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Kodaikanal Observatory

BULLETIN No. CXXVIII

SUMMARY OF PROMINENCE OBSERVATIONS FOR THE YEAR 1947

PART I

Summary of Prominence Observations for the first half of the year 1947.

This summary is based on the data obtained from the observations made at this observatory supplemented by those from photographs obtained from the other co-operating observatories at Mt. Wilson, Meudon and Ewhurst, for those days on which no photographs could be obtained at Kodaikanal.

During this half year, 148 K-prominence photographs were taken at Kodaikanal and 38 were received from Mt. Wilson making the data available for 174 days which were counted as 157½ effective days after giving weightage to the photographs according to their quality.

The mean daily areas (in square minutes of arc) and the mean daily numbers computed from these data are given below. The means calculated from the Kodaikanal data only are also given for comparison with bulletins issued prior to 1st January 1923, before the co-operation of other observatories came into force.

	Combined data		Kodaikanal data only	
	Mean daily areas	Mean daily numbers	Mean daily areas	Mean daily numbers
North	2·35	6·33	2·29	6·27
South	2.73	6·04	2·71	5·93
Total	5·08	12·37	5·00	12·20

compared with the figures of the previous half year, the areas and numbers show an increase of about 29 per cent and 5 per cent respectively.

The latitudinal distribution of the areas and numbers is illustrated in the following diagram in which the full line represents the mean daily areas and the broken line the mean daily numbers for each zone of 5° of latitude. The ordinates represent tenths of square minutes of arc for the full line and numbers for the broken line. In the northern hemisphere, the areas show maximum activity in the zones 30° to 35° and 60° to 65°, while in the southern hemisphere the peak of activity occurs between 35° and 40°. The numbers in both the hemispheres show more or less uniform distribution up to latitude 65° beyond which they decrease rapidly.

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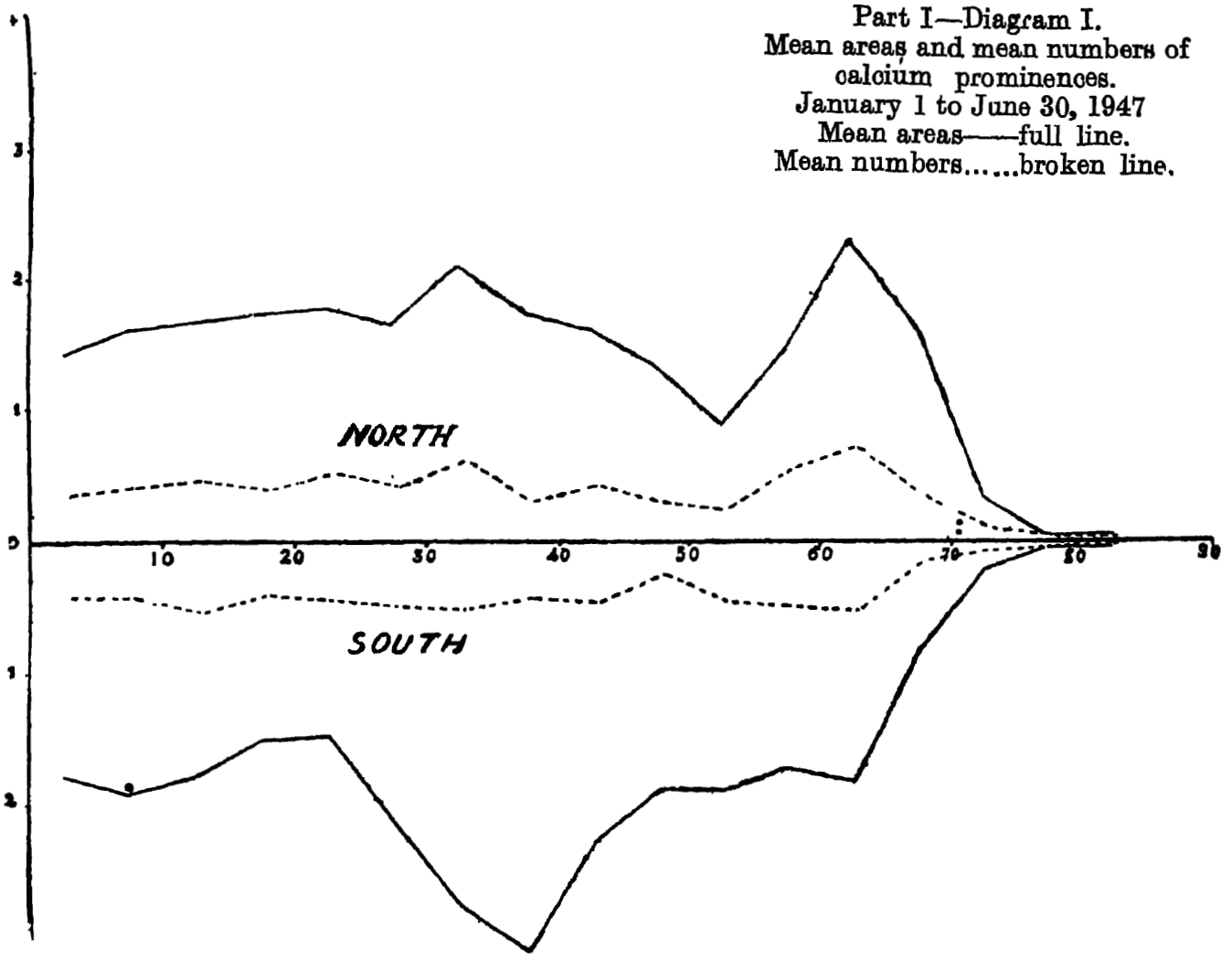


The monthly, quarterly and half yearly areas and numbers and the mean height and the extent of the prominences are given in table I.

TABLE I

Months	Number of days (effective)	Areas	Numbers	Daily means		Mean height	Mean extent
				Areas	Numbers		
						°	°
1947—							
January	25½	106·15	330	4·16	12·94	49·73	5·13
February	24	113·05	294	4·71	12·25	44·73	5·77
March	28½	147·30	352	5·17	12·35	52·42	6 86
April	26	148·90	302	5·73	11·62	55 53	7·75
May	27½	162·80	363	5·92	13·20	50·55	6 41
June	25½	120·75	305	4·69	11·84	42·92	4 70
1st quarter	78	366·50	976	4·70	12·51	49·19	5·95
2nd quarter	79½	432·45	970	5·46	12·24	49·70	6·29
1st half year	157½	798·95	1946	5·08	12·37	49·45	6·12

The distribution of the prominences about the sun's axis is shown below :—

	East	West	Percentage east
Total area (sq. min.) observed	408	390	51·10
Total number observed	966	980	49·65

The areas show a slight western defect, while the numbers show a slight eastern defect.

Observations with Prominence Spectroscope.—The details of metallic prominences observed during the half year are given in table II.

TABLE II

Date 1947	Time I. S. T.*	Base	Latitude		Limb	Height	Lines
			North	South			
January	H. M.	°	°	°		°	
20 . . .	09 00	1	..	19·5	W	20	4 and 10 only.
February							
15 . . .	09 35	2	..	48	E	15	Do.
March							
8 . . .	09 05	8	34	..	W	30	Do.
April							
5 . . .	10 15	3	47·5	..	E	..	Do.
6 . . .	08 50	2	..	25	W	..	Do.
15 . . .	09 30	2	..	32·5	W	60	1 to 12 only.
	09 30	3	..	36·5	W	60	Do.
18 . . .	09 05	3	..	22·5	W	45	4 and 10 only.
20 . . .	08 00		28	..	W	40	Do.
	08 05	2	25	..	E	..	Do.
30 . . .	09 20	4	..	27	E	..	Do.
May							
4 . . .	09 00	5	..	7·5	W	25	Do.
11 . . .	08 15	2	21	..	E	13	Do.
16 . . .	10 35	2	14	..	E	9	Do.
17 . . .	08 50	5	24·5	..	E	15	Do.
	09 15	3	12·5	..	E	10	Do.
June							
1 . . .	08 50	2	18	..	W	20	Do.
	08 50	2	13	..	W	20	Do.

*I.S.T.=G.M.T.+05h 30m.

The key to the wave lengths of the metallic lines is given below :—

No.	A°	Element	No.		Element
1	4924·1	Fe^{+}	7	5276·2	Ne^{+}
2	5016·0	He	8	5316·8	Fe^{+}
3	5018·6	Fe	9	5363·0	Fe^{+}
4	b_4, b_3, b_2, b_1	Mg Fe	10	D/, D_2	Na
5	5234·8	Fe	11	6677	He
6	5276·0	Cr	12	7065	He

The distribution of metallic prominences was as follows :—

Latitude zone	1°—10°	11°—20°	21°—30°	31°—40°	41°—50°	Mean latitude	Extreme latitudes
North	·	4	4	1	1	23°·7	12°·5 & 47°·5
South	1	1	3	2	1	27°·3	7°·5 & 48°

Particulars of displacements observed in the chromosphere and prominences with the spectroscope are given in the following table :—

TABLE III

Date	Time I.S.T.	Latitude		Limb	Displacements		Remarks
		North	South		Red	Violet	
1947	H. M.	°	°		A°	A°	
January							
14	08 30		15	E		1	At the top.
15	08 55		14	E	1	1	
18	09 15		8	E	1		At the top.
20	09 05	19·5		E		2	Middle.
February							
5	08 35		10	E	0·5	0·5	In the chromosphere
	08 20	32		W		0·5	Close to the limb.
	08 25		13	W		2	
6	09 00	9		E		2	
8	09 15		29·5	W		5·0	
	09 30		33	E	Slight	Slight	
9	09 40	33		W		5·0	
	09 40		40	W		3	At the middle & base; no displacement at the top.

TABLE III—*contd.*

Date	Time I.S.T.	Latitude		Limb	Displacements		Remarks
		North	South		Red	Violet	
February	H. M.	°	°		A°	A°	
10	11 15		25	W	4		
	11 10		10	E	Slight	Slight	
	11 11	5·5		E	2		At the top.
15	09 18		12	W		2	
	09 25		21·5	W		0·5	
16	09 35	2		E		1	
17	08 30	54		W	1		At the middle and top.
19	09 00	40		E		1	Close to limb.
21	08 50	34		W		Slight	
	08 40		22	E		0·5	
23	09 10	32		E	2		At the top.
24	08 15		22	E	1	0·5	
March							
7	09 00	68		E	Slight	Slight	
8	09 00	62·5		E		0·5	
19	09 10	9·5		W		0·5	
17	08 35	59·5		W	4		Close to limb.
	09 40	10		E	0·5		
18	09 20		5	E		0·2	At the top.
	09 32	79		E	0·5	1	To R at bottom & V at top.
19	08 50	29		E	Slight		
	08 30		66·5	W	2·5	1	
20	09 15	16		E		2	
23	08 35	26		E	0·5	0·5	
24	09 30	33·5		E	3		
25	09 10			E	Slight	Slight	
April							
6	08 50'		25	W	2		Metallic.
	08 40	50·5		E		0·7	
8	09 20	15		E	1·5		
	09 35	59		W		2·0	At the middle.
9	09 05		13	E	0·5		
	09 10		74·5	E		0·3	

TABLE III—*contd.*

Date		Time I.S.T.		Latitude		Limb	Displacements		Remarks
				North	South		Red	Violet	
April		H.	M.	°	°		A°	A°	
	10	09	30		6	E		1	
		09	35		16	W	1		
	16	09	20		50·5	W	3	1	
	18	09	05		22·5	W	1	1	Metallic.
	19	09	15	12		W		0·5	
		09	27		6	W	0·5	0·3	At the middle.
	20	08	12	9·5		W		0·3	
		08	15		6	W		0·5	
	21	09	00	29		W	Slight		
		09	20		19	E		0·5	
		09	15	37		E	Slight	Slight	
	22	09	05		27	W	1	1	At the top.
		09	05		32	W	2		At the top.
		09	33	21·5		E	1		
		09	32	16·5		E		2	At the top.
	23	08	50	32		W	0·5	0·5	
		09	05		46·5	W		Slight	At the middle.
	25	09	00		22·5	W	2·0		
	28	09	30		47·5	W		1	
	30	09	26		46	E		0·5	
May	3	10	00	13·5		W		1·5	
	4	08	20	37		W	Slight		
		08	25	21·5		W		Slight	
	13	09	25	16·5		W	6	3	Displaced to R 6 A° at the base & 3 A° to V at the top.
	15	08	12	18		W		0·5	
	16	10	35	22·5		E	6		At the top.
	17	08	50	18·5		E	1·5	0·5	
		08	26	20		E	0·5	0·5	To V at middle.
	18	09	42		11	E		1	
		09	40		17	E	1		
		09	25		18	E		1	At the base.
	21	08	40	22·5		W	0·5	0·5	
		08	45		16·5	W	0·5	0·5	

Date		Time I.S.T.	Latitude		Limb	Displacements		Remarks
			North	South		Red	Violet	
May	H.	H. M.	°	°		A°	A°	
	22	09 00	22		W	2·5	2·5	
	23	09 15		44	E		2	
		09 30		59	E	2	2	
		10 07		42	E	0·5	0·5	
	28	09 30	18·5		W	1·5		
		09 30	24·5		W		0·5	
June								
	19	09 15		36	E		1	
	20	09 00		16	E		3·5	

The number of displacements was 84 as against 43 in the previous half year and their distribution was as follows :—

Latitude	North	South	Total
0°—30°	25	29	54
31°—60°	12	11	23
61°—90°	5	2	7
Total	42	42	84
East limb			45
West limb			39

Of these 21 were towards the red, 39 towards the violet and 24 both ways simultaneously. A large displacement of 6A° to red and 3A° to violet was observed over a prominence on the NW limb on the 13th of May. Another prominence on the NE limb observed on the 16th May showed a displacement of 6A° to red.

32 bright reversals of the Hα line and 30 dark reversals of D_3 and 6 displacements of the Hα line (4 towards red and 2 both ways) were observed the sun's disc in the neighbourhood of sunspots. Their distribution was as follows :—

	North	South	East	West	Total
Bright reversals of Hα	12	20	22	10	32
Dark reversals of D_3	17	13	22	8	30
Displacements of Hα	1	5	3	3	6

Observations with Spectrohelioscope.—Observations with the Hale Spectrohelioscope in the Hα line were continued as in previous years for noting the changing phenomena and displacements on the sun's limb and disc. The displacements observed are summarised below :—

	North	South	East	West	Total
Displacements in prominences	15	30	22	23	45
Displacements in dark markings	10	13	9	14	23
Displacements in bright flocculi	6	9	6	9	15

	Displacements towards			
	Red	Violet	Both ways	Total
Prominences	13	10	22	45
Dark markings	12	5	6	23
Bright flocculi	2		13	15

A list of solar flares observed during this half year is given below in table IV :—

TABLE IV

Date	Time (I. S. T.)			Mean latitude	Mean longitude from C. M.	Intensity	Remarks
	Beginning	Maximum	End				
1947 January	H. M.	H. M.	H. M.	°	°		
15	..	09 25	..	—14	85E	1	From spectroheliosoope.
31	..	08 15	..	—12	66E	1	Do.
February							
7	08 15	08 18	08 55	—23	47E	1	Do.
13	08 24	08 33	08 42	—21	22W	1	Do.
17	Started before observation time.		08 15	—21	72W	3	From both spectroheliosoope & spectroheliogram. Eruption taken place on a large area.
March							
7	..	08 17	..	—22	42E	1	From spectroheliosoope & spectroheliogram.
8	..	09 50	..	+14	26E	3	From spectroheliogram.
12	..	08 15	..	—23	29W	1	Do.
14	..	08 40	09 12	—23	55W	2	Do.
15	..	08 10	..	—22	56W	1	Do.
29	..	10 20	..	+14	8E	1	From spectroheliogram and spectroheliosoope
April							
9	09 00	09 30	..	—21	21W	1	From spectroheliogram.
10	..	08 02	..	—21	50W	1	Do.
18	08 02	08 15	08 20	N	W	1	From spectroheliosoope.
25	..	07 52	..	+10	45W	1	Do.
	..	08 09	..	+20	15E	1	Do.
	..	08 10	..	—15	60E	1	Do.
26	..	10 15	..	+11	61W	1	Do.
28	..	08 26	..	+10	15W	1	Do.
30	..	09 35	..	+20	30E	1	Do.

TABLE IV (*contd.*)

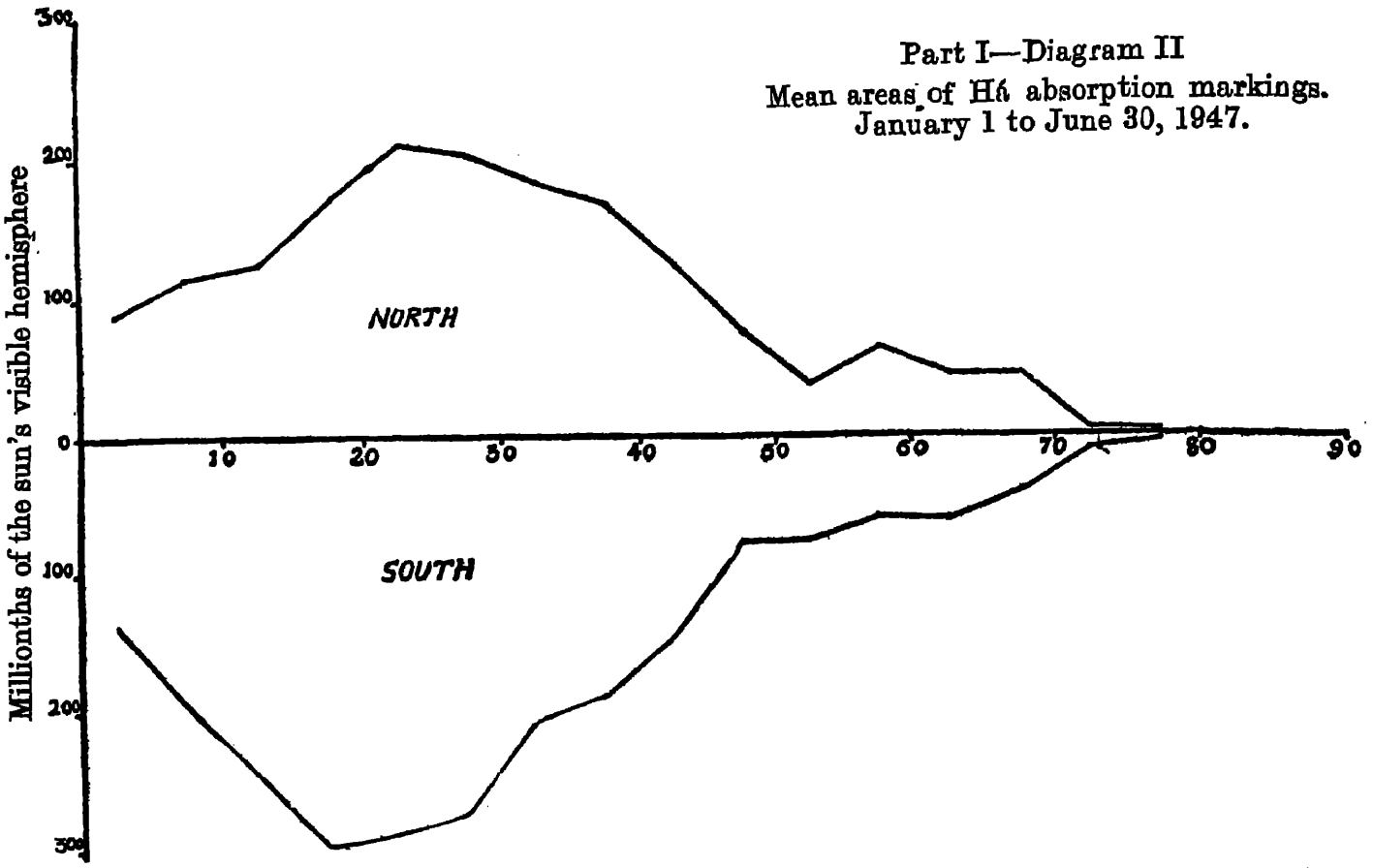
Date	Time (I. S. T.) Beginning	Maximum	End	Mean latitude	Mean longitude from C. M.	Intensity	Remarks
1947 May	H. M.	H. M.	H. M.				
6	..	09 45	..	—13	67E	1	From spectroheliosccpe.
	..	10 38	..	—16	31E	1	Do.
9	..	09 24	..	+11	30E	1	Do.
12	..	08 10	..	—11	12W	1	Do.
	..	09 35	..	—15	13W	1	Do.
13	..	07 49	..	—24	80W	1	From spectroheliogram.
16	08 59	09 07	09 18	+19	17W	3	From spectroheliogram and spectrohelioscope.
17	09 00	09 22	09 40	+17	75E	3	Do.
	09 20	09 35	09 45	+19	74E	3	Do.
19	..	07 44	..	+15	54E	2	Do.
20	..	07 52	..	+19	36E	1	From spectrohelioscope.
21	09 20	09 25	09 42	+21	30E	2	From spectrohelioscope and spectrohelliogram.
23	..	08 10	..	—8	46E	1	From spectrohelioscope.
	..	08 10	..	+21	31E	1	Do.
24	08 30	08 35	09 39	+16	29W	3	From spectrohelioscope and spectrohelliogram.
June							
20	..	08 18	..	+21	20E	1	Do.

Prominences projected on the disc as dark markings.—Hα flocculus photographs were taken at Kodaikanal on 148 days and photographs were received for 39 days from Mt. Wilson and for 17 days from Meudon. On the whole data were available for 189 days which were reckoned as 168 effective days. The mean daily areas in millionths of the sun's visible hemisphere (uncorrected for foreshortening) and mean daily numbers are given below :—

	Combined data		Kodaikanal data	
	Areas	Numbers	Areas	Numbers
North	1669	15.83	1649	15.37
South	2298	21.10	2295	20.94
Total	3967	36.93	3944	36.31

Compared with the previous half year, the areas show a decrease of about 6 per cent while the numbers show an increase of about 7 per cent.

The following diagram illustrates the distribution in latitude of the areas of these markings:—



It will be seen that in both the hemispheres the maximum activity occurs in the latitudinal zone 15° to 35°.

Both the areas and the numbers show an eastern preponderance, the percentage east for them being 51·20 and 52·22 respectively.

Part II

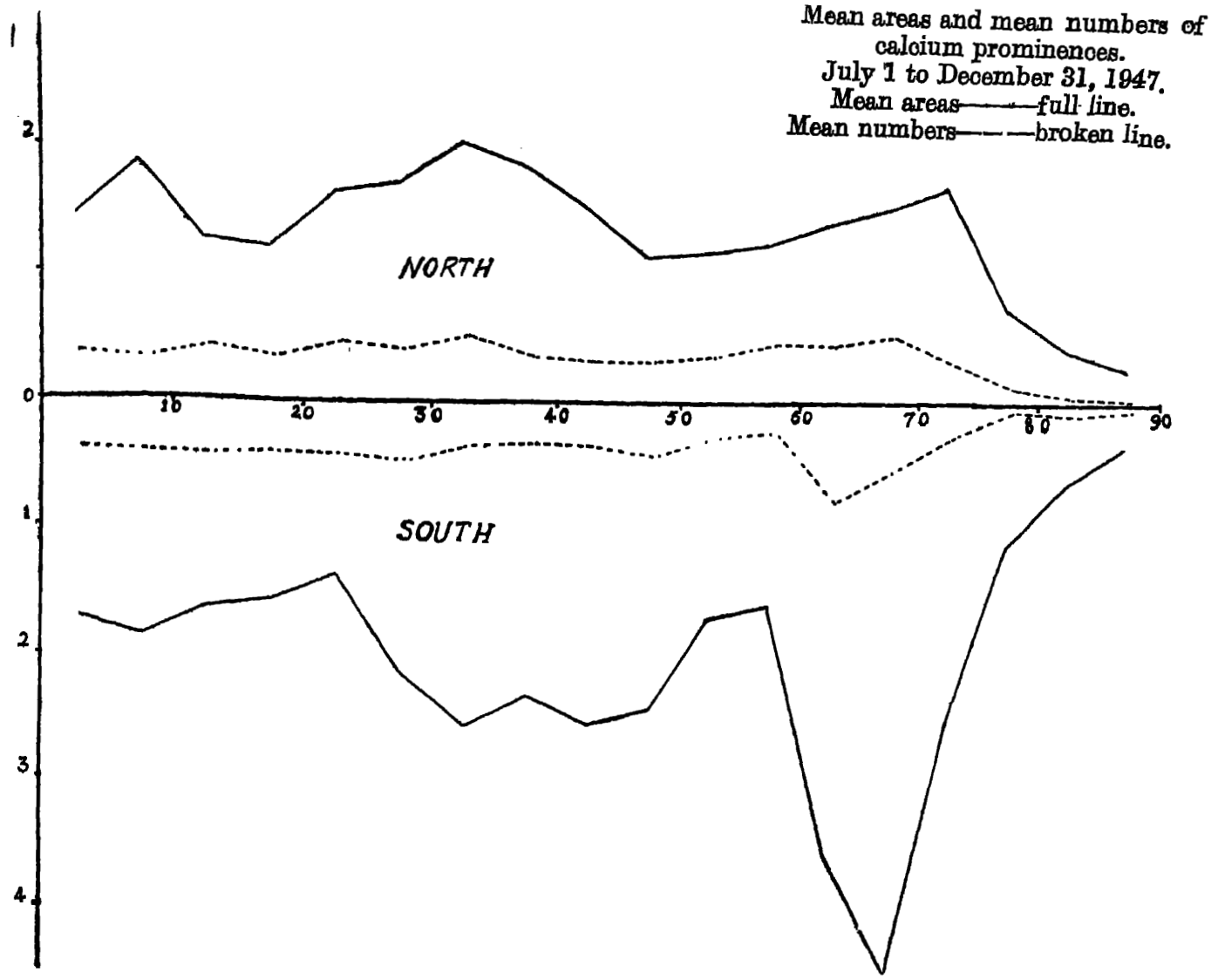
SUMMARY OF PROMINENCE OBSERVATIONS FOR THE SECOND HALF OF THE YEAR 1947

Calcium Prominences at the limb.—Photographs of calcium prominences were obtained at Kodaikanal on 126 days during this half year and 50 photographs were received from Mt. Wilson, making the data available for 173 days which were counted as 153¾ effective days after giving weightage to the photographs according to their quality. The mean daily areas and mean daily numbers derived from these are given below, together with the corresponding figures, obtained from the Kodaikanal photographs only, for comparison.

	Combined data		Kodaikanal data only	
	Mean daily areas	Mean daily numbers	Mean daily areas	Mean daily numbers
North	2.43	6.36	2.17	5.81
South	3.64	6.06	2.53	5.75
Total	6.07	12.42	4.70	11.56

Compared with the previous half year, the areas show an increase of about 20 per cent. while numbers are nearly identical.

The distribution of prominences in latitude is represented by the following diagram similar to that in Part I. The areas show peaks of activity over the zones 5°—10°, 30°—35° and 70°—75° in the northern hemisphere while in the southern hemisphere a pronounced peak is noticed between 65° and 70°.



The monthly, quarterly and half-yearly means of areas, numbers, heights and extents of prominences are given in table I.

TABLE I

Months	Number of days (effective)	Areas	Numbers	Daily means		Mean height	Mean extent
				Areas	Numbers		
1947—							
July	26½	207·55	332	7·91	12·65	48·64	4·74
August	24½	159·15	315	6·50	12·86	43·64	5·40
September	26½	233·05	349	8·71	13·05	50·04	5·48
October	26½	128·7	328	4·81	12·26	46·20	4·60
November	26½	105·8	309	4·00	11·66	44·66	4·45
December	25	111·5	301	4·46	12·04	46·01	4·70
1st quarter	77½	599·65	996	7·73	12·85	47·55	5·12
2nd quarter	78½	346·1	938	4·43	11·99	45·63	4·58
2nd half year	155½	945·75	1934	6·07	12·42	46·62	4·86

The distribution of areas and numbers east and west of sun's axis was as follows :—

	East	West	Percentage East
Total area (Sq. minutes)	439	507	46·44
Total numbers	977	957	50·52

Observations with Prominence Spectroscope.—The details of metallic prominences observed during this half year are given in table II.—

TABLE II

Date	Time I.S.T.	Base	Latitude		Limb	Height in Hcc	Lines
			North	South			
1947	H. M.	°	°	°		"	
July							
9	09 47	3	25.5		W	Short	4 and 10 only.
August							
3	08 51	5		23.5	W	14	4 and 10 only.
4	08 45	5		29.5	W	20'	1 to 12 only.
October							
29	09 19	3	23.5		W	20	4 and 10 only.
29	09 40	3		16.5	E	15	Do.
November							
13	09 45		13		E		Do.
29	07 52	2		20	W	11	Do.
29	08 30	3		23.5	W	10	Do.
December							
10	[09 25]	3		54.5	W	10	Do.
17	08 30	2	21		E	96	Do.
27	08 20	1		4.5	W	14.4	Do.

No.	λA°	Element	No.	λA°	Element
1	4924.1	Fe+	7	5276.2	Fe+
2	5016.0	He	8	5316.8	Fe+
3	5018.6	Fe	9	5363.0	Fe+
4	b_4,b_3,b_2,b_1	Mg. Fe+	10	D_2,D_1	Na
5	5234.8	Fe	11	6677	He
6	5276.0	Cr	12	7065	He

The distribution of metallic prominences was as follows :—

Latitudinal zone	1°—10°	11°—20°	21°—30°	31°—40°	41°—50°	51°—60°	Mean Lat.	Extreme Latitude
North . .	..	1	3	..	..	..	20°.7	13° & 25°.5
South . .	1	2	3	..	..	1	24°.6	4°.5 & 54°.5

Particulars of displacements observed in the chromosphere and prominences are given in the following table :—

TABLE III

Date	Time I.S.T.	Latitude		Limb	Displacements		Remarks
		North	South		Red	Violet	
July	H. M.	°	°		A°	A°	
3	09 20	5		W	1	1	
9	09 30	24		W	1	2	
14	10 00		5	W	3		The entire portion of prominence.
28	09 10		0	W	3		A small speck.
	09 20		16	E		2	At the top.
	09 20		18	E	2·5		At the top.
August 3	08 51		23.5	W		0·5	
4	08 45		29	W	2		At top and middle.
7	08 15	10		E	1	1	
	08 20		5	W	1·5		No prominence in plate.
8	08 40		43	W	2	6	Base to V and top to R.
10	09 50	10		E		4	At the top.
18	08 40	56		W		3	
September 4	08 45		14	W		1·5	
	09 15	9		W	1	1	
9	09 40	32		W	3	2 & 4·5	Top to R, middle to V.
11	09 30	21		W		1 & 1·5	
30	09 15	31		E		3	At the top.
October 1	09 20		38	W	Slight		At the top.
6	09 12		6.5	W	0·5	0·5	At the top to V and middle to R.
9	09 20		12	W	1	0·5	
12	08 35		24	W	1·5	1·5	
	08 40		44	W		1·5	
25	10 00	4		W	0·5		
	09 50	8		E		0·5	
29	09 36	2		W		0·5	
30	08 45	17		E	Slight	Slight	
31	08 40		15	W	Slight		
November 1	07 48		15	W		0·5	
	07 45	25		W		Slight	

TABLE III—*contd.*

Date	Time I.S.T.	Latitude		Limb	Displacements		Remarks
		North	South		Red - - -	Violet	
November	H. M.	°			A°	A°	
4	08 50	6		W		1 to 1·5	
	08 45	68		E		1	At the base.
	08 45	64		E		0·5	At the top.
6	08 20	29		W	1		At the top.
	08 20	20		W	1·5		
	08 30		13	W		1 to 2	
	09 00		20	E		1	At base.
8	08 30		75	W	Slight	Slight	In chromosphere.
9	08 07	68		E		1·5	At top.
10	09 00	30·5		W	0·5		At top.
	09 15		32	W	3·5		
11	08 32		20	E		0·5	
	08 30		40	W		1	
15	09 34		62	E		Slight	
17	08 30	9·5		W	0·5	0·5	At base.
	08 15	14		E		1	At top.
18	09 30		17	W		Slight	
	10 00		47	W		1	At middle.
23	11 15		32	E	2	4	
24	07 40		32	W		0·5	
	07 42		21	E	0·5	0·5	
25	08 15		46	W	0·5	1 to 2	
28	09 15		7·5	W	1		
	07 50		22	W	0·5	0·5	}
	07 54		20	W	1·5	1	} One and the same prominence.
	08 00		20	W	2		}
December							
1	08 15		12	E	Slight	Slight	}
4	08 45	28		W	1		
9	07 15	37		E	2		Eruptive prominence.
10	09 25		15	W		1	
11	10 30		53·5	E	0·5		
12	10 10		12·5	E	0·5		
17	08 30	19		E		Slight]	
21	09 00	32		W		0·5	

The number of displacements was 64 as against 84 in the previous half year. Of these, 18 were towards red 27 towards violet and 19 both ways simultaneously. Their distribution was as follows :—

Latitude	North	South
0°—30°	18	25
31°—60°	6	10
61°—90°	3	2
Total	26	37

Bright reversals of Hα line and dark reversals of D_3 were observed over active spot groups on 18 and 12 occasions respectively. Displacements of Hα line on the sun's disc was seen on 5 occasions (4 towards red a.vl 1 towards violet) Their distribution was as follows :—

	North	South	East	West	Total
Bright reversals of Hα	7	11	10	8	18
Dark reversals of D_3	4	8	6	6	12
Displacement of Hα	1	4	3	2	5

Observations with the Hale Spectrohelioscope.—Displacements of Hα line in prominences, dark markings and brigh flocculi observed during the second half of the year are summarised below :—

	N	S	E	W	Towards Red	Towards Violet	Bothways	Total
Prominences	13	15	9	19	11	9	8	28
Bright flocculi	..	4	2	2	..	3	1	4
Dark markings	..	4	3	1	..	3	1	4

Particulars of solar flares observed are given in table IV below :—

TABLE IV

Date	Time (I. S. T.) Beginning	Maximum	End	Mean latitude	Mean longitude from C.M.	Intensity	Remarks
1947 July	H. M.	H. M.	H. M.	°	°		
16	07 54	08 20	..	+10	30E	3	From spectroheliogram and spectrohelioscope.
30	08 01	08 08	08 28	—20	60E	2	From spectrohelioscope.
August							
2	..	10 15	..	—15	25E	1	Do.
8	..	08 00	..	—17	4W	1	Do.
	..	08 00	..	—10	14W	1	Do.
	..	08 00	..	+13	0	1	Do.
October							
2	..	09 30	..	+19	64E	2	From spectroheliograms.
	..	09 30	..	+28	41E	1	Do.
5	..	08 15	..	—15	12W	1	Do.
6	07 45	07 50	08 10	+8	12·5E	1	From spectrohelioscope.

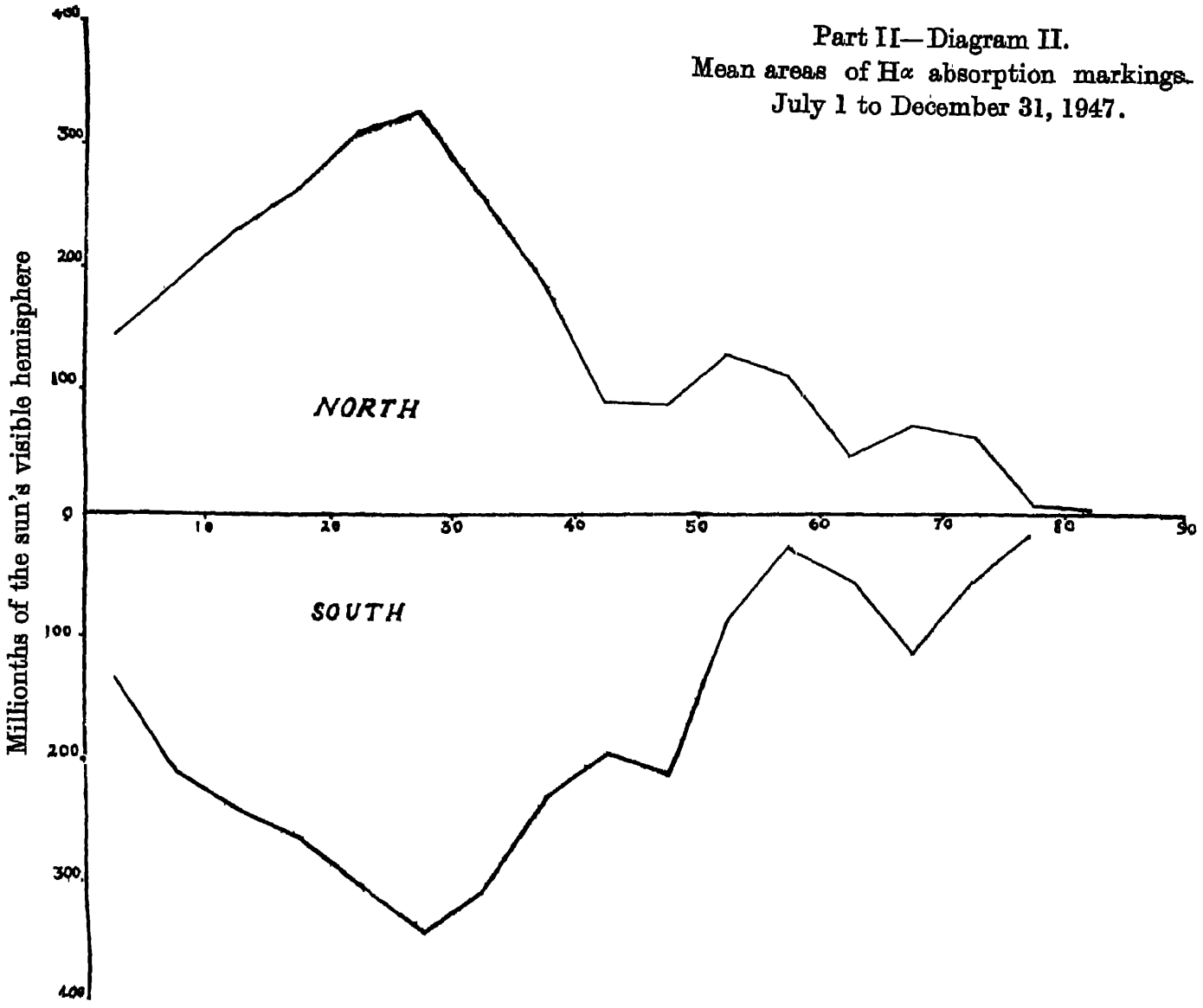
Date	Time (I.S.T.) Beginning	Maximum	End	Mean latitude	Mean longitude from C.M.	Intensity	Remarks
1947 November	H. M.	H. M.	H. M.	°	°		
4	..	08 15	..	—17	70W	1	From spectroheliosoope.
8	08 08	08 35	08 44	+20	60W	2	From spectroheliosoope and spectroheliogram.
	08 08	08 14	08 32	+23	60W	2	Do.
10	..	08 02	..	+21	35·5E	1	From spectroheliosoope.
13	08 18	08 23	08 45	+10	22W	1	Do.
15	..	09 08	..	+8	52W	1	Do.
17	..	08 10	..	—19	74E	1	Do.
18	..	08 21	..	—28	53E	1	Do.
20	..	08 25	..	—15	63W	1	Do.
	..	09 04	..	—10	39E	1	Do.
23	..	11 21	..	—19	65W	3	From spectroheliogram.
28	08 10	08 15	..	—20	61E	1	Fro spectroheliosoope.
December							
3	..	11 04	..	+7	70E	1	From spectroheliogram.
8	..	12 16	..	—15	69E	1	From spectroheliosoope.
11	..	09 30	09 55	—16	16E	2	From spectroheliosoope and spectroheliogram.
16	..	08 15	..	—19	26E	1	From spectroheliosoope.
17	..	08 30	..	—15	66E	1	From spectroheliosoope.

Prominences projected on the disc as dark markings.—H α flocculus photographs were taken at this observatory on 139 days during this half year. Photographs for 38 days were obtained from Mt. Wilson, and for 32 days from Meudon Observatories. In all, data were available for 179 days which were counted as 174½ effective days. The mean daily areas in millionths of the sun's visible hemisphere (uncorrected for foreshortening) and the mean daily numbers are given below :—

	Combined data		Kodaikanal data only	
	Mean daily areas	Mean daily Numbers	Mean daily areas	Mean daily numbers
North	2564	21·12	2391	19·15
South	2813	21·88	2875	20·88
Total .	5377	43·00	5266	40·03

The areas and numbers show an increase of 35 per cent. and 16 per cent. respectively over those of the previous half year.

The distribution of areas in latitude is shown in the following diagram :—



Pronounced peaks of activity centred in the zone 25°—30° are seen in both the hemispheres. Both the areas and numbers show an eastern preponderance, the percentage east being 50·84 and 52·18 respectively.

Thanks are due to the co-operating Observatories for the photographs supplied by them.

KODAIKANAL,
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