

# Kodaikanal Observatory.

BULLETIN No. LXXIX.

## SUMMARY OF PROMINENCE OBSERVATIONS FOR THE SECOND HALF OF THE YEAR 1925.

In pursuance of the programme of work adopted since 1st January 1923 under the auspices of the International Astronomical Union, all observatories taking spectroheliograms of the Sun have been asked to co-operate with the Kodaikanal Observatory by supplying copies of their photographs on those days when the Kodaikanal records are imperfect or wanting. In response to our requirements for the second half of the year 1925, Mount Wilson Observatory supplied prominence plates for 40 days and H $\alpha$  disc plates for 38 days; Meudon Observatory supplied K $\beta$  disc plates for 34 days and H $\alpha$  disc plates for 31 days and Yerkes Observatory sent prominence plates for 7 days. Eight prominence plates and 7 H $\alpha$  disc plates taken by Mr. Evershed at his observatory at Ewhurst, Surrey, England during the last three months of the year were also received.

When only incomplete or imperfect photographs for any day are available from more than one observatory, the best photograph is chosen as representing the solar activity of that day after weighting it according to its quality, and the remaining photographs are ignored.

The mean daily areas and numbers of prominences during the half-year are given below. The means are corrected for incomplete or imperfect observations, the total of 181 days when plates were available being reduced to 151 effective days.

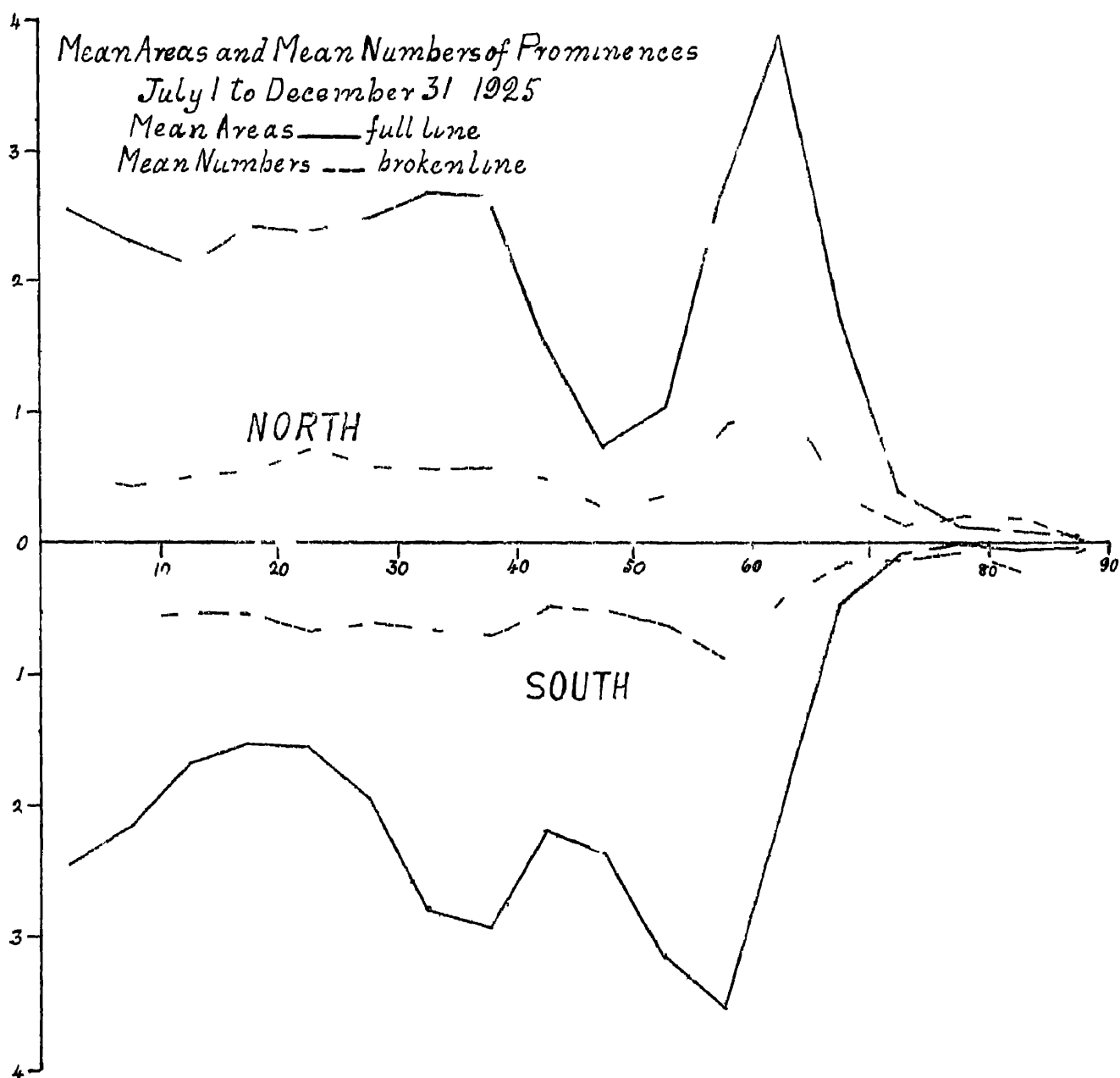
								Mean daily areas (square minutes).	Mean daily numbers.
North	...	...	...	...	...	...	...	3.18	8.40
South	...	...	...	...	...	...	...	3.08	8.34
								6.26	16.74
						Total	...	6.26	16.74

Compared with the previous half-year, areas have increased by 24 per cent the increase being more marked in the southern hemisphere. In the case of numbers, there is a slight decrease in the northern hemisphere, and an increase of 10 per cent in the southern.

For comparison with bulletins issued prior to the co-operation of other observatories, the means based on Kodaikanal photographs alone are also given, 141 days of observation being counted as 118 effective days.

								Mean daily areas (square minutes).	Mean daily numbers.
North (Kodaikanal photographs only)	...	...	...	...	...	...	...	3.46	8.83
South		do.		...	...	...	...	3.42	8.75
								6.88	17.58
						Total	...	6.88	17.58

The distribution of the prominences in latitude is represented in the following diagram in which the full line gives the mean daily areas and the broken line the mean daily numbers for each zone of 5° of latitude. The ordinates represent tenths of a square minute of arc for the full line and numbers for the broken line. Compared with the previous half year there has been a decrease of activity near 45° which is more marked in the northern hemisphere than in the southern. The maximum of activity in the higher latitudes has advanced about 10° towards the poles.



The monthly, quarterly and half yearly areas and numbers and the mean height and mean extent of the prominences on photographs from all the cooperating observatories are given in Table 1. The unit of area is 1 square minute of arc. The mean height is derived by adding together the greatest heights reached by

individual prominences and dividing by the total number of prominences observed; the mean extent is derived by adding together the lengths of the base on the chromosphere of individual prominences and dividing by the total number of prominences.

TABLE I.—ABSTRACT FOR THE SECOND HALF OF 1925.

Months.	Number of days (effective)	Areas.	Numbers.	Daily Means.		Mean height.	Mean extent.
				Areas.	Numbers.		
1925						"	°
July	23½	137·8	379	5·9	16·1	36·4	5·22
August	22½	124·2	390	5·5	17·3	37·2	4·73
September	28½	178·6	484	6·3	17·0	38·9	5·30
October	27	192·1	477	7·1	17·7	39·8	5·31
November	23	127·2	368	5·5	16·0	41·3	4·57
December	26½	185·9	430	6·9	16·1	43·2	5·82
Third quarter	74½	440·6	1253	6·0	16·9	37·6	5·10
Fourth quarter	76½	505·2	1275	6·5	16·6	41·2	5·27
Second half-year	151	945·8	2528	6·3	16·7	39·5	5·18

*Distribution east and west of the Sun's axis.*

Both areas and numbers were in excess in the western hemisphere as will be seen from the following table :—

1925 July to December.	East.	West.	Percentage East.
Total number observed ... ..	1242	1286	49·1
Total areas in square minutes ... ..	446·2	499·6	47·2

*Metallic prominences.*

Twenty-nine metallic prominences were observed during the half-year. Their details are given below :—

TABLE II.—LIST OF METALLIC PROMINENCES OBSERVED AT KODAIKANAL, JULY TO DECEMBER 1925.

Date.	Hour I.S.T.	Base.	Latitude.		Limb.	Height.	Lines.
			North.	South.			
1925	H. M.	°	°	°		"	
July	7 9 20	4		28	E	20	4924·1, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
September	2 8 2	3	33		W	25	4924·1, 5016, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, 5363·0, 5535·1, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	4 9 33		18·5		W	60	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> .
	14 9 0		18		W	85	4924·1, 5016, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, 5363·0, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	15 8 50	2	22		W	10	4924·1, 5016, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5276·2, 5316·8, 5363·0, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	30 11 43			18·5	W	90	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> .
October	2 8 50	3	19·5		W	90	4924·1, 5016, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5263·2, 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	2 8 56		23		W	35	4924·1, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	9 9 36			18	W	20	4924·1, 5016, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677.
	10 8 50		27		W	70	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
	11 8 36		26		W	20	5016, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, 5363·0, D <sub>1</sub> , D <sub>2</sub> .
	14 9 41		27		E	10	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> .
	14 10 50			25·5	W	15	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	15 9 25		24·5		E	15.	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	16 9 12			24	E	15	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> .
	19 9 2			27·5	W	30	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	20 9 37			38·5	E	35	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
	20 9 14			18	W	10	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	20 8 58		14·5		W	40	4924·1, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
November	15 11 4			23	E	15	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
December	17 9 20			16	W	10	4924·1, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	19 9 32		20·5		E	20	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 7065.
	20 9 30		35		E	30	4924·1, 5016, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
	20 9 50	1	21		E	10	4924·1, 5016, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, 5363·0, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	23 10 5		33		E	15	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> , 7065.
	24 9 34		26		W	15	4924·1, 5018·6, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, D <sub>1</sub> , D <sub>2</sub> .
	25 9 24			25	W	10	4924·1, 5016, b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , 5316·8, 5363·0, D <sub>1</sub> , D <sub>2</sub> , 6677, 7065.
	25 8 24		22		W	20	6677, 7065.
	31 9 39	10		28	W	30	b <sub>1</sub> , b <sub>2</sub> , b <sub>3</sub> , b <sub>4</sub> , D <sub>1</sub> , D <sub>2</sub> .

The metallic prominences enumerated above were distributed in latitude as follows :—

				11°—20°	21°—30°	31°—40°	Mean latitude.	Extreme latitudes.
North	...	...	...	4	10	3	24°·1	14°·5 and 35°
South	...	...	...	4	7	1	24°·2	16° and 38°·5

Thirteen were in October and 9 in December. Ten were on the east limb and 19 on the west.

*Displacements of the hydrogen lines.*

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

TABLE III.—DISPLACEMENTS OF HYDROGEN LINES.

Date.	Hour I.S.T.	Latitude.		Limb.	Displacement.			Remarks.
		North.	South.		Red.	Violet.	Both ways.	
1925	h. m.	°	°		A.	A.	A.	
July	2	8 54	85·5	E	1·5			At top.
	2	9 46	11	W		Slight		
	2	8 43	40	W	0·5			At top.
	3	9 2	52	W	0·5			Do.
	6	9 3	18	W	1			Do.
	6	9 10	72·5	W	Slight			
	7	8 50	22	W	1			At top.
	8	10 5	86·5	W		1		
	9	8 47	83	E		3		
	9	9 9	20	W		Slight		
	10	9 4	21	E		1		
	10	9 2	10	W	1			
	14	9 18	15	W	0·5	1		To red at top ; to violet at base.
	14	10 8	13	W	1			At top.
	15	9 41	40	E		Slight		Do.
	22	9 46	16	W	1			Do.
	25	9 45	23	W			1·5	
	28	9 20	19	W	1			At top.
	31	9 24	83	E		0·5		
August	1	10 8	43·5	E		1		At base.
	3	9 57	79	W		1		Do.
	5	8 37	24	E	1·5			At top.
	5	8 56	32	W	1			
	6	10 25	57·5	W	0·5			
	11	9 20	26	W	1			
	11	9 2	63·5	W	0·5			
	14	8 58	67	E	Slight			At base.
	14	9 24	64	E	2			At top.
	15	8 45	25	W		Slight		
	17	10 2	26	E		1		
	17	9 57	39	W	Slight			At top.
	18	8 49	31	W		Slight		
	22	9 25	36·5	W		1		
	24	10 16	76	W	0·5			
	27	9 17	82·5	E		Slight		
	27	9 16	82·5	W	Slight			
	27	9 2	15·5	W	1·5			At top.
	27	9 2	17	W		1		
	30	8 4	11	E		Slight		At base.
	31	11 2	44	E	Slight			Do.
	31	10 50	54	W	1			At top.

Date.	Hour I.S.T.	Latitude.		Limb.	Displacement.			Remarks.
		North.	South.		Red.	Violet.	Both ways.	
1925	H. M.	°	°		A.	A.	A.	
September	1	9 45	68	E	0.5			
	1	9 48	31	E		0.5		At top.
	1	9 12	27	W	1			Do.
	1	10 50	30	W	0.5			At base.
	2	8 2	33	W			2	
	3	9 4	70.5	E	Slight			
	3	9 14	15	E	Do.			
	3	9 2		W	Do.			
	4	9 13	20	E	Do.			
	4	8 58	34	W	1			At top.
	4	9 15	20	W	1			2.5 A at 9h 46m.
	4	8 42	59.5	W		0.5		At base.
	8	8 51	30.5	W		Slight		Do.
	8	8 40	55	W		Do.		Do.
	10	8 20	62	E	Slight			
	10	8 25	81.5	W		Slight		
	11	8 50	68	W	Slight			
	12	8 27		E	Do.			
	13	8 50	81	E	1			
	13	9 1	22	E	1			At top.
	13	8 58	18	W	1			Do.
	14	9 16	78	E	Slight			
	14	8 46	18.5	W	3	1		To red at top; to violet at base.
	14	8 52	19	W	8			At top.
	14	9 9	18	W	4			Do.
	14	9 28	20	W	2	1		To red at top; to violet at base.
	15	8 35	68	E	0.5			
	15	8 44	24	W	1			
	16	11 15	24	W		1		At top.
	21	10 0	12	W	1			Do.
	22	9 12		W	4			Do.
	22	8 48	60	W		Slight		
	24	9 20	38	E	Slight			At top.
	24	8 56		W	0.5			
	25	10 16		W	1			
	28	9 7	72.5	E		Slight		
	28	9 8	69	E	Slight			
	28	9 12	15	E		2		
	28	8 46	42	W	2			At top.
	29	10 10	14.5	E	2			
October	2	8 50	19.5	W	2	1		To red at top; to violet at base.
	2	8 56	23	W	2			At top.
	2	8 40	72.5	W		Slight		
	6	9 7	61	E	1			At base.
	6	8 54	13	W	0.5			At top.
	8	9 3	42	E	1			At base.
	9	8 46	19	W	1			At top.
	9	8 36	26	W	1			Do.
	10	9 2		W		Slight		Do.
	10	8 50	30	W		0.5		
	11	9 8	42	E		1		At top.
	12	9 8	23	E	1	2		To red at base; to violet at top.
	12	8 40	30	W	1.5			At top.
	13	9 40	35	E	1			Do.
	13	9 55		E	1	2		To red at base; to violet at top.
	14	9 35	25.5	E		0.5		At top.
	14	9 23	18.5	E	1			
	15	9 25	24.5	E	0.5	1.5		To red at base; to violet at top.
	15	8 44	31	W	Slight			
	16	8 58	58	E		Slight		
	16	8 58	53	E		Do.		
	16	8 59	11	E	Slight			
	16	9 8		E	0.5	1		To red at base; to violet at top.
	18	9 56		W	1			
	19	9 22	54.5	E		1		At top.
	19	9 20	axis	...	Slight			

Date.	Hour I.S.T.		Latitude.		Limb.	Displacement.			Remarks.
			North.	South.		Red.	Violet.	Both ways.	
1925	II.	M.	°	'		A.	A.	A.	
October	19	9 2		27.5	W	1			At top
	20	9 24		24	E		0.5		At base.
	20	9 26		34	E	1			Do.
	20	9 26		37	E	1			Do.
	20	9 9		16	W	Slight			
	20	9 4	14.5		W	1	1		To red at top ; to violet at base.
	20	8 54	30		W		1.5		
	20	8 54	25		W	1			
	20	8 47	77		W	Slight			
	21	9 58		3.5	E	Do.			
	21	9 24		43	W	Do.			
	22	9 45		27	E	Do.			At base.
	22	9 6		38	W	0.5			Do.
	22	9 40	83.5		W	Slight			
	29	8 50	19		W	Do.			At top.
November	6	8 55	54		E	Slight			
	6	9 0	15		E		1		
	6	8 50		17	W	Slight			
	6	8 42		25	W		1		At base.
	14	9 5	37		E	Slight	Slight		To red at top ; to violet at base.
	14	8 55		12	W		0.5		
	14	8 52	30		W		Slight		
	15	11 4		23	E	0.5			At top.
	18	10 11	20		E	2	1		Do.
	18	10 2	24.5		E		1		Do.
	18	10 1	30		E		Slight		Do.
	18	9 50		87	E		1		At base.
	18	9 47		64	W		1		Do.
	22	9 9		25	W	1			
	22	9 4		7	W	Slight			
	22	8 58	18		W	1			
	25	10 17	26.5		W	0.5			At top.
December	1	9 22		78	E	Slight			
	1	9 14	18		W	Do.			
	1	9 10	62.5		W		0.5		
	13	10 4	27		W	1	1.5		To red at top ; to violet at base.
	16	10 31	36.5		E	2			
	16	10 27	21		E	1.5			
	16	10 7		68	E	1			
	16	10 45		87	W		2		
	17	9 24	69		E	1			At base.
	17	9 28	38		E		0.5		
	17	9 16		19	W	1			
	18	8 56	77		E		1.5		
	18	9 32	30		E	1.5			
	18	9 38		20	E		1.5		At base.
	18	9 38		27	E	3			
	18	9 22		20	W	1			
	18	9 15	17		W	1.5			At top.
	18	9 15	21		W		0.5		At base.
	18	9 2	39		W		0.5		Do.
	19	9 32	19		E	2			Do.
	19	9 32	20		E		1		At top. } seen in D <sub>1</sub> , D <sub>2</sub> also.
	19	9 40		20	E	4	1.5		To red at base ; to violet at top.
	19	9 15		35	W		Slight		At base.
	20	10 22	30		E		1		Do.
	20	9 50	25		E	1			
	20	9 14	23		W	1	0.5		To red at top ; to violet at base.
	20	9 11	39		W	0.5			At top.
	21	9 3	65		W	1			Do.
	21	9 1	70		W	1			Do.
	21	9 20	33		E		3		Do.
	21	9 20	26		E	2			At base.
	21	9 40	23		E		1.5		At top.
	21	9 30	36		W	1			Do.
	21	9 4	29		W		1.5		At base.
	21	9 2	50		W	1			

Date.	Hour I.S.T.	Latitude.		Limb.	Displacement.			Remarks.
		North.	South.		Red.	Violet.	Both ways	
1925	H. M.	°	°		A.	A.	A.	
December 21	8 55.	84		W		0.5		
22	9 10	22		E	1			At base.
22	8 50	23		W	Slight			
23	9 50	34.5		E	3			Over middle of prominence
24	9 10	83		E		Slight		
24	9 42	26		W	1			At top.
25	9 30		36	W	0.5			Do.
25	9 20		25	W		0.5		At base.
26	8 57		27	W		2		
26	8 53	14		W	1			
26	8 52	26		W	0.5			
31	9 45	35.5		E		1		At top.
31	9 38		23	E		4		At top; 6A at 9h 36m.
31	9 28		87	E	0.5			

The total number of displacements was 202 and they were distributed as follows:—

Latitude.	North.	South.
1°—30°	76	40
31°—60°	34	11
61°—90°	30	11
Total	140	62
East limb	...	86
West limb	...	115
Pole	...	1
Total	...	202

One hundred and twenty-four displacements were towards the red, 76 towards the violet and 2 both ways simultaneously.

*Reversals and displacements on the Sun's disc.*

Two hundred and eighteen bright reversals of the  $H\alpha$  line, 94 dark reversals of the  $D_3$  line and 62 displacements of the  $H\alpha$  line were observed during the half-year. Their distribution is given below:—

	North.	South.	East.	West.
Bright reversals of $H\alpha$	132	86	95	123
Dark reversals of $D_3$	59	35	45	49
Displacements of $H\alpha$	34	28	24	38

Three-quarters of the number of displacements were towards the red.

*Prominences projected on the disc as absorption markings.*

Photographs of the Sun's disc in  $H\alpha$  light were available from all the co-operating observatories for a total of 179 days, which were counted as  $172\frac{1}{2}$  effective days. The mean daily areas of  $H\alpha$  absorption markings (corrected for foreshortening) in millionths of the Sun's visible hemisphere and the mean daily numbers are given below:—

	Mean daily areas.	Mean daily numbers.
North	1917	14.4
South	1223	9.8
Total	3140	24.2

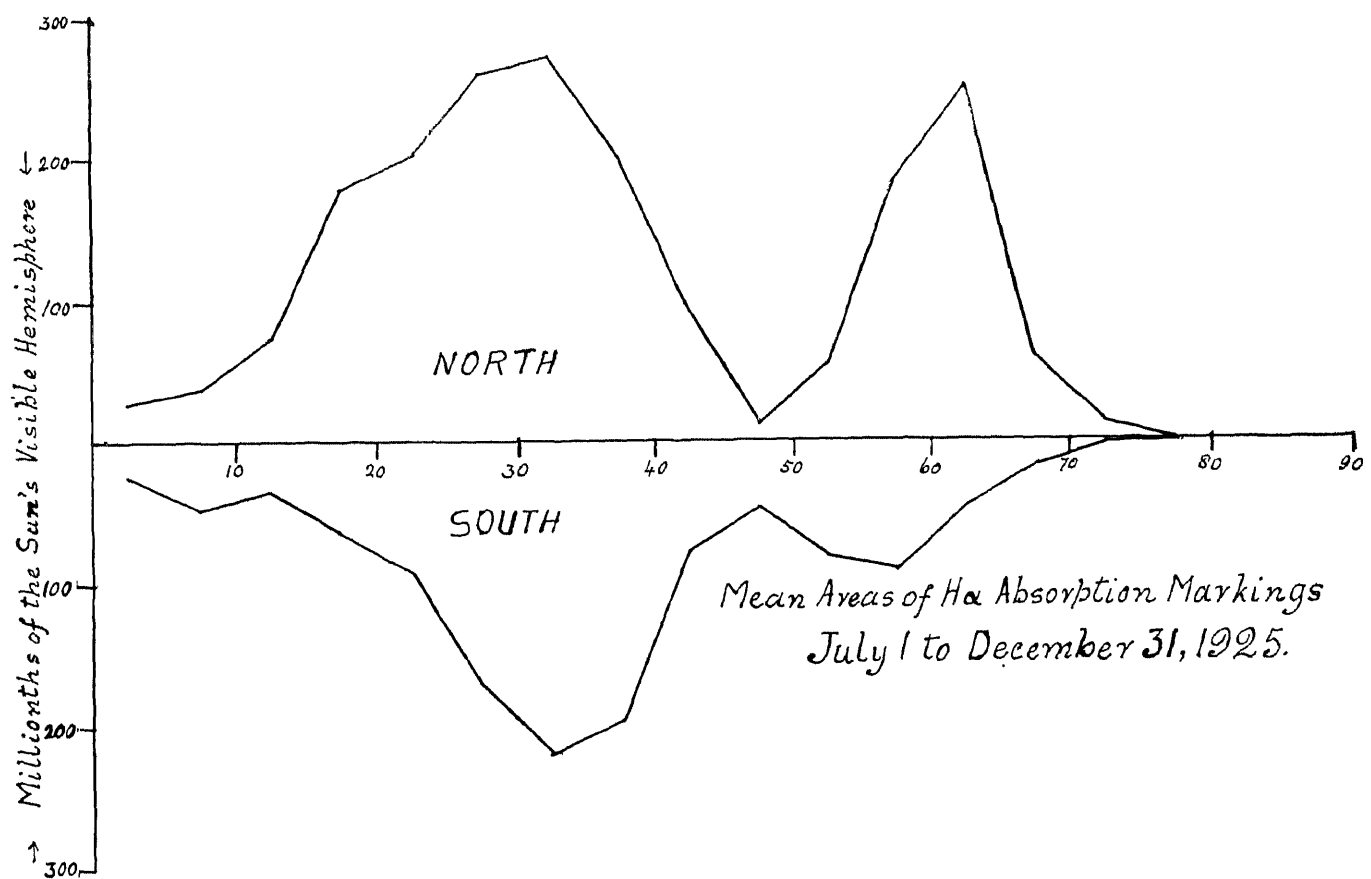


These figures indicate an increase of about 70 per cent compared with the previous half-year.

For comparison with bulletins issued prior to the co-operation of other observatories, the means based on Kodaikanal photographs alone are also given, 120 days of observation being counted as  $113\frac{1}{2}$  effective days.

			Mean daily areas.	Mean daily numbers.
North (Kodaikanal photographs only)	...	...	1928	15.2
South	do.	...	1241	10.2
Total	...	...	3169	25.4

The distribution of the mean daily areas in latitude is shown in the following diagram. The diagram shows two maxima at  $30^\circ$  and  $60^\circ$ , but in the southern hemisphere the second maximum is not so well developed.



As in the case of prominences at the limb, the activity is in excess in the western hemisphere, the percentage east being 48.23 for areas and 48.76 for numbers.

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

THE OBSERVATORY, KODAIKANAL,  
20th July 1926.

T. ROYDS,  
Director, Kodaikanal and Madras Observatories.

D t	H ur I S T	I t t d		L mb	D plac m t			R k
		N rth	S th		R d	V l t	B tl w y	
1925					A	A		
Dec mb	1	8 55	84	W		0		Atl
	22	9 10	22	E	1			
	22	8 50	23	W	Slight			0 ill fp
	23	9 50	34.5	F	3			
	24	9 10	83	E		Slight		
	24	9 42	26	W	1			Att I
	25	9 30		W	0.5			D
	25	9 20	36	W		0		Atl
	26	8 57	27	W		2		
	26	8 53	14	W	1			
	26	8 52	26	E	0.5			
	31	9 45	35.5	E		1		Att p
	31	9 33	23	E		4		Att p (A at) k
	31	9 28	87	E	0.5			

The total number of displacements was 202 and they were distributed as follows —

L t t d	N th	S th
1 — 30	70	40
31 — 60	34	11
61 — 90	30	11
Total	140	62

East limb	80
West limb	11
Pole	1
Total	202

One hundred and twenty four displacements were towards the red 76 towards the violet and 101 ways simultaneously

*Reversals and displacements on the Sun's disc*

Two hundred and eighteen bright reversals of the H $\alpha$  line 94 dark reversals of the D $\delta$  line and 69 displacements of the H $\alpha$  line were observed during the half year Their distribution is given below

	N th	S th	East	West
Bright reversals of H $\alpha$	139	41	75	123
Dark reversals of D $\delta$	37	35	45	41
Displacements of H $\alpha$	34	28	24	38

Three-quarters of the number of displacements were towards the red

*Prominences projected on the disc as absorption markings*

Photographs of the Sun's disc in H $\alpha$  light were available from all the co-operating observatories for a total of 179 days which were counted as 172½ effective days The mean daily areas of H $\alpha$  absorption markings (corrected for foreshortening) in millionths of the Sun's visible hemisphere and the mean daily numbers are given below —

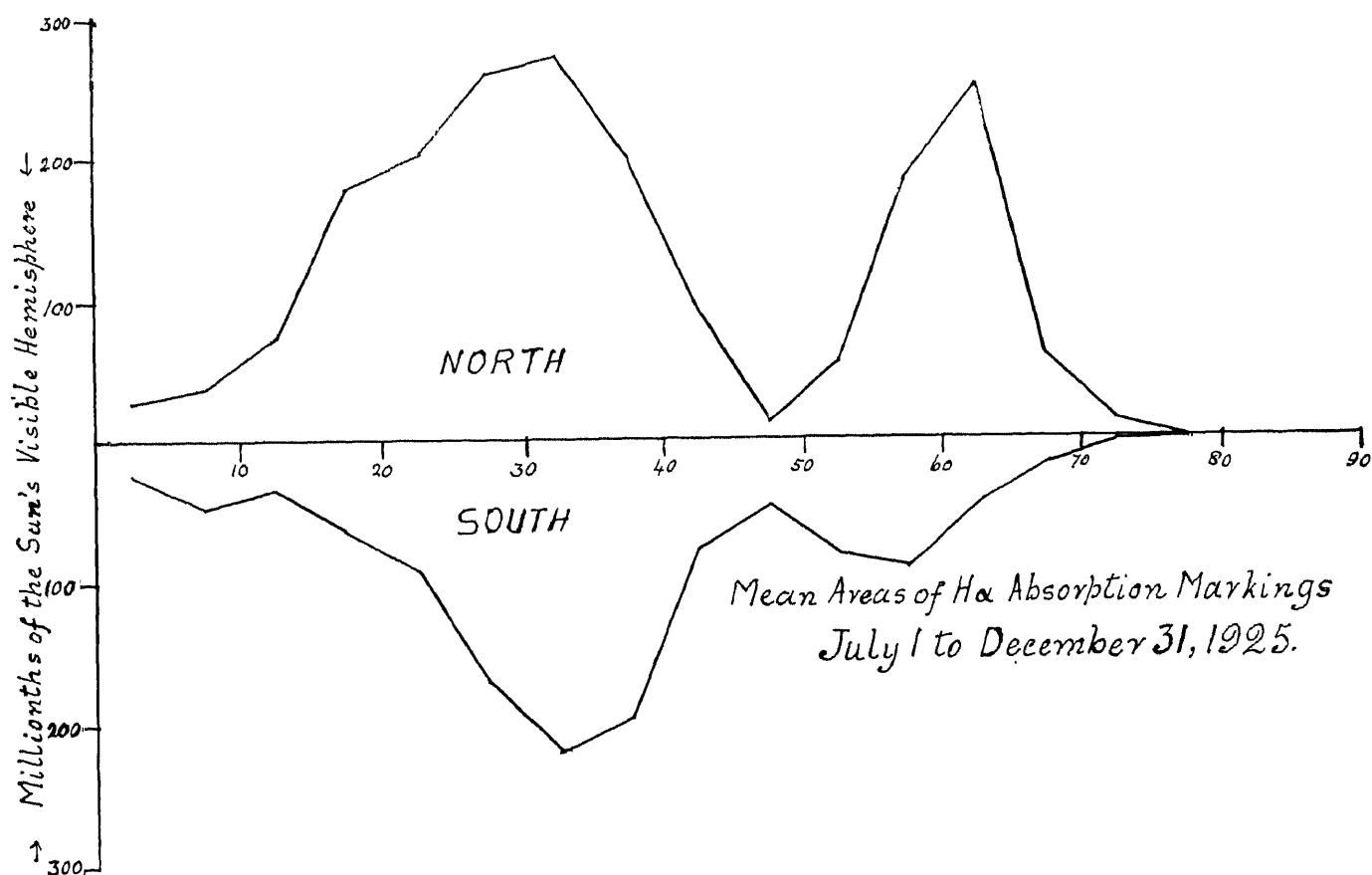
	Mean daily areas	Mean daily numbers
North	1917	144
South	1223	98
Total	3140	242

These figures indicate an increase of about 70 per cent compared with the previous half-year.

For comparison with bulletins issued prior to the co-operation of other observatories, the means based on Kodaikanal photographs alone are also given, 120 days of observation being counted as  $113\frac{1}{2}$  effective days.

	Mean daily areas.	Mean daily numbers.
North (Kodaikanal photographs only) ... ..	1928	15.2
South do. ... ..	1241	10.2
Total ... ..	3169	25.4

The distribution of the mean daily areas in latitude is shown in the following diagram. The diagram shows two maxima at  $30^\circ$  and  $60^\circ$ , but in the southern hemisphere the second maximum is not so well developed.



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