

**White light MDF, 2000 July**

Observer	MDF				R		Q	
	North	South	Total	Days	Total	Days	Total	Days
L. Smith	5.9	5.2	11.1	13	-	-	179.7	13
W. Heyes	6.8	5.1	11.9	10	-	-	30.5	10
G. North	6.0	5.1	11.1	7	-	-	-	-
T. Tanti	5.8	5.4	11.3	31	181.8	31	31.3	31
R. Dryden	6.6	5.4	12.0	12	204.3	12	-	-
G. Johnstone	5.9	6.4	12.3	-	-	-	-	-
D. Storey	4.9	5.0	9.9	10	-	-	-	-
J. Shanklin	5.8	5.6	11.4	22	172.0	22	-	-
M. Hendrie	7.6	7.0	14.6	8	205.6	8	-	-
K. Medway	5.0	4.4	9.4	28	-	-	-	-
P. Meadows	7.2	6.4	13.6	11	227.3	11	42.5	11
E. Strach	5.0	5.1	10.2	23	169.8	17	26.6	23
MEANS	5.8	5.3	11.1	175	187.2	101	53.3	88

*MDF = Mean Daily Frequency of active areas, R = sunspot number, Q = mean quality estimate (JBAA 98,6,pp282-286)*

**White light activity, 2000 July**

July showed an increase in solar activity although the weather in southern England was hardly conducive to observation. Strach commented that activity was particularly high during the middle two weeks of the month. His MDF of 10.17 was the highest he has ever recorded. The record prior to that was 9.97 in 1991 August. The high activity during the month was evident in MDF, R and Q and was well distributed between the N and S hemispheres.

Strach notes that, in spite of the high activity, no very large sunspots were seen during the month but extensive grouping did occur.

Meadows' first observation on the 2nd showed an equal distribution of groups between the N and S hemispheres with six in each. The largest of these was a Cai group at S14/119 with an area of 180 millionths.

On the 3rd Strach noted a small spot at N19/28. By the 7th, as it approached the CM, this had developed into a complex Eao group covering an area of about 300 msh and containing no less than 33 individual spots. Also on that date Meadows noted four S groups at similar latitudes and approximately evenly spaced in longitude. These were at S19/63 (type Hax), S17/47 (Dac), S16/30 (Csi) and S18/15 (Dac). By the 11th, the westernmost group was near the limb and the other three groups appeared to give the impression of a string of spots stretching for some 60° in longitude. Strach comments that this made it difficult to identify the individual spot groups. On the 10th and 11th this unusual chain of spots was confined to the W hemisphere. During the next few days the most westerly spots started to rotate around the W limb and on the 15th only the most easterly spot of the chain remained visible before crossing the W limb on the 16th

A relatively high latitude spot was first seen on the 10th at S29/301. Strach noted that it crossed the CM on the 15th at S26/299 and was last seen on the 20th when it was approaching the W limb at S26/295.

Strach observed a near equatorial group from the 11th to the 23rd. The leader was at N2/275 and it became a bipolar group of type Dao. After crossing the CM it became a single spot of type Hsx and it passed over the W limb on the 23rd.

The 11th also showed two northern Fkc type groups. Meadows reported that one was at N18/34 with an area of 500 millionths while the other was at N19/314 with an area of 740 millionths. The latter group was the more impressive with a large symmetrical following spot with several small leading penumbral spots. When this group was seen on the 13th the following spot had decayed while the number of spots within the group had increased substantially. Its area was now 500 millionths. By the 17th the group had decayed further such that its total area was only 270 millionths and it was of type Dac.

Meadows comments that his observations made each day between the 17th and 22nd inclusive showed very high levels of activity and that these were the highest seen during this cycle so far. On the 17th Medway reported an AA count of 13 and on the 19th Meadows counted no less than 17 groups almost equally distributed between the N and S hemispheres. On that date he reported a sunspot number of 279 and the quality parameter, Q, of 54! The largest group on this date was an Eac group at S10/235 with an area of 530 millionths. This group was particularly interesting as it had no obvious bipolar structure - it consisted of many penumbral and other spots spread over almost 15° in longitude and, unusually, over 11° in latitude. Even more spots were seen within this group on the 20th. Some of the penumbral spots appeared slightly larger on the 21st although the number of spots had reduced slightly. The group had a similar appearance on the 22nd. Another interesting group during this period was first seen on the 19th having just rotated onto the disk as a Dhc group at the low latitude of N7/170. On the 20th, it consisted of a single very elongated asymmetrical penumbral spot with a couple of adjacent

spots. When seen on the 21st, the main spot had split into three and its total area was 610 millionths and it was of type Ekc. By the 22nd, four penumbral spots were seen with the leading one still being the largest.

Strach comments that throughout the month a number of very small Axx and Bxx groups were seen. This was particularly true towards the end of the month when no major group was present.

Heyes reported three low-latitude spots at N3 (11th-19th), N2-5 (18th-22nd) and 3S (19th).

### H $\alpha$ activity, 2000 July

Both Strach and Medway comment that prominences were numerous in July. They both reported a remarkable prominence which was seen on the 6th on the E-limb extending from N39 to N57. It was a high mound with intricate internal structure. On the 7th it was a little higher and somewhat "windswept" to the N. On the same day Strach witnessed an eruption emanating from a small but brilliant prominence on the E limb at N21. At 0635 UT it formed a jet of a curious shape. Half way up it turned northwards turning back to the limb at around N32 but not reaching it.



Prominence on E limb. 2000 July 7, 0635. Eric Strach.

Strach observed two very dense prominences on the 18th. One was on the W limb at N33 to N39 and the other was seen on the E limb at S10 to S23. Both lasted five days although with diminished intensity.

On the 29th Strach reported multiple low arches between two prominences on the E limb at N8 to N20. Their structure was constantly changing.

A continuous network of low prominences covered the NE limb over a large segment, extending from N38 to N61 on the 30th. Cloud prevented Strach from making any observation on the 31st but Hendrie obtained an image on that date showing that it had developed into a huge mound.

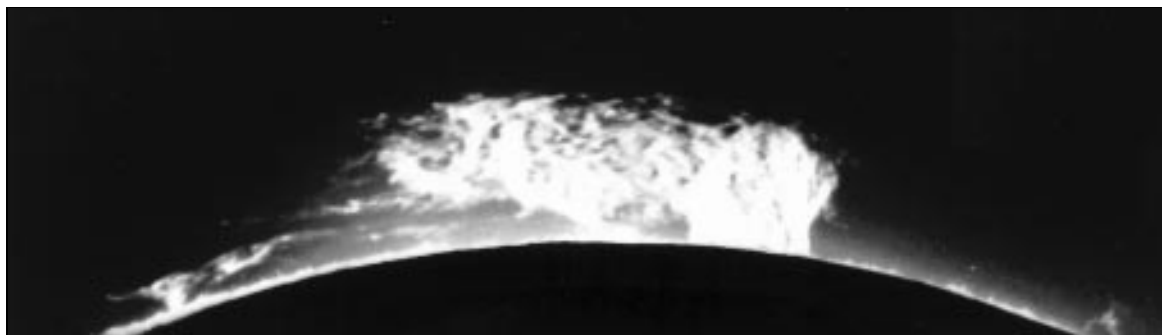
Both Strach and Medway comment that many filaments were seen during the month. On the 19<sup>th</sup> there were three filaments associated with the complex Fhc spot group centered on S13/233. Medway reported no less than eight filaments on the disk on the 30th.

### Flares, 2000 July (1B or greater only)

Date	Time	Lat	CMD	Type	Obs.
7	1104	N22	W39	1B	EHS
11	0750	N17	W42	1N	EHS
11	1135	N17	E37	1N	EHS
11	1137-1323	N17	E29	2N	EHS
12	1030-1110	N18	E25	2B	EHS
18	1525	N06	E84	1N	EHS
19	0700	S19	E12	2N	EHS
19	1030	N13	W17	1N	EHS
20	0940	S12	W07	1N	EHS
20	1030-1110	S12	W09	2N	EHS
21	1034-1853	N12	E13	1N	EHS
22	1113	N14	W55	2N	EHS
23	1330	N12	W57	1N	EHS
15	1430	S10	W26	1B	KJM
20	1735	N15	E25	1n	KJM
22	1430	N10	E28	1f	KJM
30	1310	N18	E60	2B	KJM

### Prominence MDF, 2000 July

Observer	All Latitudes				0-40°			40-90°		
	North	South	Total	Days	North	South	Total	North	South	Total
K. Medway	5.5	3.3	8.8	24	3.3	2.3	5.6	2.6	1.1	3.2
M. Hendrie	6.4	4.8	11.2	5	3.8	2.8	6.6	2.6	2.0	4.6
E. Strach	6.6	5.7	12.3	19	3.6	3.4	7.0	2.9	2.3	5.2



Prominence on northeast limb. 2000 July 31, 1640. 150mm Cooke at f/45, 0.25s on TP2415. Mike Hendrie