

White light Mean Daily Frequencies, 2001 January

| Observer | AA | | | | R | | Q | |
|--------------|-------|-------|-------|------|-------|------|-------|------|
| | North | South | Total | Days | Total | Days | Total | Days |
| R. Dryden | 5.1 | 2.6 | 7.8 | 13 | 126.3 | 13 | - | - |
| A. Gabriël | 3.8 | 2.7 | 6.4 | 20 | 105.2 | 20 | - | - |
| M. Hendrie | 6.3 | 3.1 | 9.4 | 13 | 135.8 | 13 | - | - |
| G. Johnstone | 4.4 | 2.3 | 6.7 | 13 | - | - | - | - |
| P. Meadows | 5.1 | 3.1 | 8.2 | 15 | 124.7 | 15 | 23.0 | 15 |
| K. Medway | 3.2 | 2.2 | 5.5 | 17 | - | - | - | - |
| J. Shanklin | 3.9 | 2.2 | 6.1 | 19 | 81.0 | 19 | - | - |
| L. Smith | 3.9 | 1.4 | 5.3 | 8 | 84.9 | 8 | 16.0 | 8 |
| E. Strach | 3.8 | 2.6 | 6.4 | 20 | 103.1 | 19 | 18.6 | 20 |
| D. Storey | 4.0 | 2.0 | 6.0 | 2 | - | - | - | - |
| MEANS | 4.3 | 2.5 | 6.8 | 140 | 108.0 | 107 | 19.6 | 43 |

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

White light activity, 2001 January

Strach reports that the month opened with the naked eye spot of the end of December approaching the CM (Johnstone reports that this spot was seen with the protected naked eye on the 1st and 3rd). When this Ekc group at S7/202 was seen by Meadows on the 3rd it had almost halved in size to 560 millionths since the 30th December. Now the leading spot had split into two and the size of the following penumbral spots had decreased in size and number. When this group was next seen on the 6th, all that remained was a smaller foreshortened leading penumbral spot and one following spot. By the 7th, the leading spot had decayed further and it was close to the western limb.

On the 8th, Meadows notes there was a dominance of northern hemisphere groups but that all were small in size; the largest being an Hax spot on the CM at N9/118 which had an area of 120 millionths. He notes that the group nearest to the eastern limb appeared as a small leading penumbral spot with other spots following over 20° of longitude. By the 9th more spots had appeared, most of which had small penumbra. The group was now classified as type Fsc at N12N/59. On the 11th Strach saw this group as string of spots. When Meadows next saw the group on the 13th, it had developed further with many penumbral spots of different sizes spread throughout the length of the group. The maximum area of the group was on the 14th and 15th at 560 millionths when the leading spot developed to become the largest of the group. This continued to be the case as the group moved westward. On the 17th, Meadows notes that all of the following penumbral spots had disappeared to leave a smaller leading spot and a few following spots. On the 18th, only a single penumbral spot was seen close to the limb. On the 19th, Strach saw the last spot of the string near the western limb.

Observations from 14th to 18th by Hendrie, Johnstone, Meadows, Medway and Strach showed that the southern hemisphere was almost devoid of spots (Meadows who saw an Axx spot at S5/311 on the 16th). Strach observed that the southern hemisphere started to revive on the 19th with the appearance of three groups in the east: a Dao group at mean position of S5/272, an Hsx spot at S15/252 and a Bxo group at S27/285. Around the same time Strach saw a single Hrx spot was at N3/339 - on approaching the western limb on the 24th it became a bipolar group.

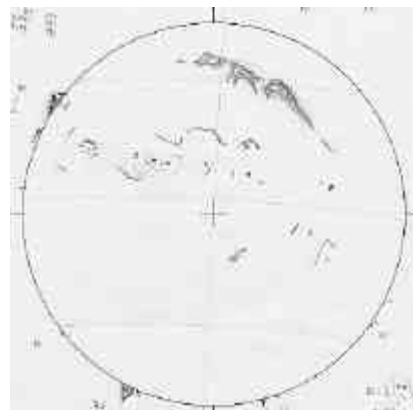
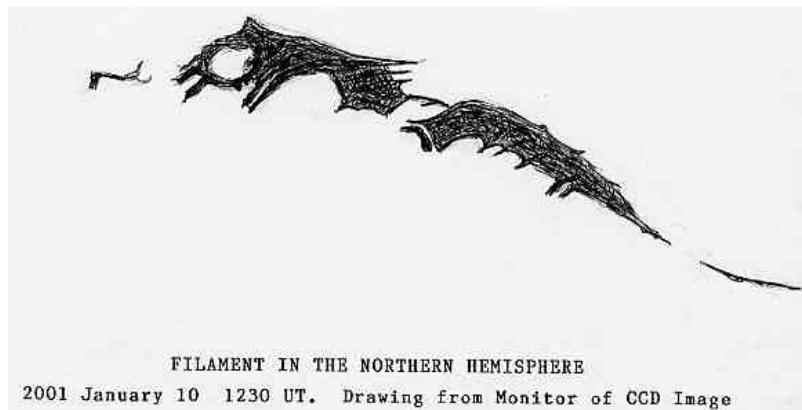
When Meadows next saw the Sun on the 24th, activity had increased again with the greater number of groups now being in the southern hemisphere. The largest of these was close to the equator with a mean location of S3/233 and of type Dac and area 210 millionths. The biggest spot in this group was the following one which had a smaller penumbral spot just to the north of it. By the following day, these spots had merged to form a group of type Dkc. By the 27th Meadows noted that the following spot had decayed slightly while in the middle of the group a penumbral spot had enlarged compared to the 25th while at the leading part of the group more smaller spots had appeared. On the 28th, a moderately sized spot had appeared at the leading position while the middle penumbral spot had also increased in size but the following one had decayed slightly; the total area was now 330 millionths.

Ha activity, 2001 January

Strach and Medway comment that the relatively high prominence count has been maintained from last year. On the 3rd Strach observed two very bright hedgerow prominences on the E limb, one extending from N25 to N38 and the other from S17 to S39°. On the 7th Medway reports that many mounds and small pillars were seen. Strach saw an irregular

pyramidal type of prominence on the 11th at S65 to S70 on the E limb while on the 14th Medway comments that many mounds were seen once again. On the 17th, at 1035, Strach saw two very bright and detached prominences on the E limb at S12 and at S17. At 1055 the former gained a slender attachment to the limb. On the 19th Strach observed another pyramidal shaped prominence at S75 to S82 on the E limb. Also on this date Strach observed a *prominence eruption*: at 1150 his attention was drawn to a small but very bright and slightly detached prominence on the E limb at S11. It changed its configuration with incredible speed: at 1154 it broke up into a detached brighter part and fainter fragments nearer the limb. At 1155 there was a bright detached streak with fainter debris to the south. At 1157 and 1158 the bright detached streak showed condensations whilst the southern debris brightened. Throughout the observation period the distance from the limb gradually increased and at 1159 all structures became fainter and dissolved into condensation 'blobs'. At 1200 he measured the maximum height of the furthest part and estimated it at 175,000 km. After that it was ejected even further and Strach last saw it at 1205 as a faint streak and at 1206 it could no longer be seen. All this happened within the time span of 15 minutes. This eruption was associated with a spot on the E limb at S15/250. On the 20th Strach saw a high spire on the E limb at S49 while on the same day Medway saw a lot of spicule/pillar and mound prominences together with, at 1300, a suspended 'cloud' prominence at S30. Medway saw a large mound prominence on the NE and SW limbs on the 27th. On the 28th Medway saw a tall pillar prominence on the SE limb at S27, an extended mound on the SW limb (0 to S15) and an interesting prominence on the NW limb at N15.

Strach notes that the long filament seen in the northern hemisphere at the end of December was still in evidence during the first few days of January. It was of an undulating shape and it crossed the CM on the 1st. On the 3rd its western portion was very dark, the eastern part was fainter. On the 5th the western part was approaching the W limb. He do not know its fate as he was unable to observe on the 6th but he would have expected to record a prominence on the W limb on the 7th but nothing was visible at the expected position. A very similar filament was seen by Strach emerging from a prominence at N39 on the E limb on the 5th. By the 7th it was an outstanding feature, extending in SW direction. On the 10th it attained a length of 2/3 of the solar radius and showed great detail (see drawings below). On the 11th it broke up into two portions. On the 13th only its northern portion remained near the W limb. Strach notes that from the 16th onwards there was a paucity of filaments in the southern hemisphere. This was particularly pronounced on the 19th when he counted 8 very dark ones in the N and 2 fainter filaments, whilst in the S was only one dark filament and 3 faint ones. A similar distribution was seen on the 24th and 25th.



2001 January 10, 1230 UT. Drawing of large filament (detail left and whole disk right). Eric Strach

Flares, 2001 January

On the 24th Strach saw a flare-active area near the W limb that was associated with a nearby sunspot group; at 1005 UT he observed a SF flare at N3/343 and at 1108 a limb flare was seen in the same region. By 1125 the flare had subsided.

| Date | Time UT | Lat | CMD | Type | Obs. |
|------|---------|-----|-----|------|------|
| 7 | 1148 | N23 | E47 | SF | KJM |
| 13 | 1355 | N20 | W37 | SB | KJM |
| 14 | 1136 | N11 | W14 | SF | KJM |
| 24 | 1005 | N03 | W74 | SF | EHS |
| 28 | 1140 | S20 | W59 | SF | KJM |

Prominence Mean Daily Frequencies, 2001 January

| Observer | All Latitudes | | | | 0-40° | | | 40-90° | | |
|-----------|---------------|-------|-------|------|-------|-------|-------|--------|-------|-------|
| | North | South | Total | Days | North | South | Total | North | South | Total |
| K. Medway | 4.8 | 4.8 | 9.6 | 6 | 3.6 | 3.5 | 7.2 | 1.2 | 1.3 | 2.5 |

| | | | | | | | | | | |
|-----------|-----|-----|------|----|-----|-----|-----|-----|-----|-----|
| E. Strach | 4.5 | 6.5 | 10.9 | 16 | 3.7 | 3.7 | 7.4 | 0.8 | 2.7 | 3.5 |
|-----------|-----|-----|------|----|-----|-----|-----|-----|-----|-----|