

White light Mean Daily Frequencies, 2001 October

| Observer | AA | | | | R | | Q | |
|---------------|-------|-------|-------|------|-------|------|-------|------|
| | North | South | Total | Days | Total | Days | Total | Days |
| R. Dryden | 5.1 | 5.3 | 10.4 | 12 | 168.0 | 12 | - | - |
| A. Gabriël | 4.3 | 4.8 | 9.1 | 28 | 147.5 | 28 | - | - |
| M. Hendrie | 7.4 | 4.1 | 11.6 | 7 | 169.3 | 7 | - | - |
| H. Hill | 3.9 | 4.0 | 7.9 | 21 | - | - | - | - |
| G. Johnstone | 4.4 | 4.6 | 8.9 | 16 | - | - | - | - |
| P. Meadows | 5.2 | 4.5 | 9.6 | 11 | 141.9 | 11 | 28.0 | 11 |
| K. Medway | 2.9 | 2.8 | 5.7 | 18 | - | - | - | - |
| G. North | 3.1 | 5.1 | 8.2 | 9 | 144.9 | 9 | - | - |
| E. Richardson | 5.7 | 4.7 | 10.3 | 21 | 136.9 | 21 | 21.2 | 21 |
| J. Shanklin | 4.6 | 4.9 | 9.5 | 17 | 143.0 | 17 | - | - |
| D. Storey | 5.0 | 4.0 | 9.0 | 4 | - | - | - | - |
| E. Strach | 4.2 | 4.4 | 8.6 | 24 | 135.8 | 21 | 23.7 | 24 |
| MEANS | 4.5 | 4.4 | 8.9 | 188 | 145.7 | 126 | 23.6 | 56 |

AA = active areas, R = sunspot number, Q = mean quality estimate (JBAA 98,6,pp282-286)

White light activity, 2001 October

Meadows reports that observations on the 5th to 7th showed that the majority of the white light activity was in the south. None of the groups were particularly large: the largest was a Fac group at N21/79 which had an area of 360 millionths on the 7th. Strach reports that the north became more active on the 11th with the appearance of a Dsi group with three penumbral spots. On the 12th, Meadows classified this group as type Eko and reports that it was located towards the eastern limb at N16/0 with an area of 720 millionths. This group comprised mainly of a north-south elongated following penumbral spot and a smaller and more symmetrical leading spot. On the 13th Meadows saw small spots between the leader and follower while on the 17th, the following spot had spread out in longitude and more small spots were seen surrounding the following spot. This group was also on the central meridian. Strach comments that after the 18th it gradually faded: when next seen by Meadows on the 22nd and 23rd, the group appeared as types Eac and Hsx respectively close to the north-western limb.

On the 22nd three moderately sized groups were reported by Meadows and Strach to be around the central meridian at approximately the same southern latitude. When seen by Meadows on the 23rd, these were at S15/297 of type Dac with an area of 160 millionths, at S17/282 of type Dko with an area of 310 millionths and at S17/270 of type Hkx with an area of 430 millionths. The two eastern most groups contained quite irregular main spots, each with several umbrae within. These two groups were seen again by Meadows on the 28th each with a reduced size and near to the western limb.

Strach reports that an innocent looking Cro group was seen on the 23rd at N7/221. On this date Meadows estimated its area to be 140 millionths. Strach saw it develop into a Dso group by the 26th. The leader had crossed the CM on the 27th and contained 3 umbrae whilst the follower spot had split into three penumbral spot. On the 28th Meadows reports that this group had increased in size to 680 millionths and it was now type Ehc as the leading spot had a symmetrical penumbral although two main umbra were within it. The following part of the group consisted of a collection of smaller irregular penumbral spot. By the 30th, the size of this group had halved to 340 millionths due to a decrease in size of all the penumbral spots: it was now of type Ekc. The group also appeared smaller on the 31st.

The largest group of the month was seen on the 26th by Strach at N10/172; it developed rapidly into a Dai group on the 27th. On the 28th Meadows estimated its area to be 970 millionths and he classified as type Ekc with the largest spot being the leading one which occupied a region of approximately 7° in longitude and 5° in latitude. There were three main umbrae within this spot which encompassed a region of photosphere. Several much smaller penumbral spots were seen by Meadows towards the following and northern part of the group. By the 30th, a part of the main spot had separated to form a new leading spot of the group. The largest spot, now towards the centre of the group, still had three main umbrae and the region of photosphere. The total area remained similar to the 28th at 980 millionths. On the 31st another part of the main spot was seen to separate by Meadows, this time towards the following part of the group. Several small spots were still seen within the group which was still classified as type Ekc, was just part the central meridian and it had an area of 1000 millionths. Also at the end of the month another moderately sized group was reported by Meadows. This group, near the eastern limb on the 28th at N6/139, was of type Dkc. On the 30th its area was estimated to be 440 millionths but by the 31st it had reduced to 330 millionths. Several observers reported that the southern hemisphere was spotless on the 30th and 31st.

Ha activity, 2001 October

Hill comments that certain days in the month provided examples of the most delicate filamentary strands (usually eruptive prominences). The most striking of these were observed in the latter stages of an eruption on the 1st when two penumbral spots at S20/296 & 274 respectively were approaching the W limb. Hill recorded bright prominences at S8 and S27 at the SE limb on the 2nd with the latter taking the form of a broad arch curving over and tapering to meet the limb further north at S20. Though no longer visible on the following day, this was the position where a violent eruption occurred at 1228 developing rapidly to reach maximum phase at 1245-1250. Strach also observed this prominence at 1235 and until 1312 when it had started to fade. It was associated with a limb flare which probably emanated from the averted hemisphere as the relevant spot group rotated around the E limb two days later at S22/84. The eruption was initially a bundle of parallel jets, directed SE from the limb to a considerable height. At 1252 Strach recorded an extension of the jet from the tip of the 'bundle' directed to the W towards a small prominence on the limb. There were very rapid developments: at 1255 the extension reached the limb and the whole structure formed an arc. At 1258, the apex of the arc developed an extension which curved southwards at 1301. Strach's last observation was at 1312 when the arc was smaller but the extension from the apex persisted and the whole structure became fainter. Hill notes that the event had subsided markedly by 1330 but it was still of remarkable appearance. On the 6th an extensive range of prominences were observed by Hill at the E limb from N20 to N48 - Strach reports an arc prominences was seen on the E limb at N29 to N44 on the same day. Strach continues that on the 7th it had broken up and two large fragments were seen detached from the solar limb. On the 8th Strach reports that there was no sign of it while Hill observed the merest vestige of it at N22. Gabriël observed a very large explosive prominence early on the 9th. He first saw it about 0800, when it had already risen to its full extent of about 450,000km high. It had its roots at S16 on the W limb. It was very bright at that time and possibly the best prominence he has seen in 28 years of H α observing. It resembled somewhat a large tree, with the upper part existing of many small clouds. These were moving and changing forms all the time. Unfortunately clouds came in at about 0820: at 1250 only a stubby small prominence remained. Strach reports that a magnificent prominence graced the NW limb from the 9th to the 12th, extending from N34 to N50. On the 9th it was a high hedgerow type at 1325 which developed a slender arc like extension towards the N at 1430. By the 11th the arc was complete, its southern portion was massive, its northern part was more substantial than on the previous day. The whole prominence vaguely resembled an anteater. On the 11th Hill observed this prominence extending along the NW limb from N28 to N45, some 190" in height (140,000km) and of a very delicate internal structure which was constantly changing. As a consequence of solar rotation it was seen by Hill to be noticeably lower on the 12th. An extensive arc was seen by Strach on the 11th and 12th. It originated from a point at S41 on the E limb and curved northwards towards a detached prominence at S21 without reaching it. Thus the arc spanned a full 20°! Hill saw a spectacular series of eruptive outbursts around 1200 on the 22nd. The mean latitude was S11 on the W limb and they were probability associated with the spot region seen in the previous day at S16/18. A sizeable nearby quiescent-type prominence seemed to be unrelated as its shape was unaffected. Strach reports that fine slender loops were also seen on the 22nd between 1144 and 1320. They arose from the northern part of a prominence on the W limb at S16 and they contained several 'knots' or 'condensations' some of them becoming isolated at a height of 110,000km.

Major Flares, 2001 October (excluding types SF & SN)

| Date | Time UT | Lat. | CMD | Type | Obs. | Date | Time UT | Lat. | CMD | Type | Obs. |
|------|-----------|------|-----|------|------|------|---------|------|-----|------|------|
| 3 | 1235 | S23 | E88 | 1N | EHS | 27 | 0920 | N12 | E01 | 1N | AG |
| 11 | 1108 | N12 | E17 | 1F | AG | 28 | 1000 | N11 | E42 | 1B | KJM |
| 11 | 1110 | S17 | E52 | 1F | AG | 28 | 1235 | N10 | W85 | 1N | EHS |
| 12 | 1156 | N15 | E64 | 2N | EHS | 29 | 1020 | N12 | E28 | 1N | AG |
| 13 | 1228 | N15 | E48 | SB | KJM | 29 | 1242 | N13 | E24 | 1N | EHS |
| 22 | 1215 | N15 | W14 | 2N | EHS | 29 | 1330 | N13 | E24 | 1B | EHS |
| 22 | 1413-1429 | S17 | E23 | 2N | EHS | 30 | 0833 | N13 | E15 | 1B | AG |
| 24 | 1053 | S14 | W06 | 1N | AG | 30 | 1330 | N13 | E08 | 1B | EHS |
| 24 | 1055 | S18 | W09 | 1N | EHS | 31 | 1232 | N20 | W65 | 1B | EHS |
| 25 | 0807 | N08 | E27 | 2F | AG | | | | | | |

AG also observed 3 SN flares, KJM 2 SF and 1 SN flares and EHS 8 SF flares.

Prominence Mean Daily Frequencies, 2001 October

| Observer | All Latitudes | | | | 0-40° | | | 40-90° | | |
|------------|---------------|-------|-------|------|-------|-------|-------|--------|-------|-------|
| | North | South | Total | Days | North | South | Total | North | South | Total |
| A. Gabriël | 4.1 | 4.9 | 9.0 | 28 | 3.5 | 3.3 | 6.8 | 0.7 | 1.6 | 2.3 |
| H. Hill | 4.6 | 3.7 | 8.3 | 19 | 3.1 | 3.0 | 6.1 | 1.5 | 0.7 | 2.2 |
| K. Medway | 4.3 | 3.0 | 7.3 | 7 | 3.6 | 3.0 | 6.6 | 0.7 | 0.0 | 0.7 |
| E. Strach | 5.7 | 5.2 | 10.9 | 20 | 3.8 | 3.0 | 6.8 | 1.9 | 2.2 | 4.1 |