Notes and News

From the President

Much work is done in our local societies and organisations for which very little credit is given. The organisation of speakers, venues and other logistical planning can absorb a great amount of time and effort. We are lucky in the BAA to have meeting organisers who are both enthusiastic and conscientious: Nick Hewitt has arranged our Ordinary Meetings for some time now and he has recently been assisted by Hazel Collett from York, who also helps with setting up the workshops. The Directors and their assistants set up Section meetings and from time to time individuals step forward to organise other events such as the Exhibition Meeting. Even the BAA stall at Astrofest needs organisers and supporters if it is to be effective.

The Winchester weekend is set up and run by Richard Flux, a role that he has filled for a while. It is so easy to turn up at a society or BAA meeting and take for granted all the hard work that goes into making it a success.

In the autumn I had the pleasure of visiting the Isle of Man for the Association's regular 'Out of Town' weekend. This was hosted by the local society, the IoM Astronomical Society, and very well done it was too. When a local society is well organised and run it comes through so clearly when an event such as this is held. Each task needing completing had an owner and was carried out with the minimum of fuss and bother. I'm sure it wasn't as easy as that but that was how it looked to the outsider. Our own BAA organisers assist in putting these events together but it is the society that does most of the work and deserves the credit. The BAA held an 'Out of Town' meeting in York last year and that was also a great success, in fact it recorded one of the highest attendances for any meeting that I have attended.

With this success still fresh in my memory I have to admit to approaching our trip to the IoM with some trepidation. It is only a small island with a population of between 60–70,000 inhabitants. Would they indeed be able to summon enough interest to make the weekend a success? How many astronomers could they have with a population that size and how many would be persuaded to travel from the mainland?

My concerns were ungrounded. The event was well managed. Superb speakers were present for the Friday and Saturday sessions. The Friday evening public lecture was attended by many local people and many fellow BAA members took the trouble to travel and enjoy the weekend. To finish off the weekend on a high point, the opportunity was given to visit the society's observatory, an excellent facility that echoed the energy and enthusiasm of the society. It is a quality building and excellently appointed, housing the society's 16" telescope.

My thanks go out to not only the organisers of these two events but also to those who have put together so many other occasions throughout the years. Please do not take the organisers in your local society for granted. They do a great job. They could be very difficult to replace. And for every organiser there are perhaps two or three 'doers' in the group who just get on quietly with their tasks and can easily be overlooked. Make sure that they also are made aware of your appreciation and of how much they mean to the society.

Tom Boles, *President*

The audience at the BAA meeting held in 2004 September in Douglas, Isle of Man. *(Photo: Hazel McGee)*

Comet Section

Comet prospects for 2005

2005 sees the possible return of 27 periodic comets. None are particularly bright, but several are like to come within range of visual observation with moderate apertures. Three long-period comets are likely to be easily visible in binoculars. 2003 K4 (LINEAR) may be fading from 6th magnitude after its perihelion in 2004 October, though at the time of writing there are hints that it may be coming to a premature end. 2003 T4 (LINEAR) should reach 6th magnitude in the spring. 2004 Q2 (Machholz) could be a naked eye object. Several other long-period comets discovered in previous years are still visible.

Theories on the structure of comets suggest that any comet could fragment at any time, so it is worth keeping an eye on some of the fainter periodic comets, which are often ignored. This would make a useful project for CCD observers. As an example 51P/Harrington was observed to fragment in 2001. Ephemerides for new and currently observable comets are published in the BAA *Circulars*, Comet Section *Newsletters* and on the Section, CBAT and Seiichi Yoshida's web pages. Complete ephemerides and magnitude parameters for all comets predicted to be brighter than about mag 21 are given in the *International Comet Quarterly Handbook*; details of subscription to the ICQ are available from the Director. The updated Section booklet on comet observing is still available from the BAA office or the Director.

9P/Tempel was first observed in 1867, but was lost between 1879 and 1967 following an encounter with Jupiter in 1881, which increased the perihelion distance from 1.8 to 2.1 AU. Further encounters in 1941 and 1953 put q back to 1.5 AU and calculations by Brian Marsden allowed Elizabeth Roemer to recover it in 1967. Alternate returns are favourable, but an encounter with Jupiter in 2024 will once again increase the perihelion distance to 1.8 AU. The 2000 return was an unfavourable one and no observations were reported. It is an important comet to observe, as it is the target for the *Deep Impact* space mission. It may come within visual range as early as 2005 February, when it is visible in the morning sky in Virgo and remains in the constellation until July. It should be at its best in May and June, when it may reach 10th magnitude in the evening sky, but it heads south as it fades and UK observers will lose it after mid-summer, although elsewhere it should remain visible until October. The impactor of the *Deep Impact* spacecraft is expected to hit the comet on 2005 July 4 with a variety of possible outcomes. Observers who want to witness the event should head south of around 50°N because the object will be rather too low from the UK unless there is a spectacular outburst.

21P/Giacobini–Zinner is the parent comet of the October Draconid meteors. On this occasion Earth passes just inside the comet's orbit 92 days after the comet, with any shower taking place on October 8.7. The comet was first discovered by Michael Giacobini at Nice observatory in December 1900 and was thought to have a period of 6.8 years. The next two returns were expected to be difficult to observe, but in October 1913, Ernst Zinner, of Bamberg, Germany, discovered a comet whilst observing variable stars in Scutum. This turned out to

be the same comet, but the period had been incorrectly determined and was actually 6.5 years. The comet was missed at three unfavourable returns, so the 1998 return was its thirteenth apparition comet. This is another mediocre apparition and the closest the comet will get to the Earth is 1.42 AU. It will come within visual range in 2005 March, but is not well placed for the UK until April, when it may be 12th magnitude. It is a morning object, and draws back into the Sun, so that we will lose it again in May, by which time it may have brightened to 10th magnitude. For most of this period it is in Pegasus.

29P/Schwassmann–Wachmann is an annual comet that has frequent outbursts and seems to be more often active than not at the moment, though it rarely gets brighter than 12th magnitude. Initially in Pisces, it spends most of the year in Aries, reaching opposition at the end of October. The comet is an ideal target for those equipped with CCDs and should be observed at every opportunity. It is quite well placed this year and UK based observers should be able to follow it during January and February, when it is in Pisces and throughout the second half of the year when it is in Aries.

37P/Forbes was discovered by A. F. I. Forbes during a visual search with a 20cm reflector at Hermanus, South Africa on 1929 August 1 at a favourable opposition. It has undergone several encounters with Jupiter, most recently to within 0.38 AU in 1990 and 0.58 AU in 2001. These have pushed out the perihelion distance a little, however this will be the best opposition for the next 50 years. It may come within visual range in 2005 April, but is a southern hemisphere object throughout the apparition, reaching its best (12th magnitude) in June and July as it passes from Lupus to Scorpius.

62P/Tsuchinshan The comet was discovered at Purple Mountain Observatory, Nanking, China in 1965, following a close approach to Jupiter in 1960, which reduced the perihelion distance from 2 to 1.5 AU. Another encounter in 2020 will reduce it further to 1.3 AU giving an excellent apparition in 2023/24. The inclination is decreasing, combined with a rapid regression of the node and rotation of the orbital plane. Unusually, the comet's name derives from that of the observatory rather than those of the discoverers. It was at perihelion at the end of 2004 and will slowly fade from 11th magnitude. It will remain visible in the evening sky until April or May as it completes a retrograde loop in Coma.

69P/Taylor A series of Jupiter encounters in the 19th century reduced the perihelion distance from 3.1 to 1.6 AU and led to its discovery by Clement Taylor, with a 0.25m reflector from Herschel View, Cape Town, in 1915 November. It was quite bright, 9th magnitude at best, and shortly after perihelion, in 1916 February, E. E. Barnard found a double nucleus, each with a short tail. The secondary nucleus became brighter than the primary, but then rapidly faded and the primary also faded more rapidly than expected. The comet was then lost until 1977, when new orbital computations led to the recovery of the 'B' component by Charles Kowal with the Palomar Schmidt. The 'A' component was not found. The comet has had several encounters with Jupiter, the closest recent one being in 1925, and had very close (0.06 AU) encounters in 1807 and 1854. The comet was not expected to be brighter than 15th magnitude at its last return, however it was recovered at around 12.5 in mid-January 1998. The observations suggest that it suffered two outbursts. This makes it difficult to predict the likely brightness at this return, and it was recovered in mid October 2004 at 17th magnitude. Unless it undergoes further outbursts it is unlikely to get within visual range in 2005, however it is worth monitoring the expected position of the comet, particularly by CCD. It retrogrades from Cancer to Lynx then resumes direct motion and reaches the border of Leo Minor and Major by the end of June, when it slips into the twilight.

78P/Gehrels Tom Gehrels discovered this comet at Palomar in 1973. Its perihelion distance is slowly decreasing and is currently around the lowest for 200 years. The eccentricity is slowly increasing, with a marked jump in both following a moderately close approach to Jupiter in 1995. This return is extremely favourable, with the comet reaching opposition and perihelion within a fortnight of each other. At the last return the comet reached 12th magnitude and this time round it had reached mag 11 in mid-October. By 2005 it is well past its best,

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Comets reaching perihelion in 2005

Comet	*T*	*q*	*P*	*N*	H_1	K_1	*Peak mag*
2004 F3 (P/NEAT)	Jan 4.3	4.31	8.04	0	9.0	10.0	15
56P/Slaughter–Burnham	Jan 15.0	2.54	11.55	4	8.0	15.0	16
2004 Q2 (Machholz)	Jan 24.9	1.21			6.1	7.5	4
3D/Biela	Feb 1.5	0.80	6.54	6	8.0	15.0	?
10P/Tempel	Feb 15.0	1.43	5.38	20	9.0	12.5	13
49P/Arend–Rigaux	Feb 24.6	1.37	6.61	8	11.3	11.0	14
141P/Machholz (A)	Feb 27.8	0.75	5.23	2	13.4	29.8	11 ?
141P/Machholz (D)	Mar 2.5	0.75	5.23	2	13.4	29.8	11 ?
2004 L1 (LINEAR)	Mar 30.1	2.05			10.0	10.0	13
32P/Comas Sola	Apr 1.3	1.83	8.78	9	6.5	20.0	13
2003 T4 (LINEAR)	Apr 3.6	0.85			6.0	10.0	6
1998 X1 (P/ODAS)	May 2.5	1.98	6.78	1	10.5	15.0	17
1892 T1 (D/Barnard)	May 3.2	1.56	7.02	1	8.0	15.0	?
119P/Parker–Hartley	May 24.3	3.04	8.89	2	9.0	8.0	15
1886 K1 (D/Brooks)	May 30.8	1.88	6.67	1	8.0	15.0	?
129P/Shoemaker–Levy	Jun 4.7	2.81	7.23	2	11.0	10.0	17
72P/Denning–Fujikawa	Jun 20.0	0.80	9.08	2	15.5	25.0	14
1983 V1 (P/Hartley–IRAS)	Jun 26.8	1.28	21.52	1	8.0	10.0	10
91P/Russell	Jun 26.8	2.60	7.67	3	7.5	15.0	15
21P/Giacobini–Zinner	Jul 2.8	1.04	6.62	13	8.5	10.6	10
2004 K1 (Catalina)	Jul 5.2	3.40			7.0	10.0	14
9P/Tempel	Jul 5.3	1.51	5.52	10	5.4	25.0	10
2000 G1 (P/LINEAR)	Jul 13.9	1.00	5.34	1	19.5	5.0	21
138P/Shoemaker–Levy	Jul 19.9	1.71	6.91	2	15.0	10.0	19
107P/Wilson–Harrington	Jul 10.7	0.99	4.29	6	15.0	5.0	15
37P/Forbes	Aug 1.7	1.57	6.35	9	10.5	10.0	12
1998 W1 (P/Spahr)	Sep 3.4	1.73	6.62	1	10.2	15.0	15
105P/Singer Brewster	Sep 11.3	2.04	6.45	3	12.5	15.0	19
1884 O1 (D/Barnard)	Sep 20.8	1.33	5.46	1	11.5	15.0	?
1998 W2 (P/Hergenrother)	Nov 2.2	1.43	6.92	1	14.5	10.0	15
2004 L2 (LINEAR)	Nov 15.0	3.78			10.0	10.0	18
117P/Helin–Roman–Alu	Dec 19.9	3.04	8.24	2	2.5	20.0	14
60P/Tsuchinshan	Dec 24.1	1.77	6.78	6	10.5	15.0	14
101P/Chernykh	Dec 25.0	2.35	13.92	2	3.3	15.0	10

The date of perihelion (T), perihelion distance (q), period (P), the number of previously observed returns (N), the magnitude parameters H_1 and K_1 and the brightest magnitude are given for each comet. The brightest magnitude given for 29P is that typical of an outburst. Comet 141P/Machholz has experienced a number of fragmentations and the magnitude of the components is uncertain.
Note: $m_1 = H_1 + 5.0 * \log(d) + K_1 * \log(r)$

Deep Sky Section

Another bright supernova in the northern sky

After the 11th magnitude supernova SN2004dj discovered in July this year, it was not expected that another bright one would be seen so quickly – and one so well placed for northern hemisphere observers. But on September 27 S. Moretti, using a 0.4m telescope at Ravenna, discovered a magnitude 12.8 supernova (SN2004et) in the galaxy NGC 6946. Details were issued by Roger Pickard (Variable Star Section Director) on BAA electronic circular no.0161 and paper circular no.797. Although the VSS monitors the rise and decline of supernovae, these objects are also an opportunity for more general observers to look at galaxies they may not have observed before.

NGC 6946 was discovered by William Herschel on 1798 September 9. He catalogued it as 76 IV, meaning it was the 76th object in his category 4, which were 'planetary nebulae'. Planetary nebulae to Herschel were objects that were small, round and nebulous, and many of his galaxy discoveries were classified by him at the time as planetaries. He summarised this nebula as 'considerably faint, very large and irregularly faint'. He also remarked that '…the nebulosity is of a milky kind and it is a pretty object'.

If anyone wants to carry out a single galaxy supernova search, this would be the one to choose. Supernovae have been discovered in this galaxy in 1917, 1939, 1948, 1968, 1969, 980, 2002 and now 2004. The 1917 event, discovered on a photographic plate by G. W. Richey at Mt Wilson, led directly to studies ultimately proving spiral nebulae to be other galaxies.

NGC 6946 is located at RA 20h 34m 52.0s and Dec. +60° 9′ 15" (2000.0). This places it right on the border of Cepheus and Cygnus. The galaxy is a Herschel 400 object. This is a list of the 400 best Herschel objects compiled by the members of the Ancient City Astronomy Club in Florida, USA (see **http://www.astroleague.org/al/obsclubs/herschel/hers400.html**). It is an Sc type galaxy of magnitude 8.8(v), but as its surface brightness is quite low it can be a challenging object visually under a poor sky.

An image of NGC 6946 with the supernova by Martin Mobberley. 2004 October 4.825 UT, Celestron 14/Paramount ME and ST9XE CCD, 3×180 sec. *M. P. Mobberley.*

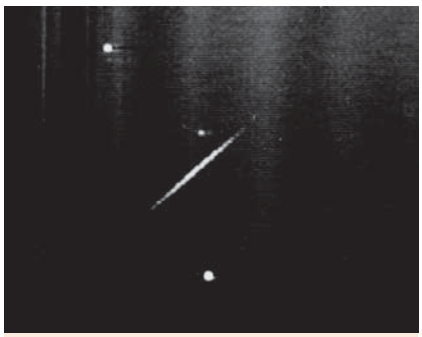
In a good sky a 150mm reflector should show it as a small featureless haze while in 300mm it appears as slightly elongated with a brighter concentrated core. A 500mm instrument will show some spiral structure. Just 30 arcminutes to the NNW of this galaxy is another Herschel 400 object, the open cluster NGC 6939. This is a beautiful, but quite small and faint, star cluster and really needs at least 250mm aperture to be appreciated.

Stewart Moore, *Director*

Meteor Section

Bright prospects for the Geminids this winter

Active between December 7 and 16, the Geminids have in recent years become established as a favourite target for regular meteor observers. Certainly since the early 1990s, the Geminids' activity close to maximum has outstripped that of a typical Perseid return. The very strong Geminid activity of 1996 December 13–14, marked by an abundance of bright meteors and fireballs (meteors brighter than magnitude –5), is well-remembered by Meteor Section contributors:[1] very similar encounter circumstances exist in 2004, and we may hope, weather permitting, for another strong showing on the equivalent date, this year a Monday evening to Tuesday morning.



A bright Geminid meteor recorded at 1997 Dec 14d 02h 35m 34s UT on his Astrovid 505E system by Yorkshire observer Alex Pratt.

Unlike the situation last year, the 2004 Geminids will be favoured by the absence of moonlight. New Moon falls on December 12, and dark sky conditions will be found throughout the span of shower activity. Observers are, as ever, encouraged to make visual watches by the Section's standard methods[2] on every possible clear opportunity, and not just on the expected maximum night. Given their current broad maximum, with rates matching the best of the Perseids for about 36 hours, the Geminids can be very rewarding observationally on the nights to either side of peak.

The Geminids emanate from a radiant just north of Castor, this being above the horizon throughout the long hours of darkness in mid-December. This brings some advantages, since it is always possible that there will be at least *some* clear sky during the 14 hours or so of night-time. The radiant is fairly low in the northeast until about 21h local time, but thereafter is very favourably placed, culminating at an altitude of around 70° in the southern sky for UK-based observers at about 01h, and remaining high up even as dawn is breaking five hours later.

In recent years, the Geminids' activity profile has shown a steady rise from low initial observed rates (about 2–3 meteors/hr) to double figures by December 10–11. Rates increase markedly from this point, and by Dec 12–13, an attentive observer at a dark site, watching in the interval around midnight, may see more than 20 Geminids per hour (corresponding to a Zenithal Hourly Rate (ZHR), corrected for sky haze and radiant altitude, of 30–40). At maximum, ZHR may become as high as 120.

During the 1996 peak, for example, observers frequently recorded bursts of 4–6 Geminids per minute, interspersed with 'lulls' of a few minutes' duration. By Dec 14–15, rates begin to decline, with a still-respectable ZHR of the order of 40–50. From Dec 15–16, however, the decline becomes rapid, and few Geminids are in evidence by that date.

The Geminids are produced by debris from asteroid (3200) Phaethon. As such, the meteoroids appear to be mechanically more robust than the 'dust balls' in cometary streams such as the Perseids and Leonids. Geminids occasionally penetrate the atmosphere to as low as 50km altitude. With an entry velocity of 35km/s, Geminids are among the slowest shower meteors, and brighter events, particu-

larly, can be of a few seconds' duration (contrasting with the more typical two-tenths of a second for, say, Perseids). Sometimes, brighter Geminids may be seen breaking up into chains of luminous 'blobs'.

Past analysis of the Geminid shower close to maximum has revealed some degree of sorting by size among the stream meteoroids.[3] Bright events (produced by larger meteoroids) become more numerous, by proportion, some hours after the highest visual rates have occurred. With the peak expected at 16h UT on Dec 13, evening in the UK is likely to see plenty of bright meteors. In the 1996 return, where circumstances were very similar, bright events were especially abundant for a couple of hours centred on 23h UT, and the repetition of these circumstances makes the 2004 Geminids especially favourable from the point of view of western Europe. Photographic observers might well succeed in recording slow, bright Geminids on Dec 13–14. Undriven time exposures of 10–15 minutes on ISO 400 film, using a 50mm or 28mm lens at f/2.8 or faster can capture Geminids brighter than mag 0. Suggested aiming directions are towards Taurus in early evening, or Cancer/Leo in the early morning hours.

Our most recent detailed look at Geminid activity was in 2001, when Meteor Section contributors amassed the BAA's largest collection of data on the shower thus far. Analysis of these is complete, and a paper reporting the detailed conclusions is in preparation. A ZHR close to 100 was found from midnight until dawn on 2001 Dec 13–14, but observers in the UK were poorly-placed to see the bright-meteor interlude in the shower (some fine bright Geminids were, however, noted on Dec 14–15). The 2002 return was lost to poor weather, while the waning gibbous Moon largely restricted observations around maximum in 2003 to the early parts of the night when the radiant was low. Strong activity was reported early on 2003 Dec 14–15 (ZHR close to 100), with a fair number of bright meteors – some sufficiently noteworthy to elicit reports from the general public to the BAA head office.

The current high levels of Geminid activity relative to those in the 1970s and earlier reflects gradual changes in the meteor stream orbit. Eventually, we shall see the shower start to decline in intensity as the encounter circumstances become less favourable. Now is the time to enjoy the spectacle, and the 2004 Geminid return is particularly favourable from our point of view in western Europe.

Neil Bone, *Director*

1 Evans S. J. & Bone N. M., *J. Brit. Astron. Assoc.* **111**(1), 33–37 (2001)
2 Bone N. M., *J. Brit. Astron. Assoc.* **114**(4), 219–222 (2004)
3 Spalding G. H., *J. Brit. Astron. Assoc.* **94**(2), 109–112 (1984)

Solar Section

2004 July

Sunspot activity was low in the first two weeks of July and high from July 13 to 28. The dramatic change to high activity was predicted by professionals, using the technique of helioseismic holography, who established one week beforehand that large and active spot groups were present on the averted hemisphere.

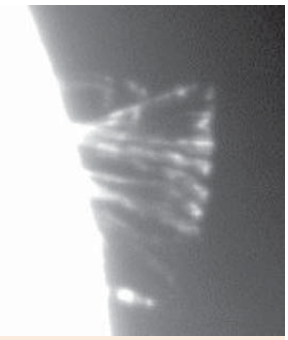


Figure 1. Image by Eric Strach on July 31 showing an array of typical loop prominences on the W limb at N09 (see text).

The high solar activity started with the appearance of an important spot group (in its second rotation) near the E limb on July 13 at S11/47. It expanded rapidly and became a very active Fkc group on July 17, covering an area of some 500msh. It crossed the CM on July 19 with reduced activity and crossed the W limb on July 24 as a single penumbral spot.

The high solar activity was compounded by the appearance of a spot at N08/350 on the E limb on July 16. When the group had fully rotated onto the disk it became visible to the naked eye as a Fkc group and reached its maximum expanse on July 21, estimated at 2000 msh. The group straddled the CM on July 23 after which it gradually waned and finally cleared the W limb on July 29.

A spot appeared near the E limb on July 10 at N10.5/79 that was clearly at the start of its second rotation, having previously been seen on the E limb on June 13 at N12/79. This was mostly a single penumbral spot, which crossed the CM on July 16 and was last seen near the W limb on July 22.

Martin Ratcliffe makes an interesting observation. He notes that the large spot group observed on July 22 closely resembled the one observed on 2003 October 23, a large naked eye spot centred on the disk at the same latitude and longitude. While this may be coincidence, given our rudimentary knowledge of what is going on deep inside the Sun, it raises the question of whether the spots are somehow linked at a deeper level, and these large spots represent surface breakout of some deeper structure.

Martin goes on to suggest that it would be a worthwhile project for someone to investigate the frequency of recurrence of large spots at similar latitudes and longitudes.

North & south MDF of active areas g

	MDFNg	*MDFSg*
July	1.53	1.65 (34)
August	1.59	1.39 (34)

g = active areas (AAs)
MDF = mean daily frequency
R = relative sunspot number
The number of observers is given in brackets.

H-alpha

Surprisingly little prominence activity was observed near the big northern hemisphere spot, although the southern hemisphere group near the CM on July 17 showed extensive and very bright plages.

BAA sunspot data, 2004 July–August

	July		*August*	
Day	*g*	*R*	*g*	*R*
1	2	23	2	33
2	2	26	2	37
3	2	28	2	42
4	2	21	1	30
5	1	17	1	30
6	1	15	2	41
7	1	10	3	50
8	1	17	3	51
9	2	30	4	69
10	3	48	4	71
11	4	60	4	78
12	5	85	4	90
13	6	103	4	96
14	6	109	4	87
15	6	102	4	79
16	4	78	3	68
17	5	94	3	51
18	6	111	3	46
19	6	122	3	49
20	5	113	4	71
21	4	112	4	77
22	4	97	5	81
23	3	93	5	76
24	3	86	3	52
25	3	85	3	47
26	3	87	2	32
27	3	72	3	32
28	2	43	3	33
29	2	30	1	17
30	2	31	1	16
31	2	32	1	7
MDFg	3.25 (54)		2.98 (54)	
Mean R	63.86 (48)		52.81 (48)	

On July 18 a low hedgerow type was on the W limb at 07:30 UT extending from S08 to N06. At 09:10 UT an eruption occurred in the southern part of the hedgerow consisting of two curved jets reaching a height of 135,000km. Both jets seemed to collapse at 09:20 UT and were no longer seen after 09:30.

On July 20 only the lower part of the hedgerow was present and reached from S08 to S23. On the following day the hedgerow was higher and more fragmented. (The associated filament is described below). On the next day the whole structure was no longer visible and only very small traces were seen.

As the naked eye group at N08/346 was approaching the W limb on July 28, a lone jet prominence was seen at N02 on the W limb at 10:36 UT. At my next observation of 13:15 UT it had changed into a triangular shape, but no further observation was possible.

On July 31 an array of typical loop prominences was seen on the W limb at N09 with a smaller bunch at N04. The former looked like a bunch of flowers with characteristic

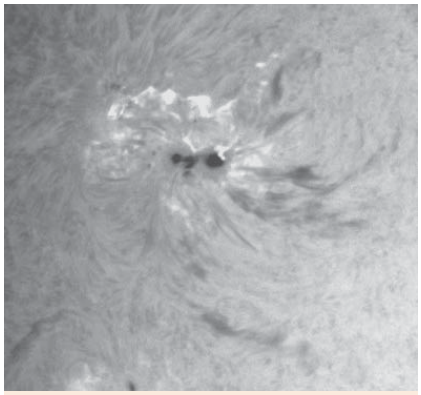


Figure 2. A closeup of the flare activity on July 20 by Eric Strach.

'knots' at their ends, caused by the looping (Figure 1). At the eyepiece the 'stems' appeared very slender. Their disposition constantly changed and they seemed to have lasted all day.

On July 8 a filament was seen extending in the NW direction from a point S24 E60 to S08. It was seen to the E of the CM on July 14 and in broader shape close to the W limb on July 18. On July 20 it was seen as the fragmented prominence described above. On July 26, 4 filaments were seen associated with the naked eye spot.

Innumerable large and small filamentous surges were seen in association with a 3B flare on July 20 (Figure 2). They constantly changed their shape, number and intensity.

Figure 3. Image by Eric Strach on Aug 01 showing chimney-like prominences.

2004 August

The month started with two bipolar groups on the disk. The northern Dao group at N08/261 faded on approaching the W limb whilst the southern Dao group at S09/177 became more active when crossing the CM on Aug 5. The span in longitude rose to 13° thus becoming an Eao type. After Aug 6 the follower spots faded and disappeared on approaching the W limb. This group seems to be a return of the spots first seen on July 9, just to the W of the CM at S09/173.

A new group rotated onto the disk on August 6 at S12/82; again this could be the return of a group first seen in July. It developed rapidly into a compact Ekc group with five penumbral spots, covering an area of 1,000msh on Aug 11, a clear naked eye object (Figure 4). On Aug 14 its longitudinal span was 15.5° making it an Fkc type with an area of some 1,400msh. The leader spot reached the W limb on Aug 17, and the follower spot crossed the limb on Aug 18/19.

A pair of penumbral spots was seen near the E limb on Aug 14 at N08/354, a return of the spots first seen on July 16 which became of naked eye visibility and showed great activity in July. The group still showed some activity in its August appearance, although losing its vigour on approaching the W limb on Aug 24.

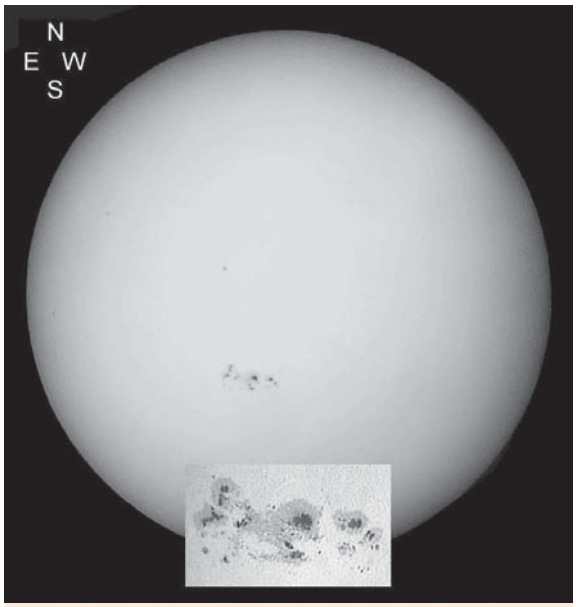


Figure 4. Image taken on Aug 11 by Peter Paice showing active region 649.

H-alpha

Two jet-like prominences were seen on the W limb at N32 and N38 on Aug 1 at 07:30UT; they seemed to have been interactive. They started to erupt resembling a tall chimney with smoke veering southwards (Figure 3). Eventually the whole structure was ejected.

On Aug 4 there was a fine display of a 'hedgerow' prominence on the E limb, this remaining visible until Aug 6. By Aug 7 only tall spike prominences were seen distributed around the limb.

On Aug 12 two low arch prominences were seen at +15° and +18° on the E limb. Thereafter mostly small prominences were seen and activity declined rapidly.

On Aug 25 a revival of prominence activity was noted down the W limb from +40° to –40°, being mostly spikes and small arches. More tall pillar prominences were seen along the NW limb at +17° to +57°.

Mike Beales, *Director*

FAS award for Guy Hurst

At the Federation of Astronomical Societies annual convention, held at the Institute of Astronomy in Cambridge on 2004 October 2, Guy Hurst (BAA past President, and current Vice President) was presented with the Eric Zucker award in recognition of his contribution to the promotion and support of amateur astronomy in the UK over many years. Guy *(right)* was presented with the award by Ron Kelley, FAS President. *Photo by Callum Potter.*

Aurora Section

Preliminary summary of NLC sightings in 2004 July

Date (2004 July)	*No. of UK observers*	*Location of most southerly observation*	*NLC types observed*
01/02	1	Dundee	I, II, IV
03/04	3	Wallsend	I, II, III, IV
05/06	2	Morpeth	I, II, III, IV
06/07	10	Morpeth	I, II, III, IV
07/08	9	Glengarnock	I, II, III
08/09	1	St Andrews	II, III
15/16	3	Morpeth	I, II
22/23	1	Morpeth	I, II
25/26	4	Morpeth	I, II, III
27/28	1	Morpeth	I, II, III

Date (2004 July)	*No. of overseas observers*	*Location of observers*	*NLC types observed*
01/02	2	Denmark	I, II, III, IV
02/03	1	Denmark	II
03/04	2	Denmark	I, II
06/07	1	Denmark	I, II, IV
07/08	1	Denmark	I, II, III
09/10	1	Denmark	I, II, IV
10/11	1	N. Dakota	II
12/13	1	N. Dakota	II
18/19	1	Denmark	I, II, III
19/20	2	Denmark	I, II, II, IV
22/23	1	Denmark	I, II

2004 July

Geomagnetically speaking the month began quietly enough and background activity dropped practically to nothing by July 8. There were periods of active conditions occurring on 11/12, 12/13 and particularly on 16/17 which was preceded by a storm sudden commencement (SSC). Coincident with a large sunspot group traversing the centre of the Sun's disk on July 23 there were SSCs on July 22, 24, 26 and 30. Substantial activity was detected by our magnetic observers from 22 to 27. The daily planetary magnetic index Ap, obtained from the GeoForschungsZentrum at Niemegk gave the following values:

July date	21	22	23	24	25	26	27	28	29
Ap	4	32	48	37	150	48	171	16	5

An Ap value of 0 to 10 indicates quiet conditions, 10 to 20 a minor magnetic storm, 20–50 a full storm, 50–80 a severe storm, and anything above 80 indicates the occurrence of a major global event.

Radio auroral effects were reported on July 22 and 25. The ionosphere was enhanced by auroral activity so that it acted as a reflector for VHF signals, whose range between stations could thereby be extended beyond the radio horizon.

In spite of the intense magnetic activity the aurora observed from the UK was not spectacular. An auroral glow was suspected at Trelogan and reported from Vildbjerg in Denmark on July 22/23. On 25/26 from 22:00 to 01:35 UT five observers between Kincardine O'Neil and Morpeth noted glows, arcs and rays to a maximum altitude of 60°, and the presence also of noctilucent clouds (NLC) between 00:55 and 02:45 UT. Three observers in the Central Belt of Scotland recorded glows, bands and rays to a maximum altitude of 50° between 23:10 and 01:35 UT on July 26/27.

A quiet auroral glow was observed on July 12/13 from Glen Ullin, North Dakota, followed by NLC. Quiet glows or patches were noted on 17/18, 25/26 and 28/29. A quiet aurora comprising glows, arcs, rays and patches was seen on July 16/17. However on 24/25 an all-night active auroral storm took place comprising glows, flickering rays and coronal structures covering three-quarters of the sky. A similar event was seen on July 26/27.

In the accompanying table are listed apparitions of NLC observed in July by Section members. The cloud types are identified as follows, in accordance with the system set down by Gadsden & Parviainen:[1]

I	Veils	Tenuous with ill-defined structure
II	Bands	Long streaks roughly parallel
III	Billows	Closely spaced roughly parallel short streaks
IV	Whirls	Rings of cloud with dark centres

A full report on the 2004 apparitions will be prepared by Dr David Gavine in due course.

It has been suggested that the simultaneous or consecutive appearance of aurora and NLC is a rarity, on the assumption that auroral heating of the atmosphere would prevent formation of the clouds. Normally NLC form at an altitude of 80 to 85km while aurora, except in special cases, occupy an altitude of 100 to 105km upwards. From 1987 the Section records show that there were 9 nights in the UK, 12 nights in Canada, 9 in the USA and 2 in Denmark where aurora and NLC were reported to have been seen on the same nights.

2004 August

After the magnetic storms towards the end of July, August was quieter. There were disturbed conditions on Aug 07, 09–11 and 20–22 although only those of 10 and 21 showed up significantly on our magnetometers. On Aug 29 an SSC was reported by the GeoForschungsZentrum at 10:04 UT. A magnetic storm developed over the night of 30/31 when the Kp index rose to 7 and registered on our magnetometers.

David Friend observed auroral glows, arcs and rayed arcs while flying westwards across the Atlantic on August 20/21. Steven Martin observed a coronal aurora of the auroral oval while flying over Canada west of Hudson's Bay on 23/24. Jay Brausch at Glen Ullin observed glows, arcs, rays and patches on August 06/07, 13/14, 21/22, 29/30 and 30/31.

Associated with the magnetic storm of August 30/31 an aurora comprising glows, arcs, rayed arcs, ray bundles and patches was observed from Scotland and northern England.

R. J. Livesey

1 Gadsden M. & Parviainen P., *Observing Noctilucent Clouds*, International Assn. of Geomagnetism & Aeronomy, Aberdeen, 1995

Notice

Asteroids and Remote Planets Section Meeting – Winchester, 2005 April 2

An ARPS Section meeting will be held on Saturday afternoon at the BAA Winchester Weekend, 2005 April 2. All are welcome to attend. We will discuss the projects, techniques, analysis and results that can be undertaken by observers at all levels from simple visual binocular work through to the most advanced video and CCD projects.

Could anyone who is interested in making a short contribution please contact the undersigned.

Andrew J. Hollis, *Director*