7	+ 5·7	2	7		316·348		·968	289·0					92
	10791	·628	73·2	226·9	+13·2	36	253				·963	275·2					243
	1005c	·952	106·3	194·6	−14·3	6	29	228*c*			·850	296·3					242
		·864	88·4					162			·819	254·0					186
		·911	97·6					119		*1005f*	·949	282·8	284·9	+13·1	6	20	211*f*
		·922	77·5					202		10789	·723	245·3	256·0	−15·3	111	740	
Nov. 8			(+23·2)	(264·9)	(+3·5)	(222)	(1554)	(1850)		10788	·691	297·7	254·1	+21·0	9	18	
									C	10792	·527	283·8	244·5	+ 9·8	79	540	
313·423		·971	236·7					170		10791	·288	309·3	226·5	+13·5	18	173	
		·965	287·8					214		10793	·963	75·3	138·9	+15·0	42	196	438*p*
		·937	253·0					200			·791	113·5					190
		·920	225·2					97			·941	116·2					140
		·894	287·7					200			·946	105·7					169
		·880	238·9					125	Nov. 12			(+22·2)	(213·3)	(+3·1)	(265)	(1687)	(1911)
	10784	·769	287·2	301·3	+15·3	19	135	270*f*									
G	10787	·515	277·0	282·7	+ 6·5	5	14		317·349		·976	281·4					232
	10788	·306	350·8	254·9	+20·9	14	35				·938	297·7					322
	10789	·333	183·4	253·1	−15·9	137	762				·937	257·2					175
	10792	·196	58·8	242·2	+ 9·1	22	64				·915	230·5					180
	10791	·448	66·8	227·0	+13·2	32	258				·843	282·2					292
	1005d	·490	118·7	226·1	−10·5	2	7			10789	·857	250·5	256·6	−15·0	107	645	640*c*
		·836	109·6					363		10788	·820	293·9	253·4	+21·2	5	11	58*p*
		·977	111·0					140		10792	·702	281·4	244·3	+10·1	67	408	
Nov. 9			(+23·0)	(251·9)	(+3·4)	(231)	(1275)	(1779)	C	10791	·469	292·7	226·4	+13·1	27	133	

Group 10792. Nov. 9–15. A stream of normal type with rapid rise and decrease.
Group 10793. Nov. 11–24. Return of Group 10769; third appearance. When first seen two spots almost in contact; the smaller and preceding one diminishes to a dot by Nov. 18; the follower is regular.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
317·349	10794	·608	117·5	166·5	−13·7	13	39	
C	10793	·886	74·0	138·2	+15·5	36	245	634*c*
	10795	·974	105·0	124·7	−13·8	9	37	283*c*
		·862	118·8					272
		·894	109·0					209
		·967	114·3					124
		·976	71·4					410
Nov. 13			(+22·0)	(200·1)	(+3·0)	(264)	(1518)	(3831)
318·398		·946	279·6					264
		·931	229·6					177
		·883	304·7					219
		·809	291·6					133
	10789	·955	253·7	257·4	−14·6	83	413	1041*c*
	10788	·925	292·2	253·1	+21·5	5	14	155*c*
	10792	·852	279·8	244·5	+ 9·8	47	273	161*c*
G	10791	·654	287·8	226·0	+13·7	20	94	
	10794	·426	132·9	167·6	−14·1	22	69	
	1005g	·730	124·9	146·1	−22·5	3	7	
	10793	·760	71·8	138·0	+15·5	42	227	310*f*
	10795	·893	106·4	124·9	−13·2	29	58	449*f*
		·911	119·3					126
		·936	74·4					535
		·938	64·3					280
Nov. 14			(+21·7)	(186·3)	(+2·8)	(251)	(1155)	(3850)
319·444		·945	270·5					231
		·944	302·6					230
		·937	288·2					234
	10789	·997	254·8	256·9	−14·9	55	207	904*f*
	10792	·966	279·8	247·5	+10·1	32	186	397*f*
C	10791	·814	284·0	226·4	+12·9	8	29	
	10794	·312	169·3	169·1	−15·1	23	125	
	10793	·600	66·8	137·7	+15·8	24	164	
	10795	·767	110·6	125·0	−13·8	16	80	379*f*
		·839	60·8					190
		·891	73·2					306
		·943	62·4					89
		·951	107·7					358
Nov. 15			(+21·4)	(172·5)	(+2·7)	(158)	(791)	(3318)
320·334		·981	253·1					323
		·980	280·2					357
		·975	288·5					236
		·961	300·3					150
		·945	269·3					168
		·895	282·9					366
		·880	297·5					88
	10796	·281	306·1	174·2	+12·1	43	150	
C	10794	·342	204·8	169·3	−15·4	30	201	

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
320·334	10793	·449	58·2	137·5	+16·0	31	158	
C	10795	·638	115·2	124·5	−13·6	6	21	
		·807	70·4					233
		·822	53·1					59
		·840	114·0					147
		·914	106·8					195
		·960	118·4					262
Nov. 16			(+21·1)	(160·8)	(+2·6)	(110)	(530)	(2584)
321·441		·973	282·4					241
		·956	294·9					87
		·887	302·2					70
		·830	251·8					107
	10796	·503	289·7	175·0	+11·9	65	307	
G	10794	·517	231·4	171·0	−16·5	41	222	
	10793	·280	32·0	137·4	+16·1	19	135	
	10795	·448	131·8	126·1	−15·0	17	32	
		·810	119·7					297
		·857	84·7					163
		·935	120·7					379
		·950	77·6					242
Nov. 17			(+20·8)	(146·2)	(+2·5)	(142)	(696)	(1586)
322·424		·913	269·1					137
		·909	253·9					232
	10796	·680	285·0	175·2	+11·9	69	383	
	10794	·681	242·1	172·0	−16·6	25	171	
	10793	·252	343·9	137·4	+16·3	29	133	
	10795	·306	156·1	125·9	−13·8	8	31	
G	10797	·960	71·9	59·8	+18·1	7	23	288*c*
		·716	123·0					231
		·822	74·3					136
		·858	123·5					311
		·918	105·7					81
		·920	83·0					60
		·968	99·2					214
Nov. 18			(+20·5)	(133·2)	(+2·4)	(138)	(741)	(1690)
323·362		·972	255·5					125
	10796	·802	283·4	173·5	+12·0	24	168	250*c*
	10794	·808	247·4	171·7	−16·6	41	165	341*sf*
	10793	·366	311·1	137·4	+16·0	23	125	
C	10795	·293	196·6	125·7	−14·0	1	5	
	10798	·816	108·4	68·2	−13·6	33	75	56*c*
	10797	·884	70·8	59·7	+17·9	14	32	238*c*
		·919	102·2					335
		·937	82·0					135
Nov. 19			(+20·2)	(120·8)	(+2·2)	(136)	(570)	(1480)

Group 10794. Nov. 13–21. A group of stream type of which the following part is of slight development.
Group 10795. Nov. 13–20. A small semi-regular spot dividing into two on Nov. 15–16 and disappearing in company with two or three small companions.
Group 10796. Nov. 16–21. A fair-sized stream of rapid rise and decline.
Group 10797. Nov. 18–23. A small definite spot joined by a distant companion on Nov. 22.
Group 10798. Nov. 19–22. A pair of spots separating in longitude; the leader survives on Nov. 22.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
324·350		·958	235·0					110
	10796	·925	281·9	175·2	+11·8	29	182	401*c*
	10794	·913	250·5	171·6	−16·8	18	138	427*sf*
	10793	·536	297·1	137·4	+15·9	17	122	
	10795	·413	227·9	126·1	−14·1	1	4	
C	10798	·658	112·9	69·5	−13·1	14	63	
	10797	·769	68·1	59·4	+18·0	6	20	146*c*
		·803	103·1					162
		·859	89·9					107
		·863	76·9					128
		·941	117·6					124
		·963	75·8					124
Nov. 20			(+19·9)	(107·8)	(+2·1)	(85)	(529)	(1729)
325·317		·917	292·1					180
		·847	244·6					218
		·825	283·4					253
	10796	·975	282·2	172·2	+12·4	8	28	259*c*
	10794	·976	252·5	171·1	−16·6	20	97	662*sf*
	10793	·697	291·2	137·5	+16·0	15	104	
	10799	·384	312·2	112·4	+16·8	2	11	
C	10798	·476	121·3	70·6	−12·4	9	25	
	10797	·627	62·8	59·3	+18·2	6	8	
		·879	71·0					155
		·942	123·6					141
		·944	114·5					122
		·964	64·2					142
		·969	76·3					94
Nov. 21			(+19·6)	(95·1)	(+2·0)	(60)	(273)	(2226)
326·316		·967	290·4					118
		·965	277·3					120
		·952	249·6					188
		·866	246·7					290
		·736	246·2					154
	10793	·835	287·9	137·4	+15·9	19	114	306*sp*
C	10798	·275	149·3	73·7	−11·7	2	6	
	10797	·426	51·2	61·7	+17·2	3	7	
		·872	109·1					90
		·880	64·8					110
		·903	76·8					135
		·943	51·1					110
Nov. 22			(+19·3)	(81·9)	(+1·9)	(24)	(127)	(1621)
327·706		·981	256·0					166
		·967	244·2					280
		·875	254·9					545
		·857	292·3					660
		·846	234·3					191
	10793	·963	285·5	137·6	+15·4	29	102	612*c*
	1005h	·902	245·6	125·0	−21·0	3	15	388*f*
	10799	·755	290·7	110·9	+16·6	8	17	471*c*
W	10797	·245	354·5	65·0	+15·8	4	10	

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
327·706	10800	·704	63·1	21·9	+19·8	21	62	
W		·821	61·5					258
		·975	77·9					219
Nov. 23			(+18·9)	(63·6)	(+1·7)	(65)	(206)	(3790)
328·505		·950	243·4					213
		·948	257·2					302
		·890	250·9					178
		·885	292·0					562
		·844	308·4					105
		·780	244·7					313
G	10793	·995	285·6	137·2	+15·7	19	105	118*f*
	1005i	·346	218·8	66·0	−14·0	1	2	
	10800	·587	57·0	21·7	+19·9	8	22	
		·918	113·4					141
		·935	76·5					242
		·981	67·8					60
Nov. 24			(+18·6)	(53·1)	(+1·6)	(28)	(129)	(2234)
329·457		·959	253·6					240
		·945	290·7					352
		·865	303·3					137
		·848	250·4					229
		·768	235·2					207
C	*1005j*	·424	184·1	42·4	−23·4	2	4	
		·847	77·1					257
		·935	120·7					58
		·947	68·9					213
		·966	104·9					48
Nov. 25			(+18·3)	(40·5)	(+1·5)	(2)	(4)	(1741)
330·527		·963	285·9					119
		·949	250·7					289
		·944	297·8					203
		·922	308·7					111
		·857	240·5					392
G	10801	·822	297·1	78·7	+22·7	8	17	56*c*
	10802	·329	220·3	39·0	−13·2	2	7	
		·770	77·5					139
		·848	65·5					167
		·873	108·8					244
		·951	70·4					306
Nov. 26			(+17·9)	(26·4)	(+1·3)	(10)	(24)	(2026)
331·396		·979	253·2					127
		·959	242·4					277
		·923	256·1					76
		·910	283·4					96
		·906	234·4					161
		·798	252·1					162
	10801	·906	294·7	78·0	+22·8	24	106	130*c*
	10802	·466	237·4	38·7	−13·7	7	22	
C		·803	62·8					193

Group 10799. Nov. 21–23. A small group.
Group 10800. Nov. 23–24. A very small group.
Group 10801. Nov. 26–28. A group forming near the west limb.
Group 10802. Nov. 26–28. A spot with companions on Nov. 28.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
331·396		·903	115·1					98
C		·910	70·5					358
		·940	128·6					55
		·946	82·5					178
Nov. 27			(+17·6)	(15·0)	(+1·2)	(31)	(128)	(1911)
332·343		·968	242·6					116
		·891	254·7					204
		·877	289·3					273
	10801	·976	293·7	78·8	+23·3	47	270	240*c*
	10802	·644	247·8	40·1	−13·1	7	33	
C	10803	·949	75·4	291·5	+14·2	13	27	286*f*
		·840	68·2					308
		·871	134·4					107
		·877	81·8					179
		·951	58·0					102
		·981	67·9					106
Nov. 28			(+17·2)	(2·5)	(+1·1)	(67)	(330)	(1921)
333·348		·967	254·3					417
		·945	289·4					409
		·828	253·6					179
	10803	·857	74·2	291·2	+14·0	8	16	551*f*
C		·763	79·6					172
		·883	56·0					94
		·924	136·0					104
		·943	66·0					157
		·964	102·2					56
Nov. 29			(+16·8)	(349·2)	(+1·0)	(8)	(16)	(2139)
334·352		·967	281·4					81
		·917	254·9					162
		·916	305·6					58
		·853	288·9					70
C	10803	·722	71·5	291·4	+13·8	4	12	368*f*
	10804	·942	81·6	265·9	+ 8·2	37	226	350*c*
	10805	·978	105·8	259·0	−15·2	31	190	460*c*
		·898	61·7					402
Nov. 30			(+16·5)	(336·0)	(+0·9)	(72)	(428)	(1951)
335·389		·959	252·6					103
		·956	289·1					89
		·848	295·2					116
	10803	·551	64·9	291·5	+14·1	2	8	
	10804	·842	80·4	265·4	+ 8·5	88	738	234*c*
	10805	·911	107·3	258·1	−15·4	36	198	547*sf*
	10806	·952	77·5	250·6	+12·1	10	37	401*f*
C		·823	59·5					215

G.M.T.	Group No.	Measures. Dist.	Measures. Pos. Angle.	Position. Long.	Position. Lat.	Area. Umbræ.	Area. Whole Spots.	Area. Faculæ.
1928.			°	°	°			
335·389		·948	58·5					132
C		·950	69·9					93
		·979	109·6					346
Dec. 1			(+16·1)	(322·3)	(+0·7)	(136)	(981)	(2276)
336·356		·942	291·9					119
		·928	252·6					90
	10807	·372	16·3	303·2	+21·5	19	49	
	10808	·170	42·4	303·0	+ 7·8	4	17	
	10803	·379	52·2	291·7	+13·9	2	4	
	10804	·712	77·3	265·0	+ 9·4	144	848	
	10805	·811	110·6	257·6	−16·2	26	173	401*sf*
C	10806	·884	77·4	248·2	+11·4	13	36	613*c*
	10809	·974	101·5	233·3	−11·1	4	9	254*f*
		·875	66·3					158
		·937	109·5					389
		·942	121·8					162
		·949	133·4					116
		·966	55·3					169
		·982	78·3					137
Dec. 2			(+15·7)	(309·6)	(+0·6)	(212)	(1136)	(2608)
337·458	10807	·398	337·1	304·7	+21·9	11	33	
	10808	·183	314·7	302·6	+ 7·9	2	7	
	10804	·494	72·9	266·7	+ 8·8	203	1077	
	10805	·651	116·2	257·8	−16·2	31	193	
	10806	·717	74·5	250·5	+11·4	0	3	198*f*
		·766	62·3					188
C		·835	113·7					324
		·847	127·5					148
		·900	101·8					218
		·903	68·3					166
		·922	77·5					136
		·947	54·0					146
Dec. 3			(+15·3)	(295·1)	(+0·5)	(247)	(1313)	(1524)
338·379		·872	268·5					111
		·850	283·3					277
	10807	·501	316·4	304·6	+21·5	8	30	
	10804	·309	62·3	266·9	+ 8·6	149	1100	
	10805	·506	125·0	257·4	−16·4	26	157	
C	10806	·552	70·1	251·1	+11·1	2	5	
	10809	·739	105·9	236·6	−11·4	20	111	186*f*
		·802	70·1					149
		·891	48·8					104
		·926	76·7					221
		·940	60·6					138
Dec. 4			(+14·9)	(282·9)	(+0·4)	(205)	(1403)	(1186)

Group 10803. Nov. 28–Dec. 2. Possibly a return of Group 10784. A small distinct spot.
Group 10804. Nov. 30–Dec. 12. A very large and complex stream visible to the naked eye. At first there is a regular spot leading the stream, but this becomes absorbed into a large complex formation. Another spot in the *sf* part of the stream is perhaps the most stable component.
Group 10805. Nov. 30–Dec. 12. Return of Group 10789. A stable regular spot.
Group 10806. Dec. 1–8. Return of Group 10792. A disturbed area, *f* Group 10804, in which very small ephemeral spots appear.
Group 10807. Dec. 2–5. A small stream.
Group 10808. Dec. 2–3. One or two small spots *s* Group 10807.
Group 10809. Dec. 2–14. A stream of normal type in appearance, but in which the leading and following spots do not separate in longitude to the usual extent.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
339·483		·953	282·2					275	342·504		·727	69·2					197
		·890	252·6					138	G		·843	75·6					298
		·831	295·0					141			·880	116·2					265
		·755	290·4					112			·958	88·0					131
	10807	·671	304·2	305·1	+22·3	6	17				·961	74·9					172
	10804	·159	17·1	265·7	+ 8·9	252	1478		Dec. 8			(+13·2)	(228·6)	(−0·2)	(369)	(2169)	(2456)
C	10805	·347	146·8	257·0	−16·6	38	186										
	10806	·408	60·0	247·3	+11·9	0	9		343·479		·972	257·6					69
	10809	·558	110·8	236·4	−11·2	45	327				·937	288·3					300
		·780	43·1					110			·879	302·1					154
		·981	75·8					63		10804	·804	280·1	268·5	+ 7·9	189	1408	240c
Dec. 5			(+14·4)	(268·4)	(+0·2)	(341)	(2017)	(839)		10805	·686	245·5	256·2	−16·7	35	193	
										10809	·402	241·8	236·8	−11·2	109	636	
340·306		·953	280·7					137	G	10812	·705	62·3	174·6	+18·8	3	6	70c
		·947	253·5					123		10813	·691	72·1	173·6	+12·0	1	6	
		·897	295·1					194		10810	·693	106·1	173·1	−11·3	32	146	95c
		·795	292·6					125		10814	·988	75·3	135·2	+14·5	0	41	136p
	10804	·223	314·5	266·7	+ 9·1	235	1407				·778	118·0					123
C	10805	·289	176·9	256·6	−16·6	36	187				·886	75·0					127
	10806	·286	43·2	246·0	+12·1	3	10				·930	110·5					123
	10809	·397	119·1	236·9	−11·0	48	322		Dec. 9			(+12·7)	(215·7)	(−0·3)	(369)	(2436)	(1437)
	10810	·988	101·3	176·9	−11·1	13	41										
		·934	75·0					139	344·408		·978	286·1					348
		·971	79·1					217			·938	264·5					124
Dec. 6			(+14·1)	(257·5)	(+0·1)	(335)	(1967)	(935)			·931	299·4					200
											·887	254·3					181
341·454		·936	300·6					211			·814	299·8					140
		·929	246·6					150			·797	315·1					75
		·926	289·8					447		10804	·910	278·8	268·5	+ 7·8	224	1762	836c
		·880	276·8					258		10805	·812	249·6	255·9	−16·6	31	181	538sf
		·766	295·7					274	G	10809	·580	251·0	237·4	−11·2	83	638	
	10804	·448	288·1	267·8	+ 8·0	193	1420			10813	·483	62·8	177·5	+12·4	5	32	
G	10805	·374	219·1	256·6	−16·8	32	174			10812	·541	53·3	176·4	+18·4	6	23	
	10809	·208	155·7	237·4	−10·9	53	350			10810	·544	110·1	172·3	−11·1	42	184	
	10811	·321	43·7	229·3	+13·4	2	5			10815	·623	118·1	168·5	−17·3	0	3	
	10812	·916	70·3	177·6	+17·9	5	11	743s		10814	·935	74·2	135·4	+14·5	13	51	349p
	10810	·928	102·1	175·0	−11·2	23	114	564f			·861	121·4					138
		·945	113·2					332			·865	108·3					134
Dec. 7			(+13·6)	(242·4)	(0·0)	(308)	(2074)	(2979)			·904	59·0					114
											·959	101·0					245
342·504		·972	290·6					159			·987	70·3					185
		·959	278·2					218	Dec. 10			(+12·3)	(203·5)	(−0·4)	(404)	(2874)	(3607)
		·906	303·8					157									
		·863	288·6					349	345·336		·972	297·7					155
	10804	·637	282·6	267·3	+ 7·8	215	1214				·960	250·7					268
	10805	·534	237·0	256·4	−17·0	33	189				·880	296·3					93
	10806	·346	307·1	244·9	+11·8	2	7				·823	284·5					182
	10809	·237	218·6	237·2	−10·8	90	614				·795	247·8					164
	10811	·232	355·0	229·8	+13·1	2	8			10804	·970	278·1	266·8	+ 7·8	270	1844	753c
	10812	·818	67·3	176·2	+18·2	3	9	189c		10805	·912	251·9	255·9	−16·7	33	177	319sf
G	10810	·832	103·6	173·2	−11·4	24	128	321c	C	10809	·740	255·7	238·0	−10·8	76	576	

Group 10810. Dec. 6–18. A regular spot followed by bright faculæ in which a cluster and a few other spots develop as a train to the regular spot.
Group 10811. Dec. 7–8. A small spot on Dec. 7; a pair on Dec. 8.
Group 10812. Dec. 7–17. A stream of indefinite spots.
Group 10813. Dec. 9–18. At first a small stream of faint spots; fresh activity is shown after Dec. 12, when a stream of larger spots develops.
Group 10814. Dec. 9–18. Return of Group 10793; fourth appearance. A small regular spot dying out on Dec. 14. An ephemeral spot is seen in its place on Dec. 18.
Group 10815. Dec. 10–11. A small spot *s* Group 10810.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

G.M.T.	Group No.	MEASURES. Dist.	MEASURES. Pos. Angle.	POSITION. Long.	POSITION. Lat.	AREA. Umbræ.	AREA. Whole Spots.	AREA. Faculæ.
1928.			°	°	°			
345·336	10813	·324	45·2	177·7	+12·7	4	16	
C	10812	·397	36·5	177·0	+18·1	10	59	
	10810	·366	120·7	172·7	−11·2	32	150	
	10815	·439	131·6	171·3	−17·3	2	8	
	10814	·838	72·5	136·0	+14·2	7	35	179*n*
	10816	·974	74·5	115·3	+15·0	54	321	256*f*
		·869	101·6					190
		·942	66·5					201
		·974	103·1					161
Dec. 11			(+11·9)	(191·3)	(−0·5)	(488)	(3186)	(2921)
346·446		·926	284·8					276
		·850	300·1					149
	10804	·995	278·6	260·5	+ 8·5	10	38	162*f*
	10805	·982	253·2	255·2	−16·6	44	197	645*sf*
	10809	·875	257·8	237·0	−11·0	96	642	294*c*
	10817	·304	216·2	187·3	−14·8	2	6	
C	10812	·331	2·0	175·9	+18·5	18	125	
	10810	·187	160·4	173·0	−10·8	33	184	
	10818	·576	114·1	143·9	−14·1	5	26	
	10814	·687	68·0	135·6	+14·4	9	37	
	10816	·907	73·2	112·9	+14·9	61	349	502*c*
		·756	104·3					88
		·839	63·4					154
		·908	126·2					99
		·929	108·5					212
Dec. 12			(+11·4)	(176·6)	(−0·7)	(278)	(1604)	(2581)
347·358		·973	281·0					179
		·961	245·6					393
		·956	293·2					170
		·939	304·4					153
		·890	315·0					92
		·852	243·4					85
	10809	·953	258·2	236·5	−11·5	94	547	433*c*
	10817	·449	238·4	187·7	−14·2	4	24	
	10813	·371	306·9	182·2	+12·1	9	48	
C	10812	·393	325·8	178·0	+18·1	30	123	
	10810	·235	226·0	174·4	−10·2	33	157	
	10818	·412	125·1	144·3	−14·4	12	28	
	10814	·537	61·0	135·7	+14·3	10	27	
	10816	·796	70·3	113·9	+15·1	42	251	327*c*
	10819	·961	110·8	91·7	−20·2	7	14	343*f*
		·877	112·4					98
		·925	101·6					165
		·941	49·4					108
		·947	60·6					129
Dec. 13			(+11·0)	(164·6)	(−0·8)	(241)	(1219)	(2675)
348·362		·947	304·4					169
		·893	275·6					121
	10809	·990	256·2	232·9	−13·8	27	158	261*c*
	10817	·627	247·6	188·0	−14·5	8	17	
	10813	·526	294·5	180·6	+11·8	30	196	
	10812	·562	305·2	180·2	+18·1	21	91	
	10810	·428	248·2	175·1	− 9·9	22	122	
	10818	·246	162·4	147·0	−14·4	3	9	
	10814	·371	45·2	135·7	+14·2	2	7	
C	10820	·323	69·2	133·8	+ 5·7	2	13	
	10816	·646	64·5	114·4	+15·4	33	210	
	10819	·880	112·6	91·7	−20·2	4	14	532*f*
	1006a	·958	80·2	78·7	+ 9·1	3	14	143*c*
	10821	·968	65·6	78·0	+23·3	16	63	359*c*
		·734	116·0					77
		·894	50·6					129
		·945	122·6					134
		·960	103·7					120
Dec. 14			(+10·6)	(151·4)	(−0·9)	(171)	(914)	(2045)
349·333		·975	249·1					93
		·958	300·8					72
		·957	278·1					100
		·950	266·9					66
		·854	286·7					184
	10817	·808	253·1	191·3	−14·2	7	14	145*c*
	10813	·702	288·1	181·4	+11·7	55	274	
	10812	·718	296·9	181·0	+18·7	22	74	
	10810	·611	254·7	175·2	−10·1	15	78	
	10818	·277	213·1	147·5	−14·4	3	10	
C	10820	·112	18·0	136·6	+ 5·0	15	23	
	10816	·486	54·7	114·4	+15·2	34	211	
	10822	·522	118·6	110·3	−15·4	6	12	
	10819	·779	115·1	90·2	−19·9	18	35	301*c*
	10821	·892	63·9	78·7	+22·5	9	25	490*c*
		·860	79·7					147
		·897	50·5					113
		·931	121·8					256
		·938	109·9					144
		·957	100·6					107
		·963	72·3					232
Dec. 15			(+10·1)	(138·6)	(−1·1)	(184)	(756)	(2450)
350·123	10817	·905	255·0	192·3	−14·1	5	9	114*f*
	10813	·811	285·7	180·9	+11·9	61	380	280*c*
	10812	·807	294·2	178·9	+18·5	15	71	148*c*
	10810	·751	257·8	176·2	− 9·9	15	91	
K	10820	·190	303·0	137·4	+ 4·7	6	54	

Group 10816. Dec. 11–23. A regular spot followed at some distance by three small spots that have disappeared by Dec. 18.
Group 10817. Dec. 12–16. A diminutive group.
Group 10818. Dec. 12–18. A very small stream; only one spot is present on Dec. 14, 15 and 18, none being seen on Dec. 16 and 17.
Group 10819. Dec. 13–19. A small unstable stream.
Group 10820. Dec. 14–18. A small stream.
Group 10821. Dec. 14–21. Probable return of Group 10801. A small distinct spot with an occasional companion.
Group 10822. Dec. 15–23. Intermittent. A small group disappearing on Dec. 17, but re-forming on Dec. 21.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
350·123	10816	·369	39·4	114·2	+15·4	35	202		353·396	*1006b*	·776	259·5	135·5	− 9·1	0	3	125*sf*
K	10822	·385	131·6	110·9	−15·8	4	15		C	10816	·544	302·1	113·5	+15·4	18	146	
	10819	·679	118·4	89·0	−19·7	11	35	223*f*		10819	·318	185·1	86·8	−19·9	0	4	
	10821	·808	61·0	78·6	+22·3	10	24	184*f*		10821	·401	14·1	79·1	+21·2	2	10	
		·886	111·4					140			·858	74·3					317
		·890	126·2					241			·869	88·1					257
		·904	98·8					93	Dec. 19			(+8·3)	(85·1)	(−1·6)	(20)	(163)	(1367)
		·912	68·6					142									
		·960	81·0					106	354·436		·971	254·7					129
Dec. 16			(+9·8)	(128·2)	(−1·2)	(162)	(881)	(1671)			·968	247·2					116
											·942	288·7					294
351·470		·968	254·1					106			·924	276·0					204
		·760	288·1					216			·880	258·2					186
	10813	·945	283·7	180·4	+12·4	115	663	} 1217*c*			·830	295·2					272
	10812	·925	291·1	176·1	+18·8	3	12			10816	·710	293·6	113·6	+15·2	30	102	
	10810	·916	259·8	176·5	− 9·8	16	69	574*sf*	C	10821	·399	345·0	77·7	+20·9	4	11	
	10820	·490	282·1	139·1	+ 4·7	5	26			*1006c*	·283	53·0	58·3	+ 8·1	4	12	
	10816	·301	351·2	113·2	+15·9	45	233			*1006d*	·372	110·6	50·8	− 9·1	1	3	
	10822	·251	177·0	109·7	−15·7	2	9				·727	76·5					77
G	10823	·241	125·7	99·1	− 9·3	2	7				·730	89·2					61
	10819	·459	132·8	89·7	−19·3	6	23				·898	59·2					131
	10821	·619	50·9	79·5	+21·8	6	12				·952	83·0					129
		·807	63·2					435	Dec. 20			(+7·8)	(71·4)	(−1·7)	(39)	(128)	(1599)
		·853	81·9					257									
		·950	118·6					109	355·465		·989	274·7					112
		·950	104·4					212			·944	277·8					98
		·969	79·6					96			·938	292·7					415
Dec. 17			(+9·2)	(110·5)	(−1·3)	(200)	(1054)	(3222)			·924	255·9					366
										G 10816	·850	289·0	113·9	+15·0	24	153	629*f*
352·384		·975	290·5					365		10822	·787	251·1	108·3	−15·8	9	45	138*c*
		·946	244·4					103		10821	·514	319·2	78·8	+21·1	2	5	
		·871	292·5					69			·942	75·3					426
		·864	281·3					79			·945	114·8					163
		·753	280·5					61	Dec. 21			(+7·3)	(57·8)	(−1·8)	(35)	(203)	(2347)
		·752	294·1					68									
	10810	·987	260·5	179·0	− 9·6	12	64	373*sf*	356·314		·978	253·7					188
	10813	·985	282·3	177·7	+11·9	23	166	356*c*			·972	294·2					255
	10818	·772	252·7	147·7	−14·2	3	10				·888	306·5					137
C	10814	·675	297·3	137·0	+16·9	0	5				·860	243·8					118
	10820	·615	279·1	135·8	+ 4·5	0	8			10816	·929	287·1	113·3	+15·1	28	142	529*f*
	10816	·384	318·1	113·7	+15·2	29	157			10822	·904	253·4	110·6	−15·8	5	15	167*f*
	10823	·141	174·3	97·6	− 9·4	0	3		C	*1006e*	·692	240·5	86·7	−21·3	1	3	
	10819	·372	153·1	88·1	−20·7	2	15			10824	·372	56·1	28·4	+10·1	1	4	
	10821	·497	38·5	79·1	+21·5	5	12				·846	72·6					173
		·775	77·4					70			·946	102·9					103
		·902	64·5					85			·950	71·1					267
		·904	105·9					135			·953	114·3					179
		·941	77·7					169	Dec. 22			(+6·9)	(46·6)	(−1·9)	(35)	(164)	(2116)
		·959	87·8					146									
Dec. 18			(+8·7)	(98·4)	(−1·4)	(74)	(440)	(2079)	357·367		·982	294·3					98
											·977	278·7					145
353·396		·930	251·0					242			·905	304·8					135
		·916	287·5					220			·897	255·4					94
		·786	276·1					103			·818	245·6					100
C		·777	293·7					103	C		·762	234·4					130

Group 10823. Dec. 17–18. A small spot.
Group 10824. Dec. 22–24. A short-lived stream of small spots.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
357·367		·756	304·0					169	360·357	10825	·175	357·3	353·9	+ 7·7	1	4	
C	10816	·989	285·8	113·2	+15·2	26	125	321*f*	C	10826	·957	81·6	281·0	+ 7·3	29	143	776*c*
	10822	·975	254·8	109·8	−15·2	9	51	167*f*		10827	·988	79·3	273·2	+10·1	41	460	599*c*
	10824	·208	18·7	28·9	+ 9·2	4	26				·762	48·1					62
		·803	66·7					84			·777	60·7					137
		·831	104·0					71			·906	132·3					37
		·950	121·6					84			·927	56·9					133
		·950	69·4					207			·936	70·8					207
		·975	80·9					102	Dec. 26			(+4·9)	(353·4)	(−2·4)	(71)	(607)	(2878)
Dec. 23			(+6·4)	(32·8)	(−2·1)	(39)	(202)	(1907)									
									361·496		·957	236·6					226
358·372		·976	256·1					86			·955	274·8					292
		·975	289·3					130			·953	261·5					183
		·937	304·8					134			·950	249·0					177
		·912	247·8					319			·938	290·6					252
		·895	279·7					75			·927	222·0					256
		·856	234·8					219			·793	283·2					402
C		·854	289·1					90	G	10825	·317	303·9	353·7	+ 7·7	7	17	
		·840	303·9					152		10828	·364	74·0	318·0	+ 3·3	2	5	
	10824	·261	321·7	28·9	+ 9·6	8	31			10826	·835	79·1	282·8	+ 7·6	30	255	700*c*
	10825	·497	69·3	351·6	+ 8·2	2	9			10827	·928	77·6	271·5	+10·5	65	620	1077*f*
		·906	65·3					474			·837	68·4					321
		·927	81·1					209			·936	133·4					120
Dec. 24			(+5·9)	(19·5)	(−2·2)	(10)	(40)	(1888)			·953	62·5					238
											·957	106·6					286
359·483		·975	247·6					309	Dec. 27			(+4·4)	(338·4)	(−2·6)	(104)	(897)	(4530)
		·966	238·2					238									
		·957	275·7					128	362·309		·966	292·2					112
		·955	298·2					232			·875	280·4					337
		·928	287·8					251		10825	·487	290·1	355·0	+ 7·2	5	10	
		·893	257·0					146		10826	·685	75·6	285·8	+ 7·8	43	228	
		·887	242·8					208		10827	·835	75·7	272·6	+10·3	58	460	867*c*
		·884	227·0					228	C		·743	61·4					226
		·848	298·0					132			·882	104·6					233
G	10825	·273	49·3	352·9	+ 7·9	2	5				·915	58·0					194
	10826	·996	82·0	280·6	+ 7·7	21	59	628*p*			·964	110·6					594
		·779	60·8					408			·966	75·3					581
		·850	79·3					273	Dec. 28			(+4·0)	(327·7)	(−2·7)	(106)	(698)	(3144)
		·880	103·6					175									
		·908	62·6					342	363·308		·968	279·5					165
		·910	119·0					167			·924	315·7					115
		·983	73·4					200		10825	·644	285·1	353·2	+ 7·5	5	14	
Dec. 25			(+5·4)	(4·9)	(−2·3)	(23)	(64)	(4065)		10828	·134	333·9	317·9	+ 4·1	2	4	
										10826	·477	68·3	288·1	+ 7·6	63	297	
360·357		·987	295·1					127		10827	·694	72·4	272·5	+10·0	36	226	
		·971	284·8					78	C	10829	·967	100·0	239·2	−10·4	15	48	249*s*
		·967	259·5					102			·844	72·5					127
		·943	242·3					194			·861	113·1					451
		·929	294·3					113			·908	56·2					162
		·922	230·1					114			·930	72·2					205
		·917	253·1					99			·953	115·9					275
C		·881	279·1					100	Dec. 29			(+3·5)	(314·5)	(−2·8)	(121)	(589)	(1749)

Group 10825. Dec. 24–29. One or two small spots.
Group 10826. Dec. 25–1929, Jan. 5. A stream of spots in continual change.
Group 10827. Dec. 26–Jan. 6. Return of Group 10804. A moderately large composite spot breaking up, and, with the addition of companions in the rear, lengthening into a stream of faint unstable spots. The group has nearly disappeared by Jan. 3, but new and larger spots are developing on the following day.
Group 10828. Dec. 27–Jan. 1. A small spot on Dec. 27 and 29; then a short-lived stream.
Group 10829. Dec. 29–Jan. 4. Return of Group 10809. A small regular spot with a companion on some days.

POSITIONS and AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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.
1928.			°	°	°				1928.			°	°	°			
364·371		·939	255·8					91	365·340		·916	282·4					208
		·803	282·8					193			·837	294·9					144
	10828	·411	287·8	323·5	+ 4·5	15	125			10828	·607	280·9	324·2	+ 4·1	17	75	
	10826	·258	44·2	290·1	+ 7·8	60	326			10830	·494	318·5	307·8	+18·8	5	19	
	10827	·537	65·6	270·8	+10·3	25	122			10826	·186	350·9	289·4	+ 7·6	55	345	
C	10829	·882	99·9	238·8	−10·1	12	71	310s		10827	·326	46·9	272·6	+10·2	20	102	
		·760	118·2					179	C	10829	·763	101·5	238·4	−10·7	18	69	184sf
		·893	69·6					244			·704	122·7					121
		·896	120·1					330			·782	62·1					126
		·907	53·4					155			·862	122·3					162
		·934	42·2					160			·906	78·1					104
Dec. 30			(+3·0)	(300·5)	(−2·9)	(112)	(644)	(1662)			·922	66·1					108
											·926	54·8					117
									Dec. 31			(+2·5)	(287·7)	(−3·0)	(115)	(610)	(1274)

Group 10830. 1928 Dec. 31–1929 Jan. 4. A small stream.

ROYAL OBSERVATORY, GREENWICH.

General Catalogue of Groups of Sun Spots

for the Year

1928

GREENWICH PHOTO-HELIOGRAPHIC RESULTS 1928

GENERAL CATALOGUE of GROUPS of SUN SPOTS for the YEAR 1928.

Groups of Sun Spots, lasting for two or more days, are numbered in the *first* column in continuation of the Group-numbers given in 1927 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 $0^d{\cdot}01$, corresponding to $0°{\cdot}13$ of solar longitude. In other cases, in which groups disappear before or appear after the central meridian, the deduced time is given to $0^d{\cdot}1$.

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 $\xi = 14°{\cdot}37 - 2°{\cdot}60 \sin^2\phi$ gives the apparent drift in longitude appropriate to corresponding latitudes after an interval of 27 days.

Latitude.	Drift *forwards.*	Latitude.	Drift *backwards.*
0°	5°	20°	3°
5°	4·5	25°	7·5
10°	3	30°	12·5
15°	0·5	35°	18

GENERAL CATALOGUE of 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.	
	1927–28.		1928.	°	1928.	°			°	°	
10480	Dec. 29·9	3/4	Jan. 1	+32·7	Jan. 4	+75·7	5	26	97·3	+ 8·2	
1	Jan. 4·73	9	1	−43·7	9	+62·4	7	33	20·6	−13·4	II.
2	7·10	8	1	−75·1	8	+18·7	7	18	349·5	+10·1	II.
3	8·87	12	3	−70·9	14	+74·9	30	170	326·1	−18·1	II.
4	5·1	6	5	+ 4·7	10	+69·5	30	127	15·6	+10·1	II.
5	8·30	5/7	5	−35·3	11	+42·3	9	28	333·7	− 7·0	
6	11·0	3	6	−60·8	8	−32·0	11	41	298·6	+13·0	
7	11·34	10	8	−37·8	17	+80·8	40	221	293·6	+ 8·0	I. 1036 (1)
8	14·2	6	8	−75·9	13	−10·4	5	10	255·4	− 9·6	II.
9	12·68	10	10	−32·8	19	+80·5	43	238	276·0	−10·8	II.
10490	12·95	9	10	−33·4	18	+72·0	23	110	272·4	−14·8	II.
1	16·30	8/10	10	−75·3	19	+33·6	5	23	228·4	+16·2	II.
2	17·7	4/6	12	−68·3	17	− 5·6	3	14	210·6	−17·7	
3	13·4	3	14	+13·7	16	+40·5	2	7	267·0	−34·7	
4	19·0	5	14	−60·2	18	− 7·5	14	52	192·5	+15·7	
5	18·22	5	15	−36·5	19	+16·0	4	23	203·1	+15·3	
6	21·8	5	16	−71·4	20	−19·6	4	16	156·0	+14·8	
7	22·55	13	16	−77·7	28	+77·6	138	1061	146·0	+15·4	II.
8	22·55	6/9	17	−72·5	25	+39·5	1	6	146·0	−19·0	II.
9	25·14	12	19	−76·3	30	+69·7	37	277	111·9	+ 6·0	II.
10500	18·1	3	21	+41·5	23	+68·8	2	12	204·2	−15·9	
1	25·92	11	21	−65·4	31	+76·6	52	328	101·7	+ 8·0	I. 1037 (1)
2	22·0	4	24	+30·5	27	+71·1	21	90	153·9	− 9·8	
3	30·0	5	24	−74·6	28	−23·3	4	14	47·2	−28·1	
4	30·24	13	24	−79·5	Feb. 5	+73·1	84	454	44·8	−21·6	I. 1038 (1)
5	30·36	8	24	−79·0	Jan. 31	+11·8	18	93	43·1	−16·4	II.
6	30·92	13	24	−86·7	Feb. 5	+73·1	63	344	35·8	− 7·8	I. 1035 (3)
7	28·20	8	25	−38·5	1	+57·2	8	28	71·6	−21·7	II.
8	28·1	6	28	+ 1·7	2	+73·4	23	108	73·4	−11·2	II.
9	29·8	3	30	+ 7·4	1	+32·5	1	11	50·6	−12·4	
10510	Feb. 4·1	3/4	31	−48·5	3	− 7·4	2	5	341·0	+14·0	
1	6·0	4	31	−72·2	3	−35·2	6	21	316·2	−16·7	
2	6·8	6/7	31	−82·0	6	− 6·2	9	30	305·9	+ 7·8	I. 1036 (2)
3	8·34	10	Feb. 2	−79·8	11	+38·4	22	108	284·9	−12·3	II.
4	Jan. 29·2	2	3	+71·2	4	+79·8	4	13	59·2	+ 1·6	
5	Feb. 9·47	6/7	4	−66·7	10	+ 9·8	3	15	270·1	−20·3	
6	10·9	3	7	−47·5	9	−19·6	5	20	251·2	−22·9	
7	14·01	10	10	−49·9	19	+73·1	31	164	210·3	+16·1	II.
8	9·2	4	12	+42·8	15	+81·9	42	231	274·2	+11·2	
9	19·7	6	13	−83·1	18	−15·4	8	29	135·4	−22·7	II.
10520	19·48	9	15	−51·7	23	+51·6	10	39	138·3	+20·0	II.
1	20·5	6	15	−66·2	20	− 4·4	12	44	124·4	+18·6	II.
2	21·55	13	15	−80·8	27	+77·6	125	799	111·0	+ 5·6	I. 1037 (2)
3	17·95	8	16	−22·8	23	+74·6	25	147	158·4	−10·0	II.
4	18·35	8	17	−14·8	24	+83·4	37	177	153·2	−17·3	II.
5	19·4	2	19	+ 0·8	20	+13·9	2	10	139·9	+15·4	
6	25·40	13	19	−82·6	Mar. 2	+80·5	71	423	60·3	−11·9	II.
7	20·56	7	20	− 2·8	Feb. 26	+77·8	31	149	124·1	−23·8	II.
8	26·03	9/10	20	−73·9	29	+45·8	5	20	52·1	−16·3	II.
9	26·7	5/7	20	−84·6	26	− 3·1	4	12	42·7	− 5·8	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.	
	1928.		1928.	°	1928.	°			°	°	
10530	Feb. 26·95	13	Feb. 20	−84·9	Mar. 3	+72·3	16	96	39·9	−19·9	I. 1038 (2)
1	20·2	5	21	+12·0	Feb. 25	+69·7	4	20	128·7	−11·4	
2	27·12	13	21	−75·8	Mar. 4	+84·0	30	180	37·6	− 8·7	I. 1035 (4)
3	26·27	5	22	−48·7	Feb. 26	+ 3·2	3	9	48·8	− 9·6	
4	24·4	5	25	+14·9	29	+65·5	12	44	72·9	−26·7	
5	Mar. 2·55	12/13	25	−81·3	Mar. 8	+74·9	14	59	339·3	−18·8	II.
6	3·75	13	26	−84·8	9	+74·9	52	305	323·5	− 5·9	I. 1039 (1)
7	Feb. 26·0	6	27	+18·4	3	+82·9	43	305	52·0	− 4·8	I. 1040 (1)
8	Mar. 7·78	13	Mar. 2	−68·1	14	+82·9	40	289	270·4	+ 9·4	I. 1041 (1)
9	6·1	2	4	−21·1	5	− 8·5	2	6	293·0	−14·6	
10540	7·67	10	4	−44·1	13	+83·7	68	411	271·8	+ 6·0	I. 1041 (1)
1	10·05	12	4	−76·5	15	+78·6	35	198	240·5	+15·3	II.
2	5·5	6	5	+ 2·4	10	+62·2	15	70	300·6	+26·2	II.
3	11·2	6	5	−79·2	10	− 8·3	5	12	225·6	−10·6	II.
4	11·36	10	8	−45·3	17	+83·5	23	142	223·2	− 8·5	I. 1042 (1)
5	13·0	3	8	−60·7	10	−35·0	4	13	201·2	−14·3	
6	16·22	14	9	−88·6	22	+83·3	38	244	159·1	−20·5	II.
7	18·40	14	11	−85·8	24	+77·8	73	446	130·4	−23·4	II.
8	11·5	6	12	+ 8·4	17	+79·7	21	104	220·8	−18·1	II.
9	18·83	12	13	−76·2	24	+73·6	109	694	124·7	+14·6	I. 1043 (1)
10550	19·93	12	14	−73·5	25	+73·6	91	537	110·3	+ 8·4	I. 1037 (3)
1	17·86	7	15	−29·6	21	+46·5	19	107	137·6	−15·4	II.
2	16·2	2	16	+ 2·6	17	+16·5	8	28	159·6	−25·2	
3	16·7	5	18	+21·7	22	+79·6	43	293	152·3	−14·2	I. 1044 (1)
4	23·63	5/8	18	−68·4	25	+25·4	1	6	61·4	− 7·2	I. 1040 (2)
5	27·75	7	22	−67·8	28	+ 8·9	18	118	7·2	+18·9	II.
6	29·19	13	23	−75·8	April 4	+85·8	25	138	348·1	−11·2	I. 1045 (1)
7	30·05	11	23	−88·5	2	+44·0	28	195	336·8	−13·2	II.
8	30·71	10	24	−82·5	2	+35·7	9	43	328·1	−19·2	II.
9	22·5	2/4	25	+42·2	Mar. 28	+75·5	2	6	76·5	−14·8	
10560	30·8	6	25	−71·2	30	− 5·0	4	8	326·4	− 2·4	I. 1039 (2)
1	April 2·17	12	27	−77·3	April 7	+70·6	11	49	295·6	+ 6·5	II.
2	2·84	13	27	−84·1	8	+73·1	38	231	286·7	+21·5	II.
3	3·98	12	29	−73·3	9	+73·3	11	52	271·8	+10·3	I. 1041 (2)
4	6·2	4	31	−76·2	3	−36·4	8	19	243·1	+20·3	
5	2·79	3/4	April 1	−18·9	4	+25·6	2	8	287·4	+ 6·0	
6	3·62	9	1	−27·6	9	+76·1	42	222	276·4	+ 7·0	II.
7	7·17	12	1	−76·2	12	+68·9	16	82	229·6	− 8·8	I. 1042 (2)
8	9·08	14	2	−84·8	15	+78·0	145	870	204·4	−15·8	I. 1046 (1)
9	8·74	8	3	−71·6	10	+22·7	12	60	209·0	−25·0	II.
10570	5·54	6	4	−12·3	9	+52·4	4	16	251·2	+13·5	II.
1	9·67	11	4	−66·9	14	+65·1	23	127	196·7	+15·0	II.
2	9·9	3	4	−69·3	6	−46·5	3	8	193·3	−11·4	
3	4·5	2	5	+14·2	6	+25·1	2	7	265·4	−15·8	
4	12·91	12	6	−86·7	17	+60·2	19	103	153·9	−15·8	I. 1044 (2)
5	7·78	4	7	− 5·4	10	+36·5	10	23	221·6	− 7·4	
6	10·4	2	7	−40·7	8	−24·2	2	8	187·2	−10·5	
7	14·13	8	8	−74·6	15	+13·2	16	51	137·8	−18·0	II.
8	14·69	12	8	−83·7	19	+64·4	33	212	130·4	+13·5	I. 1043 (2)
9	16·06	13	10	−75·0	22	+86·3	53	243	112·3	+ 8·6	I. 1037 (4)

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.	
	1928.		1928.	°	1928.	°			°	°	
10580	April 15·95	12	April 10	−78·5	April 21	+77·5	60	364	113·7	− 9·2	II.
1	11·9	2	12	+ 7·0	13	+19·6	2	6	166·9	−16·4	
2	11·1	3	14	+43·5	16	+68·9	22	95	177·3	+17·5	
3	16·71	2	16	− 4·7	17	+ 9·5	2	9	103·8	+ 5·8	
4	20·9	3	16	−60·8	18	−32·3	4	6	48·5	−11·7	
5	19·8	3	19	− 4·9	21	+20·0	5	17	62·5	− 8·0	
6	25·2	6	19	−76·9	24	−12·1	6	13	350·9	−10·2	I. 1045 (2)
7	25·64	13	19	−83·6	May 1	+72·8	44	276	345·7	−12·2	II.
8	26·68	7	22	−58·3	April 28	+23·7	12	41	332·0	+ 8·0	II.
9	30·35	13	24	−79·7	May 6	+80·4	58	294	283·6	−14·4	I. 1047 (1)
10590	May 1·20	8	25	−76·9	2	+12·3	11	31	272·2	−14·7	II.
1	1·83	9	25	−82·6	3	+19·9	20	147	263·9	−19·4	II.
2	3·21	13	27	−78·2	9	+81·5	59	419	245·7	+ 8·7	I. 1048 (1)
3	3·89	6/7	28	−72·7	4	+ 5·5	9	37	236·7	+22·0	II.
4	4·23	12/13	28	−81·6	10	+76·8	35	216	232·2	−22·0	II.
5	2·3	3	29	−39·1	1	−15·3	4	16	257·4	+13·4	
6	April 29·4	5	30	+11·2	4	+65·8	8	37	295·5	−19·9	
7	May 1·8	2	30	−17·5	1	− 9·5	1	8	264·6	−14·3	
8	6·48	13	30	−78·4	12	+75·7	62	404	202·4	−13·8	I. 1046 (2)
9	7·2	3	May 1	−81·6	3	−49·5	4	9	192·5	−19·8	
10600	8·14	13	2	−78·0	14	+73·3	167	1077	180·6	−14·1	I. 1049 (1)
1	5·3	2	3	−25·2	4	−12·3	4	10	217·8	−12·0	
2	11·0	6	6	−61·8	11	+ 4·1	14	45	142·4	+22·4	II.
3	13·3	6	7	−78·2	12	−12·4	13	47	112·7	+ 7·9	I. 1037 (5)
4	10·32	8	8	−26·4	15	+67·8	11	34	151·7	−12·6	II.
5	10·7	2	9	−20·0	10	− 2·9	0	4	146·4	+ 9·9	
6	10·79	3	9	−20·3	11	+ 9·8	4	10	145·5	− 9·2	
7	12·9	2	9	−47·2	10	−33·1	3	7	117·7	+ 4·4	
8	19·7	7	13	−80·4	19	− 4·1	9	69	27·8	−13·2	II.
9	21·6	4/6	16	−67·4	21	− 0·9	2	6	2·0	−12·5	
10610	22·88	2/5	19	−46·4	23	+ 6·2	1	5	345·6	−11·4	
1	26·8	4	21	−74·2	24	−28·5	4	10	293·4	−20·2	
2	27·57	13	21	−80·6	June 2	+76·7	18	93	283·5	−16·6	I. 1047 (2)
3	27·75	11/12	22	−72·4	2	+74·1	22	108	281·1	+12·8	II.
4	27·11	10	23	−50·5	1	+72·1	19	86	289·6	−18·8	II.
5	29·95	12	24	−70·3	4	+71·5	12	45	252·1	+ 8·3	I. 1048 (2)
6	31·94	10	26	−74·8	4	+51·8	28	122	225·7	−10·7	II.
7	June 2·94	13	27	−84·6	8	+76·4	91	575	199·2	−13·0	I. 1046 (3)
8	3·29	13	28	−79·9	9	+82·0	48	257	194·6	+ 7·6	II.
9	1·90	9	29	−48·3	6	+63·3	20	78	213·0	+ 9·2	II.
10620	4·27	10	29	−77·5	7	+42·9	16	71	181·6	−16·4	I. 1049 (2)
1	7·8	3	June 1	−82·6	3	−58·8	6	16	135·4	+15·8	
2	2·1	4/6	2	+ 5·3	7	+75·4	5	16	210·1	−19·8	I. 1050 (1)
3	5·10	9	2	−39·5	10	+74·1	14	64	170·6	+11·6	II.
4	5·38	9/10	2	−40·5	11	+80·3	49	285	167·0	+ 8·0	I. 1051 (1)
5	1·6	5	3	+23·1	7	+79·6	8	58	217·1	− 9·9	
6	6·47	8	5	−19·2	12	+81·9	20	96	152·5	+19·1	I. 1052 (1)
7	11·0	2	7	−44·8	8	−33·8	2	6	92·0	−12·2	
8	12·6	2	7	−67·2	8	−53·7	6	14	70·8	−11·9	
9	12·7	2	7	−67·7	8	−53·9	4	9	70·5	− 6·4	

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.	
	1928.		1928.	°	1928.	°			°	°	
10630	June 13·14	8	June 7	−74·0	June 14	+14·7	12	62	64·2	−10·4	II.
1	7·3	2	8	+16·3	9	+27·9	2	4	141·2	+18·4	
2	17·2	2	13	−51·5	14	−35·8	3	17	10·6	−10·2	
3	17·19	11	13	−53·0	23	+82·1	80	469	10·6	+12·8	I. 1053 (1)
4	16·70	3	15	−16·7	17	+ 7·3	4	14	17·0	−13·8	
5	17·25	8	15	−25·1	22	+68·9	40	201	9·8	−15·0	II.
6	22·69	8	17	−72·4	24	+23·5	10	61	297·7	+14·5	II.
7	23·04	13	17	−76·2	29	+84·4	49	300	293·1	+10·1	I. 1054 (1)
8	17·5	6	18	+14·8	23	+75·8	14	67	6·1	+18·8	II.
9	23·6	3	18	−65·7	20	−43·4	6	13	286·2	+14·4	
10640	17·7	4	19	+22·2	22	+66·7	16	59	4·2	+ 7·9	
1	24·64	7	21	−45·0	27	+36·8	12	43	272·0	+14·9	II.
2	27·55	13	21	−82·3	July 3	+77·0	33	199	233·4	−11·7	II.
3	23·92	3	22	−19·5	June 24	+ 6·9	3	11	281·5	+ 9·9	
4	28·98	14	22	−84·2	July 5	+83·6	114	654	214·5	−19·3	I. 1050 (2)
5	26·39	10	23	−43·0	2	+81·2	27	124	248·8	+ 8·8	II.
6	28·24	11	23	−65·0	3	+68·4	20	94	224·3	+12·1	II.
7	29·36	10	23	−80·0	2	+41·1	17	56	209·5	+15·7	II.
8	25·75	4	24	−18·1	June 27	+21·3	7	20	257·2	+ 4·8	
9	30·25	12	24	−75·6	July 5	+65·7	78	531	197·7	+18·1	II.
10650	July 2·14	10	26	−77·2	5	+42·9	10	38	172·7	+ 8·5	I. 1051 (2)
1	June 24·2	2	27	+42·9	June 28	+55·4	5	15	278·2	+ 5·9	
2	30·02	2/5	27	−34·5	July 1	+17·7	0	1	200·7	+ 9·2	
3	July 3·30	8/12	27	−79·5	8	+63·7	8	25	157·3	+19·7	I. 1052 (2)
4	3·44	6	29	−52·1	4	+10·8	9	28	155·7	+ 6·5	II.
5	June 28·5	5	30	+24·9	4	+78·2	34	188	221·0	−21·9	
6	28·6	4	July 1	+37·2	4	+75·2	9	27	219·6	−11·2	
7	30·6	3/4	1	+ 8·9	4	+50·0	3	13	192·4	−12·2	
8	July 7·43	13	1	−78·6	13	+78·5	82	513	102·6	−26·6	I. 1055 (1)
9	7·29	6/8	2	−60·2	9	+21·8	1	4	104·6	−16·7	
10660	1·8	4	4	+32·2	7	+75·0	9	30	177·4	+12·2	
1	1·7	2	5	+46·2	6	+63·4	4	16	178·0	− 6·7	
2	12·26	13	6	−77·0	18	+80·8	172	908	38·8	+ 8·0	I. 1056 (1)
3	12·72	10	6	−81·7	15	+29·5	25	135	32·6	−10·4	II.
4	14·20	13	8	−76·1	20	+83·2	39	215	13·1	+14·3	I. 1053 (2)
5	12·29	3/5	11	−12·6	15	+41·7	3	16	38·4	− 9·7	
6	12·76	6	12	− 3·7	17	+59·2	11	30	32·2	− 3·8	II.
7	13·23	3	12	−12·1	14	+16·1	0	5	25·9	+ 7·6	
8	16·1	3	12	−49·3	14	−22·6	5	11	348·1	+ 6·4	
9	17·52	12	12	−69·2	23	+72·5	172	970	329·2	−18·8	II.
10670	18·2	4/5	13	−63·0	17	−11·9	2	10	319·6	−14·4	
1	19·85	14	13	−80·0	26	+83·7	126	671	298·3	+ 9·4	I. 1054 (2)
2	20·5	5	16	−55·2	20	− 1·8	11	27	289·5	−10·8	
2*	20·3	5	22	+26·7	26	+79·6	27	132	291·9	−19·3	
3	21·65	7/8	16	−68·1	23	+22·7	8	39	274·6	+17·7	II.
4	19·6	2	17	−29·2	18	−16·3	2	4	302·0	+21·2	
5	16·6	4	18	+22·9	21	+64·0	8	21	341·8	+ 3·6	
6	18·74	2	18	− 4·5	19	+ 8·8	1	4	313·0	+18·2	
7	15·7	3	19	+47·0	21	+75·9	9	32	352·9	+ 7·1	
8	20·89	5	19	−18·8	23	+30·9	8	29	284·6	+10·6	
9	20·0	2	20	+ 5·8	21	+17·8	2	8	296·2	+19·9	

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.	Umbræ.	Whole Spots.	Longitude.	Latitude.	
	1928.		1928.	°	1928.	°			°	°	
10680	July 26·5	5	July 20	−79·8	July 24	−27·7	6	21	210·7	−19·0	I. 1050 (3)
1	26·88	13	20	−84·0	Aug. 1	+75·8	30	175	205·3	+14·6	II.
2	29·59	11	24	−71·1	3	+64·3	14	60	169·5	+ 6·5	II.
3	22·0	4	25	+47·6	July 28	+84·4	23	108	270·4	+15·5	
4	26·35	4	25	− 9·3	28	+25·6	1	2	212·4	+18·4	
5	31·50	12	25	−78·1	Aug. 5	+63·8	42	248	144·2	−19·9	II.
6	31·79	11	27	−60·6	6	+76·1	123	690	140·4	+14·6	I. 1057 (1)
7	29·51	2	29	− 4·1	July 30	+13·6	2	6	170·5	+10·0	
8	Aug. 3·58	8	29	−70·0	Aug. 5	+20·8	17	71	103·4	−16·0	II.
9	4·0	6	29	−71·9	3	−10·6	9	25	98·6	−25·6	I. 1055 (2)
10690	3·85	10	29	−73·8	7	+51·4	27	139	99·9	+ 7·4	II.
1	2·99	9	30	−51·0	7	+62·6	5	13	111·3	+11·5	II.
2	7·77	10	Aug. 1	−83·5	10	+35·2	10	41	48·1	+ 6·5	I. 1056 (2)
3	5·77	5	2	−43·9	6	+10·1	9	20	74·6	− 3·8	
4	8·35	13	2	−76·4	14	+80·0	58	299	40·4	+ 8·8	I. 1056 (2)
5	9·92	12	4	−76·6	15	+78·2	77	387	19·7	−15·4	I. 1058 (1)
6	10·40	3/8	4	−79·8	11	+12·0	3	6	13·3	+15·2	I. 1053 (3)
7	4·2	4	6	+28·7	9	+67·2	8	25	94·8	−13·6	
8	12·66	11	7	−68·2	17	+64·4	7	25	343·4	−17·6	II.
9	8·77	3	8	− 4·3	10	+20·5	6	20	34·9	+20·3	
10700	16·11	13	10	−76·7	22	+83·4	29	183	297·9	+ 4·1	II.
1	14·1	2/3	11	−35·4	13	−11·4	2	5	324·0	+23·6	
2	15·71	9	11	−60·6	19	+50·7	9	24	303·2	−17·2	II.
3	16·13	5	12	−47·8	16	+ 3·7	12	25	297·6	+20·2	
4	17·04	8	12	−60·9	19	+29·7	20	85	285·5	+ 7·9	II.
5	16·7	2	13	−43·9	14	−30·3	5	17	290·5	− 9·7	
6	11·0	4	14	+44·6	17	+80·8	43	178	5·3	−14·7	I. 1059 (1)
7	19·0	2	14	−61·6	15	−46·6	2	8	260·3	+ 9·0	
8	21·31	11	15	−77·6	25	+54·1	25	102	229·1	−16·0	II.
9	21·45	10	18	−40·4	27	+78·6	106	660	227·3	−11·6	I. 1060 (1)
10710	24·82	12	18	−88·2	29	+61·7	25	140	182·8	+ 5·5	II.
1	26·04	10	20	−74·7	29	+44·6	23	117	166·6	− 8·9	II.
2	27·24	12	21	−78·6	Sept. 1	+68·4	28	165	150·8	−20·5	II.
3	27·80	14	21	−84·6	3	+86·7	41	229	143·3	+15·1	I. 1057 (2)
4	24·1	2	22	−25·8	Aug. 23	− 8·2	2	5	191·7	+28·8	
5	28·89	12	23	−73·6	Sept. 3	+74·3	70	388	129·0	+17·4	II.
6	30·70	12	24	−83·0	4	+62·3	17	90	105·1	+ 6·0	II.
7	31·14	8/9	25	−76·3	2	+28·7	7	40	99·3	−14·5	II.
8	27·89	4/5	26	−19·9	Aug. 30	+33·5	4	15	142·1	−15·1	
9	31·7	3/4	26	−70·1	29	−33·9	2	7	91·8	− 8·8	
10720	Sept. 2·00	5/12	27	−73·2	Sept. 7	+68·8	3	7	74·6	+23·2	
1	Aug. 30·53	4/5	29	−16·9	2	+38·0	2	6	107·3	−12·4	
2	Sept. 4·0	3	29	−74·7	Aug. 31	−46·9	6	12	48·2	+18·6	
3	4·12	12	29	−77·3	Sept. 9	+72·0	19	96	46·6	+ 7·9	I. 1056 (3)
4	4·7	4	29	−84·9	1	−43·8	4	12	38·9	+20·6	
5	5·62	5/7	31	−68·3	6	+ 8·4	3	7	26·9	−14·8	I. 1058 (2)
6	6·97	12	Sept. 1	−73·9	12	+71·1	12	56	9·0	−13·1	I. 1059 (2)
7	Aug. 30·2	3	3	+56·1	5	+80·6	16	49	112·1	+13·4	
8	31·3	4	3	+41·7	6	+79·3	26	143	97·1	− 7·5	I. 1061 (1)
9	Sept. 2·3	5	3	+11·4	7	+70·5	10	32	71·2	− 1·0	

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.	Umbræ.	Whole Spots.	Longitude.	Latitude.	
	1928.		1928.	°	1928.	°			°	°	
10730	Sept. 8·96	7	Sept. 3	−76·0	Sept. 9	+ 9·3	14	39	342·7	−15·8	II.
1	1·8	2	4	+32·2	5	+49·5	4	11	77·8	+ 7·9	
2	5·5	2	4	−15·7	5	− 0·6	2	7	28·8	+20·6	
3	12·70	14	6	−84·4	19	+86·8	164	1059	293·4	+14·7	I. 1062 (1)
4	5·2	3	7	+28·2	9	+58·4	6	27	32·5	+18·6	
5	10·44	6	8	−26·6	13	+36·4	3	11	323·2	+12·7	
6	11·16	9	8	−36·5	16	+73·8	52	252	313·7	+ 8·4	II.
7	13·8	2/3	9	−55·8	11	−33·6	2	6	278·4	−19·7	
8	8·3	2/4	10	+25·3	13	+68·6	2	5	351·4	+10·1	
9	17·29	13	11	−78·6	23	+82·0	42	225	232·8	−10·4	I. 1060 (2)
10740	22·3	2	17	−65·7	18	−51·3	3	6	166·3	− 9·5	
1	23·24	13	17	−77·5	29	+81·2	34	194	154·2	−16·1	II.
2	24·40	14	17	−87·2	30	+79·1	186	1082	138·9	+16·0	I. 1063 (1)
3	15·1	4	18	+42·0	21	+83·1	16	74	261·4	+17·7	I. 1064 (1)
4	24·52	13	18	−78·4	30	+72·0	94	533	137·4	−18·8	II.
5	25·61	11	19	−81·3	29	+50·0	40	231	123·0	+16·1	II.
6	27·39	13	21	−78·4	Oct. 3	+75·4	265	1770	99·5	−15·3	II.
7	27·6	2	22	−69·1	Sept. 23	−56·1	5	27	96·2	− 8·8	I. 1061 (2)
8	26·24	3	25	− 8·1	27	+15·1	3	13	114·7	+16·2	
9	28·29	3/4	26	−25·3	29	+14·0	3	9	87·6	− 6·2	
10750	Oct. 2·45	8	27	−62·9	Oct. 4	+23·1	18	91	32·6	+19·3	II.
1	Sept. 30·49	4	28	−30·3	1	+14·9	5	14	58·6	−13·3	
2	29·2	2	30	+14·8	1	+29·1	2	6	75·4	− 6·1	
3	Oct. 1·58	6	30	−16·1	5	+53·7	14	54	44·1	−16·0	II.
4	7·3	4	Oct. 2	−62·2	5	−27·1	3	9	328·7	+16·4	
5	7·4	3	2	−64·2	4	−40·2	7	16	327·1	−14·7	
6	7·5	3/4	3	−54·7	6	−15·9	4	11	325·9	+ 8·2	
7	9·50	13	3	−81·3	15	+80·1	56	323	299·6	+13·6	I. 1062 (2)
8	5·6	3/7	5	+ 0·8	11	+76·4	7	29	351·5	+ 2·3	
9	11·4	7	5	−77·4	11	− 0·6	12	34	275·3	− 4·6	II.
10760	12·55	13	6	−79·4	18	+76·1	34	214	259·5	+18·9	I. 1064 (2)
1	8·01	3	7	− 7·4	9	+18·6	3	17	319·4	−13·6	
2	13·68	13	7	−81·2	19	+71·9	79	478	244·5	+ 7·4	II.
3	11·57	7	10	−17·5	16	+65·5	12	46	272·3	+ 9·5	II.
4	14·47	7/9	10	−52·0	18	+50·5	1	7	234·1	+10·3	II.
5	15·3	3	11	−51·7	13	−22·7	2	5	223·6	− 7·9	
6	13·5	2/7	13	+ 3·1	19	+74·8	1	5	247·2	−16·4	
7	19·68	8	13	−81·7	20	+10·1	11	38	165·3	−17·5	II.
8	16·03	3	14	−21·0	16	+ 3·8	7	21	213·5	+13·8	
9	21·73	13	15	−83·4	27	+74·0	58	311	138·4	+16·4	I. 1063 (2)
10770	15·3	6	16	+13·1	21	+83·8	61	336	223·5	+12·9	I. 1065 (1)
1	21·60	7/8	17	−57·5	24	+36·5	8	27	140·1	− 9·3	II.
2	21·93	11	17	−62·5	27	+75·5	27	136	135·7	+14·1	II.
3	22·78	5/6	18	−58·2	23	+ 8·3	2	5	124·4	− 8·2	
4	21·11	2	20	−10·7	21	+ 4·6	6	12	146·6	+10·2	
5	22·64	8	21	−16·5	28	+75·5	52	241	126·3	+16·0	II.
6	21·6	3/4	23	+23·3	26	+63·5	2	7	139·5	−14·5	
7	28·53	12	23	−70·5	Nov. 3	+79·3	41	258	48·6	− 9·7	II.
8	29·5	3	23	−82·0	Oct. 25	−51·7	6	13	36·2	+17·6	
9	23·6	2/3	24	+11·0	26	+37·8	2	10	114·3	− 9·4	

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.	
	1928–29.		1928.	°	1928–29.	°			°	°	
10780	Oct. 24·4	2/3	Oct. 25	+13·8	Oct. 27	+39·1	2	11	103·6	−18·5	
1	31·40	7	29	−26·6	Nov. 4	+57·4	10	26	10·9	−14·0	II.
2	28·0	4	30	+32·6	2	+72·4	13	48	56·1	+18·2	I. 1066 (1)
3	Nov. 4·3	5	30	−64·5	3	−12·1	5	8	318·8	+13·8	
4	5·69	13	30	−81·4	11	+77·9	24	134	301·2	+15·2	I. 1062 (3)
5	3·1	3	31	−36·9	2	− 9·4	8	20	335·0	+14·4	
6	4·3	2	31	−52·0	1	−38·2	0	2	318·8	−15·2	
7	7·18	6/7	Nov. 3	−49·7	9	+30·8	4	15	281·5	+ 8·8	II.
8	9·20	12	3	−74·8	14	+66·8	11	42	254·8	+21·0	I. 1064 (3)
9	9·28	13	3	−74·9	15	+84·4	130	860	253·7	−15·4	I. 1067 (1)
10790	5·3	2	5	+ 2·1	6	+14·2	4	8	306·6	+14·4	
1	11·33	11	5	−77·0	15	+53·9	30	207	226·8	+13·1	I. 1065 (2)
2	9·99	7	9	− 9·7	15	+75·0	53	329	244·2	+ 9·8	I. 1068 (1)
3	18·08	14	11	−84·0	24	+84·1	27	152	137·7	+15·8	I. 1063 (3)
4	15·63	9	13	−33·6	21	+76·0	26	136	170·0	−15·7	II.
5	19·02	8	13	−75·4	20	+18·3	11	34	125·4	−13·9	II.
6	15·3	6	16	+13·4	21	+77·1	40	203	174·2	+12·0	II.
7	23·92	6	18	−73·4	23	+ 1·4	7	17	60·8	+17·5	I. 1066 (2)
8	23·2	4	19	−52·6	22	− 8·2	14	42	70·5	−12·7	
9	20·1	2/3	21	+17·3	23	+47·3	3	9	111·6	+16·7	
10800	26·9	2	23	−41·7	24	−31·4	14	42	21·8	+19·8	
1	22·6	3	26	+52·3	28	+76·3	26	131	78·5	+22·9	I. 1069 (1)
2	25·6	3	26	+12·6	28	+37·6	5	21	39·3	−13·3	
3	Dec. 3·7	5	28	−71·0	Dec. 2	−17·9	6	13	291·5	+14·0	I. 1062 (4)
4	5·61	13	30	−70·1	12	+83·9	183	1210	266·8	+ 8·4	I. 1070 (1)
5	6·35	13	30	−77·0	12	+78·6	33	184	256·9	−16·4	I. 1067 (2)
6	7·00	7/8	Dec. 1	−71·7	8	+16·3	4	13	248·4	+11·7	I. 1068 (2)
7	2·75	4	2	− 6·4	5	+36·7	11	32	304·4	+21·8	
8	2·87	2	2	− 6·6	3	+ 7·5	3	12	302·8	+ 7·8	
9	7·89	12/13	2	−76·3	14	+81·5	60	398	236·7	−11·1	I. 1071 (1)
10810	12·63	13	6	−80·6	18	+80·6	26	129	174·2	−10·6	II.
1	8·43	2	7	−13·1	8	+ 1·2	2	6	229·6	+13·2	
2	12·38	11	7	−64·8	17	+65·6	12	55	177·4	+18·4	II.
3	12·24	9/10	9	−42·1	18	+79·3	31	179	179·3	+12·1	I. 1072 (1)
4	15·54	7/10	9	−80·5	18	+38·6	5	18	135·9	+14·8	I. 1063 (4)
5	13·0	2	10	−35·0	11	−20·0	1	6	169·9	−17·3	
6	17·22	13	11	−76·0	23	+80·4	34	196	113·7	+15·2	II.
7	11·5	5	12	+10·7	16	+64·1	5	14	189·3	−14·4	
8	14·77	5/7	12	−32·7	18	+49·3	4	12	146·1	−14·3	
9	19·05	7	13	−72·9	19	+ 1·7	7	20	89·6	−20·0	II.
10820	15·49	5	14	−17·6	18	+37·4	6	25	136·5	+ 4·9	
1	19·88	8	14	−73·4	21	+21·0	7	20	78·7	+21·8	I. 1069 (2)
2	17·51	6/9	15	−28·3	23	+77·0	4	16	109·9	−15·6	II.
3	18·4	2	17	−11·4	18	− 0·8	1	5	98·4	− 9·4	
4	23·67	3	22	−18·2	24	+ 9·4	4	20	28·7	+ 9·6	
5	26·36	6	24	−27·9	29	+38·7	4	10	353·4	+ 7·7	
6	31·24	12	25	−84·3	Jan. 5	+75·0	54	325	289·1	+ 7·5	II.
7	Jan. 1·35	12	26	−80·2	6	+69·7	27	192	274·5	+ 9·2	I. 1070 (2)
8	Dec. 28·78	5/6	27	−20·4	1	+49·2	8	44	321·5	+ 4·0	
9	Jan. 4·08	7	29	−75·3	4	+ 2·3	12	43	238·5	−10·2	I. 1071 (2)
10830	Dec. 29·9	5	31	+20·1	4	+71·0	16	65	306·7	+20·2	

GENERAL CATALOGUE of SUN SPOTS—*continued.*

REVIVAL GROUPS of SUN SPOTS, 1928.

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.	
		1927–28.			1927–28.	°	1927–28.	°		°	°	
1	10423	Oct. 20·5	991	6	Oct. 21	+10	Oct. 26	+81	344	305	− 5	I. 1034
	38	Nov. 15·74	992	13	Nov. 9	−81	Nov. 21	+75	411	319	− 6	
	63	Dec. 11·98	993	12	Dec. 6	−76	Dec. 17	+75	77	334	− 8	
	85	Jan. 8·30	994	5/7	Jan. 5	−35	Jan. 11	+42	28	334	− 7	
2	10480	Dec. 29·9	993	3/4	Jan. 1	+33	Jan. 4	+76	26	97	+ 8	
	501	Jan. 25·92	994	11	Jan. 21	−65	Jan. 31	+77	328	102	+ 8	
	522	Feb. 21·55	995	13	Feb. 15	−81	Feb. 27	+78	799	111	+ 6	I. 1037
	550	Mar. 19·93	996	12	Mar. 14	−74	Mar. 25	+74	537	110	+ 8	
	579	Apr. 16·06	997	13	Apr. 10	−75	Apr. 22	+86	243	112	+ 9	
	603	May 13·3	998	6	May 7	−78	May 12	−12	47	113	+ 8	
3	10489	Jan. 12·68	994	10	Jan. 10	−33	Jan. 19	+80	238	276	−11	II.
	513	Feb. 8·34	995	10	Feb. 2	−80	Feb. 11	+38	108	285	−12	II.
	539	Mar. 6·1	996	2	Mar. 4	−21	Mar. 5	− 8	6	293	−15	
4	10495	Jan. 18·22	994	5	Jan. 15	−36	Jan. 19	+16	23	203	+15	
	517	Feb. 14·01	995	10	Feb. 10	−50	Feb. 19	+73	164	210	+16	II.
5	10497	Jan. 22·55	994	13	Jan. 16	−78	Jan. 28	+78	1061	146	+15	II.
	525	Feb. 19·4	995	2	Feb. 19	+ 1	Feb. 20	+14	10	140	+15	
6	10502	Jan. 22·0	994	4	Jan. 24	+30	Jan. 27	+71	90	154	−10	
	23	Feb. 17·95	995	8	Feb. 16	−23	Feb. 23	+75	147	158	−10	II.
7	10505	Jan. 30·36	994	8	Jan. 24	−79	Jan. 31	+12	93	43	−16	II.
	28	Feb. 26·03	995	9/10	Feb. 20	−74	Feb. 29	+46	20	52	−16	II.
8	10509	Jan. 29·8	994	3	Jan. 30	+ 7	Feb. 1	+32	11	51	−12	
	26	Feb. 25·40	995	13	Feb. 19	−83	Mar. 2	+80	423	60	−12	II.
9	10518	Feb. 9·2	995	4	Feb. 12	+43	Feb. 15	+82	231	274	+11	
	38	Mar. 7·78	996	13	Mar. 2	−68	Mar. 14	+83	289	270	+ 9	I. 1041
	63	Apr. 3·98	997	12	Mar. 29	−73	Apr. 9	+73	52	272	+10	
10	10519	Feb. 19·7	995	6	Feb. 13	−83	Feb. 18	−15	29	135	−23	II.
	47	Mar. 18·40	996	14	Mar. 11	−86	Mar. 24	+78	446	130	−23	II.
11	10524	Feb. 18·35	995	8	Feb. 17	−15	Feb. 24	−83	177	153	−17	II.
	46	Mar. 16·22	996	14	Mar. 9	−89	Mar. 22	−83	244	159	−20	II.

GENERAL CATALOGUE of SUN SPOTS—*continued.*

REVIVAL GROUPS of SUN SPOTS, 1928—*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.	
		1928.			1928.	°	1928.	°		°	°	
12	10535	Mar. 2·55	996	12/13	Feb. 25	−81	Mar. 8	+75	59	339	−19	II.
	58	Mar. 30·71	997	10	Mar. 24	−82	Apr. 2	+36	43	328	−19	II.
13	10541	Mar. 10·05	996	12	Mar. 4	−76	Mar. 15	+79	198	241	+15	II.
	70	Apr. 5·54	997	6	Apr. 4	−12	Apr. 9	+52	16	251	+13	II.
	95	May 2·3	998	3	Apr. 29	−39	May 1	−15	16	257	+13	
14	10545	Mar. 13·0	996	3	Mar. 8	−61	Mar. 10	−35	13	201	−14	
	568	Apr. 9·08	997	14	Apr. 2	−85	Apr. 15	+78	870	204	−16	I. 1046
	598	May 6·48	998	13	Apr. 30	−78	May 12	+76	404	202	−14	I. 1046
	617	June 2·94	999	13	May 27	−85	June 8	+76	575	199	−13	I. 1046
15	10557	Mar. 30·05	997	11	Mar. 23	−88	Apr. 2	+44	195	337	−13	II.
	587	Apr. 25·64	998	13	Apr. 19	−84	May 1	+73	276	346	−12	II.
	610	May 22·88	999	2/5	May 19	−46	May 23	+ 6	5	346	−11	
16	10564	Apr. 6·2	997	4	Mar. 31	−76	Apr. 3	−36	19	243	+20	
	93	May 3·89	998	6/7	Apr. 28	−73	May 4	+ 6	37	237	+22	II.
17	10573	Apr. 4·5	997	2	Apr. 5	+14	Apr. 6	+25	7	265	−16	
	97	May 1·8	998	2	Apr. 30	−18	May 1	−10	8	265	−14	
18	10592	May 3·21	998	13	Apr. 27	−78	May 9	+82	419	246	+ 9	I. 1048
	615	May 29·95	999	12	May 24	−70	June 4	+72	45	252	+ 8	I. 1048
	645	June 26·39	1000	10	June 23	−43	July 2	+81	124	249	+ 9	II.
19	10596	Apr. 29·4	998	5	Apr. 30	+11	May 4	+66	37	296	−20	
	611	May 26·8	999	4	May 21	−74	May 24	−28	10	293	−20	
20	10601	May 5·3	998	2	May 3	−25	May 4	−12	10	218	−12	
	16	May 31·94	999	10	May 26	−75	June 4	+52	122	226	−11	II.
	25	June 1·6	999	5	June 3	+23	June 7	+80	58	217	−10	II.
	42	June 27·55	1000	13	June 21	−82	July 3	+77	199	233	−12	II.
	56	June 28·6	1000	4	July 1	+37	July 4	+75	27	220	−11	II.
21	10609	May 21·6	998	4/6	May 16	−67	May 21	− 1	6	2	−12	
	32	June 17·2	999	2	June 13	−52	June 14	−36	17	11	−10	
22	10613	May 27·75	999	11/12	May 22	−72	June 2	+74	108	281	+13	II.
	39	June 23·6	1000	3	June 18	−66	June 20	−43	13	286	+14	
23	10618	June 3·29	999	13	May 28	−80	June 9	+82	257	195	+ 8	II.
	52	June 30·02	1000	2/5	June 27	−34	July 1	+18	1	201	+ 9	

GENERAL CATALOGUE of SUN SPOTS—*continued.*

REVIVAL GROUPS OF SUN SPOTS, 1928—*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.	
		1928.			1928.	°	1928.	°		°	°	
24	10623	June 5·10	999	9	June 2	−40	June 10	+74	64	171	+12	II.
	60	July 1·8	1000	4	July 4	+32	July 7	+75	30	177	+12	
25	10624	June 5·38	999	9/10	June 2	−40	June 11	+80	285	167	+ 8	I. 1015
	50	July 2·14	1000	10	June 26	−77	July 5	+43	38	173	+ 8	I. 1015
	82	July 29·59	1001	11	July 24	−71	Aug. 3	+64	60	169	+ 6	II.
26	10643	June 23·92	1000	3	June 22	−20	June 24	+ 7	11	282	+10	
	678	July 20·89	1001	5	July 19	−19	July 23	+31	29	285	+11	
	704	Aug. 17·04	1002	8	Aug. 12	−61	Aug. 19	+30	85	286	+ 8	II.
27	10647	June 29·36	1000	10	June 23	−80	July 2	+41	56	209	+16	II.
	81	July 26·88	1001	13	July 20	−84	Aug. 1	+76	175	205	+15	II.
	84	July 26·35	1001	4	July 25	− 9	July 28	+26	2	212	+18	II.
28	10659	July 7·29	1000	6/8	July 2	−60	July 9	+22	4	105	−17	
	688	Aug. 3·58	1001	8	July 29	−70	Aug. 5	+21	71	103	−16	II.
	697	Aug. 4·2	1001	4	Aug. 6	+29	Aug. 9	+67	25	95	−14	II.
	717	Aug. 31·14	1002	8/9	Aug. 25	−76	Sept. 2	+29	40	99	−15	II.
	746	Sept. 27·39	1003	13	Sept. 21	−78	Oct. 3	+75	1770	99	−15	II.
29	10672	July 20·5	1001	5	July 16	−55	July 20	− 2	27	289	−11	
	705	Aug. 16·7	1002	2	Aug. 13	−44	Aug. 14	−30	17	290	−10	
30	10674	July 19·6	1001	2	July 17	−29	July 18	−16	4	302	+21	
	679	July 20·0	1001	2	July 20	+ 6	July 21	+18	8	296	+20	
	703	Aug. 16·13	1002	5	Aug. 12	−48	Aug. 16	+ 4	25	298	+20	
31	10685	July 31·50	1001	12	July 25	−78	Aug. 5	+64	248	144	−20	II.
	712	Aug. 27·24	1002	12	Aug. 21	−79	Sept. 1	+68	165	151	−20	II.
32	10686	July 31·79	1001	11	July 27	−61	Aug. 6	+76	690	140	+15	I. 1057
	713	Aug. 27·80	1002	14	Aug. 21	−85	Sept. 3	+87	229	143	+15	I. 1057
	742	Sept. 24·40	1003	14	Sept. 17	−87	Sept. 30	+79	1082	139	+16	
	769	Oct. 21·73	1004	13	Oct. 15	−83	Oct. 27	+74	311	138	+16	I. 1063
	793	Nov. 18·08	1005	14	Nov. 11	−84	Nov. 24	+84	152	138	+16	I. 1063
	814	Dec. 15·54	1006	7/10	Dec. 9	−80	Dec. 18	+39	18	136	+15	I. 1063
33	10690	Aug. 3·85	1001	10	July 29	−74	Aug. 7	+51	139	100	+ 7	II.
	716	Aug. 30·70	1002	12	Aug. 24	−83	Sept. 4	+62	90	105	+ 6	II.
34	10691	Aug. 2·99	1001	9	July 30	−51	Aug. 7	+63	13	111	+11	II.
	727	Aug. 30·2	1002	3	Sept. 3	+56	Sept. 5	+81	49	112	+13	II.
	748	Sept. 26·24	1003	3	Sept. 25	− 8	Sept. 27	+15	13	115	+16	II.

GENERAL CATALOGUE of SUN SPOTS—*continued.*

REVIVAL GROUPS of SUN SPOTS, 1928—*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.	
		1928.			1928.	°	1928.	°		°	°	
35	10698	Aug. 12·66	1002	11	Aug. 7	−68	Aug. 17	+64	25	343	−18	II.
	730	Sept. 8·96	1003	7	Sept. 3	−76	Sept. 9	+ 9	39	343	−16	II.
36	10699	Aug. 8·77	1001	3	Aug. 8	− 4	Aug. 10	+20	20	35	+20	
	724	Sept. 4·7	1002	4	Aug. 29	−85	Sept. 1	−44	12	39	+21	}
	732	Sept. 5·5	1002	2	Sept. 4	−16	Sept. 5	− 1	7	29	+21	}
	734	Sept. 5·2	1002	3	Sept. 7	+28	Sept. 9	+58	27	32	+19	}
	750	Oct. 2·45	1003	8	Sept. 27	−63	Oct. 4	+23	91	33	+19	II.
	778	Oct. 29·5	1004	3	Oct. 23	−82	Oct. 25	−52	13	36	+18	
37	10711	Aug. 26·04	1002	10	Aug. 20	−75	Aug. 29	+45	117	167	− 9	II.
	40	Sept. 22·3	1003	2	Sept. 17	−66	Sept. 18	−51	6	166	−10	
38	10715	Aug. 28·89	1002	12	Aug. 23	−74	Sept. 3	+74	388	129	+17	II.
	45	Sept. 25·61	1003	11	Sept. 19	−81	Sept. 29	+50	231	123	+16	II.
	75	Oct. 22·64	1004	8	Oct. 21	−16	Oct. 28	+76	241	126	+16	II.
39	10727	Aug. 30·2	1002	3	Sept. 3	+56	Sept. 5	+81	49	112	+13	
	48	Sept. 26·24	1003	3	Sept. 25	− 8	Sept. 27	+15	13	115	+16	
40	10754	Oct. 7·3	1004	4	Oct. 2	−62	Oct. 5	−27	9	329	+16	
	83	Nov. 4·3	1005	5	Oct. 30	−64	Nov. 3	−12	8	319	+14	}
	85	Nov. 3·1	1005	3	Oct. 31	−37	Nov. 2	− 9	20	335	+14	}
41	10761	Oct. 8·01	1004	3	Oct. 7	− 7	Oct. 9	+19	17	319	−14	
	86	Nov. 4·3	1005	2	Oct. 31	−52	Nov. 1	−38	2	319	−15	
42	10762	Oct. 13·68	1004	13	Oct. 7	−81	Oct. 19	+72	478	245	+ 7	II.
	792	Nov. 9·99	1005	7	Nov. 9	−10	Nov. 15	+75	329	244	+10	} I. 1068
	806	Dec. 7·00	1006	7/8	Dec. 1	−72	Dec. 8	+16	13	248	+12	} I. 1068
43	10763	Oct. 11·57	1004	7	Oct. 10	−18	Oct. 16	+66	46	272	+10	II.
	87	Nov. 7·18	1005	6/7	Nov. 3	−50	Nov. 9	+31	15	281	+ 9	II.
44	10766	Oct. 13·5	1004	2/7	Oct. 13	+ 3	Oct. 19	+75	5	247	−16	
	789	Nov. 9·28	1005	13	Nov. 3	−75	Nov. 15	+84	860	254	−15	} I. 1067
	805	Dec. 6·35	1006	13	Nov. 30	−77	Dec. 12	+79	184	257	−16	} I. 1067

GENERAL CATALOGUE of SUN SPOTS—*continued.*

REVIVAL GROUPS of SUN SPOTS, 1928—*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.	
		1928.			1928.	°	1928–29.	°		°	°	
45	10767	Oct. 19·68	1004	8	Oct. 13	−82	Oct. 20	+10	38	165	−17	II.
	794	Nov. 15·63	1005	9	Nov. 13	−34	Nov. 21	+76	136	170	−16	II.
	815	Dec. 13·0	1006	2	Dec. 10	−35	Dec. 11	−20	6	170	−17	
46	10770	Oct. 15·3	1004	6	Oct. 16	+13	Oct. 21	+84	336	224	+13	I. 1065
	791	Nov. 11·33	1005	11	Nov. 5	−77	Nov. 15	+54	207	227	+13	
	811	Dec. 8·43	1006.	2	Dec. 7	−13	Dec. 8	+ 1	6	230	+13	
47	10796	Nov. 15·3	1005	6	Nov. 16	+13	Nov. 21	+77	203	174	+12	II.
	813	Dec. 12·24	1006	9/10	Dec. 9	−42	Dec. 18	+79	179	179	+12	I. 1072
48	10799	Nov. 20·1	1005	2/3	Nov. 21	+17	Nov. 23	+47	9	112	+17	
	816	Dec. 17·22	1006	13	Dec. 11	−76	Dec. 23	+80	196	114	+15	II.
49	10807	Dec. 2·75	1006	4	Dec. 2	− 6	Dec. 5	+37	32	304	+22	
	30	Dec. 29·9	1007	5	Dec. 31	+20	Jan. 4	+71	65	307	+20	

ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sun Spots

for the Year

1928

Ledger I.—Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS 1928

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928.

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 Kodaikánal 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 $14°{\cdot}18$, 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, $\xi = 14°{\cdot}37 - 2°{\cdot}60 \sin^2\phi$.

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 1928.

No. 1035. Latitude −9°·1.

Group 10461 in Rotation 992.
,, 10477 ,, ,, 993.
,, 10506 ,, ,, 994.
,, 10532 ,, ,, 995.

Group 10461.—1927, December 5–15. At first a small stream which suddenly expands after December 8 and becomes a very large complex stream. The largest spot, *b*, is at the rear to begin with, but one fully as big forms in front on December 12.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
27·478 G	9	35	6	25	14·7	0·0	−11·2	−44·5
26·456 G	28	168	17	101	14·2	−0·6	−11·0	−32·1
25·311 C	25	127	14	69	16·2	+1·3	−11·0	−18·8
24·314 C	55	170	28	87	17·2	+2·1	−10·9	− 4·6
23·358 C	102	456	53	235	15·2	0·0	−10·7	+ 7·1
22·331 C	152	1055	82	567	14·7	−0·6	−10·6	+19·4
21·445 C	207	1319	129	828	15·9	+0·5	−11·2	+35·3
20·389 C	200	1458	153	1135	17·3	+1·7	−11·7	+49·2
19·326 C	136	1338	141	1429	17·1	+1·4	−11·4	+61·3
18·320 C	75	577	177	1203	18·0	+2·2	−12·4	+75·3
17·313 C	23	122	(65	344	9·3	...	−14·4)	+79·7
Means ...	...	...	80	568	16·0	...	−11·2	...
Spot *a*.								
20·389 C	80	717	64	574	18·9	0·0	−10·5	+50·8
19·326 C	68	806	80	951	20·4	+1·4	−10·1	+64·6
18·320 C	44	243	133	736	23·1	+4·0	−10·3	+80·4
Spot *b*.								
22·331 C	87	616	46	326	12·5	0·0	−11·4	+17·2
21·445 C	114	604	68	362	11·5	−1·1	−12·5	+30·9
20·389 C	84	483	59	338	10·8	−2·0	−12·9	+42·7
19·326 C	68	532	61	478	11·1	−1·8	−13·4	+55·3
18·320 C	25	300	34	408	10·7	−2·3	−14·2	+68·0
17·313 C	23	122	65	344	9·3	−3·8	−14·4	+79·7

Group 10477.—1927, December 28–1928, January 9. A large regular spot (possibly *a* of Group 10461) both preceded and followed by small companions until January 6.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
4·433 C	27	112	92	408	35·7	...	− 8·4	−81·1
3·468 G	83	456	120	663	33·0	+12·0	− 8·7	−70·1
2·453 G	148	691	137	643	32·4	+11·2	− 8·7	−57·8
1·464 G	176	825	122	574	33·0	+11·7	− 8·7	−43·9

No. 1035, Group 10477—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
0·464 G	207	923	120	534	32·8	+11·4	− 9·0	−30·9
1·117 K	200	916	108	494	32·8	+11·3	− 8·9	−22·3
2·542 C	190	899	95	450	33·0	+11·3	− 8·9	− 3·3
3·494 C	181	974	92	498	33·2	+11·4	− 8·7	+ 9·4
4·495 G	185	854	100	461	33·2	+11·3	− 8·4	+22·6
5·451 C	139	704	85	429	33·3	+11·3	− 8·3	+35·3
6·315 C	109	624	80	456	33·6	+11·5	− 7·9	+47·0
7·457 G	80	396	86	424	34·0	+11·7	− 7·9	+62·4
8·495 G	37	215	76	441	34·2	+11·8	− 7·8	+76·3
Means ...	...	...	102	506	33·2	...	− 8·5	...

Group 10506.—1928, January 24–February 5. A stable regular spot (identical with that of Group 10477) decreasing with small attendant spots from January 29 to February 2.

23·314 C	2	59	15	434	36·1	...	− 7·7	−86·7
24·460 G	52	217	82	341	35·8	+11·4	− 7·7	−71·9
25·420 C	70	380	68	369	35·6	+11·1	− 7·8	−59·5
26·327 C	89	488	65	356	35·7	+11·1	− 8·0	−47·4
27·335 C	98	594	60	356	35·8	+11·0	− 7·8	−34·0
28·411 C	102	712	54	377	35·7	+10·8	− 8·0	−20·0
29·324 C	108	695	55	354	35·8	+10·8	− 8·0	− 7·9
30·425 G	147	683	74	342	35·7	+10·5	− 8·0	+ 6·5
31·322 C	112	636	59	337	35·6	+10·3	− 7·8	+18·3
32·470 G	108	562	65	337	36·0	+10·6	− 8·0	+33·8
33·426 G	91	441	65	318	35·9	+10·4	− 7·8	+46·3
34·338 C	72	354	68	333	36·1	+10·5	− 7·7	+58·4
35·424 C	23	189	38	314	36·4	+10·6	− 7·6	+73·1
Means ...	...	...	63	344	35·8	...	− 7·8	...

Group 10532.—February 21–March 4. A stable regular spot continuing from the two preceding rotations.

51·407 G	22	109	42	210	37·1	+9·3	− 8·4	−75·8
52·533 G	35	228	35	228	37·3	+9·4	− 8·6	−60·7
53·561 C	26	271	19	198	37·5	+9·4	− 8·6	−47·0
54·534 G	52	362	31	217	37·6	+9·4	− 8·7	−34·1
55·439 G	70	379	38	205	37·8	+9·5	− 8·8	−22·0
56·437 G	68	340	35	173	37·6	+9·2	− 8·7	− 9·0
57·396 G	65	336	33	168	37·8	+9·3	− 8·9	+ 3·8
58·433 G	52	317	27	165	37·6	+8·9	− 8·9	+17·3
59·519 G	48	266	28	157	37·8	+9·0	− 8·8	+31·8
60·327 C	34	227	23	152	37·7	+8·8	− 8·7	+42·3
61·331 C	30	168	26	148	38·0	+9·0	− 8·7	+55·8
62·444 G	15	100	22	145	38·0	+8·8	− 8·7	+70·5
63·469 G	9	44	37	179	38·0	+8·7	− 8·9	+84·0
Means ...	...	...	30	180	37·6	...	− 8·7	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

No. **1036**. Latitude +7°·9.
Group 10487 in Rotation 994.
,, 10512 ,, ,, 995.

Group 10487.—January 8–17. An irregular stream of changing spots *sf* the position of Group 10486.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
7·457 G	9	22	6	14	293·8	0·0	+ 9·7	−37·8
8·495 G	56	174	32	99	293·0	−0·9	+ 8·5	−24·9
9·340 C	86	420	45	219	293·6	−0·5	+ 7·9	−13·2
10·469 G	86	649	44	331	293·0	−1·2	+ 8·2	+ 1·1
11·329 C	63	481	33	250	292·9	−1·4	+ 8·1	+12·3
12·434 G	54	359	31	209	293·2	−1·3	+ 8·0	+27·2
13·469 G	80	329	54	224	293·0	−1·6	+ 7·5	+40·6
14·458 G	69	380	63	342	294·4	−0·4	+ 6·9	+55·0
15·356 C	42	206	56	297	295·6	+0·7	+ 7·4	+68·0
16·324 C	8	55	27	211	295·6	...	+ 7·3	+80·8
Means ...	...	...	40	221	293·6	...	+ 8·0	...

Group 10512.—January 31–February 6. A small spot with two or three companions, followed by a fairly large area of faculæ. No spots are seen on February 5, but a faint cluster appears in the region on February 6.

30·425 G	0	2	0	8	307·2	...	+ 7·8	−82·0
31·322 C	8	32	13	52	306·6	+9·4	+ 8·0	−70·7
32·470 G	12	60	11	55	306·8	+9·5	+ 7·6	−55·4
33·426 G	15	60	11	43	305·6	+8·1	+ 7·8	−44·0
34·338 C	4	8	2	5	307·5	+9·9	+ 8·1	−30·2
35·424 C	0	0	0	0	...	...	...	...
36·490 G	9	43	5	22	303·1	+5·2	+ 7·3	− 6·2
Means ...	...	...	9	30	305·9	...	+ 7·8	...

No. **1037**. Latitude +7°·7.
Group 10501 in Rotation 994.
,, 10522 ,, ,, 995.
,, 10550 ,, ,, 996.
,, 10579 ,, ,, 997.
,, 10603 ,, ,, 998.

Group 10501.—January 21–31. A group undergoing transformation *f* Group 10499. On January 21–22, there is one tiny spot on January 23 a cluster; on January 24 there are two partially formed regular spots that separate considerably in longitude, whilst a connecting stream of small spots forms between them on the following days. The *f* part of the stream then begins to disappear, but the leader, *a*, shows a marked increase after January 28.

20·318 C	2	4	3	5	96·8	0·0	+ 9·0	−65·4
21·415 C	0	6	0	5	99·1	+2·1	+ 8·0	−48·7
22·309 C	25	139	17	92	97·1	0·0	+ 7·4	−38·9
23·314 C	42	240	24	135	99·8	+2·6	+ 7·5	−23·0
24·460 G	79	451	42	234	99·6	+2·2	+ 7·9	− 8·1
25·420 C	108	481	56	248	100·7	+3·2	+ 8·2	+ 5·6
26·327 C	114	615	62	336	103·0	+5·3	+ 8·0	+19·9
27·335 C	99	519	62	329	104·6	+6·8	+ 8·4	+34·8
28·411 C	113	639	92	525	105·8	+7·8	+ 7·9	+50·1
29·324 C	72	581	81	659	106·1	+8·0	+ 8·0	+62·4
30·425 G	56	445	130	1036	105·8	+7·6	+ 8·0	+76·6
Means ...	...	...	52	328	101·7	...	+ 8·0	...

No. **1037**, Group 10501—*continued.*
Spot *a*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
25·420 C	30	177	16	92	106·6	0·0	+ 7·5	+11·5
26·327 C	47	282	26	158	107·0	+0·3	+ 7·7	+23·9
27·335 C	51	295	33	192	107·3	+0·4	+ 8·2	+37·5
28·411 C	83	522	70	438	107·5	+0·5	+ 8·2	+51·8
29·324 C	55	464	64	543	107·1	−0·1	+ 7·9	+63·4
30·425 G	43	339	108	854	106·8	−0·5	+ 7·9	+77·6

Group 10522.—February 15–27. A large regular spot, *a*, with a compact cluster of imperfectly formed spots almost touching it on its southern side. This cluster, which is preceded by a fairly stable spot, *c*, lengthens out and has practically disappeared by February 25. An extensive area of faculæ accompanies the group.

45·433 C	64	307	255	1255	110·7	...	+ 5·5	−80·8
46·348 C	128	893	182	1288	111·0	+10·5	+ 5·2	−68·5
47·331 C	184	1353	170	1241	110·5	+ 9·8	+ 4·8	−56·1
48·472 G	240	1837	162	1240	110·7	+ 9·9	+ 5·0	−40·8
49·431 G	294	1901	172	1108	111·2	+10·2	+ 5·6	−27·7
50·396 G	277	1732	148	923	111·3	+10·2	+ 5·3	−14·9
51·407 G	285	1565	145	798	111·3	+10·1	+ 5·2	− 1·6
52·533 G	195	1345	103	709	110·6	+ 9·2	+ 5·6	+12·6
53·561 C	128	867	73	496	110·7	+ 9·2	+ 5·9	+26·2
54·534 G	138	736	92	492	111·1	+ 9·4	+ 6·1	+39·4
55·439 G	123	593	102	494	111·1	+ 9·3	+ 6·1	+51·3
56·437 G	67	349	82	427	111·5	+ 9·5	+ 6·0	+64·9
57·396 G	28	148	71	373	111·6	+ 9·5	+ 6·0	+77·6
Means ...	...	...	125	799	111·0	...	+ 5·6	...

Spot *a* (probably *a* of Group 10501).

45·433 C	34	153	149	672	108·9	...	+ 6·8	−82·6
46·348 C	77	405	114	599	110·3	+ 0·7	+ 6·7	−69·2
47·331 C	124	637	117	599	110·2	+ 0·5	+ 6·4	−56·4
48·472 G	156	799	108	551	109·9	0·0	+ 6·5	−41·6
49·431 G	182	885	107	522	110·4	+ 0·4	+ 6·7	−28·5
50·396 G	187	868	101	469	110·3	+ 0·1	+ 6·6	−15·9
51·407 G	204	894	104	456	110·6	+ 0·3	+ 6·5	− 2·3
52·533 G	143	799	76	423	110·6	+ 0·1	+ 6·5	+12·6
53·561 C	98	714	56	407	110·6	0·0	+ 6·3	+26·1
54·534 G	116	623	78	417	111·0	+ 0·2	+ 6·4	+39·3
55·439 G	105	497	87	413	110·9	0·0	+ 6·3	+51·1
56·437 G	63	327	77	399	111·2	+ 0·2	+ 6·4	+64·6
57·396 G	28	148	71	373	111·6	+ 0·4	+ 6·0	+77·6

Spot *c*.

45·433 C	13	47	31	113	114·2	0·0	+ 4·5	−77·3
46·348 C	23	111	27	131	115·4	+1·1	+ 4·2	−64·1
47·331 C	17	94	14	76	115·6	+1·1	+ 4·2	−51·0
48·472 G	26	148	16	93	115·8	+1·2	+ 4·1	−35·7

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1037, Group 10522—*continued*. Spot *c*—*continued*.							
d							
49·431 G	22	141	12	78	116°·2	+1°·4	+ 4°·3	−22°·7
50·396 G	26	87	14	45	116·3	+1·4	+ 3·9	− 9·9
51·407 G	15	82	8	42	116·3	+1·2	+ 3·6	+ 3·4
52·533 G	4	30	2	16	116·2	+1·0	+ 3·7	+18·2
Group 10550.—March 14–25. A large regular spot, *a*, closely followed by companions of irregular outline. On March 17–20 a cluster of these links up with *a*.								
73·402 C	59	298	118	592	109·6	+5·2	+ 9·0	−73·5
74·637 G	101	627	98	617	109·4	+4·8	+ 8·9	−57·4
75·397 G	163	766	126	597	109·8	+5·1	+ 8·7	−47·0
76·430 G	143	935	90	584	110·2	+5·4	+ 8·6	−33·0
77·470 G	165	1069	91	589	110·2	+5·2	+ 8·4	−19·3
78·369 C	197	1072	103	558	110·0	+4·9	+ 8·1	− 7·6
79·444 G	187	1192	97	620	110·8	+5·5	+ 8·4	+ 7·3
80·333 C	137	1063	75	584	110·1	+4·7	+ 8·1	+18·4
81·657 G	111	694	72	451	110·7	+5·1	+ 8·2	+36·4
82·497 G	97	612	76	477	110·9	+5·2	+ 8·2	+47·7
83·369 C	69	441	71	454	110·8	+5·0	+ 8·2	+59·1
84·456 C	39	169	75	326	111·0	+5·0	+ 8·5	+73·6
Means ...	...	...	91	537	110·3	...	+ 8·4	...
Spot *a*. (Identity with *a* of Group 10522 uncertain; perhaps a new spot in nearly the same place.)								
73·402 C	50	242	92	443	110·5	−3·0	+ 8·9	−72·6
74·637 G	86	431	82	409	110·5	−3·1	+ 8·9	−56·3
75·397 G	128	528	97	401	110·7	−3·0	+ 8·7	−46·1
76·430 G	123	838	76	520	110·5	−3·4	+ 8·5	−32·7
77·470 G	154	972	85	535	110·6	−3·4	+ 8·4	−18·9
78·369 C	182	1011	95	526	110·5	−3·7	+ 8·2	− 7·1
79·444 G	185	1179	96	613	110·8	−3·5	+ 8·4	+ 7·3
80·333 C	135	1033	74	568	110·4	−4·1	+ 8·2	+18·7
81·657 G	111	694	72	451	110·7	−3·9	+ 8·2	+36·4
82·497 G	97	612	76	477	110·9	−3·9	+ 8·2	+47·7
83·369 C	69	441	71	454	110·8	−4·1	+ 8·2	+59·1
84·456 C	39	169	75	326	111·0	−4·0	+ 8·5	+73·6
Group 10579.—April 10–22. A stable regular spot (*a* of Group 10550) usually with a number of small companions.								
100·431 G	27	116	56	242	111·6	−5·7	+ 8·6	−75·0
101·408 G	62	240	69	269	111·6	−5·9	+ 8·7	−62·1
102·353 C	70	305	56	244	112·1	−5·5	+ 8·5	−49·1
103·504 G	90	457	56	283	112·3	−5·5	+ 8·2	−33·7
104·416 C	92	493	52	276	112·3	−5·6	+ 8·3	−21·7
105·110 K	100	505	53	268	112·5	−5·5	+ 8·5	−12·3
106·368 C	92	471	48	245	112·5	−5·7	+ 8·8	+ 4·3
107·404 G	87	413	47	224	112·8	−5·5	+ 8·6	+18·3
108·391 G	76	361	46	217	112·7	−5·8	+ 8·6	+31·2

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1037, Group 10579—*continued*.							
d							
109·404 G	67	314	48	229	112°·4	−6°·2	+ 9°·0	+44°·3
110·403 G	48	225	47	219	112·5	−6·2	+ 8·7	+57·6
111·412 G	27	126	44	205	112·6	−6·3	+ 8·6	+71·0
112·407 G	5	18	51	201	114·7	...	+ 8·6	+86·3
Means ...	...	...	53	243	112·3	...	+ 8·6	...
Group 10603.—May 7–12. A small regular spot dying out—*a* of Group 10550.								
127·345 G	9	27	23	70	112·8	−8·4	+ 7·9	−78·2
128·363 C	11	54	13	65	113·0	−8·3	+ 8·0	−64·6
129·346 G	20	77	17	64	112·6	−8·9	+ 7·9	−52·0
130·368 G	23	86	15	56	112·8	−8·8	+ 7·9	−38·3
131·353 G	14	32	8	18	112·5	−9·3	+ 8·1	−25·5
132·344 G	7	16	4	8	112·5	−9·4	+ 7·8	−12·4
Means ...	...	...	13	47	112·7	...	+ 7·9	...

No. **1038**. Latitude −20·8.

Group 10504 in Rotation 994.
,, 10530 ,, ,, 995.

Group 10504.—January 24–February 5. A large spot, with multiple umbræ, usually with small companions, which are numerous on January 30–31.

23·314 C	44	249	83	468	47·4	0·0	−21·3	−75·4
24·460 G	97	572	102	601	46·0	−1·2	−21·5	−61·7
25·420 C	169	823	132	642	45·7	−1·4	−21·7	−49·4
26·327 C	227	1018	148	662	45·3	−1·7	−22·1	−37·8
27·335 C	191	871	109	496	45·2	−1·6	−21·8	−24·6
28·411 C	170	789	90	418	44·9	−1·8	−21·7	−10·8
29·324 C	131	937	68	487	44·9	−1·7	−21·8	+ 1·2
30·425 G	171	829	92	448	44·7	−1·7	−21·5	+15·5
31·322 C	121	797	70	462	44·3	−2·0	−21·5	+27·0
32·470 G	76	512	52	353	44·2	−1·9	−21·7	+42·0
33·426 G	65	322	56	277	43·6	−2·4	−21·7	+54·0
34·338 C	40	267	47	315	43·1	−2·8	−21·7	+65·4
35·424 C	17	112	41	269	42·8	−2·9	−21·4	+79·5
Means ...	...	...	84	454	44·8	...	−21·6	...

Group 10530.— February 20–March 3. A regular spot shrinking rapidly after February 29.

50·396 G	7	48	28	195	41·3	...	−20·3	−84·9
51·407 G	15	82	23	127	40·4	−3·1	−20·1	−72·5
52·533 G	26	133	24	133	40·1	−3·3	−20·2	−57·9
53·561 C	21	183	15	128	40·7	−2·5	−20·2	−43·8
54·534 G	39	214	23	128	40·2	−2·9	−20·0	−31·5

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude	Long. from C.M.
No. 1038, Group 10530—*continued.*							
d					°	°	°
55·439 G	37	244	20	132	40·3	−2·7	−20·1	−19·5
56·437 G	30	227	16	118	40·0	−2·8	−20·0	− 6·6
57·396 G	35	214	18	111	39·7	−3·0	−20·1	+ 5·7
58·433 G	30	178	16	96	39·3	−3·3	−19·8	+19·0
59·519 G	31	170	19	104	39·3	−3·1	−19·8	+33·3
60·327 C	17	73	12	51	39·1	−3·2	−19·7	+43·7
61·331 C	13	17	12	16	39·6	−2·6	−19·3	+57·4
62·444 G	0	4	0	6	39·8	−2·2	−19·0	+72·3
Means ...	...	...	16	96	39·9	...	−19·9	...
No. 1039. Latitude −4°·7.							
Group 10536 in Rotation 996.							
,, 10560 ,, ,, 997.							
Group 10536.—February 26–March 9. A large regular spot followed by a cluster of tiny companions that have died out by March 7.							
56·437 G	0	31	0	148	321·8	...	− 6·9	−84·8
57·396 G	21	146	35	226	322·2	0·0	− 6·9	−71·8
58·433 G	47	390	43	358	322·9	+0·5	− 6·7	−57·4
59·519 G	85	526	59	362	323·0	+0·4	− 6·4	−43·0
60·327 C	86	608	51	356	323·4	+0·7	− 6·4	−32·0
61·331 C	104	694	54	363	323·9	+1·0	− 6·5	−18·3
62·444 G	117	641	59	321	324·6	+1·5	− 6·3	− 2·9
63·469 G	114	622	59	317	324·4	+1·2	− 6·0	+10·4
64·402 G	116	548	62	295	323·9	+0·5	− 5·9	+22·2
65·319 C	79	473	47	282	322·9	−0·7	− 5·6	+33·3
66·343 C	73	374	54	277	323·8	+0·1	− 5·0	+47·7
67·347 C	52	249	53	251	323·7	−0·2	− 4·7	+60·8
68·423 G	26	136	49	256	323·6	−0·5	− 4·5	+74·9
Means ...	...	...	52	305	323·5	...	− 5·9	...
Group 10560.—March 25–30. One small spot with an attendant on March 29 and 30.							
84·456 C	4	11	6	17	326·2	−0·7	− 2·7	−71·2
85·419 G	7	9	7	9	326·3	−0·7	− 2·6	−58·4
86·454 C	4	9	3	6	326·3	−0·9	− 2·2	−44·7
87·446 G	4	9	2	5	326·6	−0·8	− 2·0	−31·3
88·347 C	4	13	2	7	326·1	−1·5	− 2·8	−20·0
89·396 G	4	11	2	6	327·2	−0·5	− 1·9	− 5·0
Means ...	...	...	4	8	326·4	...	− 2·4	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1040. Latitude −6°·0.							
Group 10537 in Rotation 995.							
,, 10554 ,, ,, 996.							
Group 10537.—February 27–March 3. A stream of changing spots.							
d					°	°	°
57·396 G	9	48	5	25	52·4	0·0	− 4·9	+18·4
58·433 G	82	384	48	223	50·7	−1·9	− 5·2	+30·4
59·519 G	76	475	54	337	51·5	−1·2	− 4·8	+45·5
60·327 C	76	546	72	498	51·3	−1·6	− 4·8	+55·9
61·331 C	22	275	36	442	54·1	+1·1	− 4·2	+71·9
62·444 G	9	33	(34	126	50·4	...	− 3·6)	+82·9
Means ...	...	...	43	305	52·0	...	− 4·8	...
Group 10554.—March 18–25. Probably a remnant of Group 10537. A pair of small spots on March 18. A small cluster on March 20, 22, 23 and 25.							
77·470 G	0	4	0	5	61·1	+5·4	− 6·5	−68·4
78·369 C	0	0	0	0	...	...	...	...
79·444 G	4	18	3	12	61·7	+5·7	− 6·9	−41·8
80·333 C	0	0	0	0	...	...	...	...
81·657 G	4	24	2	12	60·8	+4·5	− 7·1	−13·5
82·497 G	0	24	0	12	60·8	+4·3	− 6·8	− 2·4
83·369 C	0	0	0	0	...	...	...	...
84·456 C	2	11	1	6	62·8	+6·0	− 8·7	+25·4
Means ...	...	...	1	6	61·4	...	− 7·2	...
No. 1041. Latitude +8°·6.							
Groups 10538, 10540 in Rotation 996.							
Group 10563 in Rotation 997.							
Group 10538.—March 2–14. A few small scattered spots of which the rearmost alone remains on March 7. On the following day the development of a new group begins; this becomes a large and active stream which practically coalesces with Group 10540.							
61·331 C	4	11	6	16	274·1	0·0	+ 8·1	−68·1
62·444 G	4	17	4	16	271·2	−3·0	+ 7·8	−56·3
63·469 G	7	22	5	16	270·1	−4·3	+ 9·4	−43·9
64·402 G	11	31	7	19	271·3	−3·2	+ 9·6	−30·4
65·319 C	9	22	5	12	268·5	−6·1	+ 9·2	−21·1
66·343 C	4	13	2	7	269·2	−5·6	+ 9·5	− 6·9
67·347 C	37	146	20	77	270·2	−4·7	+ 9·6	+ 7·3
68·423 G	79	438	45	248	270·6	−4·4	+ 9·5	+21·9
69·391 G	159	1008	101	640	270·2	−5·0	+ 9·9	+34·2
70·370 C	138	1097	107	853	270·2	−5·1	+ 9·8	+47·1
71·421 G	74	614	82	674	270·7	−4·7	+10·3	+61·5
72·328 C	54	489	96	885	268·7	−6·9	+10·7	+71·4
73·402 C	9	39	(48	207	266·0	...	+12·1)	+82·9
Means ...	...	...	40	289	270·4	...	+ 9·4	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1041—*continued.*							
Group 10540.—March 4–13. An active stream. The leader spot, *a*, is the most stable member; the following part of the stream unites with Group 10538.							
d							
63·469 G	44	158	32	114	269°·9	0°·0	+ 6°·7	−44°·1
64·402 G	125	521	75	315	270·3	+0·3	+ 6·3	−31·4
65·319 C	134	744	73	408	270·5	+0·4	+ 5·8	−19·1
66·343 C	113	964	58	496	270·8	+0·5	+ 5·6	− 5·3
67·347 C	131	888	69	465	271·4	+1·0	+ 5·7	+ 8·5
68·423 G	145	802	81	455	270·6	0·0	+ 5·8	+21·9
69·391 G	101	564	66	373	274·2	+3·5	+ 5·6	+38·2
70·370 C	83	488	70	411	274·9	+4·1	+ 5·8	+51·8
71·421 G	73	537	90	661	273·8	+2·9	+ 6·9	+64·6
72·328 C	11	52	59	277	281·0	...	+ 6·1	+83·7
Means ...	...	...	68	411	271·8	...	+ 6·0	...
Spot *a*.							
63·469 G	44	158	32	114	269·9	0·0	+ 6·7	−44·1
64·402 G	61	267	36	158	272·8	+2·8	+ 5·5	−28·9
65·319 C	37	226	20	120	274·7	+4·6	+ 4·8	−14·9
66·343 C	47	370	24	189	275·8	+5·5	+ 4·9	− 0·3
67·347 C	34	320	18	170	277·1	+6·7	+ 5·0	+14·2
68·423 G	55	320	32	189	277·6	+7·0	+ 5·3	+28·9
69·391 G	46	264	32	185	278·6	+7·9	+ 6·0	+42·6
70·370 C	35	207	33	193	279·0	+8·2	+ 6·0	+55·9
71·421 G	18	114	28	180	279·7	+8·8	+ 6·1	+70·5
72·328 C	11	52	59	277	281·0	...	+ 6·1	+83·7
Composite Spot *b*.							
64·402 G	55	219	34	136	267·9	0·0	+ 7·1	−33·8
65·319 C	65	378	36	212	268·2	+0·2	+ 7·3	−21·4
66·343 C	47	443	24	230	267·7	−0·5	+ 7·3	− 8·4
67·347 C	80	477	42	248	268·2	−0·1	+ 7·0	+ 5·3
68·423 G	77	416	42	229	267·9	−0·5	+ 6·9	+19·2
69·391 G	40	205	24	125	268·2	−0·4	+ 6·4	+32·2
70·370 C	22	158	16	117	268·3	−0·4	+ 6·8	+45·2
71·421 G	46	339	49	363	269·7	+0·9	+ 7·9	+60·5
Group 10563.—March 29–April 9. A regular spot with an occasional tiny companion.							
88·347 C	11	52	21	99	272·8	−4·9	+ 9·1	−73·3
89·396 G	18	108	19	116	271·8	−6·0	+ 9·5	−60·4
90·400 G	22	142	17	109	271·9	−6·0	+ 9·6	−47·1
91·456 C	22	140	14	87	271·8	−6·3	+ 9·6	−33·2
92·394 G	22	129	12	72	272·0	−6·2	+ 9·7	−20·7
93·399 C	18	79	10	42	271·9	−6·4	+ 9·8	− 7·5
94·667 G	11	58	6	31	271·4	−7·1	+10·7	+ 8·7
95·486 G	13	27	7	15	271·6	−7·0	+10·9	+19·7
96·414 G	11	18	7	11	271·4	−7·3	+11·0	+31·8

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1041, Group 10563—*continued.*							
d							
97·425 G	7	13	5	10	271°·6	−7°·3	+11°·2	+45°·3
98·422 G	9	13	9	13	271·7	−7·3	+11·2	+58·6
99·547 G	2	7	4	14	271·6	−7·5	+11·5	+73·3
Means ...	...	...	11	52	271·8	...	+10·3	...
No. 1042. Latitude −8°·7. Group 10544 in Rotation 996. ,, 10567 ,, ,, 997.							
Group 10544.—March 8–17. A few small spots developing between March 10 and 11 into a regular spot, followed by a train of small spots which have disappeared by March 14.							
67·347 C	6	26	4	18	217·6	0·0	− 7·1	−45·3
68·423 G	11	27	6	15	219·8	+2·1	− 7·9	−28·9
69·391 G	26	86	13	44	222·5	+4·6	− 8·2	−13·5
70·370 C	58	354	30	177	223·2	+5·2	− 8·5	+ 0·1
71·421 G	84	444	43	231	224·3	+6·2	− 8·9	+15·1
72·328 C	61	395	34	220	224·1	+5·9	− 9·0	+26·8
73·402 C	39	285	26	191	225·6	+7·2	− 9·2	+42·5
74·637 G	26	220	25	209	225·9	+7·4	− 9·0	+59·1
75·397 G	18	128	24	173	225·9	+7·3	− 9·0	+69·1
76·430 G	7	33	27	126	226·7	...	− 9·0	+83·5
Means ...	...	...	23	142	223·2	...	− 8·5	...
Group 10567.—April 1–12. A regular spot diminishing rapidly after April 9.							
91·456 C	13	53	26	105	228·8	+8·1	− 8·9	−76·2
92·394 G	27	124	30	136	229·1	+8·2	− 8·9	−63·6
93·399 C	28	140	22	108	229·5	+8·5	− 9·1	−49·9
94·667 G	22	151	13	91	229·6	+8·4	− 8·9	−33·1
95·486 G	27	184	15	99	229·6	+8·3	− 8·9	−22·3
96·414 G	27	198	14	101	229·6	+8·2	− 8·7	−10·0
97·425 G	31	163	16	82	229·8	+8·3	− 8·7	+ 3·5
98·422 G	27	190	14	99	229·6	+8·0	− 8·6	+16·5
99·547 G	25	149	15	88	229·9	+8·1	− 8·7	+31·6
100·431 G	18	58	12	39	229·7	+7·8	− 8·6	+43·1
101·408 G	9	27	8	24	229·7	+7·7	− 8·8	+56·0
102·353 C	2	7	3	9	230·1	+7·9	− 8·9	+68·9
Means ...	...	...	16	82	229·6	...	− 8·8	...
No. 1043. Latitude +14°·1. Group 10549 in Rotation 996. ,, 10578 ,, ,, 997.							
Group 10549.—March 13–24. A large stream of normal type; *a* and *b* are the leader and follower respectively.							
72·328 C	2	9	5	23	121·1	0·0	+13·8	−76·2
73·402 C	52	402	60	462	122·4	+1·3	+13·9	−60·7
74·637 G	124	807	93	603	123·7	+2·5	+14·3	−43·1

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*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.				
No. 1043, Group 10549—*continued.*								
d								
75·397 G	154	990	99	641	125°·0	+3°·8	+14°·0	−31°·8
76·430 G	200	1212	115	695	125·0	+3·8	+14·1	−18·2
77·470 G	253	1563	138	852	125·6	+4·3	+14·3	− 3·9
78·369 C	295	1456	161	796	126·1	+4·8	+14·8	+ 8·5
79·444 G	249	1492	145	872	125·4	+4·0	+15·3	+21·9
80·333 C	189	1302	123	849	125·4	+4·0	+15·4	+33·7
81·657 G	132	999	116	869	125·4	+4·0	+14·9	+51·1
82·497 G	102	647	127	785	125·9	+4·4	+14·8	+62·7
83·369 C	56	419	123	875	125·3	+3·8	+15·1	+73·6
Means ...	...	...	109	694	124·7	...	+14·6	...
Spot *a*.								
73·402 C	24	207	25	217	124·9	0·0	+13·8	−58·2
74·637 G	75	493	53	345	126·8	+1·9	+13·5	−40·0
75·397 G	110	675	68	419	127·2	+2·2	+13·5	−29·6
76·430 G	150	821	84	460	127·4	+2·4	+13·7	−15·8
77·470 G	185	1096	100	592	127·4	+2·4	+14·1	− 2·1
78·369 C	217	1037	119	570	127·5	+2·4	+14·5	+ 9·9
79·444 G	187	898	110	530	127·8	+2·7	+14·5	+24·3
80·333 C	124	694	83	465	127·7	+2·6	+14·2	+36·0
81·657 G	97	544	88	495	127·3	+2·1	+14·4	+53·0
82·497 G	80	371	103	479	127·6	+2·4	+14·4	+64·4
83·369 C	39	200	92	470	127·1	+1·8	+14·2	+75·4
Spot *b*.								
73·402 C	24	173	30	218	119·6	0·0	+14·1	−63·5
74·637 G	40	277	33	230	118·0	−1·6	+15·0	−48·8
75·397 G	31	273	22	194	117·8	−1·9	+16·1	−39·0
76·430 G	37	299	23	182	117·5	−2·2	+16·1	−25·7
77·470 G	37	295	21	165	117·7	−2·0	+15·9	−11·8
78·369 C	30	189	16	102	117·5	−2·3	+16·1	− 0·1
79·444 G	31	150	17	84	117·5	−2·3	+16·2	+14·0
80·333 C	41	124	25	74	117·3	−2·5	+16·0	+25·6
81·657 G	13	44	10	33	117·3	−2·6	+15·8	+43·0

Group 10578.—April 8–19. A fairly large spot (*a* of Group 10549) dividing up and with small companions making an extensive cluster. The group is followed by considerable faculæ.

98·422 G	9	45	55	275	129·4	...	+12·7	−83·7
99·547 G	27	227	42	350	129·4	+3·6	+12·9	−68·9
100·431 G	54	493	54	493	129·3	+3·4	+13·1	−57·3
101·408 G	80	665	59	492	129·7	+3·8	+13·7	−44·0
102·353 C	75	480	47	298	130·1	+4·2	+13·4	−31·1
103·504 G	76	318	42	175	130·1	+4·1	+13·2	−15·9
104·416 C	66	282	35	149	130·7	+4·7	+12·8	− 3·3
105·110 K	50	235	27	125	130·2	+4·2	+12·7	+ 5·4
106·368 C	48	211	27	120	130·3	+4·2	+13·5	+22·1
107·404 G	31	139	20	92	130·5	+4·4	+14·6	+36·0
108·391 G	8	35	6	29	131·1	+4·9	+13·1	+49·6
109·404 G	2	7	3	9	132·5	+6·3	+15·9	+64·4
Means ...	...	...	33	212	130·4	...	+13·5	...

No. **1044**. Latitude −15°·3.
Group 10553 in Rotation 996.
,, 10574 ,, ,, 997.

Group 10553.—March 18–22. A stream of normal type; *a* is the leader spot.

d								
77·470 G	31	97	17	52	151°·2	0°·0	−13°·9	+21°·7
78·369 C	48	503	29	302	151·6	+0·4	−14·2	+34·0
79·444 G	72	489	55	367	151·5	+0·3	−14·4	+48·0
80·333 C	56	328	58	341	153·3	+2·1	−14·2	+61·6
81·657 G	22	155	56	405	153·9	+2·7	−14·2	+79·6
Means ...	...	...	43	293	152·3	...	−14·2	...
Spot *a*.								
77·470 G	18	40	10	22	152·6	0·0	−14·0	+23·1
78·369 C	35	122	22	77	154·6	+2·0	−14·1	+37·0
79·444 G	44	229	35	183	155·5	+2·9	−13·9	+52·0
80·333 C	39	243	43	265	155·2	+2·6	−14·0	+63·5
81·657 G	18	137	49	375	155·1	...	−14·0	+80·8

Group 10574.—April 6–17. A regular spot, *a* of Group 10553, whose umbra becomes double on April 13, dividing on April 14 into two parts which separate appreciably in latitude.

96·414 G	7	22	43	134	152·9	...	−15·8	−86·7
97·425 G	18	112	29	180	153·5	+0·7	−15·9	−72·8
98·422 G	27	178	26	173	153·7	+0·9	−16·0	−59·4
99·547 G	38	241	27	169	153·7	+0·9	−15·9	−44·6
100·431 G	40	241	24	145	153·9	+1·1	−15·8	−32·7
101·408 G	58	272	31	147	153·7	+0·9	−15·8	−20·0
102·353 C	26	198	13	101	153·6	+0·8	−15·9	− 7·6
103·504 G	38	157	19	80	153·5	+0·7	−15·9	+ 7·5
104·416 C	31	119	17	64	153·4	+0·6	−15·7	+19·4
105·110 K	29	83	17	48	153·9	+1·1	−15·7	+29·1
106·368 C	9	29	7	21	154·8	+2·0	−15·6	+46·6
107·404 G	4	9	4	9	154·7	+1·8	−16·0	+60·2
Means ...	...	...	19	103	153·9	...	−15·8	...

No. **1045**. Latitude −10°·9.
Group 10556 in Rotation 997.
,, 10586 ,, ,, 998.

Group 10556.—March 23–April 4. A stable regular spot with two or three small companions *s* of it on March 30 to April 1.

82·497 G	11	64	21	122	347°·4	0°·0	−10°·6	−75°·8
83·369 C	17	117	19	130	347·9	+0·4	−10·5	−63·8
84·456 C	30	178	23	137	347·7	+0·1	−10·8	−49·7
85·419 G	40	212	25	131	347·8	+0·1	−11·1	−36·9
86·454 C	35	259	19	142	347·7	−0·1	−11·5	−23·3

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1045, Group 10556—*continued*.							
d					°	°	°
87·446 G	53	274	27	140	347·7	−0·2	−11·4	−10·2
88·347 C	50	259	25	130	347·9	−0·1	−11·5	+ 1·8
89·396 G	62	300	32	156	348·0	−0·1	−11·7	+15·8
90·400 G	49	240	28	137	348·6	+0·4	−11·7	+29·6
91·456 C	35	211	24	144	348·5	+0·2	−11·2	+43·5
92·394 G	31	153	27	135	348·7	+0·3	−11·2	+56·0
93·399 C	18	103	25	142	349·0	+0·5	−11·4	+69·6
94·667 G	4	9	(21	48	348·5	...	−11·5)	+85·8
Means ...	...	...	25	138	348·1	...	−11·2	...
Group 10586.—April 19–24. A small distinct spot *p* Group 10587.							
109·404 G	4	13	8	27	351·2	+1·2	−10·7	−76·9
110·403 G	9	18	10	20	351·2	+1·1	−10·6	−63·7
111·412 G	9	14	7	11	351·0	+0·8	−10·2	−50·6
112·407 G	5	14	3	9	350·7	+0·4	−10·1	−37·7
113·348 G	5	9	3	5	350·6	+0·2	−10·0	−25·4
114·361 G	5	9	3	5	350·5	0·0	− 9·8	−12·1
Means ...	...	...	6	13	350·9	...	−10·2	...
No. 1046. Latitude −14°·2.							
Group 10568 in Rotation 997.							
,, 10598 ,, ,, 998.							
,, 10617 ,, ,, 999.							
Group 10568.—April 2–15. A large and somewhat unusual stream. There is a lag of several days in the full development of the following part of the stream, which comprises a cluster of spots, *b* (possibly a separate but allied disturbance) at the rear, and a large composite spot, *c*, between *b* and the big leader, *a*.							
92·394 G	22	144	(90	586	207·9	...	−17·7)	−84·8
93·399 C	73	593	116	932	207·0	0·0	−17·0	−72·4
94·667 G	182	964	167	877	207·0	0·0	−17·2	−55·7
95·486 G	203	1325	150	955	206·6	−0·5	−16·6	−45·3
96·414 G	298	1693	185	1048	204·9	−2·2	−16·2	−34·7
97·425 G	339	1973	186	1085	203·3	−3·8	−15·5	−23·0
98·422 G	369	2306	191	1192	203·4	−3·8	−15·5	− 9·7
99·547 G	332	2036	169	1038	203·1	−4·1	−15·3	+ 4·8
100·431 G	281	1771	149	937	204·6	−2·6	−15·9	+18·0
101·408 G	254	1443	149	846	204·7	−2·6	−15·7	+31·0
102·353 C	165	1021	114	701	204·2	−3·1	−15·4	+43·0
103·504 G	106	602	99	563	203·1	−4·2	−15·1	+57·1
104·416 C	73	431	98	592	202·4	−5·0	−15·2	+68·4
105·110 K	48	235	114	545	202·8	−4·6	−14·7	+78·0
Means ...	...	...	145	870	204·4	...	−15·8	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1046, Group 10568—*continued*.							
Spot *a*.							
d					°	°	°
92·394 G	22	144	90	586	207·9	...	−17·7	−84·8
93·399 C	55	462	81	679	208·2	0·0	−17·5	−71·2
94·667 G	129	697	112	606	207·7	−0·5	−17·2	−55·0
95·486 G	135	981	95	687	207·5	−0·8	−17·0	−44·4
96·414 G	178	912	107	547	207·0	−1·3	−16·9	−32·6
97·425 G	187	977	101	528	206·9	−1·4	−16·8	−19·4
98·422 G	167	968	85	494	206·9	−1·5	−16·8	− 6·2
99·547 G	183	856	93	437	206·9	−1·5	−16·9	+ 8·6
100·431 G	125	789	68	426	207·0	−1·4	−16·7	+20·4
101·408 G	129	709	77	425	206·8	−1·7	−16·5	+33·1
102·353 C	88	488	63	351	206·9	−1·6	−16·4	+45·7
103·504 G	54	300	55	306	207·0	−1·5	−16·1	+61·0
104·416 C	22	167	36	272	207·0	−1·6	−16·1	+73·0
105·110 K	17	75	52	227	206·6	...	−16·1	+81·8
Spot *c*.							
93·399 C	18	131	35	253	203·2	0·0	−15·0	−76·2
94·667 G	31	178	30	173	203·2	0·0	−14·7	−59·5
95·486 G	22	209	17	157	203·2	−0·1	−14·5	−48·7
96·414 G	51	415	32	261	202·3	−1·0	−14·4	−37·3
97·425 G	65	462	36	254	201·9	−1·4	−14·5	−24·4
98·422 G	107	714	56	371	201·9	−1·5	−14·5	−11·2
99·547 G	98	714	50	364	201·5	−1·9	−14·5	+ 3·2
100·431 G	98	549	51	285	201·2	−2·2	−14·6	+14·6
101·408 G	103	484	59	276	200·7	−2·8	−14·4	+27·0
102·353 C	48	414	31	269	200·5	−3·0	−14·8	+39·3
103·504 G	36	269	31	229	200·3	−3·2	−14·7	+54·3
104·416 C	40	229	48	277	200·3	−3·3	−14·7	+66·3
105·110 K	17	102	32	194	200·4	−3·2	−14·4	+75·6
Spot *b*.							
95·486 G	22	60	19	52	196·8	0·0	−14·0	−55·1
96·414 G	38	154	26	106	196·3	−0·5	−14·4	−43·3
97·425 G	36	299	21	173	196·6	−0·3	−14·5	−29·7
98·422 G	62	379	33	201	196·3	−0·3	−15·0	−16·8
99·547 G	33	185	17	94	196·0	−0·9	−15·0	− 2·3
100·431 G	27	161	14	82	195·9	−1·1	−15·2	+ 9·3
101·408 G	9	58	5	32	196·5	−0·6	−15·1	+22·8
102·353 C	7	26	4	16	196·4	−0·6	−15·4	+35·2
103·504 G	9	13	7	10	196·5	−0·6	−13·7	+50·5
Group 10598.—April 30–May 12. Probably a return of Group 10568 but continuity not certain. A long stream with a small regular spot, *a*, as leader until May 7 and a large composite spot, *b*, as trailer.							
120·410 C	17	142	34	338	204·3	−3·6	−12·5	−78·4
121·101 K	32	205	44	284	203·4	−4·5	−12·6	−70·2
122·103 K	42	410	36	371	203·8	−4·1	−12·5	−56·5
123·467 G	86	556	56	361	204·1	−3·9	−12·7	−38·2
124·346 G	123	715	70	408	203·5	−4·5	−12·9	−27·2
125·347 G	136	1091	72	572	203·2	−4·9	−13·4	−14·2

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1046, Group 10598—*continued.*							
d					°	°	°
126·425 C	102	868	52	442	203·4	−4·7	−13·8	+ 0·2
127·345 G	151	734	79	385	203·0	−5·1	−14·1	+12·0
128·363 C	98	620	54	342	200·9	−7·3	−14·5	+23·3
129·346 G	97	531	64	339	201·3	−6·9	−14·8	+36·7
130·368 G	105	593	82	461	200·3	−7·9	−14·8	+49·2
131·353 G	45	323	50	349	200·1	−8·2	−15·1	+62·1
132·344 G	60	306	118	598	200·6	−7·7	−15·1	+75·7
Means ...	...	...	62	404	202·4	...	−13·8	...
Spot *a*.							
120·410 C	13	62	22	104	209·5	0·0	−12·5	−73·2
121·101 K	13	71	15	80	209·7	+0·2	−12·7	−63·9
122·103 K	17	97	13	76	210·4	+0·8	−12·7	−49·9
123·467 G	18	86	11	51	211·1	+1·5	−12·5	−31·2
124·346 G	25	131	14	71	211·5	+1·9	−12·7	−19·2
125·347 G	23	129	12	66	212·1	+2·4	−12·7	− 5·3
126·425 C	22	100	11	51	212·8	+3·1	−12·7	+ 9·6
127·345 G	23	82	13	45	213·0	+3·3	−12·6	+22·0
Spot *b*.							
120·410 C	4	80	12	234	202·0	...	−12·5	−80·7
121·101 K	17	126	26	194	202·2	0·0	−12·4	−71·4
122·103 K	21	298	20	283	201·9	−0·3	−12·4	−58·4
123·467 G	68	470	45	310	202·2	−0·1	−12·7	−40·1
124·346 G	61	484	35	281	201·6	−0·7	−13·0	−29·1
125·347 G	77	782	41	414	201·6	−0·7	−13·7	−15·8
126·425 C	67	677	34	345	201·2	−1·2	−14·2	− 2·0
127·345 G	100	588	52	306	201·0	−1·4	−14·4	+10·0
128·363 C	89	589	49	324	200·5	−1·9	−14·6	+22·9
129·346 G	77	481	49	303	200·4	−2·1	−14·8	+35·8
130·368 G	84	472	65	363	200·0	−2·5	−15·3	+48·9
131·353 G	36	286	38	303	199·6	−2·9	−15·2	+61·6
132·344 G	36	222	67	411	199·4	−3·2	−15·4	+74·5
Group 10617.—May 27–June 8. A large stream of unusual formation changing rapidly in appearance after June 2.							
147·386 G	9	57	(48	312	201·4	...	−12·1)	−84·6
148·361 G	95	648	169	1156	200·2	− 8·6	−12·8	−72·8
149·408 G	177	1056	180	1064	200·9	− 7·9	−12·9	−58·3
150·564 G	170	1363	119	956	199·4	− 9·5	−13·1	−44·5
151·635 G	212	1333	126	792	198·7	−10·2	−13·4	−31·0
152·397 G	205	1201	112	657	198·9	−10·0	−13·5	−20·7
153·349 G	226	1117	116	577	199·3	− 9·7	−13·4	− 7·7
154·391 G	141	843	74	437	198·8	−10·2	−13·6	+ 5·6
155·371 C	96	494	53	268	198·5	−10·5	−14·1	+18·2
156·360 C	101	794	60	471	197·8	−11·3	−13·3	+30·6
157·429 G	65	403	47	294	198·2	−10·9	−12·7	+45·2
158·563 G	27	137	28	143	198·9	−10·3	−12·0	+60·9
159·580 G	5	41	11	89	201·0	− 8·2	−11·1	+76·4
Means ...	...	...	91	575	199·2	...	−13·0	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1047. Latitude −15°·5. Group 10589 in Rotation 998. ,, 10612 ,, ,, 999.							
Group 10589.—April 24–May 6. A stream led by a large regular spot, *a*, which alone remains after the follower, *b*, has disappeared on April 29.							
d					°	°	°	°
114·361 G	23	106	(60	275	282·9	...	−14·8)	−79·7
115·347 G	62	264	80	335	282·3	0·0	−15·0	−67·3
116·452 G	82	408	67	332	283·1	+0·8	−14·7	−51·9
117·359 C	99	533	65	349	283·1	+0·8	−15·0	−39·9
118·349 G	125	586	71	331	283·5	+1·2	−14·7	−26·4
119·435 C	104	566	54	295	283·9	+1·6	−14·4	−11·7
120·410 C	98	559	50	285	284·0	+1·7	−14·4	+ 1·3
121·101 K	105	521	55	271	284·0	+1·7	−14·4	+10·4
122·103 K	95	500	52	275	284·0	+1·7	−14·4	+23·7
123·467 G	88	411	59	275	283·6	+1·3	−13·7	+41·3
124·346 G	59	314	50	264	283·8	+1·5	−13·9	+53·1
125·347 G	32	181	40	224	283·8	+1·5	−13·9	+66·4
126·425 C	13	67	37	189	283·6	...	−14·0	+80·4
Means ...	...	...	58	294	283·6	...	−14·4	...
Spot *a*.							
114·361 G	23	106	60	275	282·9	0·0	−14·8	−79·7
115·347 G	50	225	61	272	283·7	+0·8	−14·4	−65·9
116·452 G	68	371	54	297	283·7	+0·8	−14·4	−51·3
117·359 C	88	502	57	326	283·6	+0·7	−14·6	−39·4
118·349 G	95	518	53	290	283·9	+1·0	−14·5	−26·0
119·435 C	102	557	53	290	283·9	+1·0	−14·5	−11·7
120·410 C	98	559	50	285	284·0	+1·1	−14·4	+ 1·3
121·101 K	105	521	55	271	284·0	+1·1	−14·4	+10·4
122·103 K	95	500	52	275	284·0	+1·1	−14·4	+23·7
123·467 G	88	411	59	275	283·6	+0·7	−13·7	+41·3
124·346 G	59	314	50	264	283·8	+0·9	−13·9	+53·1
125·347 G	32	181	40	224	283·8	+0·9	−13·9	+66·4
126·425 C	13	67	37	189	283·6	...	−14·0	+80·4
Spot *b*.							
115·347 G	7	23	12	40	276·0	0·0	−17·5	−73·6
116·452 G	9	23	9	23	275·1	−0·9	−17·6	−59·9
117·359 C	9	24	7	18	274·8	−1·2	−17·8	−48·2
118·349 G	7	14	4	9	274·1	−1·9	−17·9	−35·8
119·435 C	2	9	1	5	274·0	−2·0	−17·7	−21·6
Group 10612.—May 21–June 2. A stable regular spot (probably *a* of Group 10589) with a few small companions preceding it from May 24 to 27.							
141·437 G	9	32	27	97	284·1	...	−16·1	−80·6
142·387 C	18	63	25	89	283·2	+0·2	−16·2	−68·9
143·361 C	18	125	16	114	283·4	+0·4	−16·4	−55·8
144·628 G	46	161	30	108	283·8	+0·8	−16·6	−38·6
145·358 G	44	236	26	138	284·0	+1·0	−16·7	−28·8

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1047, Group 10612—*continued*.							
d					°	°	°
146·335 C	26	190	14	103	283·7	+0·7	−16·6	−16·2
147·386 G	34	182	18	95	283·6	+0·6	−16·7	− 2·4
148·361 G	34	155	18	82	283·5	+0·5	−16·9	+10·5
149·408 G	32	173	18	99	283·5	+0·5	−16·8	+24·3
150·564 G	23	132	15	88	283·2	+0·2	−16·5	+39·3
151·635 G	18	105	16	91	283·3	+0·3	−16·5	+53·6
152·397 G	11	55	13	65	283·6	+0·5	−16·7	+64·0
153·349 G	5	18	11	41	283·7	+0·6	−16·6	+76·7
Means ...	...	...	18	93	283·5	...	−16·6	...
No. 1048. Latitude +8°·5.							
Group 10592 in Rotation 998.							
,, 10615 ,, ,, 999.							
Group 10592.—April 27–May 9. A large active stream of irregular formation.							
117·359 C	9	71	24	189	244·8	0·0	+ 9·3	−78·2
118·349 G	32	217	40	282	244·0	−0·9	+ 9·4	−65·9
119·435 C	59	456	49	379	244·2	−0·9	+ 9·3	−51·4
120·410 C	97	582	64	378	244·8	−0·4	+ 9·1	−37·9
121·101 K	103	853	61	500	246·1	+0·8	+ 9·1	−27·5
122·103 K	141	1195	75	639	246·1	+0·7	+ 8·7	−14·2
123·467 G	163	1214	84	619	245·9	+0·3	+ 8·3	+ 3·6
124·346 G	159	892	84	474	246·3	+0·4	+ 8·2	+15·6
125·347 G	93	787	54	462	247·4	+1·5	+ 8·2	+30·0
126·425 C	83	621	57	434	246·0	0·0	+ 8·4	+42·8
127·345 G	68	457	62	412	246·2	+0·1	+ 8·3	+55·2
128·363 C	38	178	56	259	246·6	+0·3	+ 8·2	+69·0
129·346 G	14	48	64	215	246·1	...	+ 8·2	+81·5
Means ...	...	...	59	419	245·7	...	+ 8·7	...
Group 10615.—May 24–June 4. A regular spot slowly diminishing.							
144·628 G	14	64	21	97	252·1	+3·7	+ 7·8	−70·3
145·358 G	23	105	24	108	252·3	+3·8	+ 7·9	−60·5
146·335 C	34	116	26	87	252·5	+3·8	+ 7·9	−47·4
147·386 G	23	100	14	61	252·5	+3·7	+ 8·0	−33·5
148·361 G	23	105	12	57	252·5	+3·6	+ 8·2	−20·5
149·408 G	16	73	8	37	252·0	+2·9	+ 8·3	− 7·2
150·564 G	18	50	9	26	251·9	+2·7	+ 8·2	+ 8·0
151·635 G	18	27	10	15	251·7	+2·3	+ 8·5	+22·0
152·397 G	18	32	11	19	251·9	+2·4	+ 8·6	+32·3
153·349 G	7	18	5	13	251·8	+2·2	+ 8·7	+44·8
154·391 G	5	11	5	11	251·7	+2·0	+ 8·6	+58·5
155·371 C	2	9	3	14	251·8	+1·9	+ 8·6	+71·5
Means ...	...	...	12	45	252·1	...	+ 8·3	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.		Latitude.	Long. from C.M.
No. 1049. Latitude −15°·2.								
Group 10600 in Rotation 998.								
,, 10620 ,, ,, 999.								
Group 10600.—May 2–14. An unusually long and active stream of numerous spots with its axis inclined 15° to the sun's equator. *a* and *b* are the leader and follower respectively.								
d					°	°	°	°
122·103 K	27	218	(62	507	182·3	...	−13·9)	−78·0
123·467 G	167	1004	182	1086	179·8	0·0	−14·1	−62·5
124·346 G	208	1136	166	906	180·3	+0·5	−13·9	−50·4
125·347 G	281	1612	180	1023	180·5	+0·7	−13·8	−36·9
126·425 C	270	1938	150	1072	180·1	+0·3	−14·1	−23·1
127·345 G	344	2199	180	1152	179·0	−0·8	−14·6	−12·0
128·363 C	381	2604	194	1332	178·4	−1·5	−14·7	+ 0·8
129·346 G	427	2776	227	1474	179·3	−0·6	−14·5	+14·7
130·368 G	345	2352	205	1371	179·7	−0·2	−14·4	+28·6
131·353 G	196	1267	136	891	181·0	+1·1	−14·2	+43·0
132·344 G	156	933	148	900	182·9	+3·0	−13·9	+58·0
133·578 C	39	299	71	638	185·1	+5·2	−12·6	+76·5
134·438 G	9	34	(16	59	170·5	...	−17·3)	+73·3
Means ...	...	...	167	1077	180·6	...	−14·1	...
Spot *a*.								
123·467 G	81	477	76	448	184·3	0·0	−12·8	−58·0
124·346 G	122	637	89	465	184·6	+0·3	−12·7	−46·1
125·347 G	140	870	84	522	184·7	+0·4	−12·7	−32·7
126·425 C	120	848	64	449	185·1	+0·8	−13·2	−18·1
127·345 G	111	767	57	391	185·8	+1·5	−13·1	− 5·2
128·363 C	134	783	68	399	186·5	+2·1	−12·8	+ 8·9
129·346 G	143	844	79	464	187·3	+2·9	−12·0	+22·7
130·368 G	163	790	103	498	188·3	+3·9	−11·7	+37·2
131·353 G	54	443	44	359	189·5	+5·1	−11·5	+51·5
132·344 G	54	377	65	452	190·4	+6·0	−11·8	+65·5
133·578 C	13	152	39	461	189·5	...	−11·2	+80·9
Spot *b*.								
123·467 G	27	131	41	197	171·5	0·0	−16·7	−70·8
124·346 G	36	203	36	201	171·4	−0·1	−16·5	−59·3
125·347 G	41	197	30	144	171·5	0·0	−16·4	−45·9
126·425 C	44	258	26	155	171·5	0·0	−16·4	−31·7
127·345 G	86	449	47	247	171·2	−0·3	−16·6	−19·8
128·363 C	71	508	37	264	170·9	−0·7	−16·9	− 6·7
129·346 G	93	531	48	276	171·3	−0·3	−17·2	+ 6·7
130·368 G	75	545	42	300	171·3	−0·3	−17·3	+20·2
131·353 G	73	409	45	254	171·7	+0·1	−17·3	+33·7
132·344 G	48	293	36	220	171·5	−0·1	−17·3	+46·6
133·578 C	18	116	20	128	171·3	−0·3	−17·0	+62·7
134·438 G	9	34	16	59	170·5	−1·1	−17·3	+73·3

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

No. 1049—*continued.*

Group 10620.—May 29–June 7. A diminishing regular spot with tiny companions on June 2 and 5. Extensive faculæ follow the spot.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
149·408 G	5	50	12	123	181·7	+1·6	−16·4	−77·5
150·564 G	32	135	34	145	181·9	+1·8	−16·3	−62·0
151·635 G	36	146	28	112	182·0	+1·9	−16·3	−47·7
152·397 G	41	166	27	108	182·1	+2·0	−16·3	−37·5
153·349 G	32	140	18	80	182·0	+1·9	−16·3	−25·0
154·391 G	18	69	10	37	181·8	+1·7	−16·3	−11·4
155·371 C	18	68	9	35	181·6	+1·4	−16·1	+ 1·3
156·360 C	16	52	9	29	180·7	+0·5	−16·7	+13·5
157·429 G	18	60	11	35	181·2	+1·0	−16·4	+28·2
158·563 G	9	14	6	10	180·9	+0·7	−16·7	+42·9
Means ...	...	...	16	71	181·6	...	−16·4	...

No. 1050. Latitude −19°·3.

Group 10622 in Rotation 999.
,, 10644 ,, ,, 1000.
,, 10680 ,, ,, 1001.

Group 10622.—June 2–7. Intermittent; scattered unstable spots, none being seen on June 5 and 6.

153·349 G	10	36	6	19	212·3	0·0	−19·8	+ 5·3
154·391 G	12	30	7	17	207·4	−4·8	−20·1	+14·2
155·371 C	10	32	6	19	207·4	−4·7	−19·8	+27·1
156·360 C	0	0	0	0	...	...	...	...
157·429 G	0	0	0	0	...	...	...	...
158·563 G	4	18	9	38	213·4	+1·6	−19·3	+75·4
Means ...	...	...	5	16	210·1	...	−19·8	...

Group 10644.—June 22–July 5. A group of stream type in which the leader, *a*, becomes very large whilst the rear spot breaks into a cluster and rapidly fades. *a* becomes elongated in an E–W direction, and a cluster of small companions comes in front of it; *see* also Group 10654.

173·458 C	7	41	(43	250	216·7	...	−19·1)	−84·2
174·363 G	39	277	86	606	213·8	+3·5	−19·4	−75·1
175·397 G	97	557	115	655	213·0	+2·8	−19·7	−62·2
176·360 G	138	761	114	625	213·8	+3·7	−20·1	−48·7
177·387 G	136	920	88	599	214·9	+4·9	−19·9	−33·9
178·422 G	244	1265	140	726	215·5	+5·6	−19·6	−19·7
179·351 G	237	1311	128	710	215·7	+5·8	−19·1	− 7·2
180·402 G	237	1301	128	705	215·4	+5·6	−19·0	+ 6·4
181·384 G	224	1375	127	785	215·1	+5·4	−18·8	+19·1
182·365 G	179	994	115	636	214·8	+5·2	−18·8	+31·8
183·376 G	147	787	113	606	214·4	+4·9	−19·0	+44·8
184·357 G	115	635	118	657	214·3	+4·9	−19·1	+57·7
185·351 G	55	322	91	535	213·7	+3·4	−18·7	+70·3
186·382 G	9	53	55	323	213·4	...	−19·0	+83·6
Means ...	...	...	114	654	214·5	...	−19·3	...

No. 1050, Group 10644—*continued.*

Spot *a*.

d					°	°	°	°
174·363 G	23	169	40	297	217·1	0·0	−19·1	−71·8
175·397 G	60	360	63	378	216·5	−0·5	−19·3	−58·7
176·360 G	99	580	77	452	216·3	−0·6	−19·5	−46·2
177·387 G	122	814	78	521	216·4	−0·4	−19·3	−32·4
178·422 G	221	1191	126	679	216·0	−0·7	−19·4	−19·2
179·351 G	221	1185	119	640	215·7	−0·9	−19·1	− 7·2
180·402 G	224	1216	121	657	215·5	−1·0	−19·0	+ 6·5
181·384 G	207	1329	117	758	215·1	−1·3	−18·8	+19·1
182·365 G	179	994	115	636	214·8	−1·6	−18·8	+31·8
183·376 G	147	787	113	606	214·4	−1·9	−19·0	+44·8
184·357 G	110	575	113	592	214·2	−2·0	−19·0	+57·6
185·351 G	55	322	91	535	213·7	−2·4	−18·7	+70·3
186·382 G	9	53	55	323	213·4	...	−19·0	+83·6

Spot *b*.

174·363 G	9	62	30	203	209·0	0·0	−20·2	−79·9
175·397 G	32	165	46	239	207·7	−1·2	−20·4	−67·5
176·360 G	30	163	29	158	207·3	−1·5	−21·0	−55·2
177·387 G	14	106	10	78	206·7	−2·0	−21·6	−42·1
178·422 G	23	74	14	47	205·9	−2·7	−22·5	−29·3
179·351 G	2	32	1	19	205·2	−3·3	−23·3	−17·7

Group 10680.—July 20–24. A small spot (*a* of Group 10644) followed by considerable faculæ.

201·447 G	0	14	0	51	210·6	−4·0	−19·0	−79·8
202·355 G	7	16	11	24	210·8	−3·7	−19·0	−67·7
203·386 G	7	14	7	13	210·8	−3·6	−19·1	−54·0
204·357 G	9	14	7	10	210·6	−3·7	−19·1	−41·4
205·394 G	5	9	3	6	210·5	−3·7	−19·0	−27·7
Means ...	...	...	6	21	210·7	...	−19·0	...

No. 1051. Latitude +8°·3.

Group 10624 in Rotation 999.
,, 10650 ,, ,, 1000.

Group 10624.—June 2–11. A small spot on June 2 that has disappeared on June 3; on June 4 a stream begins its development. The leader, *a*, and the follower, *b*, show temporarily the usual divergence in longitude. *b* changes rapidly at the outset.

153·349 G	5	18	3	12	166·5	0·0	+ 7·4	−40·5
154·391 G	0	0	0	0	...	...	...	...
155·371 C	16	63	8	33	164·9	−1·9	+ 8·0	−15·4
156·360 C	50	189	26	96	166·3	−0·6	+ 8·3	− 0·9
157·429 G	172	811	91	426	167·9	+0·8	+ 8·3	+14·9
158·563 G	128	1079	75	628	167·1	−0·1	+ 8·4	+29·1
159·580 G	126	685	88	478	166·9	−0·4	+ 8·0	+42·3
160·403 G	94	543	83	473	168·1	+0·6	+ 8·0	+54·4
161·359 G	50	319	66	415	168·0	+0·4	+ 8·0	+67·0
162·349 G	14	119	45	371	168·2	...	+ 7·9	+80·3
Means ...	...	...	49	285	167·0	...	+ 8·0	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1051, Group 10624—*continued*.							
Spot *a*.							
d							
156·360 C	27	90	14	46	168°·7	0°·0	+ 8°·0	+ 1°·5
157·429 G	69	371	37	197	170·4	+1·6	+ 8·3	+17·4
158·563 G	50	433	30	260	170·9	+1·9	+ 8·5	+32·9
159·580 G	48	314	36	232	171·6	+2·5	+ 8·2	+47·0
160·403 G	55	289	52	272	171·3	+2·1	+ 8·1	+57·6
161·359 G	30	174	44	252	170·7	+1·3	+ 8·2	+69·7
162·349 G	9	69	34	264	170·5	...	+ 8·2	+82·6
Spot *b*.							
156·360 C	23	99	12	50	164·4	0·0	+ 8·3	− 2·8
157·429 G	103	440	54	229	165·4	+0·9	+ 8·3	+12·4
158·563 G	73	632	42	360	164·9	+0·2	+ 8·3	+26·9
159·580 G	73	357	48	236	164·5	−0·3	+ 7·9	+39·9
160·403 G	39	254	31	201	164·2	−0·7	+ 7·6	+50·5
161·359 G	18	133	20	148	164·0	−1·1	+ 7·9	+63·0
162·349 G	5	50	11	107	164·2	−1·0	+ 8·1	+76·3

Group 10650.—June 26–July 5. A small regular spot (*a* of Group 10624) diminishing slowly to a dot. There are tiny companions *s* on July 4.

177·387 G	9	28	20	62	171·6	0·0	+ 8·3	−77·2
178·422 G	14	44	16	49	171·7	0·0	+ 8·5	−63·5
179·351 G	14	81	11	64	172·0	+0·2	+ 8·8	−50·9
180·402 G	18	94	11	59	172·1	+0·1	+ 8·5	−36·9
181·384 G	18	92	10	51	172·4	+0·3	+ 8·5	−23·6
182·365 G	23	71	12	36	172·7	+0·5	+ 8·4	−10·3
183·376 G	16	35	8	18	173·4	+1·0	+ 8·4	+ 3·8
184·357 G	14	32	7	17	174·0	+1·5	+ 8·5	+17·4
185·351 G	9	28	5	17	174·6	+2·0	+ 7·7	+31·2
186·382 G	5	9	3	6	172·7	−0·1	+ 9·0	+42·9
Means ...	...	...	10	38	172·7	...	+ 8·5	...

No. **1052**. Latitude +19°·4.

Group 10626 in Rotation 999.
,, 10653 ,, ,, 1000.

Group 10626.—June 5–12. A stream in which the leader, *a*, is the only significant spot.

156·360 C	36	173	21	99	148·0	0·0	+20·5	−19·2
157·429 G	59	204	32	108	149·4	+1·5	+19·3	− 3·6
158·563 G	44	195	24	107	152·2	+4·4	+18·9	+14·2
159·580 G	34	202	20	121	153·2	+5·5	+18·7	+28·6
160·403 G	21	139	14	95	153·3	+5·7	+18·8	+39·6
161·359 G	16	103	15	91	155·0	+7·5	+18·8	+54·0
162·349 G	9	37	13	52	156·1	+8·7	+19·0	+68·2
163·361 G	0	9	0	32	156·4	...	+19·1	+81·9
Means ...	...	...	20	96	152·5	...	+19·1	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long from C.M.
No. 1052, Group 10626—*continued*.							
Spot *a*.							
d							
157·429 G	39	131	21	69	151°·2	0°·0	+18°·7	− 1°·8
158·563 G	37	172	20	95	152·5	+1·4	+18·9	+14·5
159·580 G	32	188	19	113	153·7	+2·7	+18·7	+29·1
160·403 G	14	120	10	83	154·2	+3·3	+18·7	+40·5
161·359 G	14	96	13	86	155·2	+4·4	+18·9	+54·2
162·349 G	9	37	13	52	156·1	+5·4	+19·0	+68·2
163·361 G	0	9	0	32	156·4	+5·8	+19·1	+81·9

Group 10653.—June 27–July 8. A small broken spot fading out; a faint cluster occupies its position on July 2; a small spot on July 4 and a pair on July 8.

178·422 G	14	28	37	74	155·7	+ 9·8	+19·4	−79·5
179·351 G	9	41	11	49	158·0	+12·2	+19·5	−64·9
180·402 G	28	98	24	81	158·2	+12·5	+19·3	−50·8
181·384 G	14	51	9	33	159·0	+13·4	+19·8	−37·0
182·365 G	9	37	5	21	157·6	+12·1	+20·7	−25·4
183·376 G	5	28	3	15	159·2	+13·8	+21·4	−10·4
184·357 G	0	0	0	0	...	...	...	...
185·351 G	0	9	0	5	157·1	+11·9	+19·6	+13·7
186·382 G	0	0	0	0	...	...	...	...
187·371 G	0	0	0	0	...	...	...	...
188·366 G	0	0	0	0	...	...	...	...
189·399 G	7	23	8	26	153·6	+ 8·8	+18·2	+63·7
Means ...	...	...	8	25	157·3	...	+19·7	...

No. **1053**. Latitude +13°·8.

Group 10633 in Rotation 999.
,, 10664 ,, ,, 1000.
,, 10696 ,, ,, 1001.

Group 10633.—June 13–23. A stream in continual change. The leader, *a*, is at first a regular spot but becomes composite.

164·348 G	9	50	8	43	8·5	0·0	+12·7	−53·0
165·437 G	120	403	79	262	7·9	−0·6	+12·7	−39·1
166·356 G	147	715	83	404	9·3	+0·7	+12·7	−25·6
167·349 G	156	728	82	379	10·5	+1·9	+12·8	−11·2
168·324 G	139	767	72	391	11·1	+2·4	+12·8	+ 2·3
169·610 G	114	687	62	375	11·8	+3·1	+12·7	+20·0
170·490 G	172	971	103	577	12·0	+3·2	+12·8	+31·8
171·342 G	163	921	113	641	12·2	+3·4	+12·9	+43·3
172·334 C	99	859	90	778	11·6	+2·8	+13·1	+55·9
173·458 C	73	556	111	839	11·2	+2·3	+13·1	+70·3
174·363 G	23	208	74	722	11·0	...	+13·0	+82·1
Means ...	...	...	80	469	10·6	...	+12·8	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1053, Group 10633—*continued.*							
Spot *a*.							
d					°	°	°
165·437 G	37	112	23	69	12·0	0·0	+12·9	−35·0
166·356 G	46	252	25	139	13·5	+1·5	+13·1	−21·4
167·349 G	73	378	38	197	13·1	+1·0	+13·1	− 8·6
168·324 G	80	472	41	241	12·7	+0·6	+13·1	+ 3·9
169·610 G	82	545	45	300	12·7	+0·5	+12·9	+20·9
170·490 G	128	694	77	416	12·9	+0·7	+12·9	+32·7
171·342 G	108	669	77	475	13·1	+0·9	+12·8	+44·2
172·334 C	63	506	60	481	13·4	+1·1	+12·9	+57·7
173·458 C	41	287	68	476	13·3	+1·0	+12·9	+72·4
174·363 G	9	112	40	492	12·8	...	+12·8	+83·9
Group 10664.—July 8–20. A stable regular spot (*a* of Group 10633) with small attendants on July 14 and 16.							
189·399 G	23	101	46	204	13·8	+0·8	+13·8	−76·1
190·355 G	28	179	32	204	13·0	0·0	+13·9	−64·2
191·362 G	55	267	44	214	13·2	+0·1	+14·2	−50·7
192·379 G	64	391	41	250	13·1	0·0	+14·4	−37·3
193·373 G	78	426	44	239	13·1	−0·1	+14·4	−24·2
194·352 G	81	442	42	230	12·9	−0·3	+14·4	−11·4
195·363 G	87	501	44	256	12·7	−0·6	+14·6	+ 1·8
196·402 G	74	444	39	235	12·8	−0·5	+14·5	+15·6
197·346 G	53	350	30	200	12·8	−0·5	+14·3	+28·1
198·358 G	51	269	34	180	13·0	−0·4	+14·3	+41·7
199·354 G	32	220	28	191	13·0	−0·4	+14·5	+54·9
200·458 G	32	129	45	182	13·4	−0·1	+14·5	+69·9
201·447 G	9	46	32	166	13·6	...	+14·5	+83·2
Means ...	...	...	39	215	13·1	...	+14·3	...
Group 10696.—August 4–11. One small spot (*a* of Group 10633) on August 4 and 5. A tiny spot appears near its position on August 11.							
216·353 C	5	9	13	23	13·5	−0·6	+14·7	−79·8
217·376 G	5	14	6	17	13·8	−0·4	+14·8	−66·0
218·387 G	0	0	0	0	...	...	...	...
219·586 G	0	0	0	0	...	...	...	...
220·474 G	0	0	0	0	...	...	...	...
221·370 G	0	0	0	0	...	...	...	...
222·345 C	0	0	0	0	...	...	...	...
223·372 G	2	18	1	9	12·5	−1·9	+16·1	+12·0
Means ...	...	...	3	6	13·3	...	+15·2	...
No. 1054. Latitude +9°·7.							
Group 10637 in Rotation 1000.							
,, 10671 ,, ,, 1001.							
Group 10637.—June 17–29. A regular spot with companions after June 20; these become specially numerous about June 24 and of appreciable size on June 27–28.							
168·324 G	21	103	44	215	292·6	0·0	+ 9·0	−76·2
169·610 G	37	266	36	258	293·0	+0·3	+ 8·9	−58·8

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1054, Group 10637—*continued.*							
d					°	°	°
170·490 G	50	334	37	247	292·9	0·0	+ 9·0	−47·3
171·342 G	60	321	37	199	292·9	−0·1	+ 9·4	−36·0
172·334 C	68	416	37	229	292·9	−0·2	+ 9·8	−22·8
173·458 C	70	475	36	242	293·0	−0·2	+10·5	− 7·9
174·363 G	105	769	54	392	292·8	−0·5	+10·7	+ 3·9
175·397 G	142	731	75	387	293·2	−0·2	+10·4	+18·0
176·360 G	97	580	57	342	293·4	−0·1	+10·4	+30·9
177·387 G	64	400	45	284	293·3	−0·4	+11·0	+44·5
178·422 G	71	375	68	360	293·8	0·0	+11·0	+58·6
179·351 G	41	294	62	444	293·7	−0·2	+10·9	+70·8
180·402 G	11	55	53	263	293·4	...	+11·1	+84·4
Means ...	...	...	49	300	293·1	...	+10·1	...
Group 10671.—July 13–26. A large stream of spots marking with its attendant faculæ an active area of very great extent. At the front of the stream, there are two regular spot, *a* and a^1, at first almost touching one another and then finally coalescing. The rear of the stream, stretching over several degrees of latitude, comprises a composite spot, *c*, a small nearly regular spot, *d*, and one or two clusters.							
194·352 G	23	198	(61	589	304·3	...	+ 9·4)	−80·0
195·363 G	91	593	142	940	298·9	+3·2	+ 9·4	−72·0
196·402 G	185	941	174	877	299·7	+3·8	+ 9·1	−57·5
197·346 G	213	1235	156	910	297·8	+1·8	+ 8·8	−46·9
198·358 G	276	1504	169	914	297·3	+1·2	+ 8·9	−34·0
199·354 G	246	1440	132	769	297·8	+1·6	+ 9·1	−20·3
200·458 G	298	1492	151	756	297·2	+0·9	+ 9·5	− 6·3
201·447 G	306	1392	157	709	297·1	+0·7	+ 9·3	+ 6·7
202·355 G	241	1208	130	645	297·9	+1·4	+ 9·5	+19·4
203·386 G	158	831	94	502	298·1	+1·4	+ 9·7	+33·3
204·357 G	115	607	85	441	298·2	+1·4	+ 9·7	+46·2
205·394 G	60	312	63	318	299·0	+2·1	+ 9·6	+60·8
206·582 G	23	115	59	276	301·0	+4·0	+ 9·6	+78·5
207·368 G	9	35	(37	142	295·8	...	+ 9·5)	+83·7
Means ...	...	...	126	671	298·3	...	+ 9·4	...
Spot *a*.							
194·352 G	14	81	36	210	305·0	0·0	+ 8·3	−79·3
195·363 G	32	216	39	266	304·4	−0·7	+ 8·3	−66·5
196·402 G	58	262	47	212	304·9	−0·3	+ 8·5	−52·3
197·346 G	51	327	33	213	305·0	−0·3	+ 8·0	−39·7
198·358 G	60	304	34	170	304·9	−0·6	+ 8·6	−26·4
199·354 G	60	389	31	198	304·9	−0·7	+ 8·7	−13·2
200·458 G	58	294	29	147	304·8	−0·9	+ 8·9	+ 1·3
201·447 G	51	276	27	144	304·8	−1·0	+ 9·1	+14·4
202·355 G	64	322	36	180	305·0	−0·9	+ 9·3	+26·5
203·386 G	32	190	21	124	305·0	−1·0	+ 9·6	+40·2
204·357 G	41	193	34	158	304·9	−1·3	+ 9·8	+52·9
205·394 G	28	110	35	138	305·1	−1·2	+ 9·9	+66·9
206·582 G	9	37	37	151	306·2	...	+ 9·8	+83·7

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1054, Group 10671—*continued*.							
Spot *a*[1].							
d					°	°	°
194·352 G	9	78	25	220	303·9	...	+10·1	−80·4
195·363 G	28	170	36	221	303·2	0·0	+ 9·8	−67·7
196·402 G	46	262	39	223	303·2	−0·1	+10·1	−54·0
197·346 G	39	253	26	170	303·1	−0·3	+ 9·9	−41·6
198·358 G	39	225	22	128	303·4	−0·1	+ 9·9	−27·9
199·354 G	46	215	24	112	303·5	−0·2	+10·1	−14·6
200·458 G	37	202	18	101	303·4	−0·4	+10·3	− 0·1
201·447 G	41	159	21	83	303·6	−0·3	+ 9·8	+13·2
202·355 G	23	92	13	52	304·3	+0·3	+10·8	+25·8
203·386 G	14	87	9	57	304·3	+0·2	+11·1	+39·5
Spot *c*.							
195·363 G	21	156	48	359	292·9	0·0	+ 9·5	−78·0
196·402 G	46	228	52	255	293·3	+0·3	+ 9·4	−63·9
197·346 G	74	386	59	309	293·2	+0·1	+ 8·9	−51·5
198·358 G	92	527	59	337	293·1	−0·1	+ 9·0	−38·2
199·354 G	78	568	43	312	293·3	−0·1	+ 9·0	−24·8
200·458 G	104	547	53	279	293·5	0·0	+ 9·1	−10·0
201·447 G	101	557	51	279	293·7	+0·1	+ 9·1	+ 3·3
202·355 G	101	541	53	281	294·2	+0·5	+ 9·3	+15·7
203·386 G	87	481	50	279	294·5	+0·7	+ 9·2	+29·7
204·357 G	51	345	35	235	294·3	+0·4	+ 9·3	+42·3
205·394 G	32	202	28	180	294·3	+0·2	+ 9·4	+56·1
206·582 G	14	78	22	125	294·8	+0·6	+ 9·4	+72·3
Spot *d*.							
196·402 G	9	23	12	31	288·5	0·0	+ 7·3	−68·7
197·346 G	18	120	15	103	290·2	+1·6	+ 6·4	−54·5
198·358 G	32	154	21	100	291·2	+2·5	+ 5·9	−40·1
199·354 G	32	124	18	69	292·2	+3·4	+ 6·0	−25·9
200·458 G	35	143	18	73	292·3	+3·3	+ 6·0	−11·2
201·447 G	35	133	18	67	292·5	+3·4	+ 5·6	+ 2·1
202·355 G	18	78	9	41	292·8	+3·6	+ 5·8	+14·3
203·386 G	7	16	4	9	292·8	+3·5	+ 5·9	+28·0

No. **1055**. Latitude −26°·3.

Group 10658 in Rotation 1000.

,, 10689 ,, ,, 1001.

Group 10658.—July 1–13. A changing stream in fairly high southern latitude in which the leader, at first a large regular spot, subdivides; the preceding portion, *a*, tends to become regular.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
182·365 G	42	207	151	689	104·4	0·0	−26·5	−78·6
183·376 G	69	554	97	789	104·6	+0·5	−26·6	−65·0
184·357 G	106	870	104	861	103·5	−0·3	−26·8	−53·1
185·351 G	136	968	105	748	103·2	−0·2	−26·9	−40·2
186·382 G	141	867	93	575	102·1	−1·0	−27·2	−27·7
187·371 G	151	1073	91	647	101·0	−1·8	−27·3	−15·7
188·366 G	151	1060	87	614	101·4	−1·1	−27·1	− 2·1
189·399 G	146	798	86	472	101·8	−0·4	−26·5	+11·9
190·355 G	101	594	65	380	101·5	−0·3	−26·4	+24·3
191·362 G	90	437	68	327	102·7	+1·2	−26·1	+38·8
192·379 G	39	295	38	280	101·7	+0·5	−26·4	+51·3
193·373 G	18	101	27	154	103·7	+2·8	−25·9	+66·4
194·352 G	14	37	48	127	102·8	+2·2	−25·5	+78·5
Means ...	...	...	82	513	102·6	...	−26·6	...
Spot *a*.							
186·382 G	44	225	28	142	105·6	0·0	−25·9	−24·2
187·371 G	46	289	27	168	105·2	−0·1	−25·7	−11·5
188·366 G	37	224	21	128	105·1	+0·1	−25·3	+ 1·6
189·399 G	51	202	30	119	105·0	+0·4	−25·5	+15·1
190·355 G	55	235	36	152	104·3	0·0	−25·5	+27·1
191·362 G	60	271	46	206	104·2	+0·2	−25·5	+40·3
192·379 G	28	189	28	187	103·9	+0·2	−26·0	+53·5
193·373 G	18	101	27	154	103·7	+0·3	−25·9	+66·4
194·352 G	14	37	48	127	102·8	−0·2	−25·5	+78·5

Group 10689.—July 29–August 3. A small regular spot dying out—*a* of Group 10658.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
210·402 G	7	16	15	34	100·1	+2·2	−25·6	−71·9
211·345 G	9	30	11	37	99·4	+1·8	−25·7	−60·1
212·420 G	16	50	14	44	99·0	+1·7	−25·5	−46·3
213·504 G	9	23	6	16	98·3	+1·4	−25·5	−32·7
214·583 G	7	14	4	9	97·6	+1·0	−25·5	−19·1
215·267 K	9	17	5	10	97·0	+0·6	−25·9	−10·6
Means ...	...	...	9	25	98·6	...	−25·6	...

No. **1056**. Latitude +7°·9.

Group 10662 in Rotation 1000.

,, 10692 and 94 in Rotation 1001.

,, 10723 in Rotation 1002.

Group 10662.—July 6–18. A large group of abnormal development. At first two spots, *a* and *b*, in close juxtaposition near the east limb, both surrounded and followed by very bright faculæ. *a* lengthens out in longitude and then divides on July 11 or 12. The preceding part becomes a regular spot, a^1, whilst the following part, a^2, dissolves as a cluster. Meanwhile, *b*, of somewhat composite structure grows and develops a double umbra that remains intact.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
187·371 G	64	156	139	339	39·7	0·0	+ 7·6	−77·0
188·366 G	128	706	144	807	39·9	+0·1	+ 7·4	−63·6
189·399 G	274	1345	215	1066	39·5	−0·5	+ 7·8	−50·4
190·355 G	262	1664	167	1075	38·3	−1·8	+ 8·1	−38·9
191·362 G	358	1992	199	1110	38·8	−1·5	+ 7·9	−25·1
192·379 G	359	2074	186	1070	38·2	−2·2	+ 8·0	−12·2

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1056, Group 10662—*continued.*							
d					°	°	°
193·373 G	359	2109	180	1054	38·1	−2·4	+ 8·2	+ 0·8
194·352 G	378	2020	194	1039	37·9	−2·8	+ 8·4	+13·6
195·363 G	295	1585	168	904	38·9	−1·9	+ 8·2	+28·0
196·402 G	251	1216	169	817	39·1	−1·9	+ 8·1	+41·9
197·346 G	143	969	122	814	38·5	−2·6	+ 8·4	+53·8
198·358 G	145	619	183	797	39·1	−2·2	+ 7·9	+67·8
199·354 G	34	302	113	894	38·9	...	+ 8·4	+80·8
Means ...	...	...	172	908	38·8	...	+ 8·0	...
Spot *a*.							
188·366 G	87	408	92	432	41·5	0·0	+ 6·9	−62·0
189·399 G	156	662	115	490	42·0	+0·4	+ 6·9	−47·9
190·355 G	138	718	84	438	42·1	+0·3	+ 6·8	−35·1
191·362 G	179	883	97	477	42·6	+0·7	+ 6·9	−21·3
192·379 G	156	879	80	448	42·8	+0·7	+ 7·1	− 7·6
Spot a^1.							
193·373 G	80	421	40	210	44·1	+1·9	+ 6·8	+ 6·8
194·352 G	74	396	39	210	44·2	+1·9	+ 6·6	+19·9
195·363 G	69	359	41	215	43·9	+1·4	+ 6·4	+33·0
196·402 G	64	285	47	208	44·0	+1·4	+ 6·3	+46·8
197·346 G	37	182	36	177	43·8	+1·0	+ 6·2	+59·1
198·358 G	25	133	41	217	43·8	+0·9	+ 6·3	+72·5
199·354 G	7	32	43	195	43·8	...	+ 6·5	+85·7
Spot a^2.							
193·373 G	78	401	39	201	41·1	−1·1	+ 7·2	+ 3·8
194·352 G	60	336	31	175	40·9	−1·4	+ 7·6	+16·6
195·363 G	35	159	20	92	40·7	−1·8	+ 7·9	+29·8
196·402 G	21	85	14	59	40·8	−1·8	+ 8·3	+43·6
Spot *b*.							
188·366 G	41	298	52	375	36·7	0·0	+ 8·7	−66·8
189·399 G	113	662	95	556	36·4	−0·4	+ 8·7	−53·5
190·355 G	117	902	78	604	35·7	−1·3	+ 8·8	−41·5
191·362 G	179	1109	102	633	35·6	−1·5	+ 8·9	−28·3
192·379 G	198	1154	103	600	35·6	−1·7	+ 8·9	−14·8
193·373 G	183	1223	92	611	36·1	−1·3	+ 8·8	− 1·2
194·352 G	230	1191	117	607	36·0	−1·5	+ 8·9	+11·7
195·363 G	186	1044	104	585	36·6	−1·1	+ 8·7	+25·7
196·402 G	166	846	108	550	36·8	−1·0	+ 8·9	+39·6
197·346 G	106	787	86	637	37·0	−1·0	+ 8·9	+52·3
198·358 G	106	442	126	526	37·0	−1·1	+ 8·7	+65·7
199·354 G	27	270	70	699	37·5	−0·8	+ 8·9	+79·4

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1056—*continued.*							
Group 10692.—August 1–10. A small regular spot (a^1 of Group 10662).							
d					°	°	°
213·504 G	5	18	20	73	47·5	...	+ 6·3	−83·5
214·583 G	11	44	15	62	47·1	+1·9	+ 5·9	−69·6
215·267 K	17	85	17	85	47·1	+1·8	+ 5·9	−60·5
216·353 C	14	61	10	43	47·6	+2·2	+ 6·4	−45·7
217·376 G	21	108	12	64	48·0	+2·4	+ 6·5	−31·8
218·387 G	21	101	11	54	48·1	+2·4	+ 6·6	−18·3
219·586 G	18	46	9	23	48·3	+2·4	+ 6·8	− 2·2
220·474 G	9	23	5	12	48·5	+2·5	+ 6·8	+ 9·7
221·370 G	11	32	6	17	48·9	+2·7	+ 6·8	+22·0
222·345 C	5	14	3	9	49·3	+3·0	+ 6·7	+35·2
Means ...	...	...	10	41	48·1	...	+ 6·5	...
Group 10694.—August 2–14. A stable regular spot (*b* of Group 10662) with tiny followers on August 6, 7 and 11.							
214·583 G	34	179	69	362	40·3	−0·1	+ 8·5	−76·4
215·267 K	53	262	68	335	40·1	−0·4	+ 8·5	−67·5
216·353 C	77	439	64	364	40·1	−0·5	+ 8·9	−53·2
217·376 G	101	508	66	330	40·3	−0·5	+ 8·8	−39·5
218·387 G	128	614	72	344	40·4	−0·5	+ 9·0	−26·0
219·586 G	120	673	62	343	40·1	−1·0	+ 9·4	−10·4
220·474 G	108	540	54	270	40·5	−0·7	+ 9·0	+ 1·7
221·370 G	96	513	49	262	40·5	−0·9	+ 8·9	+13·6
222·345 C	72	428	40	240	40·5	−1·0	+ 8·9	+26·4
223·372 G	83	406	54	263	40·3	−1·3	+ 8·9	+39·8
224·581 G	55	271	49	241	40·8	−1·0	+ 8·7	+56·3
225·358 G	36	187	44	228	40·6	−1·3	+ 8·7	+66·4
226·360 G	18	68	48	181	41·0	...	+ 8·7	+80·0
Means ...	...	...	58	299	40·4	...	+ 8·8	...
Group 10723.—August 29–September 9. A stable regular spot (*b* of Group 10662) with a distant companion on September 3.							
241·349 G	14	61	30	130	45·6	+1·4	+ 8·5	−77·3
242·351 G	25	120	28	133	45·8	+1·5	+ 8·3	−63·9
243·448 G	27	136	21	103	46·2	+1·7	+ 8·3	−49·0
244·361 G	34	163	21	101	46·1	+1·5	+ 8·3	−37·0
245·393 G	32	182	17	98	46·4	+1·7	+ 8·2	−23·1
246·387 G	36	195	18	100	46·6	+1·7	+ 8·2	− 9·8
247·349 G	32	186	16	93	46·8	+1·8	+ 7·9	+ 3·2
248·355 G	45	172	23	89	47·1	+1·9	+ 7·7	+16·7
249·351 G	25	163	15	95	47·2	+1·9	+ 7·7	+30·0
250·358 G	27	140	18	95	47·1	+1·7	+ 7·4	+43·2
251·364 G	14	81	13	74	47·6	+2·0	+ 7·2	+57·0
252·552 C	4	22	6	35	46·9	+1·2	+ 7·1	+72·0
Means ...	...	...	19	96	46·6	...	+ 7·9	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

No. 1057. Latitude +14°·9.

Group 10686 in Rotation 1001.

,, 10713 ,, ,, 1002.

Group 10686.—July 27–August 6. A very large stream of normal type developing rapidly from a few spots on July 27 which were preceded by a patch of faculæ seen on July 26. The leader, a large regular spot, *a*, comes from the fusion of two separate spots, and a double umbra remains until July 31. The decrease of the group is rapid for so large a one, which for some days is visible to the naked eye.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
208·391 G	25	81	25	82	138·0	0·0	+15·3	−60·6
209·347 G	64	290	47	215	138·8	+0·8	+15·0	−47·1
210·402 G	188	1250	113	754	139·5	+1·5	+14·5	−32·5
211·345 G	323	1813	175	979	139·6	+1·5	+14·5	−19·9
212·420 G	362	2130	186	1091	139·2	+1·1	+14·4	− 6·1
213·504 G	328	1915	169	988	140·5	+2·4	+15·0	+ 9·5
214·583 G	275	1489	152	820	141·0	+2·9	+14·4	+24·3
215·267 K	268	1308	161	794	141·5	+3·4	+14·0	+33·9
216·353 C	163	926	123	695	141·9	+3·8	+14·2	+48·6
217·376 G	101	591	107	630	141·8	+3·6	+14·8	+62·0
218·387 G	51	277	98	538	142·5	+4·3	+14·9	+76·1
Means ...	...	...	123	690	140·4	...	+14·6	...
Spot *a*.								
209·347 G	37	176	26	125	140·9	0·0	+14·7	−45·0
210·402 G	138	852	81	503	141·0	+0·1	+14·3	−31·0
211·345 G	176	927	93	491	142·2	+1·3	+14·2	−17·3
212·420 G	174	1072	89	547	143·0	+2·0	+14·1	− 2·3
213·504 G	195	1051	101	547	143·2	+2·2	+14·4	+12·2
214·583 G	192	948	108	531	143·1	+2·1	+14·3	+26·4
215·267 K	179	954	111	591	142·9	+1·9	+14·1	+35·3
216·353 C	126	725	97	558	142·9	+1·9	+14·2	+49·6
217·376 G	87	527	95	574	143·1	+2·1	+14·6	+63·3
218·387 G	44	254	88	505	143·0	+1·9	+14·8	+76·6

Group 10713.—August 21–September 3. A large regular spot—*a* of Group 10686.

233·358 C	16	58	65	236	143·9	...	+15·2	−84·6
234·348 G	23	166	35	251	143·6	+2·2	+15·4	−71·8
235·360 C	40	294	38	276	143·6	+2·2	+15·2	−58·4
236·572 G	68	349	46	237	143·3	+1·9	+15·4	−42·7
237·369 G	80	451	47	266	143·4	+2·0	+15·4	−32·1
238·389 G	89	461	47	244	143·1	+1·7	+15·4	−18·9
239·379 G	95	481	48	245	143·1	+1·7	+15·2	− 5·8
240·345 G	66	508	34	259	143·2	+1·7	+15·1	+ 7·0
241·349 G	86	427	46	231	143·2	+1·7	+15·1	+20·3
242·351 G	59	322	35	193	143·4	+1·9	+15·0	+33·7
243·448 G	54	264	41	198	143·5	+2·0	+14·9	+48·3
244·361 G	34	186	33	182	143·2	+1·7	+14·8	+60·1
245·393 G	23	102	38	169	143·2	+1·7	+14·6	+73·7
246·387 G	5	39	30	238	143·1	...	+14·1	+86·7
Means ...	...	...	41	229	143·3	...	+15·1	...

No. 1058. Latitude −15°·2.

Group 10695 in Rotation 1001.

,, 10725 ,, ,, 1002.

Group 10695.—August 4–15. At first, small spots which are rather scattered over an area marked by faculæ; by August 7, two groupings of spots have appeared, and these develop into a large stream of approximately normal type that quickly passes through the usual phases. *a* and *b* are the leader and follower respectively.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
216·353 C	12	37	32	99	16·7	0·0	−13·8	−76·6
217·376 G	25	73	29	84	18·5	+1·8	−14·4	−61·3
218·387 G	60	176	49	144	18·2	+1·5	−15·7	−48·2
219·586 G	124	675	80	435	18·6	+1·9	−15·5	−31·9
220·474 G	252	1280	145	740	18·3	+1·6	−15·4	−20·5
221·370 G	180	1234	98	675	19·6	+2·8	−15·8	− 7·3
222·345 C	226	1229	123	668	19·8	+3·0	−15·7	+ 5·7
223·372 G	184	899	107	522	20·0	+3·2	−15·5	+19·5
224·581 G	141	656	94	443	19·6	+2·8	−15·7	+35·1
225·358 G	92	481	73	388	19·5	+2·7	−16·0	+45·3
226·360 G	52	204	59	242	22·0	+5·2	−15·7	+61·0
227·357 G	11	68	33	206	26·0	+9·2	−15·1	+78·2
Means ...	...	...	77	387	19·7	...	−15·4	...
Spot *a*.								
220·474 G	115	561	64	314	21·7	0·0	−14·7	−17·1
221·370 G	96	598	52	323	22·6	+0·9	−14·5	− 4·3
222·345 C	113	518	61	280	24·0	+2·3	−14·7	+ 9·9
223·372 G	109	447	64	264	24·7	+3·0	−15·0	+24·2
224·581 G	59	296	42	213	25·2	+3·5	−15·2	+40·7
225·358 G	36	235	32	207	25·6	+3·8	−15·3	+51·4
226·360 G	23	128	31	170	25·9	+4·1	−15·2	+64·9
227·357 G	11	68	33	206	26·0	+4·2	−15·1	+78·2
Spot *b*.								
220·474 G	112	536	67	322	15·2	0·0	−17·2	−23·6
221·370 G	50	396	28	222	14·7	−0·5	−17·8	−12·2
222·345 C	61	432	34	238	14·6	−0·6	−17·8	+ 0·5
223·372 G	50	315	29	180	14·5	−0·7	−17·8	+14·0
224·581 G	43	205	27	129	14·1	−1·1	−17·7	+29·6
225·358 G	32	155	23	112	14·1	−1·2	−17·8	+39·9
226·360 G	18	46	17	43	14·1	−1·2	−17·9	+53·1

Group 10725.—August 31–September 6. Intermittent. Two small spots on August 31 of which one survives until September 3; a dot appears in its place on September 6.

243·448 G	2	10	3	15	26·9	+ 9·9	−15·4	−68·3
244·361 G	5	9	5	9	27·4	+10·4	−14·5	−55·7
245·393 G	9	18	7	13	27·3	+10·3	−14·5	−42·2
246·387 G	5	11	3	7	27·4	+10·4	−14·4	−29·0
247·349 G	0	0	0	0	...	...	...	...
248·355 G	0	0	0	0	...	...	...	...
249·351 G	5	7	3	4	25·6	+ 8·5	−15·1	+ 8·4
Means ...	...	...	3	7	26·9	...	−14·8	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1059. Latitude −13°·3. Group 10706 in Rotation 1001. ,, 10726 ,, ,, 1002.							
Group 10706.—August 14–17. A group forming near the west limb.							
d							
226·360 G	16	25	12	19	5°·6	0°·0	−14°·4	+44°·6
227·357 G	23	68	24	70	4·9	−0·8	−14·9	+57·1
228·355 G	55	258	92	445	5·5	−0·2	−14·8	+70·9
229·397 G	9	36	(37	147	1·6	...	−14·1)	+80·8
Means ...	...	...	43	178	5·3	...	−14·7	...
Group 10726.—September 1–12. A stable regular spot.							
244·361 G	9	36	19	75	9·2	+2·7	−13·2	−73·9
245·393 G	11	54	12	60	8·9	+2·3	−13·1	−60·6
246·387 G	14	86	11	69	9·0	+2·4	−12·9	−47·4
247·349 G	20	107	13	70	8·8	+2·1	−13·0	−34·8
248·355 G	25	122	14	70	9·0	+2·3	−12·9	−21·4
249·351 G	27	127	15	69	9·2	+2·5	−12·9	− 8·0
250·358 G	18	127	10	67	9·1	+2·3	−12·9	+ 5·2
251·364 G	14	86	8	48	9·4	+2·5	−12·9	+18·8
252·552 C	15	71	10	46	9·3	+2·3	−13·4	+34·4
253·346 G	16	59	12	45	9·1	+2·1	−13·2	+44·6
254·351 G	9	23	9	23	8·7	+1·6	−13·4	+57·5
255·361 G	5	14	9	25	8·9	+1·8	−13·4	+71·1
Means ...	...	...	12	56	9·0	...	−13·1	...
No. 1060. Latitude −11°·0. Group 10709 in Rotation 1002. ,, 10739 ,, ,, 1003.							
Group 10709.—August 18–27. A large stream of normal type developing *n* Group 10708. The leader emerges as a small regular spot, *a*, is joined by another spot on August 20 with which it coalesces on August 21 and then assumes a nearly regular outline.							
230·468 G	41	205	28	143	226·3	0·0	−11·5	−40·4
231·351 G	46	237	28	142	227·6	+1·2	−11·2	−27·4
232·340 G	148	798	81	436	227·6	+1·1	−11·4	−14·3
233·358 C	178	1237	94	656	226·9	+0·3	−11·9	− 1·6
234·348 G	205	1258	111	680	227·3	+0·6	−11·3	+11·9
235·360 C	168	1317	99	767	227·3	+0·5	−11·2	+25·3
236·572 G	182	1268	130	905	227·4	+0·5	−11·8	+41·4
237·369 G	178	1140	155	993	227·3	+0·3	−11·8	+51·8
238·389 G	109	773	148	1019	227·5	+0·4	−12·3	+65·5
239·379 G	65	284	188	863	227·5	+0·4	−12·1	+78·6
Means ...	...	...	106	660	227·3	...	−11·6	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1060, Group 10709—*continued*. Spot *a*.							
d							
230·468 G	27	109	18	74	228°·1	0°·0	−10°·8	−38°·6
231·351 G	23	141	14	83	228·8	+0·6	−11·1	−26·2
232·340 G	89	545	48	294	228·7	+0·4	−11·0	−13·2
233·358 C	98	671	52	356	228·7	+0·3	−10·9	+ 0·2
234·348 G	137	825	74	446	229·1	+0·6	−10·7	+13·7
235·360 C	103	709	61	418	229·1	+0·5	−10·7	+27·1
236·572 G	100	727	73	531	229·4	+0·7	−10·6	+43·4
237·369 G	82	588	74	529	229·3	+0·5	−10·5	+53·8
238·389 G	59	310	86	450	229·9	+1·0	−10·3	+67·9
239·379 G	23	141	83	509	229·5	...	−10·1	+80·6
Group 10739.—September 11–23. A stable regular spot, *a* of Group 10709, with small companions *sf* on September 16.							
254·351 G	23	99	67	289	232·6	+2·2	−10·1	−78·6
255·361 G	47	245	61	316	232·5	+2·0	−10·1	−65·3
256·370 G	63	372	55	324	232·3	+1·7	−10·2	−52·2
257·374 G	92	423	63	288	232·5	+1·8	−10·3	−38·8
258·443 G	77	405	45	235	232·8	+2·0	−10·3	−24·4
259·459 G	65	414	34	219	232·7	+1·8	−10·4	−11·0
260·368 G	65	385	34	200	232·8	+1·9	−10·4	+ 1·1
261·418 G	54	347	29	187	233·1	+2·1	−10·4	+15·2
262·433 G	45	261	27	157	233·3	+2·2	−10·7	+28·8
263·368 G	41	230	29	161	233·1	+1·9	−10·7	+41·0
264·358 G	25	175	23	159	233·2	+1·9	−10·7	+54·1
265·362 G	27	116	38	164	233·1	+1·7	−10·7	+67·3
266·418 G	4	29	18	127	233·9	...	−10·9	+82·0
Means ...	...	...	42	225	232·8	...	−10·4	...
No. 1061. Latitude −8°·0. Group 10728 in Rotation 1002. ,, 10747 ,, ,, 1003.							
Group 10728.—September 3–6. A group forming near the west limb.							
246·387 G	34	163	24	114	98·1	0·0	− 7·5	+41·7
247·349 G	32	175	28	152	96·7	−1·5	− 7·5	+53·1
248·355 G	18	95	24	128	97·1	−1·3	− 7·5	+66·7
249·351 G	9	59	27	179	96·5	−2·0	− 7·5	+79·3
Means ...	...	...	36	143	97·1	...	− 7·5	...
Group 10747.—September 22–23. One or two outlying spots to Group 10746.							
265·362 G	4	13	6	20	96·7	−4·1	− 8·8	−69·1
266·418 G	4	36	4	34	95·8	−5·1	− 8·9	−56·1
Means ...	...	...	5	27	96·2	...	− 8·8	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

No. **1062**. Latitude +14°·4.

Group 10733 in Rotation 1003.
,, 10757 ,, ,, 1004.
,, 10784 ,, ,, 1005.
,, 10803 ,, ,, 1006.

Group 10733.—September 6–19. A very large, active and complex stream. The group is developing as it rounds the eastern limb, when it is led by a large and nearly regular spot, *a*, that remains the most stable component. On September 9 a small spot, *d*, appears in front, and this has grown and becomes regular by September 12; between September 13 and 15 it expands considerably and changes shape. Meanwhile transformations occur in the middle and rear of the stream; a large composite formation, *c*, is conspicuous on September 11 and 12; this diminishes and tends to break up, but it has re-formed as a composite spot on September 16 and absorbs *a* on September 18.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
249·351 G	9	81	(34	309	292·8	...	+15·2)	−84·4
250·358 G	61	374	100	606	290·7	0·0	+14·3	−73·2
251·364 G	131	685	129	648	291·8	+1·1	+14·7	−58·8
252·552 C	188	1312	128	899	292·0	+1·2	+14·8	−42·9
253·346 G	272	1847	161	1096	292·7	+1·9	+14·3	−31·8
254·351 G	338	2274	179	1203	293·1	+2·3	+14·8	−18·1
255·361 G	344	2080	175	1060	292·4	+1·6	+14·7	− 5·4
256·370 G	285	1905	146	974	292·8	+1·9	+15·1	+ 8·3
257·374 G	296	1807	162	989	294·3	+3·4	+14·6	+23·0
258·443 G	280	1691	178	1085	295·5	+4·6	+14·9	+38·3
259·459 G	300	1635	241	1314	295·6	+4·6	+14·9	+51·9
260·368 G	205	1276	220	1362	294·7	+3·7	+14·7	+63·0
261·418 G	74	736	152	1466	294·7	+3·7	+14·9	+76·8
262·433 G	9	54	(55	329	291·3	...	+15·3)	+86·8
Means ...	...	...	164	1059	293·4	...	+14·7	...
Spot *a*.								
249·351 G	9	81	34	309	292·8	...	+15·2	−84·4
250·358 G	45	276	65	397	293·1	0·0	+14·8	−70·8
251·364 G	54	387	48	341	294·6	+1·5	+14·8	−56·0
252·552 C	102	623	67	411	294·5	+1·3	+15·1	−40·4
253·346 G	154	673	89	390	295·0	+1·8	+15·2	−29·5
254·351 G	136	642	71	334	295·2	+2·0	+15·3	−16·0
255·361 G	149	727	76	371	295·0	+1·8	+15·3	− 2·8
256·370 G	119	629	61	321	295·3	+2·0	+15·3	+10·8
257·374 G	115	634	63	349	295·5	+2·2	+15·4	+24·2
258·443 G	117	484	75	310	295·3	+2·0	+15·4	+38·1
259·459 G	79	446	63	357	295·4	+2·0	+15·5	+51·7
260·368 G	38	290	40	304	294·1	+0·7	+15·1	+62·4
Spots *c*.								
251·364 G	36	158	35	152	291·2	0·0	+14·6	−59·4
252·552 C	40	340	28	238	290·5	−0·7	+14·8	−44·4
253·346 G	68	899	41	539	291·5	+0·2	+14·1	−33·0
254·351 G	118	1153	63	611	291·3	0·0	+14·3	−19·9

No. **1062**, Group 10733—*continued*.

Spots *c*—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
255·361 G	95	889	48	453	290·9	−0·4	+14·5	− 6·9
256·370 G	90	833	46	425	290·5	−0·8	+15·0	+ 6·0
257·374 G	61	558	33	301	292·1	+0·7	+14·4	+20·8
258·443 G	63	464	38	283	291·8	+0·4	+14·3	+34·6
259·459 G	117	644	88	483	292·0	+0·6	+14·5	+48·3
260·368 G	99	608	94	578	290·9	−0·6	+14·6	+59·2
261·418 G	56	592	97	1030	292·5	+1·0	+15·0	+74·6
Spot *d*.								
252·552 C	13	106	8	68	296·5	0·0	+14·4	−38·4
253·346 G	16	108	9	60	297·6	+1·1	+14·1	−26·9
254·351 G	59	276	31	144	297·9	+1·3	+14·1	−13·3
255·361 G	50	239	25	119	298·2	+1·6	+14·0	+ 0·4
256·370 G	49	309	25	161	298·5	+1·9	+14·3	+14·0
257·374 G	88	430	49	241	298·3	+1·7	+14·4	+27·0
258·443 G	81	666	54	446	298·7	+2·0	+14·7	+41·5
259·459 G	104	545	90	474	299·4	+2·7	+14·8	+55·7
260·368 G	68	378	86	480	299·6	+2·9	+14·7	+67·9
261·418 G	18	144	55	436	299·9	...	+14·6	+82·0

Group 10757.—October 3–15. Two regular spots, *a* and *b*—the larger one, *a*, leading —keeping the same distance apart in longitude. Small companions, present on most days southwards, make up a wide cluster on October 11 and 12. A large area of faculæ accompanies the group.

276·368 G	20	107	53	310	299·3	...	+14·1	−81·3
277·388 G	49	279	60	361	299·0	+7·5	+14·1	−68·1
278·500 C	74	386	61	319	299·4	+7·9	+14·1	−53·0
279·397 G	71	480	47	320	299·9	+8·4	+13·8	−40·7
280·396 G	104	607	59	349	299·9	+8·3	+13·6	−27·5
281·498 G	110	673	56	348	299·5	+7·9	+13·7	−13·4
282·460 G	111	648	56	326	299·7	+8·1	+13·6	− 0·5
283·418 G	101	592	52	306	299·8	+8·1	+13·5	+12·2
284·400 G	118	687	65	380	298·8	+7·1	+13·0	+24·2
285·497 C	82	475	53	306	299·6	+7·9	+13·5	+39·5
286·523 G	66	344	56	287	300·0	+8·3	+13·4	+53·4
287·439 G	48	212	56	254	300·5	+8·7	+13·7	+66·0
288·496 G	27	84	68	223	300·7	...	+13·7	+80·1
Means ...	...	...	56	323	299·6	...	+13·6	...
Spot *a* (*d* of Group 10733).								
276·368 G	18	89	41	200	302·1	+4·9	+14·3	−78·5
277·388 G	40	186	46	212	302·3	+5·1	+14·2	−64·8
278·500 C	52	264	41	206	302·2	+4·9	+14·2	−50·2
279·397 G	49	320	31	205	302·3	+5·0	+13·9	−38·3
280·396 G	67	382	38	214	302·3	+5·0	+13·9	−25·1
281·498 G	71	422	36	215	302·2	+4·9	+14·1	−10·7
282·460 G	71	402	36	201	302·1	+4·7	+13·9	+ 1·9

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1062, Group 10757—*continued.*							
Spot *a* (*d* of Group 10733)—*continued.*							
d							
283·418 G	66	402	34	209	302°·2	+4°·8	+13°·8	+14°·6
284·400 G	71	361	40	206	302·1	+4·7	+13·8	+27·5
285·497 C	56	273	38	183	302·2	+4·7	+13·9	+42·1
286·523 G	49	240	43	211	302·1	+4·6	+13·7	+55·5
287·439 G	29	155	37	198	302·2	+4·7	+13·9	+67·7
288·496 G	18	66	53	193	301·7	...	+13·8	+81·1
Spot *b* (*c* of Group 10733).							
276·368 G	2	18	12	110	294·3	...	+13·8	−86·3
277·388 G	9	93	14	149	294·4	+2·4	+13·8	−72·7
278·500 C	22	122	20	113	294·2	+2·2	+13·9	−58·2
279·397 G	22	160	16	115	294·4	+2·4	+13·5	−46·2
280·396 G	29	193	17	116	294·2	+2·2	+13·4	−33·2
281·498 G	31	209	16	111	294·3	+2·2	+13·1	−18·6
282·460 G	36	200	18	102	294·5	+2·4	+13·1	− 5·7
283·418 G	35	190	18	97	294·6	+2·5	+13·1	+ 7·0
284·400 G	27	124	15	67	294·7	+2·5	+13·1	+20·1
285·497 C	17	156	10	95	294·6	+2·4	+13·4	+34·5
286·523 G	13	91	10	67	294·5	+2·3	+13·1	+47·9
287·439 G	15	49	15	48	294·4	+2·2	+13·4	+59·9
288·496 G	9	18	15	30	294·2	+1·9	+13·4	+73·6

Group 10784.—October 30–November 11. A stable regular spot (probably *d* of Group 10733) associated with an extensive area of faculæ.

303·482 G	7	55	21	167	301·5	...	+14·7	−81·4
304·397 G	20	116	27	159	301·7	+3·7	+14·5	−69·2
305·447 C	26	163	23	145	301·4	+3·4	+14·8	−55·6
306·343 C	34	205	24	144	301·4	+3·3	+15·1	−43·8
307·413 G	66	276	39	163	301·3	+3·2	+15·0	−29·8
308·460 G	53	276	28	146	300·9	+2·8	+15·0	−16·4
309·433 G	44	286	22	146	300·9	+2·8	+15·1	− 3·6
310·352 C	43	270	22	140	300·9	+2·7	+15·2	+ 8·5
311·543 G	39	234	22	131	300·9	+2·7	+15·2	+24·3
312·432 G	39	197	25	124	301·0	+2·8	+15·4	+36·1
313·423 G	24	173	19	135	301·3	+3·0	+15·3	+49·4
314·444 G	15	83	16	90	300·9	+2·6	+15·8	+62·5
315·590 C	9	36	21	83	301·2	+2·9	+16·1	+77·9
Means ...	...	...	24	134	301·2	...	+15·2	...

Group 10803.—November 28–December 2. A small distinct spot—identity with *d* of Group 10733 uncertain.

332·343 C	8	17	13	27	291·5	−7·3	+14·2	−71·0
333·348 C	8	17	8	16	291·2	−7·6	+14·0	−58·0
334·352 C	6	17	4	12	291·4	−7·5	+13·8	−44·6
335·389 C	4	13	2	8	291·5	−7·4	+14·1	−30·8
336·356 C	4	8	2	4	291·7	−7·2	+13·9	−17·9
Means ...	...	...	6	13	291·5	...	+14·0	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1063. Latitude +15°·7.							
Group 10742 in Rotation 1003.							
,, 10769 ,, ,, 1004.							
,, 10793 ,, ,, 1005.							
,, 10814 ,, ,, 1006.							

Group 10742.—September 17–30. A very large regular spot, *a*, followed by two spots spreading one into the other, as at first, or linked together by numerous companion spots. The following and more southern of these two spots, *b*, is fairly stable throughout; the other, *d*, becomes a suitable spot for separate measurement on September 24. The group is a naked-eye object.

d								
260·368 G	14	34	(85	207	144°·5	...	+16°·1)	−87°·2
261·418 G	105	617	241	1539	138·0	0·0	+15·6	−79·9
262·433 G	177	1216	206	1426	138·9	+0·9	+15·9	−65·6
263·368 G	277	1630	229	1339	139·3	+1·3	+16·0	−52·8
264·358 G	322	2012	209	1309	139·5	+1·5	+16·0	−39·6
265·362 G	379	1943	213	1100	139·1	+1·1	+16·0	−26·7
266·418 G	417	2331	217	1208	138·7	+0·7	+15·9	−13·2
267·387 G	368	1992	190	1016	139·0	+1·0	+15·9	− 0·1
268·620 G	373	2064	196	1081	138·7	+0·7	+16·0	+15·9
269·361 G	310	1942	174	1085	138·3	+0·3	+16·3	+25·3
270·350 G	257	1492	166	957	138·9	+0·9	+16·1	+38·9
271·367 C	184	939	150	764	139·2	+1·2	+16·0	+52·6
272·409 C	97	565	116	678	139·5	+1·5	+16·3	+66·7
273·374 G	49	239	113	561	139·2	+1·2	+16·1	+79·1
Means ...	...	...	186	1082	138·9	...	+16·0	...
Spot *a*.								
260·368 G	14	34	85	207	144·5	...	+16·1	−87·2
261·418 G	63	283	111	498	143·1	0·0	+15·8	−74·8
262·433 G	86	477	89	491	142·8	−0·3	+15·9	−61·7
263·368 G	126	689	96	524	142·9	−0·2	+16·0	−49·2
264·358 G	152	883	94	547	142·5	−0·6	+16·1	−36·6
265·362 G	222	918	122	505	142·1	−1·0	+16·2	−23·7
266·418 G	211	1017	108	519	141·9	−1·2	+16·0	−10·0
267·387 G	205	995	105	507	141·8	−1·3	+16·1	+ 2·7
268·620 G	202	1006	107	533	141·3	−1·8	+16·0	+18·5
269·361 G	175	860	100	490	141·1	−2·0	+16·1	+28·1
270·350 G	152	755	100	498	141·1	−2·0	+16·0	+41·1
271·367 C	128	607	108	510	140·7	−2·4	+16·1	+54·1
272·409 C	66	372	83	469	140·5	−2·6	+16·1	+67·7
273·374 G	36	196	89	482	139·8	−3·3	+16·2	+79·7
Spot *b*.								
261·418 G	14	158	41	461	136·2	...	+14·7	−81·7
262·433 G	32	176	42	231	135·9	0·0	+14·8	−68·6
263·368 G	63	284	56	253	135·7	−0·2	+14·8	−56·4
264·358 G	63	300	43	207	135·2	−0·7	+14·7	−43·9
265·362 G	72	376	42	222	134·8	−1·1	+14·7	−31·0
266·418 G	90	367	48	195	134·5	−1·4	+14·5	−17·4
267·387 G	62	290	32	148	134·4	−1·5	+14·4	− 4·7
268·620 G	58	278	30	142	134·2	−1·7	+14·5	+11·4
269·361 G	34	300	18	162	134·4	−1·5	+14·4	+21·4

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1063, Group 10742—*continued.*							
Spot *b*—*continued.*							
d					°	°	°
270·350 G	36	208	22	127	134·4	−1·5	+14·2	+34·4
271·367 C	18	119	13	88	134·2	−1·7	+14·1	+47·6
272·409 C	11	48	11	49	134·1	−1·8	+13·8	+61·3
273·374 G	4	16	7	28	134·5	−1·4	+13·7	+74·4
Spot *d*.								
267·387 G	62	326	32	166	138·3	0·0	+17·1	− 0·8
268·620 G	72	365	37	190	137·7	−0·6	+17·0	+14·9
269·361 G	52	273	29	153	137·8	−0·5	+17·0	+24·8
270·350 G	38	193	24	122	137·5	−0·8	+17·1	+37·5
271·367 C	18	112	14	88	137·3	−1·0	+17·2	+50·7
272·409 C	9	74	10	82	136·7	−1·6	+17·1	+63·9
273·374 G	9	27	17	51	136·2	−2·1	+17·3	+76·1
Group 10769.—October 15–27. A fairly large regular spot (*a* of Group 10742) with an outbreak of numerous small companions from October 20. Group 10772 forms part of the same general area of disturbance.								
288·496 G	22	104	79	375	137·2	...	+16·3	−33·4
289·340 C	35	195	53	294	138·0	−5·1	+16·4	−71·5
290·612 G	75	369	65	321	137·8	−5·3	+16·3	−54·9
291·403 G	91	438	64	307	137·8	−5·3	+16·3	−44·4
292·340 C	78	484	47	290	137·9	−5·2	+16·3	−32·0
293·338 C	121	605	65	327	138·3	−4·8	+16·3	−18·4
294·417 G	116	662	60	338	139·0	−4·1	+16·4	− 3·5
295·423 G	134	805	69	418	139·2	−3·9	+16·3	+10·0
296·391 G	128	699	70	386	138·8	−4·3	+16·7	+22·3
297·395 G	117	455	73	283	138·5	−4·6	+16·3	+35·3
298·389 G	53	308	40	234	138·4	−4·7	+16·3	+48·3
299·417 C	39	237	41	249	138·5	−4·6	+16·7	+61·9
300·361 C	28	159	50	286	138·1	−5·0	+16·4	+74·0
Means ...	...	...	58	311	138·4	...	+16·4	...
Group 10793.—November 11–24. When first seen, two spots almost in contact; the smaller and preceding one diminishes to a dot by November 18; the follower is regular.								
315·590 C	2	19	9	83	139·3	...	+15·6	−84·0
316·348 C	23	107	42	196	138·9	+0·9	+15·0	−74·4
317·349 C	34	231	36	245	138·2	+0·2	+15·5	−61·9
318·398 G	54	295	42	227	138·0	0·0	+15·5	−48·3
319·444 C	38	264	24	164	137·7	−0·3	+15·8	−34·8
320·334 C	55	283	31	158	137·5	−0·5	+16·0	−23·3
321·441 G	37	259	19	135	137·4	−0·6	+16·1	− 8·8
322·424 G	56	256	29	133	137·4	−0·6	+16·3	+ 4·2
323·362 C	42	231	23	125	137·4	−0·6	+16·0	+16·6
324·350 C	28	206	17	122	137·4	−0·6	+15·9	+29·6
325·317 C	21	149	15	104	137·5	−0·5	+16·0	+42·4
326·316 C	21	127	19	114	137·4	−0·6	+15·9	+55·5
327·706 W	16	56	29	102	137·6	−0·4	+15·4	+74·0
328·505 G	4	22	19	105	137·2	−0·8	+15·7	+84·1
Means ...	...	...	27	152	137·7	...	+15·8	...

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1063—*continued.*							
Group 10814.—December 9–18. A small regular spot dying out on December 14. An ephemeral spot is seen in its place on December 18.							
d					°	°	°	°
343·479 G	0	13	0	41	135·2	−2·8	+14·5	−80·5
344·408 G	9	37	13	51	135·4	−2·6	+14·5	−68·1
345·336 C	8	38	7	35	136·0	−2·0	+14·2	−55·3
346·446 C	13	53	9	37	135·6	−2·4	+14·4	−41·0
347·358 C	17	46	10	27	135·7	−2·3	+14·3	−28·9
348·362 C	4	13	2	7	135·7	−2·3	+14·2	−15·7
349·333 C	0	0	0	0	...	...	...	...
350·123 K	0	0	0	0	...	...	...	...
351·470 G	0	0	0	0	...	...	...	...
352·384 C	0	8	0	5	137·0	−1·0	+16·9	+38·6
Means ...	...	...	5	18	135·9	...	+14·8	...
No. 1064. Latitude +19°·7. Group 10743 in Rotation 1003. ,, 10760 ,, ,, 1004. ,, 10788 ,, ,, 1005.							
Group 10743.—September 18–21. A small group of stream type.							
261·418 G	14	41	9	28	259·9	0·0	+17·5	+42·0
262·433 G	21	126	19	115	261·9	+2·1	+17·7	+57·4
263·368 G	13	54	19	78	262·4	+2·7	+17·8	+70·3
264·358 G	4	22	13	72	262·2	...	+17·9	+83·1
Means ...	...	...	16	74	261·4	...	+17·7	...
Group 10760.—October 6–18. A stable regular spot followed by a tiny cluster of dots on October 13.							
279·397 G	18	113	43	271	261·2	+3·2	+17·9	−79·4
280·396 G	27	231	33	284	260·5	+2·6	+18·1	−66·9
281·498 G	49	269	40	221	260·4	+2·6	+18·2	−52·5
282·460 G	44	315	29	208	260·1	+2·4	+18·4	−40·1
283·418 G	66	367	38	213	259·7	+2·1	+18·5	−27·9
284·400 G	71	391	38	207	259·5	+2·0	+18·7	−15·1
285·497 C	69	421	35	215	259·1	+1·7	+18·9	− 1·0
286·523 G	71	411	38	217	259·0	+1·7	+19·1	+12·4
287·439 G	57	371	32	208	258·9	+1·7	+19·4	+24·4
288·496 G	46	318	30	207	258·9	+1·8	+19·7	+38·3
289·340 C	43	247	34	193	258·8	+1·8	+19·6	+49·3
290·612 G	18	168	22	203	258·8	+2·0	+19·7	+66·1
291·403 G	18	71	35	137	258·3	+1·6	+19·8	+76·1
Means ...	...	...	34	214	259·5	...	+18·9	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*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.			

No. 1064—*continued*.

Group 10788.—November 3–14. A small regular spot slowly disappearing.

d					°	°	°	°
307·413 G	9	42	17	78	256·3	+1·2	+20·7	−74·8
308·460 G	18	68	19	71	256·2	+1·3	+20·7	−61·1
309·433 G	20	92	16	72	255·8	+1·0	+20·7	−48·7
310·352 C	17	103	11	67	255·6	+0·8	+20·9	−36·8
311·543 G	22	92	12	52	255·3	+0·7	+21·0	−21·3
312·432 G	26	101	14	54	255·1	+0·6	+21·0	− 9·8
313·423 G	26	68	14	35	254·9	+0·5	+20·9	+ 3·0
314·444 G	13	35	7	19	254·4	+0·1	+20·9	+16·0
315·590 C	4	17	2	10	253·8	−0·4	+21·1	+30·5
316·348 C	13	26	9	18	254·1	0·0	+21·0	+40·8
317·349 C	6	13	5	11	253·4	−0·6	+21·2	+53·3
318·398 G	4	11	5	14	253·1	−0·8	+21·5	+66·8
Means ...	...	...	11	42	254·8	...	+21·0	...

No. 1065. Latitude +13°·1.

Group 10770 in Rotation 1004.
,, 10791 ,, ,, 1005.

Group 10770.—October 16–21. A group of stream type with rapid growth.

289·340 C	17	89	9	46	222·6	0·0	+13·1	+13·1
290·612 G	161	701	93	409	223·1	+0·4	+12·9	+30·4
291·403 G	111	712	74	476	223·0	+0·3	+12·9	+40·8
292·340 C	87	508	74	435	224·1	+1·3	+12·7	+54·2
293·338 C	43	236	54	315	224·9	+2·1	+13·1	+68·2
294·417 G	7	29	28	118	226·3	...	+12·9	+83·8
Means ...	...	...	61	336	223·5	...	+12·9	...

Group 10791.—November 5–15. A regular spot with umbra crossed by a bright marking that later becomes a broad cleft in the southern side of the spot which has broken apart on November 14.

309·433 G	26	140	55	298	227·5	+3·8	+13·1	−77·0
310·352 C	30	246	35	290	227·4	+3·6	+12·7	−65·0
311·543 G	59	418	45	322	227·1	+3·2	+13·0	−49·5
312·432 G	57	396	36	253	226·9	+3·0	+13·2	−38·0
313·423 G	57	460	32	258	227·0	+3·0	+13·2	−24·9
314·444 G	74	450	38	234	226·5	+2·5	+12·9	−11·9
315·590 C	27	372	14	190	226·7	+2·6	+13·2	+ 3·4
316·348 C	34	332	18	173	226·5	+2·4	+13·5	+13·2
317·349 C	47	233	27	133	226·4	+2·2	+13·1	+26·3
318·398 G	31	142	20	94	226·9	+1·7	+13·7	+39·7
319·444 C	9	34	8	29	226·4	+2·1	+12·9	+53·9
Means ...	...	...	30	207	226·8	...	+13·1	...

No. 1066. Latitude +17°·8.

Group 10782 in Rotation 1004.
,, 10797 ,, ,, 1005.

Group 10782.—October 30–November 2. A pair of spots.

d					°	°	°	°
303·482 G	4	9	2	5	55·5	0·0	+18·8	+32·6
304·397 G	13	57	9	41	55·7	+0·2	+17·9	+44·8
305·447 C	22	86	21	83	55·6	+0·2	+18·1	+58·6
306·343 C	13	37	21	62	57·6	+2·3	+18·1	+72·4
Means ...	...	...	13	48	56·1	...	+18·2	...

Group 10797.—November 18–23. A small, definite spot joined by a distant companion on November 22.

322·424 G	4	13	7	23	59·8	+ 5·3	+18·1	−73·4
323·362 C	13	30	14	32	59·7	+ 5·3	+17·9	−61·1
324·350 C	8	25	6	20	59·4	+ 5·0	+18·0	−48·4
325·317 C	9	13	6	8	59·3	+ 5·0	+18·2	−35·8
326·316 C	6	14	3	7	61·7	+ 7·4	+17·2	−20·2
327·706 W	7	20	4	10	65·0	+10·8	+15·8	+ 1·4
Means ...	...	...	7	17	60·8	...	+17·5	...

No. 1067. Latitude −15°·9.

Group 10789 in Rotation 1005.
,, 10805 ,, ,, 1006.

Group 10789.—November 3–15. A large group of stream type, visible to the naked eye, consisting of a large regular spot, *a*, and a cluster of spots, *b* (becoming later mere penumbral markings) 15° apart in longitude. The outer and following edge of the penumbra of *a* appears broken on November 8–11, when small companions form near it.

307·413 G	33	263	(72	571	256·2	...	−15·8)	−74·9
308·460 G	121	762	165	1107	251·8	0·0	−16·0	−65·5
309·433 G	200	1070	178	960	252·1	+0·3	−15·8	−52·4
310·352 C	220	1535	152	1105	252·5	+0·7	−15·3	−39·9
311·543 G	258	1853	151	1083	252·3	+0·5	−15·5	−24·3
312·432 G	247	1940	134	1062	252·5	+0·7	−15·9	−12·4
313·423 G	258	1433	137	762	253·1	+1·3	−15·9	+ 1·2
314·444 G	214	1369	119	760	253·4	+1·6	−15·4	+15·0
315·590 C	143	1329	89	822	253·4	+1·6	−15·0	+30·1
316·348 C	153	1017	111	740	256·0	+4·2	−15·3	+42·7
317·349 C	111	661	107	645	256·6	+4·8	−15·0	+56·5
318·398 G	50	249	83	413	257·4	+5·6	−14·6	+71·1
319·444 C	9	34	55	207	256·9	...	−14·9	+84·4
Means ...	...	...	130	860	253·7	...	−15·4	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

No. **1067,** Group 10789—*continued*.

Spot *a*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
307·413 G	33	263	72	571	256·2	0·0	−15·8	−74·9
308·460 G	99	565	113	644	255·9	−0·3	−15·8	−61·4
309·433 G	161	848	130	687	255·9	−0·3	−15·9	−48·6
310·352 C	184	1096	121	723	256·0	−0·2	−15·7	−36·4
311·543 G	210	1518	120	865	255·4	−0·8	−15·8	−21·2
312·432 G	210	1581	113	854	255·7	−0·5	−15·8	− 9·2
313·423 G	210	1183	111	627	256·3	+0·1	−15·8	+ 4·4
314·444 G	179	1134	100	635	256·3	+0·1	−15·6	+17·9
315·590 C	128	1115	81	702	256·6	+0·4	−15·1	+33·3
316·348 C	128	901	95	667	257·2	+1·0	−15·2	+43·9
317·349 C	98	612	97	606	257·5	+1·3	−14·8	+57·4
318·398 G	50	249	83	413	257·4	+1·3	−14·6	+71·1
319·444 C	9	34	55	207	256·9	...	−14·9	+84·4

Cluster *b*.

308·460 G	22	197	52	463	241·4	0·0	−16·4	−75·9
309·433 G	39	222	48	273	240·7	−0·7	−16·0	−63·8
310·352 C	36	439	31	382	240·8	−0·6	−16·2	−51·6
311·543 G	48	335	31	218	241·3	−0·1	−15·7	−35·3
312·432 G	37	359	21	208	241·8	+0·4	−15·6	−23·1
313·423 G	48	250	26	135	242·2	+0·8	−16·1	− 9·7
314·444 G	35	235	19	125	241·9	+0·5	−16·1	+ 3·5
315·590 C	15	214	8	120	241·2	−0·2	−15·8	+17·9
316·348 C	21	90	13	55	242·3	+0·9	−15·7	+29·0
317·349 C	9	32	6	23	241·2	−0·2	−16·3	+41·1

Group 10805.—November 30–December 12. A stable regular spot, *a* of Group 10789.

334·352 C	13	81	31	190	259·0	+2·9	−15·2	−77·0
335·389 C	30	165	36	198	258·1	+2·0	−15·4	−64·2
336·356 C	30	204	26	173	257·6	+1·5	−16·2	−52·0
337·458 C	47	293	31	193	257·8	+1·8	−16·2	−37·3
338·379 C	44	270	26	157	257·4	+1·4	−16·4	−25·5
339·483 C	72	350	38	186	257·0	+1·0	−16·6	−11·4
340·306 C	70	359	36	187	256·6	+0·6	−16·6	− 0·9
341·454 G	60	322	32	174	256·6	+0·6	−16·8	+14·2
342·504 G	56	320	33	189	256·4	+0·4	−17·0	+27·8
343·479 G	50	280	35	193	256·2	+0·2	−16·7	+40·5
344·408 G	37	213	31	181	255·9	−0·1	−16·6	+52·4
345·336 C	27	146	33	177	255·9	−0·1	−16·7	+64·6
346·446 C	17	76	44	197	255·2	−0·8	−16·6	+78·6
Means ...	...	...	33	184	256·9	...	−16·4	...

No. **1068.** Latitude +10°·7.

Group 10792 in Rotation 1005.

,, 10806 ,, ,, 1006.

Group 10792.—November 9–15. A stream of normal with rapid rise and decrease; *a* is the leader spot.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
313·423 G	44	125	22	64	242·2	0·0	+ 9·1	− 9·7
314·444 G	127	597	64	302	243·3	0·0	+ 9·6	+ 4·9
315·590 C	107	976	58	528	243·0	−0·4	+10·1	+19·7
316·348 C	135	929	79	540	244·5	+1·0	+ 9·8	+31·2
317·349 C	96	581	67	408	244·3	+0·7	+10·1	+44·2
318·398 G	50	279	47	273	244·5	+0·8	+ 9·8	+58·2
319·444 C	17	98	32	186	247·5	+3·7	+10·1	+75·0
Means ...	...	...	53	329	244·2	...	+ 9·8	...

Spot *a*.

314·444 G	44	296	22	151	245·7	0·0	+10·1	+ 7·3
315·590 C	66	505	36	278	246·2	+0·4	+10·3	+22·9
316·348 C	79	454	47	272	246·9	+1·0	+10·1	+33·6
317·349 C	47	304	35	225	247·5	+1·5	+10·1	+47·4
318·398 G	26	198	27	206	247·6	+1·5	+10·3	+61·3
319·444 C	17	98	32	186	247·5	+1·3	+10·1	+75·0

Group 10806.—December 1–8. A disturbed area *f* Group 10804, in which very small ephemeral spots appear.

335·389 C	6	23	10	37	250·6	+5·2	+12·1	−71·7
336·356 C	12	34	13	36	248·2	+2·7	+11·4	−61·4
337·458 C	0	4	0	3	250·5	+4·9	+11·4	−44·6
338·379 C	4	8	2	5	251·1	+5·4	+11·1	−31·8
339·483 C	0	17	0	9	247·3	+1·5	+11·9	−21·1
340·306 C	6	19	3	10	246·0	+0·1	+12·1	−11·5
341·454 G	0	0	0	0	...	...	...	...
342·504 G	4	13	2	7	244·9	−1·2	+11·8	+16·3
Means ...	...	...	4	13	248·4	...	+11·7	...

No. **1069.** Latitude +22°·1.

Group 10801 in Rotation 1005.

,, 10821 ,, ,, 1006.

Group 10801.—November 26–28. A group forming near the west limb.

330·527 G	9	20	8	17	78·7	0·0	+22·7	+52·3
331·396 C	21	89	24	106	78·0	−0·5	+22·8	+63·0
332·343 C	21	125	47	270	78·8	+0·4	+23·3	+76·3
Means ...	...	...	26	131	78·5	...	+22·9	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1069—*continued*.							
Group 10821.—December 14–21. A small, distinct spot with an occasional companion.							
d					°	°	°
348·362 C	8	32	16	63	78·0	+2·5	+23·3	−73·4
349·333 C	8	23	9	25	78·7	+3·3	+22·5	−59·9
350·123 K	12	28	10	24	78·6	+3·4	+22·3	−49·6
351·470 G	9	19	6	12	79·5	+4·5	+21·8	−31·0
352·384 C	8	21	5	12	79·1	+4·3	+21·5	−19·3
353·396 C	4	19	2	10	79·1	+4·5	+21·2	− 6·0
354·436 C	8	21	4	11	77·7	+3·3	+20·9	+ 6·3
355·465 G	4	9	2	5	78·8	+4·5	+21·1	+21·0
Means ...	...	...	7	20	78·7	...	+21·8	...
No. 1070. Latitude +8°·8.							
Group 10804 in Rotation 1006.							
„ 10827 „ „ 1007.							
Group 10804.—November 30–December 12. A very large and complex stream visible to the naked eye. At first there is a regular spot, *a*, leading the stream, but this becomes absorbed into a large complex formation. Another spot, *b*, in the *sf* part of the stream is perhaps the most stable component, though this at first is subject to change and on some days is somewhat arbitrarily divided from the neighbouring spots.							
334·352 C	25	152	37	226	265·9	0·0	+ 8·2	−70·1
335·389 C	101	808	88	738	265·4	−0·6	+ 8·5	−56·9
336·356 C	205	1200	144	848	265·0	−1·2	+ 9·4	−44·6
337·458 C	352	1849	203	1077	266·7	+0·4	+ 8·8	−28·4
338·379 C	285	2091	149	1100	266·9	+0·5	+ 8·6	−16·0
339·483 C	496	2910	252	1478	265·7	−0·9	+ 8·9	− 2·7
340·306 C	457	2737	235	1407	266·7	0·0	+ 9·1	+ 9·2
341·454 G	346	2532	193	1420	267·8	+1·0	+ 8·0	+25·4
342·504 G	331	1864	215	1214	267·3	+0·3	+ 7·8	+38·7
343·479 G	226	1675	189	1408	268·5	+1·4	+ 7·9	+52·8
344·408 G	189	1491	224	1762	268·5	+1·3	+ 7·8	+65·0
345·336 C	112	809	270	1844	266·8	−0·5	+ 7·8	+75·5
346·446 C	2	8	(10	38	260·5	...	+ 8·5)	+83·9
Means ...	...	...	183	1210	266·8	...	+ 8·4	...
Spot *a*.							
334·352 C	13	59	17	75	269·3	0·0	+ 9·0	−66·7
335·389 C	68	312	56	256	270·4	+1·0	+ 9·3	−51·9
336·356 C	76	399	49	255	271·4	+1·8	+ 9·0	−38·2
337·458 C	98	526	54	289	272·0	+2·3	+ 8·3	−23·1
338·379 C	118	646	60	329	271·7	+1·9	+ 8·3	−11·2
Spot *b*.							
336·356 C	85	568	64	426	261·9	0·0	+ 7·9	−47·7
337·458 C	127	789	76	479	261·6	−0·4	+ 8·0	−33·5
338·379 C	80	513	43	277	260·9	−1·3	+ 8·0	−22·0
339·483 C	110	483	56	246	260·4	−1·9	+ 8·0	− 8·0
340·306 C	80	506	41	258	260·4	−2·0	+ 8·0	+ 2·9
341·454 G	82	486	43	258	260·9	−1·7	+ 7·9	+18·5
342·504 G	65	363	39	218	261·0	−1·7	+ 7·7	+32·4
343·479 G	52	286	37	206	261·3	−1·5	+ 8·0	+45·6
344·408 G	30	221	28	210	261·5	−1·4	+ 8·3	+58·0
345·336 C	21	118	31	173	261·2	−1·9	+ 8·6	+69·9
Group 10827.—December 26–1929, January 6. A moderately large composite spot breaking up and, with the addition of companions in the rear, lengthening into a stream of faint unstable spots. The group has nearly disappeared by January 3, but new and larger spots are developing on the following day.							
360·357 C	13	146	41	460	273·2	...	+10·1	−80·2
361·496 G	47	465	65	620	271·5	+2·1	+10·5	−66·9
362·309 C	64	506	58	460	272·6	+3·1	+10·3	−55·1
363·308 C	51	320	36	226	272·5	+2·9	+10·0	−42·0
364·371 C	43	206	25	122	270·8	+1·0	+10·3	−29·7
365·340 C	38	192	20	102	272·6	+2·7	+10·2	−15·1
366·323 C	23	193	12	98	272·5	+2·5	+ 8·9	− 2·3
367·423 G	13	28	7	15	276·9	+6·7	+ 9·0	+16·6
368·301 C	4	17	2	10	276·7	+6·4	+ 8·6	+28·0
369·322 C	17	52	12	35	276·7	+6·3	+ 7·7	+41·4
370·433 C	34	197	32	190	278·5	+7·9	+ 7·7	+57·8
371·355 C	21	156	32	234	278·2	+7·5	+ 8·1	+69·7
Means ...	...	...	27	192	204·5	...	+ 9·2	...
No. 1071. Latitude −10°·7.							
Group 10809 in Rotation 1006.							
„ 10829 „ „ 1007.							
Group 10809.—December 2–14. A stream of normal type in appearance, but in which the leading and following spots, *a* and *b* respectively, do not separate in longitude to the usual extent.							
336·356 C	2	4	4	9	233·3	0·0	−11·1	−76·3
337·458 C	0	0	0	0	...	...	...	...
338·379 C	28	149	20	111	236·6	+3·1	−11·4	−46·3
339·483 C	76	548	45	327	236·4	+2·8	−11·2	−32·0
340·306 C	89	597	48	322	236·9	+3·2	−11·0	−20·6
341·454 G	103	680	53	350	237·4	+3·6	−10·9	− 5·0
342·504 G	175	1192	90	614	237·2	+3·3	−10·8	+ 8·6
343·479 G	199	1156	109	636	236·8	+2·8	−11·2	+21·1
344·408 G	135	1039	83	638	237·4	+3·3	−11·2	+33·9
345·336 C	103	781	76	576	238·0	+3·8	−10·8	+46·7
346·446 C	92	612	96	642	237·0	+2·7	−11·0	+60·4
347·358 C	60	337	94	547	236·5	+2·1	−11·5	+71·9
348·362 C	8	46	(27	158	232·9	...	−13·8)	+81·5
Means ...	...	...	60	398	236·7	...	−11·1	...

LEDGER I.—RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
No. 1071, Group 10809—*continued*.							
Spot *a*.							
d					°	°	°
338·379 C	13	65	9	47	238·1	0·0	−10·5	−44·8
339·483 C	30	257	17	149	239·5	+1·3	−10·9	−28·9
340·306 C	55	293	29	155	239·9	+1·6	−10·7	−17·6
341·454 G	43	376	22	192	240·1	+1·7	−10·8	− 2·3
342·504 G	84	596	44	310	239·5	+1·0	−10·4	+10·9
343·479 G	82	486	46	272	239·7	+1·1	−10·6	+24·0
344·408 G	78	488	49	307	239·5	+0·8	−10·5	+36·0
345·336 C	65	506	49	385	239·2	+0·4	−10·4	+47·9
346·446 C	51	321	57	360	239·5	+0·6	−10·1	+62·9
347·358 C	15	135	29	257	239·3	+0·3	−10·5	+74·7
Spot *b*.							
338·379 C	15	84	11	64	235·3	0·0	−12·0	−47·6
339·483 C	46	291	28	178	234·6	−0·8	−11·4	−33·8
340·306 C	34	304	19	167	234·3	−1·2	−11·2	−23·2
341·454 G	43	244	22	127	233·6	−2·0	−11·7	− 8·8
342·504 G	91	596	46	304	234·4	−1·3	−11·6	+ 5·8
No. 1071, Group 10809—*continued*.							
Spot *b*—*continued*.							
d					°	°	°
343·479 G	89	460	48	248	234·3	−1·5	−12·1	+18·6
344·408 G	35	286	21	169	233·5	−2·4	−12·5	+30·0
345·336 C	30	224	21	155	233·6	−2·4	−12·8	+42·3
346·446 C	25	143	23	133	233·4	−2·7	−13·4	+56·8
347·358 C	30	122	41	166	232·7	−3·5	−13·5	+68·1
348·362 C	8	46	27	158	232·9	...	−13·8	+81·5
Group 10829.—December 29-1929, January 4. A small regular spot, *a* of Group 10809, with a companion on some days.							
363·308 C	8	25	15	48	239·2	−1·4	−10·4	−75·3
364·371 C	11	68	12	71	238·8	−1·9	−10·1	−61·7
365·340 C	23	89	18	69	238·4	−2·4	−10·7	−49·3
366·323 C	25	75	15	47	238·7	−2·2	−10·3	−36·1
367·423 G	21	69	11	37	238·7	−2·3	− 9·8	−21·6
368·301 C	13	34	7	17	238·2	−2·9	− 9·7	−10·5
369·322 C	6	23	3	12	237·6	−3·6	−10·1	+ 2·3
Means ...	...	...	12	43	238·5	...	−10·2	...

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ROYAL OBSERVATORY, GREENWICH.

Ledgers of Groups of Sun Spots

for the Year

1928

Ledger II.—Non-Recurrent Groups

GREENWICH PHOTO-HELIOGRAPHIC RESULTS 1928

Ledger II.—Non-Recurrent Groups of Sun Spots for the Year 1928.

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 Kodaikánal 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°·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, $\xi = 14°{\cdot}37 - 2°{\cdot}60 \sin^2\phi$.

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 1928.

Group 10481.

January 1–9. Scattered spots of unstable character in a large area of faculæ *sf* Group 10477.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
0·464 G	2	4	1	3	20·0	0·0	−11·6	−43·7
1·117 K	12	60	7	35	24·4	+4·4	−13·0	−30·7
2·542 C	17	72	9	38	21·1	+1·0	−12·9	−15·2
3·494 C	29	144	15	75	22·7	+2·5	−12·8	− 1·1
4·495 G	45	164	24	86	23·3	+3·1	−13·5	+12·7
5·451 C	4	25	2	13	19·1	−1·1	−14·8	+21·1
6·315 C	0	17	0	10	18·4	−1·9	−13·1	+31·8
7·457 G	4	13	3	9	16·4	−3·9	−15·0	+44·8
8·495 G	2	26	2	28	20·3	−0·1	−14·3	+62·4
Means ...	...	...	7	33	20·6	...	−13·4	...

Group 10482.

January 1–8. A small umbral spot with an occasional companion.

0·464 G	2	4	4	8	348·6	0·0	+10·1	−75·1
1·117 K	6	26	8	35	347·8	−0·9	+10·7	−67·3
2·542 C	13	32	10	24	349·6	+0·8	+10·0	−46·7
3·494 C	15	34	9	21	349·6	+0·7	+10·3	−34·2
4·495 G	13	22	7	12	349·8	+0·8	+ 9·9	−20·8
5·451 C	11	27	6	14	350·0	+0·9	+ 9·6	− 8·0
6·315 C	8	19	4	10	350·3	+1·1	+ 9·5	+ 3·7
7·457 G	9	32	5	18	350·3	+0·9	+10·7	+18·7
Means ...	...	...	7	18	349·5	...	+10·1	...

Group 10483.

January 3–14. A stream led by a regular spot. The group originates on January 3 from a single spot that has increased and become a double spot by January 4.

2·542 C	8	25	12	38	325·4	0·0	−17·4	−70·9
3·494 C	25	162	25	160	324·6	−0·7	−17·6	−59·2
4·495 G	80	404	59	298	324·5	−0·8	−17·7	−46·1
5·451 C	65	355	40	220	324·7	−0·5	−18·1	−33·3
6·315 C	59	338	32	188	325·1	−0·1	−18·2	−21·5
7·457 G	67	389	35	204	325·6	+0·5	−18·2	− 6·0
8·495 G	63	321	33	167	326·3	+1·3	−17·9	+ 8·4
9·340 C	49	301	27	164	326·1	+1·1	−18·3	+19·3
10·469 G	30	215	19	138	328·3	+3·4	−18·3	+36·4
11·329 C	36	224	27	168	327·6	+2·7	−18·5	+47·0
12·434 G	23	153	24	162	328·1	+3·3	−18·7	+62·1
13·469 G	13	73	24	135	327·3	+2·6	−18·6	+74·9
Means ...	...	...	30	170	326·1	...	−18·1	...

Group 10484.

January 5–10. A moderate-sized stream appearing suddenly and soon dying away.

d					°	°	°	°
4·495 G	56	125	29	65	15·3	0·0	+10·2	+ 4·7
5·451 C	63	311	34	168	14·9	−0·5	+10·2	+16·9
6·315 C	57	286	33	168	15·1	−0·4	+ 9·6	+28·5
7·457 G	52	234	37	168	15·8	+0·2	+10·0	+44·2
8·495 G	28	138	28	137	16·1	+0·4	+10·4	+58·2
9·340 C	12	36	19	57	16·3	+0·5	+10·1	+69·5
Means ...	...	...	30	127	15·6	...	+10·1	...

Group 10488.

January 8–13. A small but definite spot.

7·457 G	2	6	4	12	255·7	0·0	− 9·4	−75·9
8·495 G	9	11	10	12	255·0	−0·8	− 9·7	−62·9
9·340 C	13	19	10	15	255·3	−0·6	−10·0	−51·5
10·469 G	4	13	2	8	255·3	−0·8	− 9·5	−36·6
11·329 C	8	19	4	10	255·4	−0·8	− 9·4	−25·2
12·434 G	4	9	2	5	255·6	−0·7	− 9·7	−10·4
Means ...	...	...	5	10	255·4	...	− 9·6	...

Group 10489.

January 10–19. A stream with sudden growth of which the largest and most stable spot is the leader, *a*. The group is adjacent to Group 10490 and develops with it.

9·340 C	8	46	5	27	274·0	0·0	−10·0	−32·8
10·469 G	135	725	71	380	275·8	+1·7	−11·0	−16·1
11·329 C	137	812	70	410	275·2	+1·0	−11·0	− 5·4
12·434 G	94	504	48	257	276·0	+1·7	−11·0	+10·0
13·469 G	87	445	48	247	276·6	+2·2	−10·7	+24·2
14·458 G	69	370	44	235	276·7	+2·2	−10·8	+37·3
15·356 C	46	279	35	214	276·5	+1·9	−10·6	+48·9
16·324 C	25	186	26	198	276·8	+2·1	−10·8	+62·0
17·338 C	21	93	36	172	276·2	+1·4	−10·9	+74·7
18·338 C	9	46	(25	130	268·8	...	− 9·7)	+80·5
Means ...	...	...	43	238	276·0	...	−10·8	...

Spot *a*.

10·469 G	73	424	38	220	277·1	0·0	−10·8	−14·8
11·329 C	63	420	32	210	277·4	+0·2	−10·8	− 3·2
12·434 G	60	366	31	187	277·9	+0·6	−10·7	+11·9
13·469 G	65	370	36	207	277·7	+0·3	−10·5	+25·3
14·458 G	56	331	36	212	277·6	+0·1	−10·7	+38·2
15·356 C	38	241	30	188	277·6	0·0	−10·7	+50·0
16·324 C	21	173	23	187	277·6	−0·1	−10·8	+62·8
17·338 C	13	72	26	145	277·9	+0·1	−11·1	+76·4

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper. Motion.	Latitude.	Long. from C.M.
Group 10490.							
January 10–18. A stream of unstable spots associated with Group 10489.							
d					°	°	°
9·340 C	13	21	8	13	273·4	0·0	−12·7	−33·4
10·469 G	6	28	3	15	271·6	−1·8	−14·9	−20·3
11·329 C	27	103	14	53	271·7	−1·7	−15·0	− 8·9
12·434 G	71	365	36	186	271·3	−2·2	−15·0	+ 5·3
13·469 G	86	437	46	234	271·1	−2·4	−15·4	+18·7
14·458 G	75	348	45	209	272·5	−1·0	−15·4	+33·1
15·356 C	45	238	32	169	271·7	−1·8	−15·3	+44·1
16·324 C	16	81	16	82	274·6	+1·1	−14·9	+59·8
17·338 C	4	19	5	33	273·5	−0·1	−15·0	+72·0
Means ...	...	...	23	110	272·4	...	−14·8	...
Group 10491.							
January 10–19. A short-lived stream dying away after January 15. One or two small spots appear in the neighbourhood on January 16 and 19.							
9·340 C	0	8	0	18	231·5	0·0	+16·3	−75·3
10·469 G	13	67	15	76	230·7	−0·8	+16·6	−61·2
11·329 C	17	51	15	44	229·9	−1·6	+16·1	−50·7
12·434 G	15	82	10	55	229·7	−1·8	+16·7	−36·3
13·469 G	10	37	5	22	229·2	−2·3	+16·3	−23·2
14·458 G	2	9	1	5	229·2	−2·2	+16·9	−10·2
15·356 C	4	12	2	6	224·7	−6·7	+15·1	− 2·9
16·324 C	0	0	0	0	...	...	...	...
17·338 C	0	0	0	0	...	...	...	...
18·338 C	2	6	1	4	221·9	−9·5	+16·0	+33·6
Means ...	...	...	5	23	228·4	...	+16·2	...
Group 10497.							
January 16–28. A very large stream of active spots covering 15° of solar longitude. The stream is diminishing rapidly when nearing the west limb. *a* is the leader spot or leading portion of what is at times a complex formation; *b* is composite at first and later splits into a cluster, and *c* is a spot near the middle of the stream.							
15·356 C	23	148	(63	406	149·9	...	+16·1)	−77·7
16·324 C	80	804	126	1353	144·3	0·0	+15·6	−70·5
17·338 C	243	1507	234	1489	144·9	+0·6	+15·2	−56·6
18·338 C	221	1828	164	1362	144·9	+0·6	+15·3	−43·4
19·340 C	295	2208	183	1377	144·7	+0·4	+15·4	−30·4
20·318 C	245	2367	137	1333	145·1	+0·8	+15·4	−17·1
21·415 C	267	2146	142	1151	145·0	+0·7	+15·4	− 2·8
22·309 C	254	1566	138	854	145·7	+1·4	+15·2	+ 9·7
23·314 C	206	1282	122	757	146·5	+2·2	+15·3	+23·7
24·460 G	198	1314	138	916	146·2	+1·8	+15·5	+38·5
25·420 C	116	889	104	816	148·3	+3·9	+15·5	+53·2
26·327 C	81	656	102	896	148·5	+4·1	+15·3	+65·4
27·335 C	25	153	71	431	147·4	+3·0	+15·8	+77·6
Means ...	...	...	138	1061	146·0	...	+15·4	...

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10497—*continued.*							
Spot *a*.							
d					°	°	°
15·356 C	23	148	63	406	149·9	0·0	+16·1	−77·7
16·324 C	55	460	71	593	150·0	+0·1	+15·4	−64·8
17·338 C	120	595	102	506	150·8	+0·9	+15·0	−50·7
18·338 C	97	589	65	395	151·6	+1·7	+15·3	−36·7
19·340 C	80	587	46	340	152·3	+2·4	+15·3	−22·8
20·318 C	127	907	69	490	152·1	+2·2	+15·0	−10·1
21·415 C	110	785	58	416	152·3	+2·4	+15·0	+ 4·5
22·309 C	93	625	52	350	152·6	+2·7	+15·0	+16·6
23·314 C	101	591	62	361	152·3	+2·3	+14·8	+29·5
24·460 G	90	598	68	454	152·3	+2·3	+15·0	+44·6
25·420 C	63	549	64	554	152·4	+2·4	+15·1	+57·3
26·327 C	32	416	50	645	151·9	+1·9	+15·0	+68·8
27·335 C	13	81	50	309	150·4	+0·4	+15·5	+80·6
Spot *b*.							
16·324 C	25	344	55	760	139·8	0·0	+15·7	−75·0
17·338 C	93	705	105	797	140·4	+0·6	+15·4	−61·1
18·338 C	84	724	70	601	139·1	−0·7	+15·9	−49·2
19·340 C	112	903	75	605	138·3	−1·5	+15·9	−36·8
20·318 C	70	945	41	558	138·5	−1·3	+15·8	−23·7
21·415 C	89	814	48	440	138·0	−1·8	+15·6	− 9·8
22·309 C	106	582	56	308	137·8	−2·0	+15·2	+ 1·8
23·314 C	78	414	44	232	137·5	−2·3	+15·8	+14·7
24·460 G	82	535	52	337	137·9	−2·0	+16·1	+30·2
25·420 C	42	253	31	187	137·2	−2·7	+16·6	+42·1
26·327 C	28	153	27	147	137·9	−2·0	+16·4	+54·8
27·335 C	8	55	12	83	137·5	−2·4	+16·7	+67·7
Spot *c*.							
20·318 C	27	291	15	160	147·9	0·0	+15·2	−14·3
21·415 C	32	300	17	162	147·3	−0·6	+15·7	− 0·5
22·309 C	44	245	24	135	146·9	−1·0	+15·6	+10·9
23·314 C	19	241	11	142	146·3	−1·6	+15·8	+23·5
24·460 G	26	181	18	125	146·4	−1·5	+15·7	+38·7
25·420 C	11	87	9	75	145·8	−2·1	+15·7	+50·7
26·327 C	21	87	25	104	145·3	−2·6	+15·8	+62·2
27·335 C	4	17	9	39	145·0	−2·9	+16·1	+75·2
Group 10498.							
January 17–25. One or two small spots not seen on January 20, 21 and 23.							
16·324 C	0	8	0	13	142·3	0·0	−18·8	−72·5
17·338 C	6	16	6	14	145·3	+3·1	−18·9	−56·2
18·338 C	4	13	3	9	146·0	+3·9	−19·6	−42·3
19·340 C	0	0	0	0	...	...	...	...
20·318 C	0	0	0	0	...	...	...	...
21·415 C	4	21	2	11	147·4	+5·5	−18·3	− 0·4
22·309 C	0	0	0	0	...	...	...	...
23·314 C	2	4	1	2	147·9	+6·2	−18·8	+25·1
24·460 G	0	9	0	6	147·2	+5·6	−19·6	+39·5
Means ...	...	...	1	6	146·0	...	−19·0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Group 10499.

January 19–30. A spot—tending to composite structure—surrounded by a large area of dense faculæ. A temporary increase of area of the spot takes place about January 23. Group 10501 develops immediately following this group.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
18·338 C	17	107	36	232	112·0	0·0	+ 5·9	−76·3
19·340 C	27	202	31	233	111·5	−0·7	+ 6·1	−63·6
20·318 C	44	297	35	239	111·3	−1·0	+ 5·9	−50·9
21·415 C	59	559	38	358	111·3	−1·2	+ 5·9	−36·5
22·309 C	93	793	52	444	111·1	−1·5	+ 6·0	−24·9
23·314 C	99	776	51	404	111·3	−1·5	+ 5·7	•−11·5
24·460 G	82	645	42	329	111·8	−1·2	+ 5·9	+ 4·1
25·420 C	70	582	37	308	112·0	−1·1	+ 6·1	+16·9
26·327 C	59	471	34	273	112·0	−1·3	+ 5·9	+28·9
27·335 C	66	320	46	224	112·4	−1·1	+ 6·2	+42·6
28·411 C	21	148	20	142	113·2	−0·4	+ 6·0	+57·5
29·324 C	13	89	20	134	113·4	−0·4	+ 6·5	+69·7
Means ...	...	...	37	277	111·9	...	+ 6·0	...

Group 10505.

January 24–31. A diminishing stream of smallish spots *n* Group 10504.

23·314 C	12	69	28	166	43·8	0·0	−15·4	−79·0
24·460 G	26	140	30	160	43·3	−0·5	−15·6	−64·4
25·420 C	42	266	34	213	43·9	+0·1	−16·0	−51·2
26·327 C	34	170	22	111	44·2	+0·5	−16·2	−38·9
27·335 C	28	95	16	53	44·2	+0·5	−15·7	−25·6
28·411 C	6	17	3	9	42·1	−1·6	−17·2	−13·6
29·324 C	4	30	2	15	42·6	−1·1	−17·4	− 1·1
30·425 G	9	35	5	19	41·0	−2·7	−17·7	+11·8
Means ...	...	...	18	93	43·1	...	−16·4	...

Group 10507.

January 25–February 1. A small stream; the leading pair of spots remains after January 29.

24·460 G	11	34	7	22	69·2	0·0	−22·8	−38·5
25·420 C	21	51	12	30	68·9	−0·1	−22·0	−26·2
26·327 C	21	68	11	36	70·4	+1·5	−22·2	−12·7
27·335 C	25	72	13	37	70·5	+1·8	−21·1	+ 0·7
28·411 C	13	89	7	48	71·7	+3·2	−21·7	+16·0
29·324 C	8	34	5	20	73·4	+5·0	−21·4	+29·7
30·425 G	13	35	9	25	74·0	+5·8	−21·3	+44·8
31·322 C	2	11	2	10	74·5	+6·4	−21·3	+57·2
Means ...	...	...	8	28	71·6	...	−21·7	...

Group 10508.

January 28–February 2. A smallish stream; the leader alone survives after January 31, although the follower is at first the largest component.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°	°
27·335 C	34	102	17	51	71·5	0·0	−10·4	+ 1·7
28·411 C	47	233	24	121	72·2	+0·6	−10·8	+16·5
29·324 C	42	276	24	157	71·9	+0·2	−11·0	+28·2
30·425 G	52	194	37	138	73·9	+2·1	−11·4	+44·7
31·322 C	17	89	16	83	75·4	+3·5	−11·5	+58·1
32·470 G	11	60	18	100	75·6	+3·6	−12·0	+73·4
Means ...	...	...	23	108	73·4	...	−11·2	...

Group 10513.

February 2–11. Revival rather than a return of Group 10489. Two diminishing regular spots (*a* and *b*), 10° apart in longitude, of which the leader, *a*, lasts the longer and is crossed by a bright "bridge." The group is accompanied by considerable faculæ.

32·470 G	10	63	26	198	282·4	0·0	−12·1	−79·8
33·426 G	28	130	34	157	283·5	+1·0	−12·1	−66·1
34·338 C	32	195	26	161	284·5	+2·0	−12·3	−53·2
35·424 C	53	204	34	129	286·2	+2·6	−12·4	−37·1
36·490 G	39	173	22	95	286·2	+3·5	−12·5	−23·1
37·308 C	47	193	24	99	286·1	+3·4	−12·5	−12·4
38·316 C	34	146	17	73	287·5	+4·7	−12·3	+ 2·2
39·461 G	28	123	15	64	285·6	+2·7	−12·2	+15·4
40·354 C	16	80	9	45	283·6	+0·6	−12·2	+25·2
41·340 C	26	99	17	64	283·8	+0·8	−12·2	+38·4
Means ...	...	...	22	108	284·9	...	−12·3	...

Spot *a*.

32·470 G	6	22	11	41	286·7	0·0	−12·4	−75·5
33·426 G	17	78	18	82	287·5	+0·7	−12·1	−62·1
34·338 C	21	123	16	93	288·2	+1·4	−12·5	−49·5
35·424 C	42	153	26	93	288·4	+1·5	−12·4	−34·9
36·490 G	26	138	14	75	288·5	+1·5	−12·5	−20·8
37·308 C	30	165	15	84	288·4	+1·4	−12·5	−10·1
38·316 C	30	138	15	69	288·5	+1·4	−12·4	+ 3·2
39·461 G	19	97	10	51	288·3	+1·1	−12·5	+18·1
40·354 C	8	42	5	24	287·8	+0·5	−12·4	+29·4
41·340 C	11	42	7	29	288·1	+0·8	−12·4	+42·7

Spot *b*.

32·470 G	4	41	15	157	278·7	...	−11·8	−83·5
33·426 G	11	52	16	75	279·2	0·0	−12·1	−70·4
34·338 C	11	72	10	68	279·4	+0·1	−12·0	−58·3
35·424 C	11	51	8	36	279·0	−0·3	−12·2	−44·3
36·490 G	13	35	8	20	278·9	−0·5	−12·5	−30·4
37·308 C	17	28	9	15	278·7	−0·8	−12·4	−19·8
38·316 C	4	8	2	4	278·7	−0·8	−12·6	− 6·6

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Group 10517.

February 10–19. A stream of normal type, the leading and following components, *a* and *b* respectively, showing marked separation in longitude during the first few days of development.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
40·354 C	4	12	4	10	208·5	0·0	+16·4	−49·9
41·340 C	40	112	27	76	209·1	+0·6	+16·6	−36·3
42·428 C	96	505	57	296	209·4	+0·9	+16·3	−21·7
43·307 C	76	507	41	281	209·6	+1·1	+16·2	−10·0
44·315 C	68	450	37	245	209·3	+0·8	+16·2	+ 3·0
45·433 C	64	343	37	199	210·9	+2·4	+16·3	+19·4
46·348 C	39	256	25	167	211·7	+3·3	+16·0	+32·2
47·331 C	37	171	28	132	211·1	+2·7	+15·7	+44·5
48·472 G	34	130	38	147	211·6	+3·2	+15·8	+60·1
49·431 G	10	40	19	83	212·0	+3·6	+15·9	+73·1
Means ...	...	...	31	164	210·3	...	+16·1	...

Spot *a*.

40·354 C	2	6	2	5	209·1	0·0	+16·4	−49·3
41·340 C	23	61	15	40	210·9	+1·8	+16·2	−34·5
42·428 C	47	293	27	167	211·8	+2·7	+15·7	−19·3
43·307 C	49	247	26	133	213·2	+4·1	+15·8	− 6·4
44·315 C	32	239	17	129	213·8	+4·7	+15·3	+ 7·5
45·433 C	43	241	25	142	213·8	+4·7	+15·7	+22·3
46·348 C	30	222	20	147	213·8	+4·8	+15·9	+34·3
47·331 C	25	124	20	100	213·6	+4·6	+15·9	+47·0
48·472 G	17	74	21	90	213·8	+4·8	+16·0	+62·3
49·431 G	4	22	9	52	214·0	+5·0	+15·9	+75·1

Spot *b*.

40·354 C	2	6	2	5	207·6	0·0	+16·8	−50·8
41·340 C	17	51	12	36	206·7	−0·9	+17·2	−38·7
42·428 C	49	212	30	129	205·8	−1·8	+17·0	−25·3
43·307 C	21	239	12	136	205·5	−2·1	+17·4	−14·1
44·315 C	32	194	18	107	204·5	−3·1	+17·5	− 1·8
45·433 C	21	102	12	57	203·3	−4·3	+17·7	+11·8
46·348 C	9	34	5	20	203·1	−4·4	+17·8	+23·6

Group 10519.

February 13–18. A small regular spot disappearing as a dot.

43·307 C	4	21	13	66	136·5	...	−22·5	−83·1
44·315 C	11	34	16	48	135·9	0·0	−22·6	−70·4
45·433 C	17	68	15	62	135·0	−0·7	−22·6	−56·5
46·348 C	9	32	6	23	135·1	−0·4	−22·7	−44·4
47·331 C	9	15	5	9	135·0	−0·3	−22·6	−31·6
48·472 G	0	4	0	2	136·1	+1·0	−23·0	−15·4
Means ...	...	...	8	29	135·4	...	−22·7	...

Group 10520.

February 15–23. A couple of small spots which have almost disappeared by February 18; on February 19 a pair of clusters or composite spots have formed, but these soon dissipate.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
45·433 C	9	23	8	21	139·8	0·0	+20·1	−51·7
46·348 C	6	17	5	13	139·1	−0·6	+19·9	−40·4
47·331 C	4	26	3	16	139·8	+0·2	+19·9	−26·8
48·472 G	2	11	2	11	138·9	−0·6	+19·0	−12·6
49·431 G	56	245	31	137	138·9	−0·4	+19·9	0·0
50·396 G	35	117	30	68	138·6	−0·6	+20·1	+12·4
51·407 G	13	52	8	32	136·8	−2·3	+20·4	+23·9
52·533 G	9	26	7	19	136·9	−2·1	+20·1	+38·9
53·561 C	4	34	4	32	136·1	−2·8	+20·7	+51·6
Means ...	...	...	10	39	138·3	...	+20·0	...

Group 10521.

February 15–20. A few small spots in stream formation.

45·433 C	13	26	19	39	125·3	0·0	+19·2	−66·2
46·348 C	13	77	13	75	124·9	−0·3	+18·1	−54·6
47·331 C	26	109	20	83	124·4	−0·8	+19·0	−42·2
48·472 G	28	65	17	40	125·4	+0·3	+17·6	−26·1
49·431 G	8	24	4	13	124·7	−0·3	+18·1	−14·2
50·396 G	4	20	2	11	121·8	−3·1	+19·7	− 4·4
Means ...	...	...	12	44	124·4	...	+18·6	...

Group 10523.

February 16–23. A stream of usual formation composed of a regular spot, *a*, as leader and a small cluster as the follower.

46·348 C	37	128	20	70	156·7	0·0	−10·3	−22·8
47·331 C	51	389	26	198	157·5	+0·7	−10·0	− 9·1
48·472 G	70	408	35	207	157·5	+0·6	− 9·6	+ 6·0
49·431 G	61	356	33	190	158·2	+1·2	− 9·6	+19·3
50·396 G	52	276	31	164	158·7	+1·5	− 9·6	+32·5
51·407 G	30	187	22	137	160·0	+2·7	−10·3	+47·1
52·533 G	13	115	13	118	159·6	+2·2	−10·3	+61·6
53·561 C	13	51	23	90	159·1	+1·6	−10·2	+74·6
Means ...	....	...	25	147	158·4	...	−10·0	...

Spot *a*.

46·348 C	26	92	14	50	157·3	0·0	−10·4	−22·2
47·331 C	38	283	19	144	158·3	+0·9	−10·0	− 8·3
48·472 G	48	291	24	148	159·2	+1·7	− 9·6	+ 7·7
49·431 G	48	269	26	145	159·7	+2·1	− 9·7	+20·8
50·396 G	43	228	26	137	160·0	+2·2	− 9·9	+33·8
51·407 G	30	187	22	137	160·0	+2·1	−10·3	+47·1
52·533 G	13	115	13	118	159·6	+1·6	−10·3	+61·6
53·561 C	13	51	23	90	159·1	+1·0	−10·2	+74·6

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10524. February 17–24. A stream of rather unstable components *sf* Group 10523. *a* is the leader.							
d					°	°	°
47·331 C	13	72	7	37	151·8	0·0	−16·9	−14·8
48·472 G	22	74	11	38	152·0	+0·2	−17·1	+ 0·5
49·431 G	69	271	37	142	152·9	+1·2	−16·9	+14·0
50·396 G	121	603	69	342	152·1	+0·4	−17·3	+25·9
51·407 G	88	404	57	267	152·4	+0·8	−17·5	+39·5
52·533 G	52	213	46	193	154·9	+3·3	−17·6	+56·9
53·561 C	23	149	34	223	156·2	+4·6	−18·1	+71·7
54·534 G	11	44	34	151	155·1	...	−17·2	+83·4
Means ...	...	...	37	177	153·2	...	−17·3	...
Spot *a*.							
49·431 G	43	126	23	67	155·0	0·0	−16·9	+16·1
50·396 G	39	193	23	112	156·1	+1·1	−17·3	+29·9
51·407 G	33	156	23	109	156·8	+1·9	−17·8	+43·9
52·533 G	20	100	19	97	157·5	+2·6	−18·1	+59·5
53·561 C	13	85	21	139	158·2	+3·4	−18·7	+73·7
54·534 G	4	22	19	105	157·7	...	−17·6	+86·0
Group 10526. February 19–March 2. At first a small diminishing regular spot with companions in a large area of faculæ. On February 25 a new group begins to develop, and by February 27 this has become a very large stream of normal type; a decrease follows immediately.							
49·431 G	9	61	30	200	56·3	...	−12·7	−82·6
50·396 G	22	95	30	129	56·7	0·0	−12·5	−69·5
51·407 G	17	117	15	103	56·8	0·0	−12·5	−56·1
52·533 G	48	221	31	144	57·8	+0·9	−11·1	−40·2
53·561 C	26	98	14	54	59·0	+2·1	−11·7	−25·5
54·534 G	22	87	11	44	62·6	+5·6	−11·0	− 9·1
55·439 G	124	431	62	217	61·9	+4·8	−11·5	+ 2·1
56·437 G	165	898	85	468	61·6	+4·4	−11·7	+15·0
57·396 G	308	1650	173	931	61·4	+4·1	−11·9	+27·4
58·433 G	219	1480	148	988	61·0	+3·7	−12·2	+40·7
59·519 G	131	874	119	781	61·9	+4·5	−12·2	+55·9
60·327 C	73	627	93	793	62·3	+4·8	−12·8	+66·9
61·331 C	30	207	99	608	62·7	...	−12·5	+80·5
Means ...	...	...	71	423	60·3	...	−11·9	...
Group 10527. February 20–26. A stream of small unstable spots originating with its axis nearly at right-angles to the sun's equator. On February 23 an outlying spot to the stream makes its appearance southwards.							
50·396 G	24	74	12	38	123·4	0·0	−24·2	− 2·8
51·407 G	54	247	29	131	123·0	−0·2	−23·3	+10·1
52·533 G	56	252	32	144	123·7	+0·8	−22·8	+25·7
53·561 C	75	237	50	159	124·5	+1·8	−23·6	+40·0

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10527—*continued*.							
d					°	°	°
54·534 G	35	235	30	199	125·1	+2·7	−24·4	+53·4
55·439 G	28	166	32	190	124·5	+2·3	−24·1	+64·7
56·437 G	15	89	30	179	124·4	+2·4	−24·0	+77·8
Means ...	...	...	31	149	124·1	...	−23·8	...
Group 10528. February 20–29. A few small spots *sf* Group 10526.							
50·396 G	4	17	7	29	52·3	0·0	−16·4	−73·9
51·407 G	4	13	4	13	51·5	−0·8	−16·5	−61·4
52·533 G	20	82	14	59	52·0	−0·3	−16·0	−46·0
53·561 C	6	34	4	20	51·6	−0·7	−16·7	−32·9
54·534 G	13	48	7	25	52·5	+0·3	−16·0	−19·2
55·439 G	13	31	7	16	52·8	+0·6	−16·1	− 7·0
56·437 G	7	31	4	16	52·2	0·0	−16·3	+ 5·6
57·396 G	0	0	0	0	...	...	...	...
58·433 G	4	11	2	6	51·9	−0·3	−17·2	+31·6
59·519 G	4	17	3	12	51·8	−0·4	−15·1	+45·8
Means ...	...	...	5	20	52·1	...	−16·3	...
Group 10529. February 20–26. A small regular spot disappearing as a pair of dots on February 22. On February 25 and 26 another small spot appears in its place.							
50·396 G	0	4	0	19	41·6	...	− 5·8	−84·6
51·407 G	9	26	13	38	42·2	0·0	− 5·9	−70·7
52·533 G	9	15	8	13	42·6	+0·2	− 5·8	−55·4
53·561 C	0	0	0	0	...	...	...	...
54·534 G	0	0	0	0	...	...	...	...
55·439 G	6	33	3	17	42·5	−0·4	− 6·1	−17·3
56·437 G	4	11	2	6	43·5	+0·5	− 5·4	− 3·1
Means ...	...	...	4	12	42·7	...	− 5·8	...
Group 10535. February 25–March 8. A stream in which the following spot is the longest lived.							
55·439 G	11	31	29	85	338·5	...	−19·7	−81·3
56·437 G	13	46	17	62	337·7	0·0	−19·4	−68·9
57·396 G	35	175	30	151	338·9	+1·3	−19·4	−55·1
58·433 G	54	217	35	143	341·3	+3·8	−19·4	−39·0
59·519 G	47	219	27	123	341·3	+3·8	−19·3	−24·7
60·327 C	43	145	23	77	340·6	+3·2	−19·6	−14·8
61·331 C	21	75	11	39	338·5	+1·2	−19·0	− 3·7
62·444 G	24	74	13	39	339·8	+2·6	−18·5	+12·3
63·469 G	13	28	7	16	340·1	+3·0	−18·5	+26·1
64·402 G	4	14	2	9	340·9	+3·8	−18·0	+39·2
65·319 C	0	0	0	0	...	...	...	...
66·343 C	6	22	6	21	335·3	−1·6	−17·8	+59·2
67·347 C	1	17	2	30	337·8	+1·0	−17·9	+74·9
Means ...	...	...	14	59	339·3	...	−18·8	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Group 10541.

March 4–15. A stream in continual change.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
63·469 G	11	39	29	104	237·5	0·0	+16·2	−76·5
64·402 G	22	136	31	190	236·6	−0·9	+16·0	−65·1
65·319 C	39	220	35	196	237·6	+0·1	+15·2	−52·0
66·343 C	60	389	42	266	239·4	+1·9	+14·8	−36·7
67·347 C	52	288	30	170	240·1	+2·6	+15·0	−22·8
68·423 G	88	401	48	221	241·5	+4·0	+14·8	− 7·2
69·391 G	101	389	55	212	241·1	+3·5	+15·4	+ 5·1
70·370 C	60	367	34	211	241·8	+4·2	+15·4	+18·7
71·421 G	83	413	53	268	240·8	+3·2	+15·8	+31·6
72·328 C	39	393	30	301	241·4	+3·8	+16·0	+44·1
73·402 C	19	143	21	161	243·0	+5·4	+14·7	+59·9
74·637 G	4	26	13	82	245·4	+7·8	+14·0	+78·6
Means ...	...	...	35	198	240·5	...	+15·3	...

Group 10542.

March 5–10. A stream with the largest spot at the rear.

64·402 G	4	11	2	6	304·1	0·0	+24·5	+ 2·4
65·319 C	9	52	5	32	301·3	−2·5	+26·1	+11·7
66·343 C	49	224	33	150	300·9	−2·6	+26·4	+24·8
67·347 C	28	138	21	106	300·2	−3·0	+26·7	+37·3
68·423 G	22	106	21	103	298·7	−4·1	+27·1	+50·0
69·391 G	4	15	6	21	298·2	−4·3	+26·4	+62·2
Means ...	...	...	15	70	300·6	...	+26·2	...

Group 10543.

March 5–10. A small but distinct spot showing considerable proper motion in longitude.

64·402 G	2	4	5	10	222·5	0·0	−11·5	−79·2
65·319 C	9	22	10	26	224·1	+1·5	−11·0	−65·5
66·343 C	11	22	9	17	225·4	+2·7	−10·3	−50·7
67·347 C	4	11	2	7	226·5	+3·7	−10·2	−36·4
68·423 G	4	7	2	4	227·2	+4·3	−10·3	−21·5
69·391 G	4	9	2	5	227·7	+4·7	−10·4	− 8·3
Means ...	...	...	5	12	225·6	...	−10·6	...

Group 10546.

March 9–22. A large almost regular spot diminishing in area both by shrinkage and by the breaking away of small portions from its *np* edge.

68·423 G	13	50	96	368	160·1	...	−19·6	−88·6
69·391 G	40	286	74	529	160·2	0·0	−19·3	−75·8
70·370 C	52	393	55	417	160·4	+0·3	−19·7	−62·7
71·421 G	66	497	51	383	160·0	+0·1	−20·1	−49·2

Group 10546—*continued.*

72·328 C	78	510	50	326	159·9	+0·1	−20·2	−37·4
73·402 C	86	499	48	279	159·7	0·0	−20·2	−23·4
74·637 G	88	454	46	237	159·0	−0·5	−20·8	− 7·8
75·397 G	62	332	32	169	159·1	−0·3	−20·7	+ 2·3
76·430 G	48	273	25	145	159·0	−0·3	−21·0	+15·8
77·470 G	51	220	30	130	158·7	−0·5	−20·9	+29·2
78·369 C	26	150	17	101	158·2	−0·8	−21·3	+40·6
79·444 G	26	123	22	106	158·1	−0·8	−20·9	+54·6
80·333 C	9	87	11	103	157·4	−1·4	−20·9	+65·7
81·657 G	4	22	13	72	157·6	...	−20·7	+83·3
Means ...	...	...	38	244	159·1	...	−20·5	...

Group 10547.

March 11–24. An unusual group consisting of three regular spots (*a*, *b* and *c*) nearly in line with each other. There are numerous small companions to *b* and *c* until March 21. Rather dense faculæ follow the group.

70·370 C	6	30	(26	132	137·3	...	−23·2)	−85·8
71·421 G	43	352	86	706	131·7	0·0	−22·8	−77·5
72·328 C	82	535	99	632	131·6	+0·1	−22·8	−65·7
73·402 C	110	778	90	642	130·7	−0·6	−23·1	−52·4
74·637 G	146	829	94	531	130·1	−0·9	−23·2	−36·7
75·397 G	149	951	86	550	130·8	0·0	−23·2	−26·0
76·430 G	205	998	110	536	130·9	+0·3	−23·7	−12·3
77·470 G	159	848	84	441	130·7	+0·3	−23·8	+ 1·2
78·369 C	143	777	76	416	129·8	−0·4	−23·5	+12·2
79·444 G	97	621	56	359	129·6	−0·3	−23·6	+26·1
80·333 C	72	494	47	322	130·0	+0·3	−23·5	+38·3
81·657 G	53	345	47	306	130·0	+0·5	−23·5	+55·7
82·497 G	38	203	45	249	130·4	+1·1	−23·5	+67·2
83·369 C	15	52	32	111	129·5	+0·4	−23·5	+77·8
Means ...	...	...	73	446	130·4	...	−23·4	...

Spot *a*.

70·370 C	6	30	26	132	137·3	...	−23·2	−85·8
71·421 G	18	145	30	241	135·2	0·0	−23·2	−74·0
72·328 C	22	179	23	188	135·1	+0·1	−23·2	−62·2
73·402 C	45	264	34	201	134·7	−0·1	−23·1	−48·4
74·637 G	57	293	35	179	134·1	−0·4	−23·1	−32·7
75·397 G	66	304	37	170	133·8	−0·5	−23·2	−23·0
76·430 G	79	398	42	211	133·4	−0·7	−23·4	− 9·8
77·470 G	55	334	29	174	132·9	−1·0	−23·3	+ 3·4
78·369 C	48	339	26	183	132·6	−1·1	−23·5	+15·0
79·444 G	40	286	24	169	132·1	−1·3	−23·5	+28·6
80·333 C	39	260	26	174	131·8	−1·4	−23·6	+40·1
81·657 G	31	212	29	195	131·2	−1·8	−23·5	+56·9
82·497 G	22	130	28	168	131·3	−1·5	−23·3	+68·1
83·369 C	13	43	29	97	130·6	−2·0	−23·2	+78·9

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10547—*continued*.							
Spot *b*.							
d					°	°	°
71·421 G	7	53	18	137	128·3	...	−22·4	−80·9
72·328 C	13	82	18	112	127·3	0·0	−22·3	−70·0
73·402 C	24	168	21	150	127·2	+0·1	−22·5	−55·9
74·637 G	42	224	28	150	127·0	+0·1	−22·4	−39·8
75·397 G	35	273	21	161	127·1	+0·5	−22·5	−29·7
76·430 G	62	242	33	131	126·8	+0·4	−22·7	−16·4
77·470 G	26	150	14	78	126·3	+0·1	−22·6	− 3·2
78·369 C	43	143	23	76	126·5	+0·5	−22·7	+ 8·9
79·444 G	22	132	12	74	126·2	+0·4	−22·8	+22·7
80·333 C	13	95	8	59	126·1	+0·6	−23·3	+34·4
81·657 G	9	40	7	32	125·8	+0·5	−23·3	+51·5
82·497 G	7	18	7	19	125·6	+0·5	−23·8	+62·4
Spot *c*.							
71·421 G	18	154	38	328	131·0	0·0	−22·7	−78·2
72·328 C	37	251	44	301	131·0	+0·2	−22·6	−66·3
73·402 C	35	281	29	233	130·4	−0·2	−23·0	−52·7
74·637 G	40	264	26	169	130·4	+0·1	−23·3	−36·4
75·397 G	37	282	21	164	130·3	+0·2	−23·5	−26·5
76·430 G	46	275	25	149	129·9	0·0	−23·7	−13·3
77·470 G	62	304	32	158	129·2	−0·5	−23·6	− 0·3
78·369 C	48	234	25	124	128·8	−0·7	−23·8	+11·2
79·444 G	31	183	18	104	128·4	−0·8	−23·8	+24·9
80·333 C	20	139	13	89	128·0	−1·0	−24·1	+36·3
81·657 G	13	93	11	79	127·8	−1·0	−24·0	+53·5
82·497 G	9	55	10	62	127·5	−1·1	−23·9	+64·3
83·369 C	2	9	3	14	124·8	−3·6	−23·8	+73·1

Group 10548.

March 12–17. A small stream of which the leader, *a*, is the only stable spot.

71·421 G	17	55	9	29	217·6	0·0	−17·9	+ 8·4
72·328 C	41	151	22	82	218·2	+0·7	−18·6	+20·9
73·402 C	35	220	22	142	221·1	+3·6	−18·4	+38·0
74·637 G	33	167	28	146	222·2	+4·8	−18·1	+55·4
75·397 G	18	88	21	104	222·6	+5·2	−17·8	+65·8
76·430 G	9	51	22	122	222·9	+5·6	−17·6	+79·7
Means ...	...	...	21	104	220·8	...	−18·1	...
Spot *a*.								
71·421 G	13	26	7	14	219·1	0·0	−18·1	+ 9·9
72·328 C	22	73	12	40	220·8	+1·8	−18·2	+23·5
73·402 C	26	203	17	132	221·9	+2·9	−18·1	+38·8
74·637 G	31	158	27	139	222·5	+3·6	−17·9	+55·7
75·397 G	18	88	21	104	222·6	+3·7	−17·8	+65·8
76·430 G	9	51	22	122	222·9	+4·1	−17·6	+79·7

Group 10551.

March 15–21. An unstable stream.

d					°	°	°	°
74·637 G	31	90	18	51	137·2	0·0	−14·5	−29·6
75·397 G	68	361	36	192	137·7	+0·5	−15·4	−19·1
76·430 G	53	414	27	211	137·5	+0·3	−15·6	− 5·7
77·470 G	66	414	34	211	137·1	−0·1	−15·8	+ 7·6
78·369 C	30	135	16	73	137·1	−0·1	−15·7	+19·5
79·444 G	4	11	2	7	138·2	+1·0	−15·7	+34·7
80·333 C	0	9	0	6	138·2	+1·0	−15·3	+46·5
Means ...	...	...	19	107	137·6	...	−15·4	...

Group 10555.

March 22–28. Two spots joining one another which shrink and disappear as three small nuclei.

81·657 G	18	102	28	161	6·5	0·0	+18·9	−67·8
82·497 G	24	232	25	241	6·9	+0·5	+18·8	−56·3
83·369 C	30	208	24	164	7·5	+1·1	+18·7	−44·2
84·456 C	28	219	18	140	7·5	+1·2	+18·7	−29·9
85·419 G	31	137	18	79	7·6	+1·4	+18·9	−17·1
86·454 C	15	48	8	27	7·4	+1·3	+19·1	− 3·6
87·446 G	9	31	5	17	6·8	+0·8	+19·5	+ 8·9
Means ...	...	...	18	118	7·2	...	+18·9	...

Group 10557.

March 23–April 2. A composite spot with double nucleus, dividing into two spots that separate.

82·497 G	4	22	(41	223	334·7	...	−13·4)	−88·5
83·369 C	22	167	41	309	336·2	0·0	−13·7	−75·5
84·456 C	43	304	44	313	335·7	−0·6	−13·8	−61·7
85·419 G	53	446	40	335	336·1	−0·2	−14·0	−48·6
86·454 C	57	541	35	330	336·8	+0·4	−13·8	−34·2
87·446 G	62	349	33	188	337·5	+1·1	−14·0	−20·4
88·347 C	50	368	26	188	337·6	+1·1	−13·7	− 8·5
89·396 G	71	305	36	153	337·2	+0·7	−12·8	+ 5·0
90·400 G	27	160	14	85	337·0	+0·4	−12·1	+18·0
91·456 C	9	61	5	36	336·7	+0·1	−12·8	+31·7
92·394 G	4	18	3	12	336·7	0·0	−11·5	+44·0
Means ...	...	...	28	195	336·8	...	−13·2	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10558. March 24–April 2. A small, partially-formed regular spot with companions *f* Group 10557.							
d					°	°	°
83·369 C	9	48	28	151	329·2	...	−19·6	−82·5
84·456 C	13	54	18	73	328·0	0·0	−19·3	−69·4
85·419 G	15	88	14	80	327·7	−0·2	−19·5	−57·0
86·454 C	17	148	12	104	327·5	−0·3	−19·5	−43·5
87·446 G	22	75	13	44	327·7	0·0	−19·6	−30·2
88·347 C	9	35	5	19	328·6	+1·0	−19·8	−17·5
89·396 G	4	13	2	7	327·9	+0·3	−18·7	− 4·3
90·400 G	9	36	5	19	329·5	+2·0	−18·2	+10·5
91·456 C	4	55	2	30	327·5	+0·1	−18·5	+22·5
92·394 G	9	18	6	11	328·4	+1·1	−19·9	+35·7
Means ...	...	...	9	43	328·1	...	−19·2	...
Group 10561. March 27–April 7. A regular spot, *a*, rapidly shrinking to a dot, after April 2; a small cluster northwards accompanies the spot from March 31–April 3.							
86·454 C	4	26	10	64	293·7	0·0	+ 6·5	−77·3
87·446 G	13	49	15	57	294·4	+0·5	+ 6·4	−63·5
88·347 C	17	96	14	80	294·8	+0·8	+ 6·4	−51·3
89·396 G	15	104	10	68	294·9	+0·7	+ 6·2	−37·3
90·400 G	31	174	17	98	295·1	+0·8	+ 7·2	−23·9
91·456 C	33	204	17	107	295·3	+0·8	+ 7·9	− 9·7
92·394 G	26	91	13	47	296·1	+1·5	+ 6·4	+ 3·4
93·399 C	22	72	12	39	296·6	+1·8	+ 6·6	+17·2
94·667 G	9	18	6	11	296·6	+1·6	+ 6·1	+33·9
95·486 G	9	13	6	9	296·7	+1·6	+ 6·1	+44·8
96·414 G	4	7	4	7	296·6	+1·5	+ 6·1	+57·0
97·425 G	2	4	3	6	296·9	+1·5	+ 6·1	+70·6
Means ...	...	...	11	49	295·6	...	+ 6·5	...
Spot *a*.							
86·454 C	4	26	10	64	293·7	0·0	+ 6·5	−77·3
87·446 G	13	49	15	57	294·4	+0·5	+ 6·4	−63·5
88·347 C	17	96	14	80	294·8	+0·8	+ 6·4	−51·3
89·396 G	15	104	10	68	294·9	+0·7	+ 6·2	−37·3
90·400 G	22	107	12	60	295·4	+1·1	+ 6·0	−23·6
91·456 C	24	90	12	47	295·7	+1·2	+ 6·1	− 9·3
92·394 G	22	80	11	41	296·3	+1·7	+ 6·0	+ 3·6
93·399 C	13	46	7	25	296·4	+1·6	+ 5·9	+17·0
94·677 G	9	18	6	11	296·6	+1·6	+ 6·1	+33·9
95·486 G	9	13	6	9	296·7	+1·6	+ 6·1	+44·8
96·414 G	4	7	4	7	296·6	+1·3	+ 6·1	+57·0
97·425 G	2	4	3	6	296·9	+1·5	+ 6·1	+70·6
Group 10562. March 27–April 8. A stream of normal type. *a* is the leader spot and *b* the follower.							
d					°	°	°	°
86·454 C	11	44	112	446	286·9	...	+21·8	−84·1
87·446 G	35	174	69	345	286·7	0·0	+21·9	−71·2
88·347 C	57	397	66	471	286·3	−0·2	+21·2	−59·8
89·396 G	65	361	55	301	287·1	+0·7	+21·4	−45·1
90·400 G	66	426	44	286	287·0	+0·8	+21·6	−32·0
91·456 C	57	372	34	221	286·9	+0·8	+21·4	−18·1
92·394 G	53	353	30	201	287·4	+1·5	+21·5	− 5·3
93·399 C	70	365	39	208	286·8	+1·0	+21·5	+ 7·4
94·667 G	47	275	29	171	286·7	+1·1	+21·7	+24·0
95·486 G	28	258	20	177	286·0	+0·6	+21·4	+34·1
96·414 G	46	205	39	172	286·6	+1·3	+21·6	+47·0
97·425 G	20	129	24	155	286·8	+1·7	+21·7	+60·5
98·422 G	4	27	9	59	286·2	+1·2	+21·3	+73·1
Means ...	...	...	38	231	286·7	...	+21·5	...
Spot *a*.							
87·446 G	31	152	57	281	287·9	0·0	+22·0	−70·0
88·347 C	39	227	43	247	288·9	+1·2	+21·7	−57·2
89·396 G	40	248	32	198	288·8	+1·2	+21·8	−43·4
90·400 G	53	342	35	226	288·5	+1·1	+21·7	−30·5
91·456 C	48	337	28	199	287·9	+0·6	+21·6	−17·1
92·394 G	49	337	28	192	287·7	+0·6	+21·5	− 5·0
93·399 C	66	337	37	192	287·1	+0·1	+21·5	+ 7·7
94·667 G	47	275	29	171	286·7	−0·1	+21·7	+24·0
95·486 G	24	231	17	159	286·5	−0·1	+21·7	+34·6
96·414 G	33	174	28	146	286·5	0·0	+21·6	+46·9
97·425 G	20	129	24	155	286·8	+0·5	+21·7	+60·5
98·422 G	4	27	9	59	286·2	0·0	+21·3	+73·1
Spot *b*.							
87·446 G	4	22	12	64	281·3	0·0	+21·2	−76·6
88·347 C	9	105	12	145	281·8	+0·7	+20·6	−64·3
89·396 G	18	91	17	84	281·3	+0·3	+20·7	−50·9
90·400 G	9	62	6	45	281·5	+0·7	+20·7	−37·5
Group 10566. April 1–9. A stream with the largest spot, *b*, at the rear.							
91·456 C	31	140	18	81	277·4	0·0	+ 6·5	−27·6
92·394 G	65	231	34	124	277·4	−0·1	+ 6·7	−15·3
93·399 C	120	506	61	258	276·3	−1·4	+ 6·7	− 3·1
94·667 G	98	655	52	345	276·6	−1·3	+ 6·9	+13·9
95·486 G	104	675	59	387	276·9	−1·1	+ 7·2	+25·0
96·414 G	103	500	68	329	277·2	−0·9	+ 7·4	+37·6
97·425 G	42	267	34	216	276·4	−1·9	+ 7·1	+50·1
98·422 G	26	138	30	154	275·3	−3·1	+ 7·2	+62·2
99·547 G	9	45	20	101	274·4	−4·2	+ 7·4	+76·1
Means ...	...	...	42	222	276·4	...	+ 7·0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10566—*continued*.							
Spot *b*.							
d					°	°	°
92·394 G	36	129	19	70	275·1	0·0	+ 6·7	−17·6
93·399 C	81	364	41	186	274·8	−0·4	+ 6·6	− 4·6
94·667 G	58	393	30	204	274·5	−0·9	+ 6·8	+11·8
95·486 G	49	337	27	189	274·6	−1·0	+ 6·9	+22·7
96·414 G	51	259	32	163	274·6	−1·1	+ 6·9	+35·0
97·425 G	29	196	22	151	274·5	−1·3	+ 6·9	+48·2
98·422 G	22	129	24	141	274·6	−1·4	+ 7·3	+61·5
99·547 G	9	45	20	101	274·4	−1·7	+ 7·4	+76·1
Group 10569.							
April 3–10. A stream of small unstable spots.							
93·399 C	9	26	14	39	207·8	0·0	−25·6	−71·6
94·667 G	13	36	12	31	209·3	+1·8	−25·2	−53·4
95·486 G	9	53	6	38	209·2	+2·0	−25·3	−42·7
96·414 G	18	89	11	53	209·7	+2·7	−25·0	−29·9
97·425 G	47	236	26	130	209·5	+2·8	−25·3	−16·8
98·422 G	32	227	17	120	208·6	+2·2	−25·4	− 4·5
99·547 G	18	114	10	63	208·5	+2·4	−24·8	+10·2
100·431 G	0	9	0	5	209·3	+3·4	−23·4	+22·7
Means ...	...	...	12	60	209·0	...	−25·0	...
Group 10570.							
April 4–9. A stream of feeble development.							
94·667 G	2	9	1	5	250·4	0·0	+12·4	−12·3
95·486 G	11	44	6	23	252·2	+1·8	+14·0	+ 0·3
96·414 G	13	45	7	25	250·8	+0·5	+14·4	+11·2
97·425 G	13	40	8	24	251·4	+1·1	+14·4	+25·1
98·422 G	4	18	3	12	251·8	+1·6	+13·7	+38·7
99·547 G	0	4	0	4	250·7	+0·5	+12·0	+52·4
Means ...	...	...	4	16	251·2	...	+13·5	...
Group 10571.							
April 4–14. An imperfectly-formed spot with small distant followers.							
94·667 G	31	138	45	200	195·8	0·0	+15·6	−66·9
95·486 G	22	167	22	165	195·7	−0·1	+15·7	−56·2
96·414 G	42	241	33	186	195·1	−0·7	+16·0	−44·5
97·425 G	56	368	35	229	196·3	+0·5	+15·5	−30·0
98·422 G	56	281	31	158	195·9	0·0	+15·2	−17·2
99·547 G	29	221	16	120	196·9	+1·0	+15·0	− 1·4
100·431 G	38	167	20	90	197·0	+1·1	+14·7	+10·4
101·408 G	29	205	17	119	197·3	+1·4	+14·2	+23·6
102·353 C	24	152	16	101	196·8	+0·9	+14·4	+35·6
103·504 G	11	20	10	17	197·7	+1·8	+14·1	+51·7
104·416 C	4	11	5	14	199·1	+3·1	+14·3	+65·1
Means ...	...	...	23	127	196·7	...	+15·0	...

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10577.							
April 8–15. A small stream.							
d					°	°	°
98·422 G	0	4	0	7	138·5	0·0	−17·0	−74·6
99·547 G	36	138	38	145	136·4	−2·0	−18·1	−61·9
100·431 G	40	114	31	88	137·7	−0·7	−18·2	−48·9
101·408 G	27	116	17	72	138·0	−0·3	−17·4	−35·7
102·353 C	22	44	12	24	138·8	+0·5	−17·8	−22·4
103·504 G	38	97	19	50	136·7	−1·5	−18·8	− 9·3
104·416 C	11	18	6	10	138·2	0·0	−18·2	+ 4·2
105·110 K	12	24	6	12	138·0	−0·1	−18·4	+13·2
Means ...	...	...	16	51	137·8	...	−18·0	...
Group 10580.							
April 10–21. A stream approximately of normal type but of unusual length. *a* is the leader spot; *b* is the follower; *c* is a double spot originating closely following *a*.							
100·431 G	36	201	82	475	108·1	0·0	−10·5	−78·5
101·408 G	74	580	80	649	109·5	+1·3	−10·2	−64·2
102·353 C	110	737	86	581	112·0	+3·7	− 9·6	−49·2
103·504 G	152	956	96	584	111·1	+2·6	− 9·6	−34·9
104·416 C	145	963	78	522	112·7	+4·1	− 9·4	−21·3
105·110 K	137	736	71	378	114·1	+5·4	− 8·9	−10·7
106·368 C	103	570	53	289	113·1	+4·3	−10·1	+ 4·9
107·404 G	83	438	45	236	114·3	+5·3	− 9·1	+19·8
108·391 G	60	316	36	192	115·2	+6·1	− 8·6	+33·7
109·404 G	38	199	29	153	117·5	+8·3	− 8·0	+49·4
110·403 G	37	142	40	154	117·7	+8·4	− 7·9	+62·8
111·412 G	9	70	20	155	119·1	+9·7	− 7·9	+77·5
Means ...	...	...	60	364	113·7	...	− 9·2	...
Spot *a*.							
100·431 G	27	143	48	253	112·2	0·0	− 9·9	−74·4
101·408 G	54	388	52	376	114·2	+0·9	− 9·4	−59·5
102·353 C	48	277	34	197	116·0	+3·6	− 8·7	−45·2
103·504 G	58	428	33	244	116·5	+3·9	− 8·2	−29·5
104·416 C	62	455	32	237	117·0	+4·3	− 7·9	−17·0
105·110 K	71	383	36	192	117·3	+4·5	− 7·9	− 7·5
106·368 C	53	361	27	184	117·9	+5·0	− 7·9	+ 9·7
107·404 G	54	327	29	177	117·9	+4·8	− 7·8	+23·4
108·391 G	45	262	28	162	118·0	+4·8	− 7·8	+36·5
109·404 G	34	188	26	145	118·1	+4·8	− 7·8	+50·0
110·403 G	32	133	35	146	118·2	+4·8	− 7·8	+63·3
111·412 G	9	70	20	155	119·1	+5·6	− 7·9	+77·5
Spot *b*.							
100·431 G	9	58	34	222	103·2	...	−10·7	−83·4
101·408 G	13	174	19	251	103·4	0·0	−10·6	−70·3
102·353 C	31	233	29	214	103·6	+0·1	−10·9	−57·6
103·504 G	38	253	26	172	103·6	0·0	−10·9	−42·4
104·416 C	35	264	20	153	103·6	−0·2	−10·7	−30·4
105·110 K	33	137	18	74	103·7	−0·2	−10·7	−21·1
106·368 C	26	57	13	29	103·9	−0·1	−10·3	− 4·3
107·404 G	7	31	4	16	104·2	+0·1	− 9·7	+ 9·7

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10580—*continued.*							
Spot *c*.							
d					°	°	°
102·353 C	31	227	23	170	112·5	0·0	−10·0	−48·7
103·504 G	56	262	34	160	111·6	−1·0	−10·1	−34·4
104·416 C	44	220	24	119	111·4	−1·3	−10·0	−22·6
105·110 K	29	183	15	95	111·3	−1·6	−10·2	−13·5
106·368 C	15	112	8	56	111·1	−1·9	−10·5	+ 2·9
107·404 G	9	18	5	10	111·9	−1·2	−11·2	+17·4
108·391 G	9	18	5	10	112·3	−0·9	−11·5	+30·8
109·404 G	4	11	3	8	112·7	−0·7	−11·3	+44·6
110·403 G	5	9	5	8	113·1	−0·4	−11·0	+58·2
Group 10587.							
April 19–May 1. A regular spot with occasional companions.							
109·404 G	18	103	69	393	344·5	...	−12·5	−83·6
110·403 G	36	212	49	290	345·6	0·0	−12·5	−69·3
111·412 G	59	320	53	285	345·4	−0·3	−12·2	−56·2
112·407 G	79	459	55	317	345·4	−0·3	−12·3	−43·0
113·348 G	79	513	46	298	345·4	−0·4	−12·2	−30·6
114·361 G	90	605	48	321	345·4	−0·5	−12·3	−17·2
115·347 G	90	563	46	287	345·6	−0·4	−12·1	− 4·0
116·452 G	72	522	37	266	345·6	−0·4	−12·1	+10·6
117·359 C	86	546	47	299	345·4	−0·7	−12·3	+22·4
118·349 G	61	377	38	234	345·8	−0·4	−12·1	+35·9
119·435 C	42	274	33	214	346·0	−0·3	−11·9	+50·4
120·410 C	31	218	35	244	346·4	+0·1	−12·1	+63·7
121·101 K	23	155	38	254	346·4	0·0	−12·0	+72·8
Means ...	...	...	44	276	345·7	...	−12·2	...
Group 10588.							
April 22–28. A stream of feeble activity.							
112·407 G	32	104	32	103	330·1	0·0	+ 9·1	−58·3
113·348 G	14	63	10	45	331·6	+1·4	+ 8·3	−44·4
114·361 G	29	73	18	44	332·0	+1·6	+ 8·2	−30·6
115·347 G	16	95	9	51	331·0	+0·5	+ 8·4	−18·6
116·452 G	18	45	9	23	332·4	+1·7	+ 7·8	− 2·6
117·359 C	11	31	6	16	333·3	+2·5	+ 7·3	+10·3
118·349 G	5	9	3	5	333·6	+2·7	+ 6·8	+23·7
Means ...	...	...	12	41	332·0	...	+ 8·0	...
Group 10590.							
April 25–May 2. A small diminishing spot *f* Group 10589.							
115·347 G	9	23	19	48	272·7	0·0	−15·1	−76·9
116·452 G	18	70	19	76	272·3	−0·4	−14·9	−62·7
117·359 C	18	51	14	41	271·8	−0·9	−14·8	−51·2
118·349 G	18	59	12	38	271·8	−1·0	−14·7	−38·1
119·435 C	13	29	7	16	271·8	−1·0	−14·6	−23·8
120·410 C	13	22	7	11	272·2	−0·6	−14·6	−10·5

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10590—*continued.*							
d					°	°	°
121·101 K	8	15	4	8	272·3	−0·5	−14·5	− 1·3
122·103 K	8	17	4	9	272·6	−0·3	−14·5	+12·3
Means ...	...	...	11	31	272·2	...	−14·7	...
Group 10591.							
April 25–May 3. A composite spot, with companions expanding to a cluster that soon dies away.							
115·347 G	5	27	(17	93	267·0	...	−18·2)	−82·6
116·452 G	27	167	39	242	264·8	0·0	−18·8	−70·2
117·359 C	31	358	29	340	265·0	+0·3	−19·0	−58·0
118·349 G	54	396	39	289	264·3	−0·3	−19·1	−45·6
119·435 C	31	225	19	137	263·9	−0·6	−19·5	−31·7
120·410 C	29	120	16	66	263·7	−0·7	−19·8	−19·0
121·101 K	21	44	11	23	264·3	0·0	−19·3	− 9·3
122·103 K	8	109	4	57	262·8	−1·5	−20·3	+ 2·5
123·467 G	5	36	3	20	262·2	−1·9	−19·6	+19·9
Means ...	...	...	20	147	263·9	...	−19·4	...
Group 10593.							
April 28–May 4. A small unstable stream not seen on May 3.							
118·349 G	5	14	10	28	237·2	0·0	+21·8	−72·7
119·435 C	15	84	16	90	237·7	+0·7	+21·8	−57·9
120·410 C	29	91	23	73	237·7	+0·9	+22·1	−45·0
121·101 K	17	42	12	29	236·9	+0·2	+22·1	−36·7
122·103 K	4	29	2	18	234·6	−1·9	+22·6	−25·7
123·467 G	0	0	0	0	...	...	...	...
124·346 G	5	32	3	18	236·2	0·0	+21·3	+ 5·5
Means ...	...	...	9	37	236·7	...	+22·0	...
Group 10594.							
April 28–May 10. One or two small spots on April 28–29; on May 1 a fairly large stream of irregular spots develops.							
118·349 G	2	9	6	27	228·3	...	−22·5	−81·6
119·435 C	2	13	2	15	231·0	0·0	−22·8	−64·6
120·410 C	0	0	0	0	...	...	...	...
121·101 K	13	40	9	26	235·5	+4·8	−22·3	−38·1
122·103 K	63	298	37	173	235·3	+4·8	−22·0	−25·0
123·467 G	178	832	96	446	234·1	+3·8	−22·0	− 8·2
124·346 G	131	904	69	480	233·5	+3·4	−22·2	+ 2·8
125·347 G	97	642	53	349	232·0	+2·0	−22·1	+14·6
126·425 C	72	668	43	401	231·8	+2·0	−22·0	+28·6
127·345 G	79	522	55	363	231·8	+2·2	−21·7	+40·8
128·363 C	36	259	32	229	231·1	+1·7	−21·8	+53·5
129·346 G	14	68	17	85	229·8	+0·5	−21·7	+65·2
130·368 G	5	14	11	30	227·9	−1·2	−21·3	+76·8
Means ...	...	...	35	216	232·2	...	−22·0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Group 10602.

May 6–11. A small stream.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
126·425 C	4	27	5	33	141·4	0·0	+22·0	−61·8
127·345 G	27	59	23	50	142·1	+0·9	+22·0	−48·9
128·363 C	36	120	24	82	142·6	+1·6	+22·2	−35·0
129·346 G	25	86	15	52	142·7	+1·8	+22·6	−21·9
130·368 G	23	64	13	36	143·5	+2·8	+23·0	− 7·6
131·353 G	5	27	3	15	142·1	+1·6	+22·9	+ 4·1
Means ...	...	...	14	45	142·4	...	+22·4	...

Group 10604.

May 8–15. A feeble stream showing a slight increase on May 13.

128·363 C	2	7	1	4	151·2	0·0	−12·5	−26·4
129·346 G	16	41	8	21	149·9	−0·4	−13·1	−14·7
130·368 G	23	54	12	28	151·4	+0·1	−12·7	+ 0·3
131·353 G	9	27	5	14	151·4	0·0	−13·4	+13·4
132·344 G	14	54	8	31	152·1	+0·6	−12·6	+27·2
133·578 C	45	143	32	100	152·2	+0·7	−11·9	+43·6
134·438 G	18	57	16	50	152·4	+0·8	−12·3	+55·2
135·352 G	5	18	7	24	153·0	+1·3	−12·2	+67·8
Means ...	...	...	11	34	151·7	...	−12·6	...

Group 10608.

May 13–19. A double spot breaking up into a stream which rapidly diminishes.

133·578 C	11	80	32	234	28·2	...	−12·9	−80·4
134·438 G	14	141	20	199	27·8	0·0	−12·6	−69·4
135·352 G	14	145	13	135	28·4	+0·5	−12·6	−56·8
136·614 G	16	68	11	45	28·2	+0·3	−13·0	−40·3
137·605 G	10	34	6	20	27·2	−0·8	−13·8	−28·2
138·355 C	9	20	5	11	27·0	−1·0	−13·7	−18·4
139·353 G	0	7	0	4	28·1	0·0	−13·6	− 4·1
Means ...	...	...	9	69	27·8	...	−13·2	...

Group 10613.

May 22–June 2. A feeble group disappearing by May 27. A well-defined stream suddenly appears in its place on May 28, but this soon diminishes.

142·387 C	6	38	10	69	279·7	0·0	+12·2	−72·4
143·361 C	11	74	12	77	279·4	−0·4	+13·0	−59·8
144·628 G	25	73	18	51	280·2	+0·4	+12·7	−42·2
145·358 G	14	55	8	34	280·3	+0·4	+12·7	−32·5
146·335 C	4	9	2	5	278·3	−1·6	+12·9	−21·6
147·386 G	0	0	0	0	...	...	...	...
148·361 G	82	310	43	161	281·4	+1·3	+12·4	+ 8·4
149·408 G	87	533	48	298	281·1	+1·0	+12·7	+21·9
150·564 G	59	319	39	210	281·6	+1·4	+12·8	+37·7
151·635 G	41	146	36	132	283·9	+3·6	+13·4	+54·2
152·397 G	21	114	26	147	285·5	+5·2	+13·4	+65·9
153·349 G	5	28	(11	91	281·1	...	+13·4)	+74·1
Means ...	...	...	22	108	281·1	...	+12·8	...

Group 10614.

May 23–June 1. A couple of small spots, *sp* Group 10612, increasing to a moderate-sized group about May 28–29.

d					°	°	°	°
143·361 C	6	18	5	14	288·7	0·0	−19·4	−50·5
144·628 G	14	80	8	50	288·8	+0·2	−18·5	−33·6
145·358 G	9	32	5	18	289·6	+1·1	−18·5	−23·2
146·335 C	14	74	8	40	287·3	−1·2	−19·3	−12·6
147·386 G	54	221	29	115	289·5	+1·1	−18·6	+ 3·5
148·361 G	55	253	30	139	290·5	+2·2	−18·4	+17·5
149·408 G	73	360	44	222	290·5	+2·3	−18·4	+31·3
150·564 G	36	169	27	127	289·4	+1·3	−19·0	+45·5
151·635 G	21	71	23	76	289·8	+1·8	−19·0	+60·1
152·397 G	9	32	15	54	291·7	+3·7	−18·9	+72·1
Means ...	...	...	19	86	289·6	...	−18·8	...

Group 10616.

May 26–June 4. A stream which becomes a pair of clusters, each lengthening into a short unstable stream.

146·335 C	13	76	24	143	225·1	0·0	−11·1	−74·8
147·386 G	53	180	58	194	224·7	−0·5	−10·9	−61·3
148·361 G	80	290	65	235	221·5	−3·8	−11·0	−51·5
149·408 G	87	337	56	214	223·0	−2·4	−10·6	−36·2
150·564 G	71	303	38	163	223·5	−2·0	−10·7	−20·4
151·635 G	32	201	16	103	224·5	−1·1	−11·0	− 5·2
152·397 G	28	219	15	112	227·0	+1·3	−10·8	+ 7·4
153·349 G	11	66	6	36	228·6	+2·8	−10·3	+21·6
154·391 G	7	16	4	10	226·8	+0·9	− 9·7	+33·6
155·371 C	2	9	2	7	232·1	+6·1	−10·8	+51·8
Means ...	...	...	28	122	225·7	...	−10·7	...

Group 10618.

May 28–June 9. A regular spot, *a*, followed at some distance by a small double spot, *b*. *a* divides into two parts on June 5, a few small companions having appeared near it on June 3.

148·361 G	23	107	75	322	193·1	0·0	+ 8·4	−79·9
149·408 G	50	299	66	389	193·4	+0·2	+ 8·3	−65·8
150·564 G	75	403	59	317	193·4	0·0	+ 7·8	−50·5
151·635 G	87	422	55	266	193·3	−0·3	+ 7·7	−36·4
152·397 G	96	460	55	260	194·0	+0·3	+ 7·5	−25·6
153·349 G	74	449	39	234	194·3	+0·5	+ 7·7	−12·7
154·391 G	105	552	54	282	194·6	+0·6	+ 7·9	+ 1·4
155·371 C	106	581	55	302	194·9	+0·8	+ 7·8	+14·6
156·360 C	70	475	40	271	195·1	+0·8	+ 7·6	+27·9
157·429 G	50	275	35	190	195·7	+1·3	+ 7·2	+42·7
158·563 G	23	147	22	140	196·2	+1·6	+ 7·1	+58·2
159·580 G	14	64	23	105	196·9	+2·2	+ 6·8	+72·3
160·403 G	5	27	18	97	195·7	...	+ 6·8	+82·0
Means ...	...	...	48	257	194·6	...	+ 7·6	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10618—*continued.*							
Spot *a*.							
d					°	°	°
148·361 G	16	87	43	231	194·0	0·0	+ 8·4	−79·0
149·408 G	36	221	44	267	194·1	0·0	+ 7·9	−65·1
150·564 G	59	328	45	250	194·4	+0·1	+ 7·9	−49·5
151·635 G	59	342	37	212	194·5	0·0	+ 7·8	−35·2
152·397 G	73	410	41	230	194·7	+0·1	+ 7·7	−24·9
153·349 G	69	431	36	224	194·8	+0·1	+ 7·7	−12·2
154·391 G	96	506	49	258	194·9	0·0	+ 7·7	+ 1·7
155·371 C	106	581	55	302	194·9	−0·1	+ 7·8	+14·6
156·360 C	70	475	40	271	195·1	−0·1	+ 7·6	+27·9
157·429 G	50	275	35	190	195·7	+0·4	+ 7·2	+42·7
158·563 G	23	147	22	140	196·2	+0·7	+ 7·1	+58·2
159·580 G	14	64	23	105	196·9	+1·3	+ 6·8	+72·3
160·403 G	5	27	18	97	195·7	...	+ 6·8	+82·0
Spot *b*.							
149·408 G	14	78	22	122	188·1	0·0	+ 8·4	−71·1
150·564 G	16	75	14	67	188·3	+0·1	+ 7·7	−55·6
151·635 G	23	71	15	48	188·6	+0·2	+ 7·4	−41·1
152·397 G	23	50	14	30	188·8	+0·2	+ 7·2	−30·8
153·349 G	5	18	3	10	188·9	+0·2	+ 7·1	−18·1
154·391 G	2	5	1	3	189·0	+0·2	+ 6·6	− 4·2
Group 10619.							
May 29–June 6. A stream with the largest spot, *b*, in the rear.							
149·408 G	16	41	12	31	210·9	0·0	+ 9·4	−48·3
150·564 G	66	266	40	161	211·4	+0·4	+ 9·0	−32·5
151·635 G	48	208	26	113	210·9	−0·3	+10·1	−18·8
152·397 G	54	258	28	137	211·6	+0·3	+ 9·7	− 8·0
153·349 G	50	216	26	110	211·7	+0·3	+10·0	+ 4·7
154·391 G	41	122	23	66	213·0	+1·5	+ 9·4	+19·8
155·371 C	29	70	18	43	214·4	+2·8	+ 9·1	+34·1
156·360 C	7	41	6	31	216·4	+4·6	+ 7·4	+49·2
157·429 G	2	11	3	12	216·3	+4·4	+ 8·9	+63·3
Means ...	...	...	20	78	213·0	...	+ 9·2	...
Spot *b*.							
150·564 G	36	98	22	61	209·9	0·0	+11·2	−34·0
151·635 G	25	128	14	70	209·2	−0·8	+11·3	−20·5
152·397 G	27	153	14	80	208·7	−1·5	+11·0	−10·9
153·349 G	27	124	14	63	208·5	−1·8	+10·5	+ 1·5
154·391 G	18	53	10	28	208·8	−1·6	+10·4	+15·6
155·371 C	9	23	5	13	208·8	−1·7	+10·6	+28·5
Group 10623.							
June 2–10. A wide pair of spots; the leader dies out and another pair replaces the original follower. The leader of this new pair moves forward appreciably in longitude.							
d					°	°	°
153·349 G	9	27	6	18	167·5	0·0	+11·7	−39·5
154·391 G	32	115	18	65	168·2	+0·6	+11·4	−25·0
155·371 C	21	74	11	38	169·3	+1·6	+11·3	−11·0
156·360 C	18	72	10	37	169·5	+1·7	+11·8	+ 2·3
157·429 G	12	61	7	33	170·0	+2·2	+11·7	+17·0
158·563 G	37	147	22	88	169·2	+1·3	+11·5	+31·2
159·580 G	23	89	17	67	172·2	+4·2	+11·2	+47·6
160·403 G	16	78	17	81	174·4	+6·3	+11·7	+60·7
161·359 G	11	78	20	146	175·1	+6·9	+12·0	+74·1
Means ...	...	...	14	64	170·6	...	+11·6	...
Group 10630.							
June 7–14. A small composite spot breaking up into a cluster or stream.							
158·563 G	9	82	17	152	64·0	0·0	−10·5	−74·0
159·580 G	23	92	24	95	64·2	+0·1	−10·3	−60·4
160·403 G	27	115	21	90	64·4	+0·2	−10·4	−49·3
161·359 G	23	92	14	58	64·8	+0·5	−10·4	−36·2
162·349 G	9	46	5	25	65·4	+1·0	−10·4	−22·5
163·361 G	5	30	3	16	65·0	+0·5	−10·4	− 9·5
164·348 G	18	85	9	43	64·4	−0·2	−10·8	+ 2·9
165·437 G	9	34	5	18	61·7	−3·0	− 9·7	+14·7
Means ...	...	...	12	62	64·2	...	−10·4	...
Group 10635.							
June 15–22. A group of stream formation in which the leader, *a*, and the follower, *b*, instead of separating in longitude, come closer together. *b* becomes absorbed in *a* by June 21. There is a rapid break up of the group after June 20.							
166·356 G	33	64	19	36	9·8	0·0	−15·1	−25·1
167·349 G	103	492	55	263	10·6	+0·8	−14·9	−11·1
168·324 G	133	722	69	376	10·2	+0·4	−15·0	+ 1·4
169·610 G	94	481	51	263	9·7	−0·2	−15·0	+17·9
170·490 G	76	385	45	230	9·8	−0·1	−15·1	+29·6
171·342 G	55	316	38	217	9·6	−0·3	−15·2	+40·7
172·334 C	29	181	26	159	9·1	−0·8	−15·1	+53·4
173·458 C	9	41	13	60	9·8	−0·1	−14·9	+68·9
Means ...	...	...	40	201	9·8	...	−15·0	...
Spot *a*.							
166·356 G	14	25	8	14	11·0	0·0	−14·8	−23·9
167·349 G	55	309	29	164	11·6	+0·6	−14·8	−10·1
168·324 G	73	440	38	229	11·3	+0·3	−14·8	+ 2·5
169·610 G	64	353	35	194	10·5	−0·6	−14·7	+18·7
170·490 G	62	330	37	198	10·1	−1·0	−15·1	+29·9
171·342 G	46	289	32	199	9·9	−1·2	−15·0	+41·0

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10635—*continued*.							
Spot *b*.							
d					°	°	°
166·356 G	14	21	8	12	8·0	0·0	−15·4	−26·9
167·349 G	48	183	26	99	8·2	+0·2	−15·4	−13·5
168·324 G	60	282	31	147	7·3	−0·7	−15·7	− 1·5
169·610 G	30	128	16	69	7·1	−1·0	−15·9	+15·3
170·490 G	14	55	8	32	7·6	−0·5	−16·3	+27·4
171·342 G	9	27	6	18	8·0	−0·1	−16·3	+39·1
Group 10636.							
June 17–24. An elongated cluster or short stream of faint spots.							
168·324 G	9	60	15	101	296·4	0·0	+14·1	−72·4
169·610 G	16	101	14	88	297·8	+1·4	+14·1	−54·0
170·490 G	23	124	16	86	298·4	+1·9	+14·3	−41·8
171·342 G	18	94	11	55	299·0	+2·5	+14·4	−29·9
172·334 C	16	77	9	42	297·2	+0·7	+15·1	−18·5
173·458 C	18	54	9	28	296·8	+0·3	+15·1	− 4·1
174·363 G	9	82	5	43	297·6	+1·0	+14·5	+ 8·7
175·397 G	9	73	5	41	298·7	+2·1	+14·4	+23·5
Means ...	...	...	10	61	297·7	...	+14·5	...
Group 10638.							
June 18–23. A stream *n* Group 10633.							
169·610 G	14	34	8	18	6·6	0·0	+18·5	+14·8
170·490 G	53	224	31	132	7·2	+0·7	+18·9	+27·0
171·342 G	23	137	15	90	6·8	+0·3	+19·3	+37·9
172·334 C	9	36	7	29	5·8	−0·6	+19·0	+50·1
173·458 C	12	48	15	57	5·6	−0·7	+18·4	+64·7
174·363 G	5	37	10	76	4·7	−0·5	+18·5	+75·8
Means ...	...	...	14	67	6·1	...	+18·8	...
Group 10641.							
June 21–27. An irregular stream of minor importance.							
172·334 C	5	23	4	17	270·7	0·0	+16·1	−45·0
173·458 C	9	36	5	21	271·4	+0·7	+16·3	−29·5
174·363 G	9	23	5	12	272·0	+1·3	+14·7	−16·9
175·397 G	25	105	13	54	272·0	+1·2	+14·4	− 3·2
176·360 G	56	214	30	111	273·0	+2·2	+14·7	+10·5
177·387 G	23	106	13	59	272·9	+2·1	+14·1	+24·1
178·422 G	18	46	12	29	272·0	+1·2	+14·3	+36·8
Means ...	...	...	12	43	272·0	...	+14·9	...

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10642.							
June 21–July 3. A stable regular spot, *b*, preceded at some distance by one or two spots from June 25–29.							
d					°	°	°
172·334 C	7	50	28	204	233·4	...	−11·2	−82·3
173·458 C	27	154	38	214	232·8	0·0	−11·4	−68·1
174·363 G	37	234	34	215	233·0	+0·1	−11·5	−55·9
175·397 G	46	293	32	205	233·1	+0·1	−11·9	−42·1
176·360 G	87	430	51	254	233·6	+0·6	−11·8	−28·9
177·387 G	56	398	31	214	233·6	+0·5	−11·8	−15·2
178·422 G	85	438	44	228	234·1	+0·9	−11·6	− 1·1
179·351 G	71	414	38	219	234·0	+0·7	−11·5	+11·1
180·402 G	46	321	26	183	233·5	+0·1	−11·7	+24·5
181·384 G	41	248	27	161	233·2	−0·3	−11·6	+37·2
182·365 G	30	184	24	149	233·3	−0·2	−11·8	+50·3
183·376 G	18	147	21	175	233·5	−0·1	−11·9	+63·9
184·357 G	14	71	34	170	233·6	−0·1	−12·1	+77·0
Means ...	...	...	33	199	233·4	...	−11·7	...
Spot *b*.							
172·334 C	7	50	28	204	233·4	...	−11·2	−82·3
173·458 C	27	154	38	214	232·8	0·0	−11·4	−68·1
174·363 G	37	234	34	215	233·0	+0·1	−11·5	−55·9
175·397 G	46	293	32	205	233·1	+0·1	−11·9	−42·1
176·360 G	60	331	35	195	233·1	+0·1	−12·0	−29·4
177·387 G	51	373	28	201	233·2	+0·1	−11·9	−15·6
178·422 G	62	380	32	198	233·3	+0·1	−11·9	− 1·9
179·351 G	62	368	33	195	233·4	+0·1	−11·7	+10·5
180·402 G	41	307	23	175	233·3	−0·1	−11·7	+24·3
181·384 G	41	248	27	161	233·2	−0·3	−11·6	+37·2
182·365 G	30	184	24	149	233·3	−0·2	−11·8	+50·3
183·376 G	18	147	21	175	233·5	−0·1	−11·9	+63·9
184·357 G	14	71	34	170	233·6	−0·1	−12·1	+77·0
Group 10645.							
June 23–July 2. A stream in which the leader, *a*—a regular spot—and the follower, *b*, a cluster tend to approach one another.							
174·363 G	16	46	11	32	245·9	0·0	+ 8·5	−43·0
175·397 G	59	160	34	92	246·8	+0·8	+ 8·8	−28·4
176·360 G	92	336	47	174	248·6	+2·4	+ 8·6	−13·9
177·387 G	39	341	19	170	248·2	+1·9	+ 8·7	− 0·6
178·422 G	69	345	36	178	249·5	+3·1	+ 8·5	+14·3
179·351 G	65	354	37	200	249·6	+3·1	+ 8·6	+26·7
180·402 G	32	199	21	133	250·0	+3·3	+ 8·7	+41·0
181·384 G	27	104	22	88	250·0	+3·2	+ 9·0	+54·0
182·365 G	9	37	12	49	250·9	+4·0	+ 9·5	+67·9
183·376 G	0	5	0	16	250·8	...	+ 9·4	+81·2
Means ...	...	...	27	124	248·8	...	+ 8·8	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10645—*continued.*							
Spot *a*.							
d					°	°	°
175·397 G	18	55	10	31	249·1	0·0	+ 8·3	−26·1
176·360 G	46	216	23	110	250·6	+1·4	+ 8·5	−11·9
177·387 G	25	212	12	106	250·3	+0·9	+ 8·6	+ 1·5
178·422 G	46	239	24	124	250·2	+0·7	+ 8·5	+15·0
179·351 G	53	299	30	170	250·2	+0·6	+ 8·7	+27·3
180·402 G	23	188	15	126	250·5	+0·8	+ 8·9	+41·5
181·384 G	18	92	15	79	250·5	+0·6	+ 9·1	+54·5
182·365 G	9	37	12	49	250·9	+0·9	+ 9·5	+67·9
183·376 G	0	5	0	16	250·8	...	+ 9·4	+81·2
Cluster *b*.							
175·397 G	41	105	24	61	245·5	0·0	+ 8·7	−29·7
176·360 G	46	120	24	64	245·2	−0·4	+ 8·9	−17·3
177·387 G	14	129	7	64	245·1	−0·7	+ 8·7	− 3·7
178·422 G	23	106	12	54	245·9	0·0	+ 8·5	+10·7
179·351 G	12	55	7	30	246·3	+0·3	+ 8·5	+23·4
180·402 G	9	11	6	7	246·0	−0·1	+ 8·6	+37·0
181·384 G	9	12	7	9	246·0	−0·3	+ 8·7	+50·0
Group 10646.							

June 23–July 3. A small regular spot, *a*, with a follower which suddenly appears between June 23 and 24 and then dissolves into a cluster that tends to approach the leader.

174·363 G	9	25	11	30	223·9	0·0	+11·7	−65·0
175·397 G	62	311	52	259	222·8	−1·2	+11·7	−52·4
176·360 G	55	308	36	201	223·5	−0·6	+11·8	−39·0
177·387 G	53	257	30	145	223·4	−0·7	+11·9	−25·4
178·422 G	41	240	22	125	224·4	+0·2	+12·4	−10·8
179·351 G	32	200	16	102	225·1	+0·8	+12·7	+ 2·2
180·402 G	29	133	15	70	224·6	+0·2	+12·0	+15·6
181·384 G	33	82	19	47	224·4	0·0	+12·2	+28·4
182·365 G	9	28	6	19	224·8	+0·3	+12·3	+41·8
183·376 G	9	23	8	20	225·0	+0·4	+12·5	+55·4
184·357 G	5	9	7	12	225·0	+0·3	+12·2	+68·4
Means ...	...	...	20	94	224·3	...	+12·1	...
Spot *a*.								
174·363 G	9	25	11	30	223·9	0·0	+11·7	−65·0
175·397 G	37	192	30	154	224·4	+0·4	+12·3	−50·8
176·360 G	37	230	24	147	224·9	+0·8	+12·5	−37·6
177·387 G	41	209	23	117	224·9	+0·8	+12·6	−23·9
178·422 G	32	212	17	110	225·0	+0·8	+12·7	−10·2
179·351 G	32	200	16	102	225·1	+0·8	+12·7	+ 2·2
180·402 G	27	115	14	61	225·1	+0·7	+12·1	+16·1
181·384 G	28	64	16	37	224·8	+0·4	+12·4	+28·8

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10646—*continued.*							
Spot *a*—*continued.*							
d					°	°	°
182·365 G	9	28	6	19	224·8	+0·3	+12·3	+41·8
183·376 G	9	23	8	20	225·0	+0·4	+12·5	+55·4
184·357 G	5	9	7	12	225·0	+0·3	+12·2	+68·4
Group 10647.							

June 23–July 2. A group of a few spots *p* Group 10649.

174·363 G	9	46	25	130	208·9	...	+14·5	−80·0
175·397 G	23	89	29	113	208·6	0·0	+15·0	−66·6
176·360 G	37	133	33	117	208·1	−0·5	+15·3	−54·4
177·387 G	37	184	25	125	207·7	−0·9	+15·3	−41·1
178·422 G	37	90	21	51	208·6	0·0	+16·0	−26·6
179·351 G	18	69	10	37	209·6	+1·0	+16·4	−13·3
180·402 G	21	41	11	21	210·4	+1·8	+15·8	+ 1·4
181·384 G	18	32	10	17	210·9	+2·3	+15·9	+14·9
182·365 G	9	14	5	8	210·8	+2·2	+15·8	+27·8
183·376 G	9	28	6	19	210·7	+2·1	+15·6	+41·1
Means ...	...	...	17	56	209·5	...	+15·7	...
Group 10649.								

June 24–July 5. A single composite spot, *b*, or two spots close together at the east limb. These increase and separate, *b* streaming out in longitude. The decline of the group is rapid.

175·397 G	60	426	121	861	199·6	0·0	+17·8	−75·6
176·360 G	106	867	122	1008	198·5	−1·0	+17·9	−64·0
177·387 G	173	1134	141	921	197·7	−1·8	+17·9	−51·1
178·422 G	189	1325	122	859	198·3	−1·1	+18·2	−36·9
179·351 G	239	1610	136	909	199·1	−0·3	+18·0	−23·8
180·402 G	160	1219	84	642	198·0	−1·3	+17·9	−11·0
181·384 G	154	849	80	442	198·6	−0·6	+18·2	+ 2·6
182·365 G	79	499	42	266	197·3	−1·9	+18·2	+14·3
183·376 G	50	285	28	165	197·0	−2·1	+17·9	+27·4
184·357 G	48	239	33	163	196·9	−2·2	+17·9	+40·3
185·351 G	28	152	24	129	196·4	−2·6	+18·1	+53·0
186·382 G	5	9	6	11	195·5	−3·4	+19·5	+65·7
Means ...	...	...	78	531	197·7	...	+18·1	...
Spot *b*.								
176·360 G	46	421	58	535	196·1	0·0	+18·2	−66·4
177·387 G	108	649	92	552	196·0	0·0	+18·1	−52·8
178·422 G	92	743	62	498	196·1	+0·1	+18·2	−39·1
179·351 G	152	777	88	451	195·7	−0·2	+18·3	−27·2
180·402 G	87	701	46	372	195·8	−0·1	+18·2	−13·2
181·384 G	87	497	45	258	195·6	−0·2	+18·2	− 0·4
182·365 G	51	354	27	188	195·4	−0·3	+18·2	+12·4
183·376 G	41	223	23	127	195·5	−0·2	+18·2	+25·9

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Group 10654.

June 29–July 4. A feeble stream of which the following component remains alone after July 2.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
180·402 G	16	48	13	40	156·9	0·0	+ 5·9	−52·1
181·384 G	23	69	15	45	156·6	−0·5	+ 6·1	−39·4
182·365 G	18	46	10	26	156·9	−0·3	+ 6·4	−26·1
183·376 G	14	49	8	25	156·7	−0·7	+ 7·2	−12·9
184·357 G	5	32	2	16	152·9	−4·6	+ 7·1	− 3·7
185·351 G	5	28	3	14	154·2	−3·5	+ 6·3	+10·8
Means ...	...	...	9	28	155·7	...	+ 6·5	...

Group 10663.

July 6–15. A stream with a leader that becomes double by July 12. One small spot represents the rear of the group on July 15.

187·371 G	5	34	19	130	35·0	...	−10·8	−81·7
188·366 G	30	169	45	248	35·1	0·0	−10·8	−68·4
189·399 G	57	276	53	256	34·0	−1·2	−10·3	−55·9
190·355 G	44	317	31	224	33·9	−1·4	−10·3	−43·3
191·362 G	44	260	26	153	34·3	−1·1	−10·4	−29·6
192·379 G	37	241	20	130	32·7	−2·8	−10·4	−17·7
193·373 G	60	268	31	139	31·5	−4·1	−10·8	− 5·8
194·352 G	32	92	17	48	32·2	−3·5	−10·5	+ 7·9
195·363 G	5	25	3	14	33·3	−2·5	−10·0	+22·4
196·402 G	2	9	1	5	26·7	−9·2	− 9·8	+29·5
Means ...	...	...	25	135	32·6	...	−10·4	...

Group 10666.

July 12–17. A small stream in which the follower is the last spot to disappear.

193·373 G	5	14	3	7	33·6	0·0	− 4·0	− 3·7
194·352 G	46	78	23	40	32·6	−1·2	− 4·0	+ 8·3
195·363 G	23	101	13	56	33·4	−0·6	− 3·8	+22·5
196·402 G	18	71	11	44	32·5	−1·6	− 3·6	+35·3
197·346 G	13	23	9	17	30·6	−3·7	− 3·7	+45·9
198·358 G	5	16	5	16	30·5	−4·0	− 3·7	+59·2
Means ...	...	...	11	30	32·2	...	− 3·8	...

Group 10669.

July 12–23. A very large active stream (visible to the naked eye) developing from a few spots seen near the east limb on July 12. The leader, *a*, becomes a very large spot, being slightly elongated in the direction of the axis of the group, which is inclined about 25° to the solar equator. The rear of the stream is made up of two clusters, *b* and *c*, each becoming a composite spot (from July 18–20 *b* and *c* merge into one) containing numerous umbræ. Considering its size the group is short-lived.

193·373 G	30	123	53	207	328·1	0·0	−19·3	−69·2
194·352 G	92	455	91	432	330·0	+2·0	−18·8	−54·3
195·363 G	220	1102	163	805	330·1	+2·2	−18·5	−40·8

Group 10669—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
196·402 G	287	1819	176	1119	329·5	+1·6	−18·4	−27·7
197·346 G	393	2164	223	1228	329·1	+1·3	−18·8	−15·6
198·358 G	448	2486	245	1370	328·5	+0·8	−18·9	− 2·8
199·354 G	405	2519	227	1404	328·4	+0·8	−18·9	+10·3
200·458 G	324	2091	199	1275	328·1	+0·6	−19·1	+24·6
201·447 G	302	1505	215	1062	328·5	+1·0	−19·1	+38·1
202·355 G	198	1069	177	949	329·2	+1·8	−18·8	+50·7
203·386 G	87	577	119	816	331·2	+3·9	−18·1	+66·4
204·357 G	19	150	(42	301	324·5	...	−20·3)	+72·5
Means ...	...	...	172	970	329·2	...	−18·8	...

Spot *a*.

193·373 G	9	55	13	77	330·8	0·0	−18·4	−66·5
194·352 G	51	317	45	279	332·7	+2·0	−17·8	−51·6
195·363 G	115	672	79	464	333·1	+2·5	−17·3	−37·8
196·402 G	184	1118	109	660	332·9	+2·3	−17·1	−24·3
197·346 G	193	1178	106	648	333·2	+2·7	−17·3	−11·5
198·358 G	221	1164	119	629	333·6	+3·2	−17·2	+ 2·3
199·354 G	192	1012	108	567	333·7	+3·4	−17·0	+15·6
200·458 G	182	886	115	558	333·7	+3·5	−17·0	+30·2
201·447 G	150	681	113	511	333·8	+3·6	−16·9	+43·4
202·355 G	108	536	106	525	334·3	+4·2	−16·9	+55·8
203·386 G	42	344	69	564	334·6	+4·6	−16·7	+69·8

Spot *b*.

196·402 G	48	322	32	216	323·5	0·0	−21·7	−33·7
197·346 G	78	446	47	268	322·8	−0·6	−21·9	−21·9
198·358 G	104	669	59	381	322·7	−0·6	−22·0	− 8·6
199·354 G	87	852	49	477	322·7	−0·6	−21·8	+ 4·6
200·458 G	78	605	46	357	322·1	−1·1	−21·9	+18·6
201·447 G	83	435	55	287	322·1	−1·0	−22·1	+31·7
202·355 G	67	385	52	300	321·9	−1·1	−22·0	+43·4
203·386 G	27	192	28	202	321·5	−1·4	−21·8	+56·7
204·357 G	14	127	24	218	321·6	−1·3	−21·6	+69·6

Spot *c*.

196·402 G	55	379	35	243	325·6	0·0	−19·2	−31·6
197·346 G	92	473	53	274	325·5	0·0	−19·6	−19·2
198·358 G	97	520	53	286	325·8	+0·4	−19·7	− 5·5
199·354 G	121	586	67	322	325·9	+0·5	−19·6	+ 7·8
200·458 G	64	600	38	360	325·8	+0·5	−19·9	+22·3
201·447 G	69	389	47	264	325·2	0·0	−20·1	+34·8
202·355 G	23	148	19	124	326·1	+1·0	−19·3	+47·6
203·386 G	18	41	22	50	326·5	+1·5	−19·3	+61·7

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude. and Proper Motion.	Latitude.	Long. from C.M.
Group 10673.							
July 16–23. A stream of small faint spots; nothing is seen on July 22.							
d					°	°	°
197·346 G	0	2	0	3	276·6	0·0	+17·2	−68·1
198·358 G	7	14	7	13	274·7	−1·8	+18·0	−56·6
199·354 G	16	46	11	33	273·7	−2·8	+17·4	−44·4
200·458 G	32	182	19	107	273·7	−2·7	+17·9	−29·8
201·447 G	32	179	17	95	274·2	−2·2	+17·7	−16·2
202·355 G	14	113	7	58	274·3	−2·0	+17·7	− 4·2
203·386 G	0	0	0	0	...	...	...	...
204·357 G	0	5	0	3	274·7	−1·5	+18·2	+22·7
Means ...	...	...	8	39	274·6	...	+17·7	...
Group 10681.							
July 20–Aug. 1. A spot, *a*, at first with slight departure from complete regularity, followed by an insignificant train of small spots which die out after July 28.							
201·447 G	7	60	28	244	206·4	...	+14·2	−84·0
202·355 G	20	159	35	266	205·2	0·0	+14·7	−73·3
203·386 G	41	265	43	264	204·7	−0·5	+14·4	−60·1
204·357 G	53	276	39	201	205·4	+0·1	+14·2	−46·6
205·394 G	53	396	33	241	204·6	−0·7	+14·4	−33·6
206·582 G	76	435	41	232	204·4	−0·9	+14·9	−18·1
207·368 G	74	352	38	181	203·9	−1·4	+15·0	− 8·2
208·391 G	55	283	29	144	204·4	−1·0	+14·7	+ 5·8
209·347 G	39	222	21	120	205·1	−0·3	+14·5	+19·2
210·402 G	32	197	20	120	206·2	+0·8	+14·9	+34·2
211·345 G	27	156	20	114	206·4	+1·0	+14·6	+46·9
212·420 G	18	106	18	108	206·4	+0·9	+14·6	+61·1
213·504 G	9	60	17	114	206·8	+1·3	+14·7	+75·8
Means ...	...	...	30	175	205·3	...	+14·6	...
Spot *a*.							
202·355 G	18	152	29	245	205·9	0·0	+14·5	−72·6
203·386 G	27	224	26	215	206·0	+0·1	+14·3	−58·8
204·357 G	48	258	35	186	206·0	0·0	+14·2	−46·0
205·394 G	35	313	21	188	205·8	−0·2	+14·2	−32·4
206·582 G	58	299	31	158	205·8	−0·2	+14·4	−16·7
207·368 G	51	228	26	116	205·8	−0·2	+14·5	− 6·3
208·391 G	41	232	21	118	205·7	−0·4	+14·5	+ 7·1
209·347 G	37	213	20	115	205·7	−0·4	+14·7	+19·8
210·402 G	32	197	20	120	206·2	+0·1	+14·9	+34·2
211·345 G	27	156	20	114	206·4	+0·3	+14·6	+46·9
212·420 G	18	106	18	108	206·4	+0·2	+14·6	+61·1
213·504 G	9	60	17	114	206·8	+0·6	+14·7	+75·8
Group 10682.							
July 24–Aug. 3. A persistent stream of individually unstable spots.							
205·394 G	9	46	14	69	167·1	0·0	+ 6·5	−71·1
206·582 G	23	87	20	76	167·5	+0·2	+ 6·4	−55·0
207·368 G	21	74	14	51	168·2	+0·8	+ 6·9	−43·9

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10682—*continued.*							
d					°	°	°
208·391 G	28	104	16	59	169·0	+1·4	+ 6·6	−29·6
209·347 G	21	110	11	57	169·2	+1·5	+ 6·6	−16·7
210·402 G	14	78	7	39	168·9	+1·0	+ 6·6	− 3·1
211·345 G	21	123	11	64	171·0	+3·0	+ 6·4	+11·5
212·420 G	41	229	23	126	170·3	+2·1	+ 6·4	+25 0
213·504 G	27	73	17	47	170·3	+1·9	+ 6·5	+39·3
214·583 G	9	50	8	42	170·7	+2·2	+ 6·1	+54·0
215·267 K	9	26	10	30	171·9	+3·2	+ 6·0	+64·3
Means ...	...	...	14	60	169·5	...	+ 6·5	...
Group 10685.							
July 25–August 5. A stream with a regular spot, *a*, as leader, another, *b*, as follower and a composite spot, *c*, which dissolves into a cluster near *b*. The group has almost disappeared by August 2, but two new spots appear on the following day.							
206·582 G	30	178	87	585	144·4	0·0	−20·7	−78·1
207·368 G	68	313	107	498	144·4	+0·1	−20·6	−67·7
208·391 G	69	522	68	521	143·7	−0·5	−20·6	−54·9
209·347 G	89	650	66	493	143·6	−0·5	−20·5	−42·3
210·402 G	78	535	50	339	144·0	0·0	−20·3	−28·0
211·345 G	69	379	40	220	143·6	−0·3	−19·9	−15·9
212·420 G	43	164	24	92	146·4	+2·6	−20·2	+ 1·1
213·504 G	14	55	8	33	147·9	+4·3	−19·9	+16·9
214·583 G	12	32	7	21	144·6	+1·1	−20·4	+27·9
215·267 K	26	94	17	63	141·9	−1·5	−18·8	+34·3
216·353 C	20	77	17	66	142·6	−0·7	−18·5	+49·3
217·376 G	9	32	12	42	143·6	+0·4	−18·2	+63·8
Means ...	...	...	42	248	144·2	...	−19·9	...
Spot *a*.							
206·582 G	14	46	28	92	150·0	0·0	−19·9	−72·5
207·368 G	18	74	22	92	149·7	−0·2	−19·7	−62·4
208·391 G	23	106	20	90	150·0	+0·2	−19·8	−48·6
209·347 G	18	83	12	57	149·9	+0·2	−19·9	−36·0
210·402 G	18	98	11	59	150·1	+0·5	−20·1	−21·9
211·345 G	23	96	13	54	150·7	+1·2	−20·2	− 8·8
212·420 G	23	50	13	28	151·2	+1·8	−19·9	+ 5·9
213·504 G	7	23	4	14	151·8	+2·6	−19·9	+20·8
214·583 G	5	9	3	6	152·2	+3·1	−20·0	+35·5
Spot *b*.							
206·582 G	9	81	34	309	142·5	...	−20·4	−80·0
207·368 G	18	99	33	181	141·3	0·0	−20·3	−70·8
208·391 G	23	108	24	114	141·0	−0·2	−19·6	−57·6
209·347 G	27	137	21	107	141·3	+0·2	−19·3	−44·6
210·402 G	23	105	15	68	141·1	+0·1	−19·3	−30·9
211·345 G	18	82	10	48	141·1	+0·2	−19·3	−18·4
212·420 G	9	27	5	15	141·0	+0·3	−19·3	− 4·3

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Group 10685—*continued*.
Spot *c*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
206·582 G	7	51	25	184	143·4	0·0	−22·1	−79·1
207·368 G	32	140	52	225	144·0	+0·7	−21·7	−68·1
208·391 G	23	308	24	317	143·0	−0·2	−21·4	−55·6
209·347 G	37	398	28	306	143·2	+0·1	−21·1	−42·7
210·402 G	37	332	24	212	143·2	+0·2	−21·2	−28·8
211·345 G	23	160	14	94	141·8	−1·1	−20·9	−17·7

Group 10688.
July 29–August 5. A stream represented at first by a pair of spots the larger being in front.

210·402 G	5	16	8	27	102·0	0·0	−15·8	−70·0
211·345 G	26	71	25	69	103·6	+1·6	−15·7	−55·9
212·420 G	21	105	15	74	105·2	+3·2	−15·7	−40·1
213·504 G	32	163	20	99	104·8	+2·8	−16·0	−26·2
214·583 G	46	197	26	110	103·6	+1·6	−16·3	−13·1
215·267 K	51	245	28	132	103·7	+1·7	−16·7	− 3·9
216·353 C	29	90	16	50	103·9	+1·9	−16·0	+10·6
217·376 G	2	14	1	8	100·6	−1·4	−15·7	+20·8
Means ...	...	...	17	71	103·4	...	−16·0	...

Group 10690.
July 29–August 7. A spot, *a*, subdividing on August 1; there is a small follower on August 1.

210·402 G	18	96	31	167	98·2	0·0	+ 7·4	−73·8
211·345 G	41	197	41	199	98·7	+0·4	+ 7·4	−60·8
212·420 G	55	289	40	208	98·7	+0·2	+ 7·5	−46·6
213·504 G	51	316	30	187	98·4	−0·3	+ 7·6	−32·6
214·583 G	50	284	26	148	99·8	+1·0	+ 7·9	−16·9
215·267 K	60	366	30	183	100·3	+1·4	+ 7·7	− 7·3
216·353 C	50	239	26	120	100·4	+1·3	+ 8·0	+ 7·1
217·376 G	50	213	27	115	101·3	+2·1	+ 7·5	+21·5
218·387 G	17	83	10	51	101·4	+2·0	+ 7·2	+35·0
219·586 G	5	18	4	14	101·9	+2·4	+ 6·1	+51·4
Means ...	...	...	27	139	99·9	...	+ 7·4	...

Group 10691.
July 30–August 7. A pair of spots on July 30; a single spot on the following day; a very small stream on August 1; afterwards the leader is the only survivor.

211·345 G	5	9	4	7	108·5	0·0	+12·7	−51·0
212·420 G	7	11	4	7	107·6	−1·0	+13·8	−37·7
213·504 G	18	46	10	25	110·2	+1·5	+11·7	−20·8
214·583 G	9	37	5	19	111·4	+2·6	+11·0	− 5·3
215·267 K	11	28	6	14	111·8	+3·0	+10·8	+ 4·2
216·353 C	11	23	6	12	112·4	+3·5	+11·1	+19·1
217·376 G	9	14	5	8	113·0	+4·0	+11·1	+33·2
218·387 G	5	11	4	8	113·7	+4·6	+10·9	+47·3
219·586 G	5	16	5	17	113·1	+3·9	+10·3	+62·6
Means ...	...	...	5	13	111·3	...	+11·5	...

Group 10698.
August 7–17. A small but persistent group of few spots.

d					°	°	°	°
219·586 G	9	21	14	33	342·3	0·0	−18·1	−68·2
220·474 G	18	69	19	71	342·2	−0·1	−18·1	−56·6
221·370 G	11	73	9	58	342·0	−0·2	−18·1	−44·9
222·345 C	9	68	6	44	342·6	+0·4	−18·4	−31·5
223·372 G	9	27	5	15	344·7	+2·6	−17·6	−15·8
224·581 G	14	41	8	23	345·9	+3·8	−17·5	+ 1·4
225·358 G	5	9	3	5	346·7	+4·7	−17·5	+12·5
226·360 G	2	5	1	3	346·9	+4·9	−17·7	+25·9
227·357 G	5	9	3	6	339·1	−2·8	−15·2	+31·3
228·355 G	7	14	6	11	339·6	−2·3	−17·1	+45·0
229·397 G	0	5	0	7	345·2	+3·4	−17·7	+64·4
Means ...	...	...	7	25	343·4	...	−17·6	...

Group 10700.
August 10–22. A regular spot diminishing rapidly after August 17 when small companions appear near it.

222·345 C	18	119	38	253	297·4	0·0	+ 3·7	−76·7
223·372 G	34	228	38	253	297·0	−0·6	+ 4·0	−63·5
224·581 G	46	324	34	240	296·9	−0·9	+ 4·1	−47·6
225·358 G	55	378	35	238	296·9	−1·0	+ 4·0	−37·3
226·360 G	66	415	36	228	297·2	−0·9	+ 4·2	−23·8
227·357 G	55	365	28	186	297·6	−0·7	+ 4·0	−10·2
228·355 G	59	351	30	176	297·8	−0·7	+ 4·1	+ 3·2
229·397 G	52	367	28	195	298·5	−0·1	+ 4·2	+17·7
230·468 G	55	201	32	119	298·9	+0·1	+ 4·1	+32·2
231·351 G	32	182	22	126	298·7	−0·3	+ 4·5	+43·7
232·340 G	16	109	15	99	298·9	−0·3	+ 4·1	+57·0
233·358 C	9	60	13	87	298·6	−0·7	+ 4·1	+70·1
234·348 G	7	27	28	110	298·8	...	+ 3·8	+83·4
Means ...	...	...	29	183	297·9	...	+ 4·1	...

Group 10702.
August 11–19. A very small stream of which the leader—at first a double spot—is left after August 15.

223·372 G	11	27	13	32	299·9	0·0	−18·5	−60·6
224·581 G	14	64	11	50	300·6	+0·7	−18·2	−43·9
225·358 G	25	61	17	42	300·1	+0·3	−18·1	−34·1
226·360 G	26	52	15	29	302·5	+2·7	−16·3	−18·5
227·357 G	18	32	10	18	304·0	+4·2	−17·0	− 3·8
228·355 G	7	14	4	8	304·6	+4·9	−16·7	+10·0
229·397 G	9	27	5	16	305·6	+5·9	−16·7	+24·8
230·468 G	5	18	4	13	305·6	+6·0	−16·6	+38·9
231·351 G	5	9	4	8	305·7	+6·1	−16·4	+50·7
Means ...	...	...	9	24	303·2	...	−17·2	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Group 10704.

August 12–19. A stream, led for a few days by a small regular spot, *f* Group 10700.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d							
224·581 G	25	50	25	51	283°·6	0°·0	+ 8°·8	−60°·9
225·358 G	41	203	31	155	285·0	+1·3	+ 7·6	−49·2
226·360 G	57	285	35	173	285·8	+2·0	+ 7·5	−35·2
227·357 G	50	267	27	142	285·9	+1·9	+ 7·7	−21·9
228·355 G	39	154	20	78	286·2	+2·1	+ 7·5	− 8·4
229·397 G	18	87	9	44	286·3	+2·0	+ 7·3	+ 5·5
230·468 G	16	41	8	22	286·5	+2·1	+ 7·5	+19·8
231·351 G	5	32	3	18	284·7	+0·1	+ 9·1	+29·7
Means ...	...	...	20	85	285·5	...	+ 7·9	...

Group 10708.

August 15–25. A small irregular stream or cluster. Group 10709 develops northwards.

227·357 G	0	7	0	20	230·2	0·0	−14·9	−77·6
228·355 G	21	111	29	148	229·3	−0·9	−14·7	−65·3
229·397 G	29	137	25	121	229·3	−0·9	−14·4	−51·5
230·468 G	18	78	12	53	229·6	−0·6	−15·0	−37·1
231·351 G	27	64	16	39	228·7	−1·5	−15·5	−26·3
232·340 G	66	267	38	152	228·2	−2·0	−17·6	−13·7
233·358 C	62	308	34	169	228·4	−1·8	−18·1	− 0·1
234·348 G	73	178	41	100	228·1	−2·1	−17·2	+12·7
235·360 C	40	181	25	112	228·9	−1·2	−17·0	+26·9
236·572 G	46	164	35	126	229·8	−0·3	−16·6	+43·8
237·369 G	23	91	22	86	229·6	−0·5	−15·5	+54·1
Means ...	...	...	25	102	229·1	...	−16·0	...

Group 10710.

August 18–29. A spot, with multiple umbræ, partly breaking up on August 23 and 24 when a few small spots appear in the rear.

230·468 G	5	36	51	365	178·5	...	+ 5·7	−88·2
231·351 G	18	155	32	273	181·0	0·0	+ 5·3	−74·0
232·340 G	36	292	36	295	181·1	−0·1	+ 5·2	−60·8
233·358 C	54	312	39	228	181·8	+0·5	+ 5·3	−46·7
234·348 G	59	374	35	221	182·5	+1·0	+ 5·6	−32·9
235·360 C	58	294	31	156	182·8	+1·1	+ 5·6	−19·2
236·572 G	64	239	32	119	182·6	+0·7	+ 5·6	− 3·4
237·369 G	41	182	21	92	182·9	+0·9	+ 5·7	+ 7·4
238·389 G	41	155	22	83	183·4	+1·2	+ 5·3	+21·4
239·379 G	25	84	15	51	183·5	+1·2	+ 5·0	+34·6
240·345 G	7	16	5	12	184·6	+2·1	+ 5·8	+48·4
241·349 G	5	9	5	9	184·6	+1·9	+ 5·8	+61·7
Means ...	...	...	25	140	182·8	...	+ 5·5	...

Group 10711.

August 20–29. A regular spot, *a*, with a follower at some distance. A bright marking invades the former on August 24, after which its dissolution is rapid.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d							
232·340 G	14	64	(29	134	167°·2	...	− 9°·1)	−74°·7
233·358 C	31	201	38	234	165·9	0·0	− 8·9	−62·6
234·348 G	50	272	40	217	166·5	+0·5	− 8·5	−48·9
235·360 C	58	284	36	181	166·5	+0·3	− 8·5	−35·5
236·572 G	43	242	24	133	167·2	+0·9	− 8·9	−18·8
237·369 G	55	258	29	137	166·7	+0·3	− 8·9	− 8·8
238·389 G	25	141	13	73	166·3	−0·2	− 9·2	+ 4·3
239·379 G	27	96	15	52	165·4	−1·3	− 9·1	+16·5
240·345 G	9	25	5	15	167·4	+0·6	− 9·1	+31·2
241·349 G	5	9	4	7	167·5	+0·6	− 8·9	+44·6
Means ...	...	...	23	117	166·6	...	− 8·9	...

Spot *a*.

232·340 G	14	64	29	134	167·2	0·0	− 9·1	−74·7
233·358 C	22	174	25	195	166·9	−0·4	− 9·0	−61·6
234·348 G	41	242	32	189	167·3	−0·2	− 8·5	−48·1
235·360 C	56	259	35	163	167·2	−0·4	− 8·6	−34·8
236·572 G	43	242	24	133	167·2	−0·5	− 8·9	−18·8
237·369 G	50	228	26	121	167·2	−0·6	− 8·9	− 8·3
238·389 G	25	123	13	64	167·3	−0·7	− 9·1	+ 5·3
239·379 G	18	64	10	35	167·4	−0·7	− 9·1	+18·5
240·345 G	9	25	5	15	167·4	−0·8	− 9·1	+31·2
241·349 G	5	9	4	7	167·5	−0·9	− 8·9	+44·6

Group 10712.

August 21–September 1. A stream in which the following part has disappeared after August 27. The leader, *a*, is a regular spot.

233·358 C	4	31	(14	106	149·9	...	−19·4)	−78·6
234·348 G	24	150	39	239	148·6	0·0	−19·9	−66·8
235·360 C	40	263	40	263	148·9	+0·4	−20·2	−53·1
236·572 G	69	317	49	223	150·8	+2·5	−20·1	−35·2
237·369 G	55	319	34	198	152·2	+4·0	−20·5	−23·3
238·389 G	50	317	29	184	151·7	+3·6	−20·9	−10·3
239·379 G	52	293	29	167	151·2	+3·2	−20·9	+ 2·3
240·345 G	36	284	21	168	151·1	+3·3	−20·8	+14·9
241·349 G	34	218	22	140	150·7	+3·0	−20·5	+27·8
242·351 G	27	159	21	121	150·6	+3·0	−20·5	+40·9
243·448 G	18	91	19	96	151·2	+3·8	−20·5	+56·0
244·361 G	5	9	8	15	151·5	+4·2	−20·5	+68·4
Means ...	...	...	28	165	150·8	...	−20·5	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area Umbræ	Projected Area Whole Spots.	Corrected Area Umbræ	Corrected Area Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10712—*continued*.							
Spot *a*.							
d					°	°	°
233·358 C	4	31	14	106	149·9	0·0	−19·4	−78·6
234·348 G	14	100	20	140	150·6	+0·8	−19·9	−64·8
235·360 C	31	192	29	177	151·0	+1·4	−20·1	−51·0
236·572 G	46	249	32	172	152·0	+2·5	−20·1	−34·0
237·369 G	55	319	34	198	152·2	+2·8	−20·5	−23·3
238·389 G	50	317	29	184	151·7	+2·4	−20·9	−10·3
239·379 G	50	284	28	162	151·3	+2·2	−21·0	+ 2·4
240·345 G	36	284	21	168	151·1	+2·1	−20·8	+14·9
241·349 G	34	218	22	140	150·7	+1·8	−20·5	+27·8
242·351 G	27	159	21	121	150·6	+1·9	−20·5	+40·9
243·448 G	18	91	19	96	151·2	+2·6	−20·5	+56·0
244·361 G	5	9	8	15	151·5	+3·0	−20·5	+68·4
Group 10715.							

August 23–September 3. A stream, approximately of normal type when fully developed, growing rapidly from a few small spots near the east limb on August 23. On August 24 a composite spot has formed in front, and by August 25 this has become two separate spots. The preceding spot, *a*, is fairly large and regular; the other, *c*, smaller and not completely formed. *c* shows appreciable drifts in longitude and latitude, and by August 30 it has reached the cluster of spots which makes up the rear of the stream.

235·360 C	13	120	21	197	128·4	0·0	+17·8	−73·6
236·572 G	103	570	97	535	127·5	−0·8	+17·5	−58·5
237·369 G	125	785	92	586	127·9	−0·4	+17·6	−47·6
238·389 G	174	819	107	503	128·1	−0·2	+18·1	−33·9
239·379 G	216	1069	118	582	127·9	−0·3	+18·1	−21·0
240·345 G	184	1096	94	563	128·6	+0·4	+17·6	− 7·6
241·349 G	152	951	78	484	128·4	+0·3	+17·7	+ 5·5
242·351 G	141	726	75	390	128·8	+0·7	+17·2	+19·1
243·448 G	113	425	68	262	129·9	+1·8	+16·9	+34·7
244·361 G	41	232	30	171	130·4	+2·4	+16·9	+47·3
245·393 G	34	204	35	210	131·1	+3·1	+16·7	+61·6
246·387 G	14	100	24	172	130·7	+2·8	+16·4	+74·3
Means ...	...	...	70	388	129·0	...	+17·4	...
Spot *a*.								
237·369 G	71	383	50	272	130·2	0·0	+16·7	−45·3
238·389 G	80	392	47	231	130·7	+0·5	+17·1	−31·3
239·379 G	84	386	45	205	130·8	+0·7	+17·2	−18·1
240·345 G	89	599	45	305	130·6	+0·5	+16·8	− 5·6
241·349 G	104	565	53	288	130·6	+0·6	+16·7	+ 7·7
242·351 G	77	459	42	248	130·6	+0·6	+16·6	+20·9
243·448 G	86	361	53	224	131·0	+1·1	+16·5	+35·8
244·361 G	36	218	27	161	130·8	+0·9	+16·8	+47·7
245·393 G	34	204	35	210	131·1	+1·2	+16·7	+61·6
246·387 G	14	100	24	172	130·7	+0·9	+16·4	+74·3
Group 10715—*continued*.								
Spot *c*.								
d					°	°	°	°
237·369 G	18	119	13	88	128·4	0·0	+18·6	−47·1
238·389 G	30	119	18	73	128·0	−0·4	+18·6	−34·0
239·379 G	32	118	18	65	127·7	−0·6	+18·5	−21·2
240·345 G	27	118	14	61	127·3	−1·0	+18·8	− 8·9
241·349 G	25	91	13	46	126·6	−1·6	+19·1	+ 3·7
242·351 G	14	54	7	29	126·5	−1·7	+19·1	+16·8
243·448 G	9	23	5	14	126·5	−1·6	+19·3	+31·3
244·361 G	2	7	1	5	125·9	−2·2	+19·7	+42·8
Group 10716.								

August 24–September 4. A regular spot dividing into two parts just before extinction. A small spot follows it at some distance on September 3.

236·572 G	9	27	34	103	103·0	...	+ 4·9	−83·0
237·369 G	14	80	22	126	103·8	0·0	+ 4·8	−71·7
238·389 G	23	157	21	146	104·1	+0·1	+ 5·0	−57·9
239·379 G	36	216	25	151	104·6	+0·5	+ 5·2	−44·3
240·345 G	32	209	19	123	104·7	+0·4	+ 5·3	−31·5
241·349 G	43	191	23	101	105·1	+0·7	+ 5·6	−17·8
242·351 G	39	179	19	89	105·4	+0·8	+ 6·0	− 4·3
243·448 G	30	150	15	77	105·9	+1·1	+ 6·4	+10·7
244·361 G	25	118	14	64	105·9	+1·0	+ 6·8	+22·8
245·393 G	23	104	14	64	105·9	+0·8	+ 6·8	+36·4
246·387 G	14	46	11	34	104·7	−0·6	+ 7·1	+48·3
247·349 G	0	9	0	10	105·9	+0·5	+ 7·1	+62·3
Means ...	...	...	17	90	105·1	...	+ 6·0	...
Group 10717.								

August 25–September 2. An ill-formed spot, in a bright patch of faculæ, breaking up after August 28.

237·369 G	2	9	5	23	99·2	0·0	−14·2	−76·3
238·389 G	11	87	13	99	101·1	+1·9	−14·1	−60·9
239·379 G	14	104	12	86	100·3	+1·0	−14·4	−48·6
240·345 G	27	136	18	90	101·3	+2·0	−14·0	−34·9
241·349 G	11	30	6	17	100·3	+1·0	−14·4	−22·6
242·351 G	7	36	4	20	98·5	−0·8	−14·2	−11·2
243·448 G	5	32	3	17	95·4	−4·0	−15·1	+ 0·2
244·361 G	0	0	0	0	...	...	...	...
245·393 G	5	18	3	11	98·2	−1·2	−15·8	+28·7
Means ...	...	...	7	40	99·3	...	−14·5	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Group 10730.

September 3–9. A feeble stream.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
246·387 G	12	23	30	57	340·4	0·0	−15·6	−76·0
247·349 G	16	56	19	66	342·5	+2·1	−15·8	−61·1
248·355 G	16	55	14	46	342·5	+2·1	−15·5	−47·9
249·351 G	27	68	18	45	342·9	+2·5	−15·8	−34·3
250·358 G	23	63	13	38	343·0	+2·6	−15·8	−20·9
251·364 G	5	31	3	17	343·7	+3·3	−16·0	− 6·9
252·552 C	4	13	2	7	344·2	+3·8	−16·0	+ 9·3
Means ...	...	...	14	39	342·7	...	−15·8	...

Group 10736.

September 8–16. A stream of normal type with marked separation between leader, *a*, and follower, *b*.

251·364 G	71	244	44	152	314·1	0·0	+ 8·5	−36·5
252·552 C	116	681	63	368	312·4	−1·9	+ 8·7	−22·5
253·346 G	158	726	80	370	312·5	−1·9	+ 8·7	−12·0
254·351 G	153	723	76	361	313·0	−1·5	+ 8·7	+ 1·8
255·361 G	118	597	62	308	312·6	−2·0	+ 8·5	+14·8
256·370 G	82	499	46	286	312·8	−2·0	+ 8·5	+28·3
257·374 G	50	228	34	154	313·6	−1·3	+ 8·2	+42·3
258·443 G	32	192	32	182	314·4	−0·6	+ 7·9	+57·2
259·459 G	19	48	35	88	317·5	+2·3	+ 7·6	+73·8
Means ...	...	...	52	252	313·7	...	+ 8·4	...

Spot *a*.

251·364 G	43	149	26	91	315·3	0·0	+ 8·6	−35·3
252·552 C	40	261	21	138	316·6	+1·1	+ 7·9	−18·3
253·346 G	54	235	27	117	317·3	+1·7	+ 7·6	− 7·2
254·351 G	54	276	27	138	317·8	+2·1	+ 7·1	+ 6·6
255·361 G	41	189	22	100	318·7	+2·9	+ 6·9	+20·9
256·370 G	22	197	13	120	319·7	+3·7	+ 7·4	+35·2
257·374 G	18	86	14	65	319·9	+3·8	+ 7·4	+48·6
258·443 G	23	104	25	111	320·0	+3·8	+ 7·4	+62·8
259·459 G	14	34	29	71	320·5	+4·1	+ 7·1	+76·8

Spot *b*.

251·364 G	14	32	9	21	310·7	0·0	+ 9·2	−39·9
252·552 C	49	285	27	157	309·9	−1·0	+ 9·1	−25·0
253·346 G	52	298	27	155	309·4	−1·6	+ 9·0	−15·1
254·351 G	72	298	36	149	308·7	−2·4	+ 8·9	− 2·5
255·361 G	54	284	28	145	308·5	−2·7	+ 8·9	+10·7
256·370 G	58	291	32	160	308·7	−2·7	+ 8·9	+24·2
257·374 G	32	142	20	89	309·0	−2·5	+ 8·8	+37·7
258·443 G	9	88	7	71	309·5	−2·1	+ 8·8	+52·3
259·459 G	5	14	6	17	309·5	−2·3	+ 9·2	+65·8

Group 10741.

September 17–29. A spot, crossed by a bright marking, appreciably elongated in a direction E–W on September 21, but becoming circular after a small part has broken away on the *f* side. At the east limb the spot is followed by a sinuous line of faculæ.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
260·368 G	14	92	41	269	154·2	0·0	−16·2	−77·5
261·418 G	34	185	44	240	153·9	−0·3	−16·1	−64·0
262·433 G	50	268	44	236	153·9	−0·3	−16·1	−50·6
263·368 G	63	365	44	256	154·0	−0·2	−16·2	−38·1
264·358 G	65	390	39	234	154·2	0·0	−15·8	−24·9
265·362 G	60	354	33	195	154·2	0·0	−16·0	−11·6
266·418 G	72	421	39	227	154·3	+0·2	−16·0	+ 2·4
267·387 G	40	288	22	161	154·6	+0·5	−16·1	+15·5
268·620 G	49	213	31	136	154·6	+0·5	−16·1	+31·8
269·361 G	31	177	23	129	154·4	+0·3	−16·3	+41·4
270·350 G	22	130	21	125	154·5	+0·4	−16·3	+54·5
271·367 C	15	79	23	119	154·2	+0·1	−16·1	+67·6
272·409 C	4	13	18	57	154·0	...	−16·1	+81·2
Means ...	...	...	34	194	154·2	...	−16·1	...

Group 10744.

September 18–30. An irregular stream of considerable extent, with the largest spot, *b*, at the rear. The cluster of spots eccentrically situated north of the main stream is perhaps a separate but intermingling group.

261·418 G	30	135	102	447	139·5	0·0	−17·7	−78·4
262·433 G	98	586	155	882	138·0	−1·4	−18·2	−66·5
263·368 G	144	889	143	869	138·0	−1·3	−18·3	−53·9
264·358 G	171	973	129	731	137·2	−2·1	−19·1	−41·9
265·362 G	169	1232	108	781	138·1	−1·1	−17·3	−27·7
266·418 G	203	1333	116	763	137·8	−1·3	−18·4	−14·1
267·387 G	156	1183	87	658	137·0	−2·0	−19·1	− 2·1
268·620 G	161	712	93	409	137·3	−1·6	−18·6	+14·5
269·361 G	120	505	73	310	136·9	−2·0	−19·1	+23·9
270·350 G	75	333	54	238	137·4	−1·4	−19·4	+37·4
271·367 C	44	240	40	198	136·6	−2·1	−20·0	+50·0
272·409 C	17	88	22	112	134·9	−3·7	−20·3	+62·1
273·374 G	9	29	(18	59	132·1	...	−21·2)	+72·0
Means ...	...	...	94	533	137·4	...	−18·8	...

Spot *a*.

261·418 G	9	29	22	70	142·9	0·0	−17·7	−75·0
262·433 G	18	86	22	104	142·9	+0·1	−17·7	−61·6
263·368 G	23	128	20	110	143·0	+0·3	−17·4	−49·1
264·358 G	27	157	18	107	143·3	+0·6	−17·3	−35·8
265·362 G	31	166	18	98	143·4	+0·8	−17·0	−22·4
266·418 G	31	170	17	94	143·4	+0·9	−17·2	− 8·5
267·387 G	27	138	15	76	143·6	+1·2	−17·4	+ 4·5
268·620 G	29	148	17	87	143·2	+0·9	−17·6	+20·4
269·361 G	22	101	14	65	143·1	+0·8	−17·6	+30·1
270·350 G	22	85	17	65	142·8	+0·6	−17·8	+42·8
271·367 C	13	70	13	71	142·3	+0·2	−17·8	+55·7
272·409 C	4	18	7	31	142·6	+0·6	−18·1	+69·8

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10744—*continued.*							
Spot *b*.							
d					°	°	°
261·418 G	9	36	43	172	137·1	...	−20·6	−80·8
262·433 G	59	236	104	418	134·9	0·0	−20·5	−69·6
263·368 G	74	378	80	408	135·0	+0·2	−20·1	−57·1
264·358 G	94	515	75	412	134·6	−0·1	−20·2	−44·5
265·362 G	85	578	57	387	134·1	−0·6	−20·4	−31·7
266·418 G	110	699	65	412	134·0	−0·6	−20·4	−17·9
267·387 G	38	517	22	295	133·4	−1·1	−20·7	− 5·7
268·620 G	60	349	34	199	133·1	−1·3	−20·8	+10·3
269·361 G	49	249	29	149	133·0	−1·3	−20·7	+20·0
270·350 G	27	170	18	116	132·9	−1·4	−21·1	+32·9
271·367 C	20	128	17	106	132·2	−2·0	−21·1	+45·6
272·409 C	13	70	15	81	131·9	−2·2	−21·2	+59·1
273·374 G	9	29	18	59	132·1	−1·9	−21·2	+72·0
Group 10745.							
September 19–29. Revival of Group 10715. A fairly large spot, with double umbra, separating into two parts on September 27. Small spots in front form an appreciable cluster on September 25–26.							
262·433 G	14	189	39	533	123·2	...	+15·4	−81·3
263·368 G	45	306	60	407	123·2	0·0	+15·6	−68·9
264·358 G	47	376	42	335	122·8	−0·4	+15·7	−56·3
265·362 G	60	455	41	314	122·6	−0·6	+15·9	−43·2
266·418 G	106	549	61	318	122·7	−0·5	+15·7	−29·2
267·387 G	103	522	54	276	123·0	−0·2	+15·9	−16·1
268·620 G	106	526	54	268	123·6	+0·5	+15·8	+ 0·8
269·361 G	94	439	49	225	123·6	+0·5	+15·9	+10·4
270·350 G	47	210	26	116	123·4	+0·3	+16·1	+23·4
271·367 C	13	57	8	35	121·8	−1·3	+16·6	+35·2
272·409 C	4	18	3	14	122·8	−0·3	+17·5	+50·0
Means ...	...	...	40	231	123·0	...	+16·1	...
Group 10746.							
September 21–October 3. An unusually large and complicated group of stream type. The group appears to be developing in the normal manner when it comes round the east limb, but a remarkable change, which completely alters the group, takes place between September 24 and 25. The group then comprises a fairly stable regular spot, *a*, as leader, closely followed by a shapeless mass of umbral points and penumbral markings, somewhat arbitrarily separated from the leader on some days for purposes of measurement. The following part of the group is made up of irregularly shaped spots (of which *c* is the most stable) arranged nearly as a square with its diagonal along the axis of the stream. The decline of the group is rapid.								
264·358 G	4	34	(12	103	100·7	...	−14·3)	−78·4
265·362 G	60	363	87	534	98·3	0·0	−14·6	−67·5
266·418 G	277	1377	260	1278	98·3	0·0	−15·2	−53·6
267·387 G	311	2205	224	1588	98·6	+0·3	−15·1	−40·5
268·620 G	690	3886	412	2321	98·6	+0·3	−15·2	−24·2
269·361 G	685	4393	383	2460	98·6	+0·3	−15·6	−14·4
270·350 G	700	4750	381	2587	99·1	+0·8	−15·7	− 0·9

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10746—*continued.*							
d					°	°	°
271·367 C	527	4033	295	2248	99·2	+0·8	−15·4	+12·6
272·409 C	380	3154	234	1933	100·0	+1·6	−15·3	+27·2
273·374 G	313	2380	247	1799	100·6	+2·2	−15·4	+40·5
274·380 G	196	1707	191	1614	100·8	+2·4	−15·4	+54·0
275·554 C	117	635	196	1110	101·9	+3·5	−15·4	+70·6
276·368 G	18	105	(42	271	96·0	...	−18·2)	+75·4
Means ...	...	...	265	1770	99·5	...	−15·3	...
Spot *a*.							
264·358 G	4	34	12	103	100·7	0·0	−14·3	−78·4
265·362 G	25	179	32	231	101·5	+0·8	−13·8	−64·3
266·418 G	134	712	114	605	101·6	+0·9	−13·9	−50·3
267·387 G	127	912	85	611	103·2	+2·5	−14·2	−35·9
268·620 G	157	780	89	445	104·1	+3·4	−14·5	−18·7
269·361 G	228	1245	123	672	103·8	+3·1	−14·5	− 9·2
270·350 G	175	809	95	437	105·1	+4·3	−14·8	+ 5·1
271·367 C	145	708	83	404	105·3	+4·5	−14·5	+18·7
272·409 C	160	968	102	620	105·0	+4·2	−14·3	+32·2
273·374 G	103	468	101	459	106·0	+5·2	−15·1	+45·9
274·380 G	62	348	68	383	106·4	+5·6	−15·4	+59·6
275·554 C	31	193	70	434	106·1	+5·3	−15·2	+74·8
Spot *c*.							
267·387 G	11	71	8	54	97·1	0·0	−19·2	−42·0
268·620 G	63	401	39	249	97·4	+0·3	−19·6	−25·4
269·361 G	56	632	32	367	97·4	+0·3	−19·8	−15·6
270·350 G	81	882	45	494	97·8	+0·7	−19·8	− 2·2
271·367 C	99	759	56	433	97·5	+0·4	−19·6	+10·9
272·409 C	70	657	43	407	97·6	+0·5	−19·3	+24·8
273·374 G	54	640	38	454	97·6	+0·4	−19·1	+37·5
274·380 G	40	558	36	497	97·3	+0·1	−19·0	+50·5
275·554 C	35	206	51	299	97·2	0·0	−19·0	+65·9
276·368 G	9	78	25	220	97·2	0·0	−20·2	+76·6
Group 10750.							
September 27–October 4. A small stream with the largest spot at the rear.							
270·350 G	11	54	12	58	37·1	0·0	+18·2	−62·9
271·367 C	26	128	20	102	35·2	−1·8	+18·9	−51·4
272·409 C	33	197	22	130	33·1	−3·8	+19·1	−39·7
273·374 G	56	196	33	113	32·3	−4·5	+19·1	−27·8
274·380 G	31	183	16	97	32·0	−4·7	+19·4	−14·8
275·554 C	26	197	13	100	30·7	−5·9	+19·9	− 0·6
276·368 G	38	165	20	86	30·6	−5·9	+19·9	+10·0
277·388 G	11	71	6	40	30·2	−6·2	+19·8	+23·1
Means ...	...	...	18	91	32·6	...	+19·3	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10753. September 30–October 5. A short stream with the largest spot in the rear. On October 5 a spot marks the preceding part of the disturbance.							
d					°	°	°
273·374 G	9	45	5	25	44·0	0·0	−15·7	−16·1
274·380 G	43	141	24	77	44·1	+0·1	−15·8	− 2·7
275·554 C	57	256	31	143	43·8	−0·2	−15·9	+12·5
276·368 G	22	94	13	56	43·9	−0·1	−16·3	+23·3
277·388 G	11	18	7	12	42·9	−1·1	−17·0	+35·8
278·500 C	4	9	4	8	46·1	+2·1	−15·2	+53·7
Means ...	...	...	14	54	44·1	...	−16·0	...
Group 10759. October 5–11. A group of stream type.							
278·500 C	7	28	(17	67	275·0	...	− 4·4)	−77·4
279·397 G	15	49	20	64	274·2	0·0	− 4·5	−66·4
280·396 G	16	42	14	36	275·3	+0·9	− 4·6	−52·1
281·498 G	22	42	14	26	276·3	+1·7	− 4·5	−36·6
282·460 G	29	76	16	42	276·1	+1·4	− 4·5	−24·1
283·418 G	15	60	8	31	275·7	+0·8	− 4·9	−11·9
284·400 G	4	9	2	5	274·0	−1·1	− 4·5	− 0·6
Means ...	...	...	12	34	275·3	...	− 4·6	...
Group 10762 October 7–19. A large stream of abnormal development. The leader, *a*—at first a single regular spot—is represented later by a cluster; the follower, *b*, grows rapidly to a composite spot possessing multiple umbræ, whilst a cluster in the middle of the group attains the dimensions of a small stream on October 12 and 13.							
280·396 G	16	66	49	193	246·2	...	+ 7·5	−81·2
281·498 G	33	240	40	298	246·0	0·0	+ 7·7	−66·9
282·460 G	95	640	83	555	245·7	−0·4	+ 7·4	−54·5
283·418 G	208	1183	140	803	245·8	−0·5	+ 7·8	−41·8
284·400 G	282	1596	162	920	245·2	−1·2	+ 7·3	−29·4
285·497 C	254	1461	131	754	245·6	−1·0	+ 7·3	−14·5
286·523 G	167	1261	84	632	244·5	−2·2	+ 7·4	− 2·1
287·439 G	197	1065	101	546	244·5	−2·4	+ 7·4	+10·0
288·496 G	145	869	81	479	244·6	−2·4	+ 7·5	+24·0
289·340 C	85	584	53	355	244·0	−3·2	+ 7·2	+34·5
290·612 G	49	252	41	203	244·2	−3·1	+ 7·5	+51·5
291·403 G	18	103	18	104	242·3	−5·2	+ 6·7	+60·1
292·340 C	9	52	14	82	241·8	−5·8	+ 7·4	+71·9
Means ...	...	...	79	478	244·5	...	+ 7·4	...
Spot *a*.							
280·396 G	9	44	21	103	248·9	0·0	+ 8·9	−78·5
281·498 G	18	120	19	130	249·9	+0·8	+ 9·3	−63·0
282·460 G	22	167	17	129	250·2	+1·0	+ 9·5	−50·0
283·418 G	62	261	39	164	249·9	+0·6	+10·1	−37·7

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10762—*continued.* Spot *a—continued.*							
d					°	°	°
284·400 G	62	393	34	216	250·1	+0·6	+10·0	−24·5
285·497 C	63	310	32	158	250·1	+0·4	+10·4	−10·0
286·523 G	22	191	11	96	250·6	+0·8	+10·4	+ 4·0
287·439 G	18	66	9	34	251·3	+1·4	+11·0	+16·8
Spot *b*.							
280·396 G	7	22	28	90	243·8	...	+ 6·1	−83·6
281·498 G	13	93	18	126	243·9	0·0	+ 6·4	−69·0
282·460 G	73	473	66	426	243·7	−0·3	+ 6·6	−56·5
283·418 G	124	785	87	550	243·3	−0·9	+ 6·7	−44·3
284·400 G	171	1048	101	618	243·1	−1·2	+ 6·5	−31·5
285·497 C	135	875	70	455	242·3	−2·2	+ 6·4	−17·8
286·523 G	109	821	55	411	242·2	−2·4	+ 6·7	− 4·4
287·439 G	128	774	65	395	242·4	−2·4	+ 6·9	+ 7·9
288·496 G	88	628	48	339	242·5	−2·4	+ 6·1	+21·9
289·340 C	61	508	37	305	243·0	−2·1	+ 6·5	+33·5
290·612 G	31	203	24	156	242·3	−2·9	+ 6·4	+49·6
291·403 G	18	99	18	98	242·1	−3·3	+ 6·6	+59·9
292·340 C	9	52	14	82	241·8	−3·7	+ 7·4	+71·9
Group 10763. October 10–16. A small stream of variable components.							
283·418 G	22	86	12	46	270·1	0·0	+10·5	−17·5
284·400 G	40	153	20	77	270·5	+0·3	+10·7	− 4·1
285·497 C	17	87	9	44	272·1	+1·8	+ 9·4	+12·0
286·523 G	36	144	20	79	272·0	+1·5	+ 9·3	+25·4
287·439 G	22	71	14	45	272·9	+2·3	+ 9·2	+38·4
288·496 G	11	24	9	20	273·7	+3·0	+ 9·0	+53·1
289·340 C	2	7	2	8	275·0	+4·2	+ 8·4	+65·5
Means ...	...	...	12	46	272·3	...	+ 9·5	...
Group 10764. October 10–18. A disturbed region, *nf* Group 10762, marked by faculæ and small ephemeral spots (none seen on October 14 and 16).							
283·418 G	2	9	2	7	235·6	0·0	+ 9·9	−52·0
284·400 G	2	4	1	3	235·4	−0·3	+10·0	−39·2
285·497 C	4	17	2	10	234·1	−1·7	+ 9·7	−26·0
286·523 G	6	54	3	28	234·5	−1·4	+ 9·4	−12·1
287·439 G	0	0	0	0	...	...	...	...
288·496 G	0	9	0	5	233·6	−2·5	+10·1	+13·0
289·340 C	0	0	0	0	...	...	...	...
290·612 G	2	4	1	3	232·8	−3·6	+11·7	+40·1
291·403 G	0	4	0	3	232·7	−3·8	+11·3	+50·5
Means ...	...	...	1	7	234·1	...	+10·3	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Group 10767.

October 13–20. A group of feeble activity.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude. and Proper Motion.	Latitude.	Long. from C.M.
d					°	°	°
286·523 G	4	9	19	43	164·9	...	−17·9	−81·7
287·439 G	9	22	14	34	166·5	0·0	−18·0	−68·0
288·496 G	18	84	18	85	164·2	−2·3	−17·8	−56·4
289·340 C	30	122	24	98	163·3	−3·1	−17·5	−46·2
290·612 G	15	40	10	25	163·9	−2·5	−17·5	−28·8
291·403 G	7	13	4	7	166·2	−0·1	−17·2	−16·0
292·340 C	6	17	3	9	166·4	+0·1	−17·1	− 3·5
293·338 C	4	11	2	6	166·8	+0·6	−17·3	+10·1
Means	...	...	11	38	165·3	...	−17·5	...

Group 10771.

October 17–24. A pair of small spots on October 17; on October 19 a small stream led by a small regular spot, *a*.

290·612 G	2	15	2	15	135·2	0·0	−11·0	−57·5
291·403 G	0	0	0	0	...	...	...	...
292·340 C	25	75	15	45	139·5	+4·1	− 9·2	−30·4
293·338 C	30	114	16	61	140·5	+5·0	− 8·5	−16·2
294·417 G	19	88	10	44	140·7	+5·0	− 8·9	− 1·8
295·423 G	13	40	7	21	142·6	+6·8	− 8·7	+13·4
296·391 G	11	26	6	15	142·7	+6·8	− 8·9	+26·2
297·395 G	8	20	6	13	139·7	+3·7	−10·1	+36·5
Means ...	...	...	8	27	140·1	...	− 9·3	...

Spot *a*.

292·340 C	17	43	10	25	140·6	0·0	− 8·8	−29·3
293·338 C	17	84	9	45	141·6	+0·9	− 8·5	−15·1
294·417 G	15	70	8	35	142·3	+1·4	− 8·6	− 0·2
295·423 G	13	40	7	21	142·6	+1·6	− 8·7	+13·4
296·391 G	11	26	6	15	142·7	+1·6	− 8·9	+26·2
297·395 G	4	9	3	6	141·9	+0·7	− 8·9	+38·7

Group 10772.

October 17–27. A stream developing *sf* Group 10769. The leader, *a*, is a small regular spot.

290·612 G	31	119	34	128	130·2	0·0	+14·8	−62·5
291·403 G	54	268	44	218	130·9	+0·7	+14·8	−51·3
292·340 C	52	393	34	255	131·2	+0·9	+14·8	−38·7
293·338 C	100	419	56	234	132·1	+1·8	+14·5	−24·6
294·417 G	48	262	25	133	136·5	+6·2	+13·5	− 6·0
295·423 G	35	214	18	110	137·4	+7·0	+13·1	+ 8·2
296·391 G	48	240	26	132	138·0	+7·6	+13·3	+21·5
297·395 G	31	187	19	116	138·4	+8·0	+13·9	+35·2
298·389 G	27	110	20	84	139·0	+8·5	+13·9	+48·9
299·417 C	13	48	14	52	139·3	+8·8	+14·3	+62·7
300·361 C	2	17	4	32	139·6	+9·0	+14·1	+75·5
Means ...	...	...	27	136	135·7	...	+14·1	...

Group 10772—*continued*.

Spot *a*.

d					°	°	°	°
290·612 G	13	73	13	74	131·8	0·0	+14·2	−60·9
291·403 G	29	146	22	111	133·2	+1·4	+14·1	−49·0
292·340 C	26	199	16	121	135·0	+3·1	+14·0	−34·9
293·338 C	35	186	19	100	136·5	+4·6	+13·8	−20·2
294·417 G	35	185	18	94	138·2	+6·3	+13·1	− 4·3
295·423 G	26	150	13	77	138·7	+6·7	+12·8	+ 9·5
296·391 G	35	189	19	104	138·9	+6·9	+13·1	+22·4
297·395 G	31	187	19	116	138·4	+6·4	+13·9	+35·2
298·389 G	20	75	15	58	139·3	+7·2	+13·9	+49·2
299·417 C	9	35	10	38	139·7	+7·6	+14·2	+63·1
300·361 C	2	17	4	32	139·6	+7·4	+14·1	+75·5

Group 10775.

October 21–28. A stream led by a composite spot, *a*. A portion of *a* breaks away as a^1 between October 23 and 24 and has an appreciable motion in latitude northwards.

294·417 G	68	305	36	162	126·0	0·0	+16·4	−16·5
295·423 G	129	783	66	401	125·8	−0·2	+16·1	− 3·4
296·391 G	151	711	78	369	125·7	−0·3	+16·4	+ 9·2
297·395 G	141	685	79	384	125·9	−0·1	+16·6	+22·7
298·389 G	79	345	48	217	126·7	+0·7	+16·1	+36·6
299·417 C	48	212	38	167	127·0	+1·0	+15·7	+50·4
300·361 C	36	129	39	142	127·2	+1·2	+15·4	+63·1
301·368 C	17	47	32	89	126·3	+0·3	+15·1	+75·5
Means ...	...	...	52	241	126·3	...	+16·0	...

Spot *a*.

294·417 G	55	246	29	130	127·0	0·0	+16·1	−15·5
295·423 G	92	660	47	337	126·4	−0·6	+15·8	− 2·7
296·391 G	114	601	59	313	126·6	−0·4	+15·8	+10·1
297·395 G	75	436	42	244	127·1	+0·1	+15·7	+23·9
298·389 G	53	282	33	178	126·9	−0·1	+15·5	+36·8
299·417 C	39	199	31	157	127·4	+0·4	+15·3	+50·8
300·361 C	34	125	37	138	127·2	+0·2	+15·4	+63·1
301·368 C	17	47	32	89	126·3	−0·7	+15·1	+75·5

Spot a^1.

297·395 G	18	97	11	58	126·7	0·0	+18·4	+23·5
298·389 G	13	35	8	22	125·7	−1·0	+18·9	+35·6
299·417 C	9	13	7	10	125·0	−1·7	+19·4	+48·4
300·361 C	2	4	2	4	124·7	−2·0	+20·2	+60·6

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued.*

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10777. October 23—November 3. A stream in which the leader, a regular spot, *a*, is the only conspicuous component.							
d					°	°	°
296·391 G	44	215	75	363	46·0	0·0	−10·4	−70·5
297·395 G	57	368	56	349	46·9	+0·8	−10·2	−56·3
298·389 G	70	466	49	318	47·3	+1·1	−10·1	−42·8
299·417 C	82	540	48	317	48·1	+1·7	−10·0	−28·5
300·361 C	82	531	44	287	48·3	+1·8	−10·0	−15·8
301·368 C	82	594	43	309	48·9	+2·3	− 9·4	− 1·9
302·440 C	62	494	33	262	49·0	+2·3	− 9·4	+12·3
303·482 G	62	343	36	199	49·5	+2·7	− 9·3	+26·6
304·397 G	44	250	29	165	49·6	+2·7	− 9·3	+38·7
305·447 C	39	211	34	181	50·0	+2·9	− 9·5	+53·0
306·343 C	17	139	21	170	49·8	+2·6	− 9·3	+64·6
307·413 G	9	61	26	178	50·4	+3·1	− 9·5	+79·3
Means ...	...	...	41	258	48·6	...	− 9·7	...
Spot *a*.							
296·391 G	22	114	33	171	47·4	0·0	−10·1	−69·1
297·395 G	33	273	30	248	48·2	+0·7	− 9·7	−55·0
298·389 G	44	341	29	222	48·8	+1·2	− 9·8	−41·3
299·417 C	67	467	39	271	49·0	+1·2	− 9·8	−27·6
300·361 C	69	482	37	260	48·8	+0·9	− 9·8	−15·3
301·368 C	82	585	43	304	48·9	+0·9	− 9·4	− 1·9
302·440 C	62	494	33	262	49·0	+0·9	− 9·4	+12·3
303·482 G	62	343	36	199	49·5	+1·3	− 9·3	+26·6
304·397 G	44	250	29	165	49·6	+1·3	− 9·3	+38·7
305·447 C	39	211	34	181	50·0	+1·5	− 9·5	+53·0
306·343 C	17	139	21	170	49·8	+1·2	− 9·3	+64·6
307·413 G	9	61	26	178	50·4	+1·7	− 9·5	+79·3
Group 10781. October 29–November 4. A small unstable group.							
302·440 C	9	41	5	24	10·1	0·0	−13·2	−26·6
303·482 G	22	55	12	30	10·9	+0·8	−14·2	−12·0
304·397 G	44	118	23	63	10·9	+0·7	−14·4	0·0
305·447 C	15	47	8	25	10·1	−0·1	−14·5	+13·1
306·343 C	21	43	12	25	9·5	−0·7	−14·7	+24·3
307·413 G	4	9	3	6	9·8	−0·5	−14·3	+38·7
308·460 G	4	9	4	9	14·7	+4·4	−13·0	+57·4
Means ...	...	...	10	26	10·9	...	−14·0	...
Group 10787. November 3–9. A disturbed area containing a few small unstable spots.							
307·413 G	9	31	7	24	281·4	0·0	+ 8·1	−49·7
308·460 G	7	24	4	15	282·4	+0·9	+ 8·0	−34·9
309·433 G	4	11	2	6	283·0	+1·3	+ 8·0	−21·5
Group 10787—*continued*.							
310·352 C	6	45	3	23	280·8	−1·0	+10·4	−11·6
311·543 G	0	0	0	0	...	...	...	...
312·432 G	9	48	5	25	278·6	−3·4	+11·7	+13·7
313·423 G	9	24	5	14	282·7	+0·5	+ 6·5	+30·8
Means ...	...	...	4	15	281·5	...	+ 8·8	...
Group 10794. November 13–21. A group of stream type, of which the following part is of slight development. *a* is the leader spot.							
317·349 C	21	62	13	39	166·5	0·0	−13·7	−33·6
318·398 G	41	124	22	69	167·6	+1·1	−14·1	−18·7
319·444 C	43	236	23	125	169·1	+2·6	−15·1	− 3·4
320·334 C	56	379	30	201	169·3	+2·8	−15·4	+ 8·5
321·441 G	70	377	41	222	171·0	+4·5	−16·5	+24·8
322·424 G	37	252	25	171	172·0	+5·5	−16·6	+38·8
323·362 C	49	196	41	165	171·7	+5·2	−16·6	+50·9
324·350 C	15	114	18	138	171·6	+5·1	−16·8	+63·8
325·317 C	9	43	20	97	171·1	+4·6	−16·6	+76·0
Means ...	...	...	26	136	170·0	...	−15·7	...
Spot *a*.							
318·398 G	28	83	15	46	169·0	0·0	−14·3	−17·3
319·444 C	34	181	18	96	170·1	+1·1	−15·4	− 2·4
320·334 C	43	277	23	147	170·3	+1·3	−16·0	+ 9·5
321·441 G	61	342	36	202	171·4	+2·4	−16·7	+25·2
322·424 G	37	252	25	171	172·0	+3·0	−16·6	+38·8
323·362 C	49	196	41	165	171·7	+2·7	−16·6	+50·9
324·350 C	15	114	18	138	171·6	+2·6	−16·8	+63·8
325·317 C	9	43	20	97	171·1	+2·1	−16·6	+76·0
Group 10795. November 13–20. A small semi-regular spot dividing into two on November 15–16 and disappearing in company with two or three small companions.							
317·349 C	4	17	9	37	124·7	0·0	−13·8	−75·4
318·398 G	26	52	29	58	124·9	+0·2	−13·2	−61·4
319·444 C	21	102	16	80	125·0	+0·2	−13·8	−47·5
320·334 C	9	32	6	21	124·5	−0·3	−13·6	−36·3
321·441 G	31	57	17	32	126·1	+1·2	−15·0	−20·1
322·424 G	15	59	8	31	125·9	+1·0	−13·8	− 7·3
323·362 C	2	9	1	5	125·7	+0·8	−14·0	+ 4·9
324·350 C	2	8	1	4	126·1	+1·1	−14·1	+18·3
Means ...	...	...	11	34	125·4	...	−13·9	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*continued*.

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10796. November 16–21. A fair-sized stream of rapid rise and decline.							
d							
320·334 C	81	286	43	150	174·2°	0·0°	+12·1°	+13·4°
321·441 G	111	527	65	307	175·0	+0·7	+11·9	+28·8
322·424 G	101	560	69	383	175·2	+0·8	+11·9	+42·0
323·362 C	28	196	24	168	173·5	−0·9	+12·0	+52·7
324·350 C	21	131	29	182	175·2	+0·7	+11·8	+67·4
325·317 C	4	13	8	28	172·2	−2·4	+12·4	+77·1
Means ...	...	...	40	203	174·2	...	+12·0	...
Group 10810. December 6–18. A regular spot, *a*, followed by bright faculæ in which a cluster and a few other spots develop as a train to *a*.							
340·306 C	4	13	13	41	176·9	...	−11·1	−80·6
341·454 G	17	86	23	114	175·0	0·0	−11·2	−67·4
342·504 G	26	143	24	128	173·2	−1·9	−11·4	−55·4
343·479 G	46	210	32	146	173·1	−2·1	−11·3	−42·6
344·408 G	70	307	42	184	172·3	−3·0	−11·1	−31·2
345·336 C	60	276	32	150	172·7	−2·7	−11·2	−18·6
346·446 C	64	361	33	184	173·0	−2·5	−10·8	− 3·6
347·358 C	62	303	33	157	174·4	−1·2	−10·2	+ 9·8
348·362 C	40	224	22	122	175·1	−0·6	− 9·9	+23·7
349·333 C	25	123	15	78	175·2	−0·6	−10·1	+36·6
350·123 K	20	121	15	91	176·2	+0·3	− 9·9	+48·0
351·470 G	13	56	16	69	176·5	+0·5	− 9·8	+66·0
352·384 C	4	21	12	64	179·0	...	− 9·6	+80·6
Means ...	...	...	26	129	174·2	...	−10·6	...
Spot *a*.							
340·306 C	4	13	13	41	176·9	...	−11·1	−80·6
341·454 G	17	86	23	114	175·0	−0·0	−11·2	−67·4
342·504 G	17	117	15	102	174·6	−0·5	−11·2	−54·0
343·479 G	26	156	18	106	174·6	−0·6	−11·2	−41·1
344·408 G	41	165	24	96	174·5	−0·8	−10·8	−29·0
345·336 C	32	156	17	83	174·9	−0·5	−10·2	−16·4
346·446 C	30	198	15	101	175·3	−0·2	− 9·8	− 1·3
347·358 C	32	198	17	103	175·5	−0·1	− 9·7	+10·9
348·362 C	32	186	18	102	175·5	−0·2	− 9·6	+24·1
349·333 C	21	110	13	70	176·0	+0·2	− 9·8	+37·4
350·123 K	20	121	15	91	176·2	+0·3	− 9·9	+48·0
351·470 G	13	56	16	69	176·5	+0·5	− 9·8	+66·0
352·384 C	4	21	12	64	179·0	...	− 9·6	+80·6
Group 10812. December 7–17. A stream of indefinite spots.							
341·454 G	4	9	5	11	177·6	0·0	+17·9	−64·8
342·504 G	4	11	3	9	176·2	−1·3	+18·2	−52·4
343·479 G	4	9	3	6	174·6	−2·9	+18·8	−41·1
344·408 G	11	39	6	23	176·4	−1·0	+18·4	−27·1
345·336 C	19	110	10	59	177·0	−0·3	+18·1	−14·3
346·446 C	34	236	18	125	175·9	−1·4	+18·5	− 0·7
347·358 C	55	224	30	123	178·0	+0·8	+18·1	+13·4

Date. G.M.T. Place.	Projected Area: Umbræ	Projected Area: Whole Spots.	Corrected Area: Umbræ	Corrected Area: Whole Spots.	Longitude and Proper Motion.	Latitude.	Long. from C.M.
Group 10812—*continued*.							
d							
348·362 C	36	151	21	91	180·2°	+3·1°	+18·1°	+28·8°
349·333 C	30	103	22	74	181·0	+3·9	+18·7	+42·4
350·123 K	18	84	15	71	178·9	+1·9	+18·5	+50·7
351·470 G	2	9	3	12	176·1	−0·8	+18·8	+65·6
Means ...	...	...	12	55	177·4	...	+18·4	...
Group 10816. December 11–23. A regular spot, *a*, followed at some distance by three small spots that have disappeared by December 18.							
345·336 C	25	148	(54	321	115·3	...	+15·0)	−76·0
346·446 C	51	295	61	349	112·9	0·0	+14·9	−63·7
347·358 C	50	302	42	251	113·9	+1·0	+15·1	−50·7
348·362 C	50	321	33	210	114·4	+1·5	+15·4	−37·0
349·333 C	59	371	34	211	114·4	+1·5	+15·2	−24·2
350·123 K	64	374	35	202	114·2	+1·3	+15·4	−14·0
351·470 G	86	446	45	233	113·2	+0·2	+15·9	+ 2·7
352·384 C	53	291	29	157	113·7	+0·7	+15·2	+15·3
353·396 C	30	247	18	146	113·5	+0·5	+15·4	+28·4
354·436 C	42	143	30	102	113·6	+0·6	+15·2	+42·2
355·465 G	26	163	24	153	113·9	+0·9	+15·0	+56·1
356·314 C	21	106	28	142	113·3	+0·3	+15·1	+66·7
357·367 C	8	38	26	125	113·2	...	+15·2	+80·4
Means ...	...	...	34	196	113·7	...	+15·2	...
Spot *a*.							
345·336 C	25	148	54	321	115·3	0·0	+15·0	−76·0
346·446 C	34	226	37	249	115·0	−0·3	+14·9	−61·6
347·358 C	42	262	34	212	115·0	−0·3	+15·2	−49·6
348·362 C	44	304	29	198	114·8	−0·5	+15·4	−36·6
349·333 C	59	371	34	211	114·4	−0·9	+15·2	−24·2
350·123 K	64	374	35	202	114·2	−1·2	+15·4	−14·0
351·470 G	69	402	36	209	114·1	−1·3	+15·2	+ 3·6
352·384 C	53	291	29	157	113·7	−1·7	+15·2	+15·3
353·396 C	30	247	18	146	113·5	−1·9	+15·4	+28·4
354·436 C	42	143	30	102	113·6	−1·8	+15·2	+42·2
355·465 G	26	163	24	153	113·9	−1·5	+15·0	+56·1
356·314 C	21	106	28	142	113·3	−2·1	+15·1	+66·7
357·367 C	8	38	26	125	113·2	...	+15·2	+80·4
Group 10819. December 13–19. A small unstable stream.							
347·358 C	4	8	7	14	91·7	0·0	−20·2	−72·9
348·362 C	4	13	4	14	91·7	+0·1	−20·2	−59·7
349·333 C	23	44	18	35	90·2	−1·3	−19·9	−48·4
350·123 K	16	52	11	35	89·0	−2·4	−19·7	−39·2
351·470 G	11	41	6	23	89·7	−1·5	−19·3	−20·8
352·384 C	4	27	2	15	88·1	−3·0	−20·7	−10·3
353·396 C	0	8	0	4	86·8	−4·2	−19·9	+ 1·7
Means ...	...	...	7	20	89·6	...	−20·0	...

LEDGER II.—NON-RECURRENT GROUPS of SUN SPOTS for the YEAR 1928—*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 10822. December 15–23. Intermittent. A small group disappearing on December 17 but re-forming on December 21.								
d					°	°	°	°
349·333 C	11	21	6	12	110·3	0·0	−15·4	−28·3
350·123 K	8	28	4	15	110·9	+0·6	−15·8	−17·3
351·470 G	4	17	2	9	109·7	−0·6	−15·7	− 0·8
352·384 C	0	0	0	0	...	...	...	...
353·396 C	0	0	0	0	...	...	...	...
354·436 C	0	0	0	0	...	...	...	...
355·465 G	11	56	9	45	108·3	−2·0	−15·8	+50·5
356·314 C	4	13	5	15	110·6	+0·3	−15·8	+64·0
357·367 C	4	23	9	51	109·8	−0·5	−15·2	+77·0
Means ...	...	...	4	16	109·9	...	−15·6	...

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 10826. December 25–1929, January 5. A stream of spots in continual change.								
d					°	°	°	°
359·483 G	4	11	21	59	280·6	...	+ 7·7	−84·3
360·357 C	17	84	29	143	281·0	0·0	+ 7·3	−72·4
361·496 G	33	281	30	255	282·8	+ 1·6	+ 7·6	−55·6
362·309 C	62	326	43	228	285·8	+ 4·5	+ 7·8	−41·9
363·308 C	109	520	63	297	288·1	+ 6·7	+ 7·6	−26·4
364·371 C	116	627	60	326	290·1	+ 8·5	+ 7·8	−10·4
365·340 C	109	676	55	345	289·4	+ 7·7	+ 7·6	+ 1·7
366·323 C	93	741	50	390	289·6	+ 7·7	+ 7·4	+14·8
367·423 G	174	842	104	503	291·7	+ 9·7	+ 7·1	+31·4
368·301 C	112	736	79	519	292·6	+10·4	+ 7·4	+43·9
369·322 C	53	445	50	430	293·1	+10·8	+ 7·2	+57·8
370·433 C	17	67	34	135	295·7	+13·2	+ 7·4	+75·0
Means ...	...	...	54	325	289·1	...	+ 7·5	...

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

1928

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928.

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 Kodaikánal, 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.		
			Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.				Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
1928.	d								1928.	d							
January	1·464	G	391	1855	3084	275	1311	3295	February	8·316	C	40	165	897	20	84	1107
	2·117	K	380	1926	946	228	1246	1382		9·461	G	34	145	1188	18	76	1558
	3·542	C	420	2177	1987	235	1199	2287		10·354	C	32	147	1202	19	83	1422
	4·494	C	367	2212	1394	213	1318	1663		11·340	C	66	211	821	44	140	927
	5·495	G	499	2061	1054	302	1265	1203		12·428	C	126	645	1226	79	397	1744
	6·451	C	346	1809	1565	226	1182	1553		13·307	C	127	762	1506	98	568	1787
	7·315	C	280	1471	1600	196	1016	1737		14·315	C	123	748	1652	114	665	2191
	8·457	G	278	1267	1566	205	943	1875		15·433	C	189	886	1570	440	2106	2416
	9·495	G	242	1019	1995	206	955	2266		16·348	C	232	1403	1591	251	1636	1843
	10·340	C	206	948	1412	128	567	1943		17·331	C	324	2135	958	259	1716	992
	11·469	G	291	1749	1384	166	983	1829		18·472	G	400	2547	962	266	1690	1303
	12·329	C	290	1698	1562	166	946	1722		19·431	G	511	2935	1792	328	1893	2591
	13·434	G	261	1472	1448	151	874	1873		20·396	G	552	3011	1026	350	1933	1582
	14·469	G	282	1345	1252	181	882	1654		21·407	G	543	2824	1496	361	1868	1757
	15·458	G	248	1197	1226	178	857	1235		22·533	G	487	2698	2617	330	1799	2912
	16·356	C	235	1190	850	238	1305	1456		23·561	C	337	1971	3230	247	1434	3214
	17·324	C	180	1402	1613	226	2015	2218		24·534	G	318	1769	2236	235	1296	2782
	18·338	C	300	1747	1854	295	1772	2300		25·439	G	425	1980	3248	302	1408	3898
	19·338	C	265	2034	1769	236	1756	2718		26·437	G	399	2142	1294	288	1666	1807
	20·340	C	326	2418	1345	216	1615	1632		27·396	G	522	2791	1389	380	2039	2105
	21·318	C	295	2679	1195	178	1584	1200		28·433	G	510	3042	2055	337	2033	2223
	22·415	C	334	2753	1254	186	1544	1463		29·519	G	431	2586	1195	320	1922	1396
	23·309	C	372	2506	1229	207	1401	1622									
	24·314	C	466	2887	1744	362	2498	2319									
	25·460	G	586	3558	1885	476	2751	2089	March	1·327	C	331	2235	1602	277	1941	1984
	26·420	C	625	3603	2167	470	2750	2456		2·331	C	224	1447	2536	244	1632	3281
	27·327	C	631	3509	1607	451	2703	1815		3·444	G	169	869	2265	132	653	2846
	28·335	C	568	2730	1946	395	1979	2229		4·469	G	200	922	1209	170	751	1854
	29·411	C	472	2627	1444	290	1640	1702		5·402	G	288	1280	780	186	852	1158
	30·324	C	382	2665	1888	257	1838	2436		6·319	C	279	1533	1544	175	956	1960
	31·425	G	462	2297	1303	362	2089	1805		7·343	C	316	2008	1738	204	1234	1983
										8·347	C	315	1787	1840	205	1147	2283
										9·423	G	397	1980	1354	355	1680	1825
February	1·322	C	278	1617	1494	174	982	2035		10·391	G	439	2366	956	319	1829	1470
	2·470	G	225	1301	1523	176	1067	1746		11·370	C	401	2751	1269	324	2213	1586
	3·426	G	211	1006	1764	175	834	1951		12·421	G	444	2928	2387	416	2961	2897
	4·338	C	154	841	1716	154	842	2079		13·328	C	368	2534	2734	395	2746	3696
	5·424	C	101	556	1159	120	755	1446		14·402	C	413	2679	2384	434	2681	3400
	6·490	G	54	246	620	31	137	852		15·637	G	553	3220	2596	415	2476	2760
	7·308	C	72	284	908	44	171	1131		16·397	G	650	3682	1870	434	2461	2087

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928—*continued*.

Greenwich Mean Time.		Place.	Projected Area.			Area Corrected for Foreshortening.		
			Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
1928.	d							
March	17·430	G	678	3956	1349	423	2441	1975
	18·470	G	727	4222	1430	396	2288	1578
	19·369	C	745	4107	1688	408	2261	1698
	20·444	G	643	3968	1422	382	2355	1568
	21·333	C	465	3292	2095	316	2214	2258
	22·657	G	344	2341	2834	334	2276	3214
	23·497	G	276	1804	2363	335	2109	2999
	24·369	C	218	1452	3706	338	2194	4887
	25·456	C	177	994	3111	196	1039	4443
	26·419	G	146	892	2256	104	634	2415
	27·454	C	143	1075	1493	199	1119	1594
	28·446	G	200	968	1161	168	809	1673
	29·347	C	198	1220	1589	159	994	2034
	30·396	G	239	1202	2227	156	807	2483
	31·400	G	208	1191	1588	136	770	1905
April	1·456	C	221	1272	1766	155	843	2149
	2·394	G	276	1312	1377	257	1355	1837
	3·399	C	362	1893	2253	302	1774	2456
	4·667	G	428	2342	1814	359	1833	2147
	5·486	G	434	2768	1854	297	1883	2149
	6·414	G	575	3038	1635	414	2078	2051
	7·425	G	592	3341	1477	375	2137	1796
	8·422	G	612	3530	2219	410	2315	2770
	9·547	G	529	3220	2343	348	2113	2818
	10·431	G	538	3195	3346	430	2529	4202
	11·408	G	593	3548	2815	430	2618	3080
	12·353	C	500	2966	2416	350	2073	2626
	13·504	G	517	2616	3196	342	1757	3505
	14·416	C	435	2337	2035	301	1657	2426
	15·110	K	405	1897	1967	314	1448	2282
	16·368	C	287	1435	1633	177	884	1958
	17·404	G	213	1021	1529	121	573	1662
	18·391	G	148	725	2834	90	445	2909
	19·404	G	144	685	3104	164	836	3508
	20·403	G	139	635	2584	151	702	2890
	21·412	G	116	571	3076	131	678	3835
	22·407	G	121	595	2256	141	630	3157
	23·348	G	98	585	1522	59	348	1617
	24·361	G	147	793	2735	129	645	3406
	25·347	G	182	972	1481	171	814	2002
	26·452	G	222	1239	1263	174	954	1507
	27·359	C	258	1599	2389	187	1239	2513
	28·349	G	304	1688	2737	223	1269	3195
	29·435	C	277	1683	2325	187	1169	2445
	30·410	C	332	1823	2331	239	1444	2635
May	1·101	K	347	2028	1847	253	1490	2300
	2·103	K	405	2872	2577	285	2115	2925
	3·467	G	705	4118	2871	494	2855	2880
	4·346	G	695	4029	2449	452	2580	2492
	5·347	G	639	4313	2031	399	2630	2480
	6·425	C	544	4189	2891	344	2571	3473
	7·345	G	683	4016	4269	425	2442	4847
May	8·363	C	602	3842	3039	374	2313	3525
	9·346	G	625	3671	3418	420	2276	4005
	10·368	G	537	3207	2166	346	2011	2440
	11·353	G	276	1701	2243	206	1300	2727
	12·344	G	237	1309	2535	278	1537	2921
	13·578	C	99	533	1688	137	979	2031
	14·438	G	41	232	2632	52	308	3046
	15·352	G	26	195	1513	24	177	1582
	16·614	G	21	77	2031	18	57	2478
	17·605	G	12	45	1402	8	29	1566
	18·355	C	13	31	2983	8	19	3297
	19·353	G	9	32	1401	7	24	1887
	20·383	G	2	9	1456	1	5	1702
	21·437	G	14	53	1124	29	114	1414
	22·387	C	35	123	1573	46	180	2002
	23·361	C	43	255	1479	38	227	1924
	24·628	G	99	388	2251	77	318	2655
	25·358	G	92	435	2002	64	303	2408
	26·335	C	91	465	2297	74	378	2874
	27·386	G	173	740	1613	167	777	2242
	28·361	G	392	1868	2741	412	2152	3417
	29·408	G	543	2922	2381	444	2477	2718
	30·564	G	550	3140	2330	380	2193	2861
	31·635	G	513	2659	3172	336	1700	3357
June	1·397	G	483	2542	2831	302	1579	3347
	2·349	G	441	2165	2264	253	1257	3064
	3·391	G	389	1877	2119	215	999	2487
	4·371	C	305	1432	1669	168	779	2184
	5·360	C	316	1873	1930	187	1097	2294
	6·429	G	391	1567	3483	242	1197	3917
	7·563	G	293	1867	2719	217	1395	3657
	8·580	G	244	1225	2164	199	1004	2687
	9·403	G	165	907	2386	154	839	2713
	10·359	G	102	601	1963	116	715	2438
	11·349	G	32	202	1240	63	448	1782
	12·361	G	5	39	728	3	48	1017
	13·348	G	32	164	1093	21	110	1342
	14·437	G	131	451	1545	85	289	1956
	15·356	G	185	795	1504	105	449	1895
	16·349	G	273	1275	1675	144	671	2265
	17·324	G	307	1661	1751	203	1088	2229
	18·610	G	280	1578	2478	177	1013	3090
	19·490	G	415	2216	2116	257	1377	2519
	20·342	G	364	1951	1906	242	1301	2171
	21·334	C	261	1719	2244	224	1519	2423
	22·458	C	237	1450	2410	280	1744	3697
	23·363	G	266	1770	2250	318	2270	3775
	24·397	G	535	2791	3382	483	2692	3959
	25·360	G	714	3746	2974	516	2896	3242
	26·387	G	604	3805	2785	419	2598	3257
	27·422	G	795	4226	4244	526	2700	4939
	28·351	G	731	4397	3207	453	2754	4283
	29·402	G	598	3516	2531	386	2201	3000
	30·384	G	587	3015	2170	340	1738	2265

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928 —*continued.*

Greenwich Mean Time.		Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.		Place.	Projected Area.			Area Corrected for Foreshortening.		
			Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.				Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
1928.	d								1928.	d							
July	1·365	G	472	2408	1989	427	2102	2560	August	24·572	G	584	3176	2379	447	2381	2733
	2·376	G	410	2393	3390	355	2239	3773		25·369	G	573	3315	1942	427	2507	2644
	3·357	G	363	2130	3126	367	2172	3551		26·389	G	531	2946	2800	408	2383	3393
	4·351	G	267	1612	4105	272	1645	5128		27·379	G	551	2706	3303	469	2266	4124
	5·382	G	181	1000	2662	173	959	3377		28·345	G	378	2324	2421	210	1269	2760
	6·371	G	235	1344	2402	263	1197	3526		29·349	G	357	1933	2901	224	1183	3501
	7·366	G	314	1944	2475	285	1686	3292		30·351	G	324	1633	2685	204	1014	3550
	8·399	G	509	2552	3218	409	2029	3712		31·448	G	273	1153	2107	188	801	2564
	9·355	G	437	2766	1904	296	1890	2380									
	10·362	G	552	2965	1282	340	1809	1539									
	11·379	G	508	3075	1084	290	1769	1255	September	1·361	G	163	767	3094	136	626	3668
	12·373	G	564	3115	1683	347	1841	2122		2·393	G	144	698	2816	130	634	3288
	13·352	G	685	3389	2798	488	2553	3896		3·387	G	148	715	2440	162	829	3197
	14·363	G	728	3937	2842	537	2991	3414		4·349	G	155	707	2268	120	528	2597
	15·402	G	834	4562	3433	584	3144	4055		5·355	G	134	584	2017	100	460	2740
	16·346	G	852	4833	4545	571	3246	4681		6·351	G	111	523	2195	120	718	2934
	17·358	G	972	5036	3076	669	3374	3493		7·358	G	155	786	3288	167	873	3716
	18·354	G	763	4613	2316	528	3341	3056		8·364	G	259	1195	4132	212	982	4968
	19·458	G	738	4080	1477	446	2439	1891		9·552	C	340	2159	2490	219	1401	2750
	20·447	G	707	3364	2612	481	2429	3289		10·346	G	453	2644	1968	257	1518	2257
	21·355	G	512	2689	2409	390	2035	2919		11·351	G	533	3169	1462	337	1904	2241
	22·386	G	307	1728	3433	273	1624	3988		12·361	G	523	2972	2914	312	1730	3714
	23·357	G	238	1178	3537	201	1040	3988		13·370	G	442	2807	2424	256	1612	2730
	24·394	G	178	998	3374	162	861	3914		14·374	G	438	2458	2033	259	1431	2265
	25·582	G	184	965	2699	253	1410	3653		15·443	G	389	2288	2309	255	1502	2461
	26·368	G	209	948	2406	254	1152	3325		16·459	G	384	2097	3350	310	1621	3888
	27·391	G	200	1105	1376	172	984	1483		17·368	G	303	1792	2594	387	2045	3562
	28·347	G	224	1339	946	183	1133	1423		18·418	G	311	2066	2958	577	3911	4640
	29·402	G	347	2197	2192	247	1485	2950		19·433	G	414	2700	3266	545	3678	4186
	30·345	G	525	2799	2654	329	1700	2972		20·368	G	583	3474	2540	524	3110	3091
	31·420	G	563	3084	3232	324	1750	3196		21·358	G	638	3982	2311	467	2943	2971
										22·362	G	759	4476	1813	526	3108	2100
										23·418	G	1083	6076	2064	715	3955	2492
August	1·504	G	495	2674	2071	299	1588	2616		24·387	G	978	6290	1617	577	3699	2319
	2·583	G	458	2335	2336	316	1599	3315		25·620	G	1383	7414	2145	788	4222	2596
	3·267	K	536	2508	976	362	1694	1228		26·361	G	1264	7559	2020	716	4266	2541
	4·353	C	411	1990	2613	326	1528	3449		27·350	G	1121	6989	1939	665	4092	2162
	5·376	G	332	1590	2472	270	1310	2757		28·367	C	822	5491	3704	544	3488	3754
	6·387	G	296	1303	2218	252	1162	2624		29·409	C	548	4072	2163	422	2944	2616
	7·586	G	286	1467	1051	178	879	1185		30·374	G	442	2920	2566	419	2574	3384
	8·474	G	397	1947	1863	231	1120	2514									
	9·370	G	340	1950	1870	196	1096	2608									
	10·345	C	339	1908	2522	215	1242	3391	October	1·380	G	281	2051	3399	237	1799	3939
	11·372	G	328	1619	3561	221	1103	3813		2·554	C	208	1114	2870	249	1384	3723
	12·581	G	318	1452	3468	238	1083	3478		3·368	G	126	529	1773	152	773	2796
	13·358	G	302	1437	3303	235	1133	3739		4·388	G	101	463	2367	92	474	2768
	14·360	G	279	1183	2383	232	950	2950		5·500	C	96	453	2835	87	409	3241
	15·357	G	167	830	2511	128	657	3335		6·397	G	108	649	3159	112	659	3463
	16·355	G	193	911	2220	184	871	3035		7·396	G	170	977	1528	159	878	2211
	17·397	G	117	659	1142	104	530	1383		8·498	G	230	1293	2021	160	933	2803
	18·468	G	142	588	1910	136	721	2228		9·460	G	285	1704	2204	187	1145	2467
	19·351	G	133	679	3137	105	606	3456		10·418	G	432	2407	2267	271	1525	2414
	20·340	G	280	1530	3924	199	1116	4544		11·400	G	539	2893	2328	322	1679	2557
	21·358	C	354	2207	3559	297	1716	4527		12·497	C	430	2470	1577	233	1335	1828
	22·348	G	445	2434	2531	331	1823	3495		13·523	G	367	2254	2203	229	1303	2829
	23·360	C	419	2762	2466	291	1957	2856		14·439	G	344	1772	1990	223	1104	2514

TOTAL AREAS of SUN SPOTS and FACULÆ for EACH DAY in the YEAR 1928—*continued*.

Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.			Greenwich Mean Time.	Place.	Projected Area.			Area Corrected for Foreshortening.		
		Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.			Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
1928. d								1928. d							
October 15·496	G	291	1541	2554	296	1419	3279	November 23·706	W*	66	201	3409	65	206	3790
16·340	C	221	1283	2278	180	1014	2970	24·505	G	19	61	1881	28	129	2234
17·612	G	353	1668	3775	268	1307	4395	25·457	C	4	8	1499	2	4	1741
18·403	G	299	1613	2871	239	1256	3554	26·527	G	13	33	1730	10	24	2026
19·340	C	257	1538	2791	187	1136	3403	27·396	C	34	129	1576	31	128	1911
20·338	C	319	1428	2513	204	965	3161	28·343	C	40	193	1508	67	330	1921
21·417	G	273	1384	1574	167	815	2185	29·348	C	8	17	1700	8	16	2139
22·423	G	315	1855	1030	162	957	1305	30·352	C	44	250	1534	72	428	1951
23·391	G	402	1945	1759	271	1300	2315								
24·395	G	369	1755	2023	247	1181	2243								
25·389	G	235	1259	3216	161	871	3166	December 1·389	C	141	1009	1699	136	981	2276
26·417	C	188	1080	2444	146	815	2928	2·356	C	297	1575	2013	212	1136	2608
27·361	C	154	862	2778	141	765	3282	3·458	C	424	2218	1553	247	1313	1524
28·368	C	103	650	3142	77	403	3531	4·379	C	376	2570	1175	205	1403	1186
29·440	C	71	535	2007	38	286	2732	5·483	C	652	3851	764	341	2017	839
30·482	G	102	475	2474	79	416	3203	6·306	C	626	3725	696	335	1967	935
31·397	G	152	591	2297	109	462	2817	7·454	G	534	3638	2365	308	2074	2979
								8·504	G	600	3558	2236	369	2169	2456
								9·479	G	527	3352	1363	369	2436	1437
November 1·447	C	124	550	2401	99	458	2626	10·408	G	460	3186	3141	404	2874	3607
2·343	C	98	478	2564	85	429	2856	11·336	C	366	2353	2178	488	3186	2921
3·413	G	134	691	2348	166	1025	3150	12·446	C	285	1694	2090	278	1604	2581
4·460	G	212	1170	3152	225	1364	3868	13·358	C	294	1402	1857	241	1219	2675
5·433	G	303	1612	3283	278	1489	3882	14·362	C	226	1208	1430	171	914	2045
6·352	C	320	2216	2687	225	1634	2770	15·333	C	278	1159	2081	184	756	2450
7·543	G	378	2597	1729	230	1588	1859	16·123	K	226	1242	1734	162	881	1671
8·432	G	386	2713	1573	222	1554	1850	17·470	G	212	1074	2806	200	1054	3222
9·423	G	422	2296	1509	231	1275	1779	18·384	C	81	459	1409	74	440	2079
10·444	G	443	2534	1816	244	1405	2397	19·396	C	34	278	1369	20	163	1367
11·590	C	296	2770	1560	196	1729	2006	20·436	C	60	193	1351	39	128	1599
12·348	C	362	2424	1575	265	1687	1911	21·465	G	41	228	1974	35	203	2347
13·349	C	319	1798	3130	264	1518	3831	22·314	C	29	131	1617	35	164	2116
14·398	G	260	1161	3291	251	1155	3850	23·367	C	20	112	1510	39	202	1907
15·444	C	137	768	2437	158	791	3318	24·372	C	19	74	1575	10	40	1888
16·334	C	201	980	1805	110	530	2584	25·483	G	8	20	3045	23	64	4065
17·441	G	249	1220	1295	142	696	1586	26·357	C	32	238	1864	71	607	2878
18·424	G	213	1140	1533	138	741	1690	27·496	G	97	787	3690	104	897	4530
19·362	C	172	749	1459	136	570	1480	28·309	C	134	849	2602	106	698	3144
20·350	C	95	578	1565	85	529	1729	29·308	C	180	894	1380	121	589	1749
21·317	C	64	282	1609	60	273	2226	30·371	C	197	1129	1565	112	644	1662
22·316	C	31	152	1451	24	127	1621	31·340	C	204	1109	1307	115	610	1274

* Washington.

MEAN AREAS of SUN SPOTS and FACULÆ for each ROTATION of the SUN, from 1928 January 6 to December 25.

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 1873–1927 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.		
				Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
994	January	6·30	28	347	2054	1540	250	1518	1890
995	February	2·64	27	271	1499	1530	208	1155	1889
996	February	29·98	27	383	2308	1956	301	1820	2433
997	March	28·29	28	331	1818	2155	245	1340	2548
998	April	24·56	27	300	1834	2262	213	1286	2604
999	May	21·79	27	245	1246	2033	175	914	2509
1000	June	17·99	27	467.	2623	2580	351	1988	3191
1001	July	15·19	28	449	2386	2474	319	1695	2992
1002	August	11·41	27	286	1505	2637	222	1172	3201
1003	September	7·65	27	560	3380	2489	408	2451	3071
1004	October	4·93	27	263	1420	2357	184	975	2844
1005	November	1·22	28	193	1125	2049	144	835	2446
1006	November	28·53	27	254	1503	1788	185	1105	2180

MEAN AREAS of SUN SPOTS and FACULÆ for the YEAR 1928.

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.		
		Umbræ.	Whole Spots.	Faculæ.	Umbræ.	Whole Spots.	Faculæ.
1928	366	333	1884	2134	244	1390	2589

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS for each ROTATION of the SUN, from 1928 January 6 to December 25.

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.		
					°		°	°	°
994	January	6·30	28	855	12·07	663	14·40	+ 0·51	13·09
995	February	2·64	27	540	7·77	615	13·69	− 3·66	10·92
996	February	29·98	27	985	11·74	835	15·60	− 8·09	13·51
997	March	28·29	28	492	12·80	848	14·06	− 4·20	13·60
998	April	24·56	27	233	9·83	1053	14·96	−10·47	14·03
999	May	21·79	27	437	10·13	477	13·70	− 2·32	11·99
1000	June	17·99	27	1145	12·10	844	19·76	− 1·42	15·35
1001	July	15·19	28	1047	11·07	649	18·16	− 0·11	13·79
1002	August	11·41	27	613	11·93	559	13·44	− 0·16	12·65
1003	September	7·65	27	1254	15·03	1196	15·60	+ 0·08	15·31
1004	October	4·93	27	837	13·19	139	10·49	+ 9·82	12·80
1005	November	1·22	28	384	13·91	451	15·21	− 1·83	14·62
1006	November	28·53	27	760	10·07	345	12·71	+ 2·95	10·90

MEAN HELIOGRAPHIC LATITUDE of SUN SPOTS for the YEAR 1928.

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.		
			°		°	°	°
1928	366	727	11·93	663	15·23	− 1·02	13·50

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GREENWICH
PHOTO-HELIOGRAPHIC RESULTS

1928