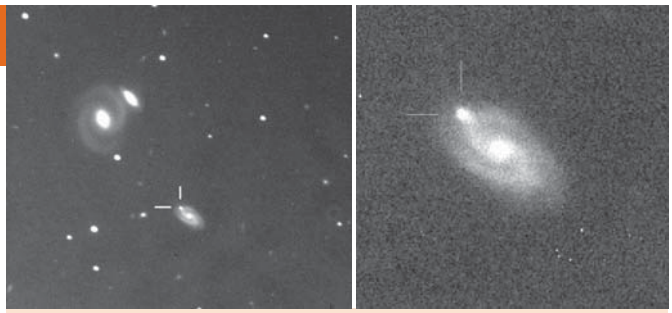
Notes and News

From the President



SN 2004dq imaged by the Ratcam camera on the 2m JMU LT, 2004 Aug 09.957 UT. *Courtesy Prof Michael Bode, Astrophysics Research Institute, Liverpool JMU.*

August and September is that time of the year when many aspects of nature come together and reveal themselves during an observing session. It is a pleasant time, warm, comfortable for outdoor observing and the nights are not too long. This makes enjoying the following day much easier and at weekends social activities are largely unaffected, unlike in the heavy 13-hour nights of November and December.

In the part of the country where I live, in Suffolk, these months bring with them some mist. Often not only is this not dense enough to detract from viewing but it can add a stillness to the air that results is superb seeing conditions. Pin point sharp images compensated for any slight loss in transparency. Even on 60-second integrations with my CCD camera, stars can appear pixular and can be easily confused with hot spots. (I run my camera at just under 2 arcseconds per pixel). There are disadvantages with this weather as well. Often the dew point of the atmosphere is reached mid-way through the night resulting in dripping wet telescopes and mounts. It is at this time that dew heaters are turned on high and the trustworthy hairdryer is forced back into action.

After the lighter evenings and nights of June the months of August and September yield what appear to be much darker skies. Most of this is, I am sure, in my imagination. The countryside around where I live becomes alive with wildlife. How often have you heard footsteps moving slowing up behind you on a dark evening and prayed that it be only a fox or mountjack. Mountjacks are very common in Suffolk. The danger is that these miniature deer are easily startled and when panicked they will run into anything, including telescopes and observatory buildings. Flies and moths are attracted wholesale by the light of a computer screen in the dark and spiders accumulate in great numbers in every possible crevice.

A June supernova

June this year was a particularly fine month for observing. At a TA meeting earlier in the year I gave a talk pointing out that a supernova had never been discovered from the UK in June and that this might be an interesting challenge this year. Along came June and we were rewarded with multiple discoveries, six in all, three by Mark Armstrong and three by myself – so much for looking at past statistics.

One of these discoveries, 2004dq, was made by me on June 27. Its announcement and designation did not appear on an IAU *Circular* until August 10; this surely must be the longest an announcement has ever taken? Partly this was due to the faintness of the candidate and partly due to the lack of available spectroscopists during June and July with adequate time on large telescopes. It certainly looked as though this discovery would be lost.

This state of affairs was ended by the intervention of Prof Michael Bode and his team at La Palma, who produced excellent high resolution images of the candidate using the 2m JMU Liverpool Telescope on Roque de los Muchachos. This telescope, which has been designed for educational and amateur use, was called into action and produced high quality images to convince the CBAT to make an announcement. As far as I am aware this is the first positive result of amateur/professional cooperation on this new telescope, and I am delighted to have taken part. Andy Newsam has also produced a very neat animation of the discovery image blinking against the Palomar Sky Survey plate, which can be viewed at **http://myweb.tiscali.co.uk/tomboles/Images htm:** this is a hidden page on my website at **www.coddenham observatories.org.**

My gratitude goes to Mike Bode, Jon Marchant and Andy Newsam of The Astrophysics Research Institute, Liverpool John Moores University for their help and cooperation.

Tom Boles, *President*

Meteor Section

Autumn meteor activity: Whither the Leonids?

Meteor observers have the prospect of a fruitful autumn in 2004, with moonlight having a lot less influence at the times of the season's major showers than it did last year.

Late October's Orionids are well-placed. Produced by debris from Comet 1P/Halley, the shower may not be as prolific as, say, the Perseids in August, but the activity is sufficiently high to reward watches in the hours after midnight. Peak Zenithal Hourly Rates (ZHRs) for the Orionids are usually around 20–25, meaning that observers out under a good transparent sky in the post-midnight interval might hope to see 10–15 shower members per hour. Orionid activity is evident from about October 17 until the end of the month; a few stragglers may even be in evidence during November's opening days.

The Orionids have a diffuse radiant. Work by J. P. M. Prentice (Director of the Meteor Section from 1923 to 1954) suggested a multiple radiant structure, spread over an area of sky to the northeast of Betelgeuse, midway between that star and second-magnitude Epsilon Geminorum.

Like other rich comet-derived streams, the Orionids appear to have been laid down over countless successive returns of 1P/Halley to the inner solar system as an interwoven series of 'filaments'. Activity can be quite variable over timescales of several hours, presumably depending on which filament, if any, Earth may be encountering at a given time. In general, highest Orionid activity is found over several nights between October 20–21 and 21–22, and even outwith these times substantial sub-peaks can be found (Oct 27–28, for example, has been a productive night in past years). Unexpectedly high Orionid activity has also been noted on occasion, most recently in 1993.

Observations close to the peak(s) in 2004 are favoured by a first quarter Moon falling on October 20: the Moon at this time will be setting just as the Orionid radiant is starting to clear the eastern horizon, and will be well out of the way by the early hours.

Orionid meteors are notably swift (the incoming meteoroids, like the parent comet, have a retrograde orbit, and collide with the upper atmosphere at a velocity of 66 km/s) and as a result a high proportion – up to 40% – leave behind persistent ionisation trains. The majority of Orionid meteors are in the middle of the brightness range, from magnitudes +1 to +4.

Useful watches should be possible in dark sky conditions up to about October 25, af-

ter which the Moon will be a nuisance even well beyond midnight. It has been some years since moonlight and weather have allowed collection of extensive data on this shower by BAA observers, and all are encouraged to use this opportunity. It is quite a thought that the parent comet's last apparition – so long-awaited by '*Apollo* generation' amateur astronomers – is now a distant memory from almost 20 years ago: those who missed 1P/Halley in 1985/6 can at least continue to observe its debris entering Earth's atmosphere each year in the third week of October!

In recent years, the Leonids have commanded much of meteor observers' autumnal attention. Rates have been elevated above 'normal' quiet-time levels since 1994, as the extended dust cloud around the parent comet 55P/Tempel–Tuttle has been encountered. More concentrated meteoroid filaments in this ortho-Leonid cloud have produced meteor storms in 1999, 2001 and 2002, along with lesser enhancements including the 1998 'Night of the Fireballs'. The comet passed perihelion early in 1998 and now, over six years 'downstream', we must be approaching the end of the high-activity period for this cycle. It will be interesting, from the point of view of mapping the extent of the ortho-Leonid cloud, to see how the Leonids perform in 2004.

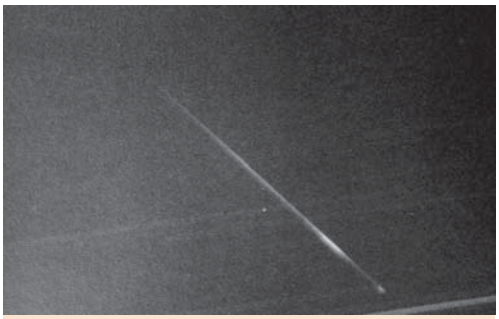
Further storms are considered unlikely in the immediate future, though the successful Asher–McNaught filament model for the Leonid stream does forecast a possible substorm outburst for 2006. In all probability, if Leonid activity does remain elevated above its 1980s levels, we are more likely to see a display similar to that of 1995, during which observed rates peaked around 30–35 meteors/hr (ZHR ca.40) near the regular Nov 17–18 maximum,[1] this year on a Wednesday night to Thursday morning.

Leonid observations are needed every bit as much from 2004 as they have been in recent previous years, and if higher-than-usual activity does manifest, so much the better! Watches in the early-morning hours, when the radiant (in Leo's 'Sickle') is high to the southeast, will probably be most productive, and even in a low-activity year the Leonids can be counted on to produce occasional very bright meteors with long-duration persistent trains. Leonids have the highest atmospheric entry velocities (71 km/s) of all meteoroids.

Reports of Orionid and Leonid watches made by the standard methods described in August's *Journal*[2] will be welcomed by the Meteor Section. Looking still further ahead, December brings a very favourable return of the Geminids, which will be described more fully in the next *Journal*.

Neil Bone, *Director*

1 N. M. Bone & S .J. Evans, *J.Brit. Astron. Assoc.*, **109**(5), 239–246 (1999)
2 N. M. Bone, *J.Brit. Astron. Assoc.*, **114**(4), 219–222 (2004)



The Leonids in 2004 may still be graced with bright events like this one captured by Neil Bone at 01:54 on 1995 November 17–18. A 29 min exposure on Ilford HP5+ monochrome film with Lubitel 166B camera, 75mm lens at f/4.5. *N. M. Bone*

Mercury and Venus Section

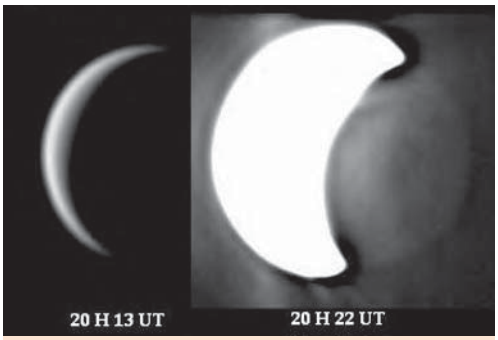
Change of Director

At its meeting on July 21 Council received the resignation of Director Mario Frassati, and accepted an offer by the undersigned to direct the Section for the time being to ensure a measure of continuity in its affairs. It is much to be regretted that Mario is unable to continue any longer in this post, but he promises to continue to support the Section with his fine observational work. Living in Italy, his lower northern latitude has enabled him to make significant observations of Mercury and – as readers of this *Journal* know – to produce the first albedo map compiled in many years. For myself, I joined the Section in 1975, when J. Hedley Robinson, my first friend in the BAA, was its Director.

Future publication policy: Venus

Because the recent east elongation and the current western one were linked by the solar transit of June 8, the new Director will write up all the observational work as a special Section Report for the *Journal*. Mario will forward to me all the observations he has received during his tenure of office, but if members have other records not yet submitted (especially of cusp extensions or of the Ashen Light), the Director would be pleased to have them as soon as possible. Observations of the present W. elongation should also be sent to me at regular intervals. Good CCD images, even if featureless apart from the bright limb and shaded terminator, will be useful.

Although an unbroken series of Venus reports was produced from 1956 to 1990, the Director feels that in general there is little to be gained by publishing further reports of individual elongations. There will be greater value in reporting an eight-year period, because after this timespan (encompassing five pairs of E. and W. elongations) Venus and the Earth return to the same positions in their orbits. The Venus *Memoir* produced by Hedley Robinson (*Mem. Brit. Astron. Assoc.*, **41**, 1974) covered two such eight-year 'cycles', from 1956 to 1972. With this longer-term aim in mind, the Director has assembled all the observational work received by the Section from 1991 to 1998 inclusive. One feature of these records is that there is comparatively little in the way of UV imaging, and until very recently very little CCD work. Can I ask readers who have worthwhile images not previously submitted (1990 to 2004) to put them on a CD and mail them to me? A second such report (1999–2006) might eventually follow...



Webcam images of Venus taken on 2004 May 17 by Christophe Pellier (355mm Schmidt–Cass.) at a wavelength of 1 micron. *Left:* a normally exposed crescent showing no trace of the night side; *right:* a greatly overexposed image (100 stacked 8-second exposures) reveals actual surface features on the glowing surface of the 'dark' side.

Imaging the surface of Venus

There is a new line of imaging work which will be of great interest to everyone: witness the remarkable 1-micron infrared images obtained by Christophe Pellier of France (in 2004 May) and already published in *Sky & Telescope* magazine (**108**(3), 20, 2004) which (when stacked as long exposure images) actually show permanent markings upon the surface of Venus on the 'dark' side. One exam-

ple is given here. The lower albedo patches represent higher, cooler terrain. As Mars Section Director I have already received many fine images of Mars from Christophe: his devotion to technical detail is remarkable. See his website for more images and technical details: **http://astrosurf.com/pellier/**

Mercury

Regarding Mercury, there is still much personal satisfaction to be gained merely from catching that little world in the twilight, and, as Mario Frassati has recently pointed out in the *Journal* (**114**(4), 183, 2004), there is continuing interest in correlating the bright areas with topographic features.

I wish members the best of luck with their observations of the inferior planets, and hope they will support the Section by regularly reporting their work .

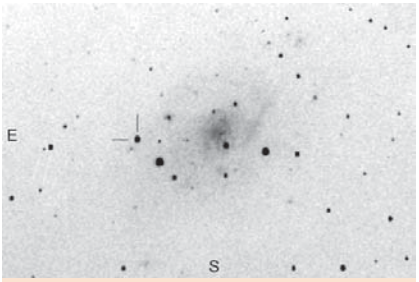
Richard McKim, *Director*

Deep Sky Section

A new bright supernova

On 2004 July 31 the Japanese amateur Koichi Itagaki, using a 0.6m reflector, discovered a bright supernova in the galaxy NGC2403. Details were circulated to members in BAA electronic circular no.0156. The supernova, a type IIp and designated SN2004dj, was at mag 11.2 at discovery and remained bright for many days after. While supernovae are now discovered on a regular basis by amateurs, particularly BAA members, it is rare to find one so bright and well positioned for UK viewing. Unfortunately the UK weather did not fully oblige and at the time of writing this, 2004 August 9, the Director has been clouded out on five consecutive nights, although the days have been remarkably hot and sunny. Images were obtained by Ron Arbour and Maurice Gavin, who also obtained his first type II spectrum from this supernova.

NGC2403 is a beautiful Sc type galaxy in Camelopardalis and an outlying member of the M81–M82 group. At between magnitude 8.3 and 8.6 (depending upon reference) it is also the brightest galaxy north of the celestial equator that does not have a Messier number. Like many bright galaxies, it is also large (approximately 16'×10') so that its surface brightness is low. It is, however, easily visible and can be seen in large binoculars from a dark site. It was also the first galaxy beyond the Local Group in which Cepheid variables were identified. It lies at RA 07h36m50.61s, Dec. +65°36' 9.6" (2000.0). The supernova lies at RA 07h37m17.02s, Dec. +65°35'57.8" (2000.0).



SN 2004dj in NGC 2403. Image by Ron Arbour on 2004 August 03.8841 UT. 30cm SCT, average of 4×20s exps. *R. W. Arbour.*

McNeil's Nebula

By the time you receive this *Journal* Orion will be an early morning object and all eyes will be on the M78 area to see if McNeil's Nebula is still visible. This 'new' variable nebula, discovered by US amateur Jay McNeil last January, but since found to have been imaged many times previously, was reported in the June *Journal* (**114**(3), p.121). Please send all new images to the Director (address inside rear cover of the *Journal*). It would be particularly good to receive visual reports from owners of large telescopes. As I live in a rural location with no broadband and with overhead telephone wires that frequently fall foul of farm equipment and strong winds, please keep file size as small as possible – jpg files preferred.

Stewart Moore, *Director*

Computing Section

New BAA *Handbook* editor appointed

I am pleased to advise members that I have appointed Mrs Valerie White as successor to Dr Jacqueline Mitton as Editor of the BAA *Handbook*. Valerie has a degree in Astronomy and Pure Mathematics from Leicester University and is a Fellow of the RAS. She once worked for INSPEC (IEE) compiling the Astrophysics and Geophysics sections of *Physics Abstracts*, and her current employment also involves the manipulation and presentation of technical data. She has been a member of the BAA since 1986, and was elected to the BAA Council last October.

Gordon E. Taylor, *Director*

Solar Section

(Due to a mistake in my spreadsheet the solar activity values for April were incorrect. They should be MDFgn=0.75; MDFgs=2.16; MDFg=2.81 and R=41.95.)

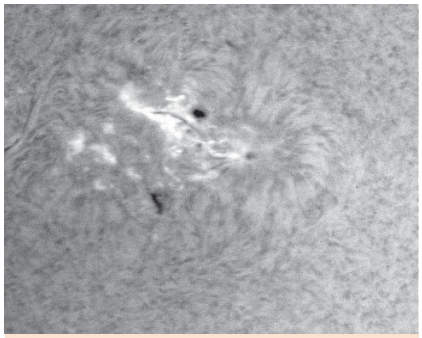
2004 May

There was a slight recovery in the sunspot MDF but generally it was about the same as in the previous months of this year. The northern hemisphere remains much less active than the south. No high latitude sunspots were reported but there were some of low latitude.

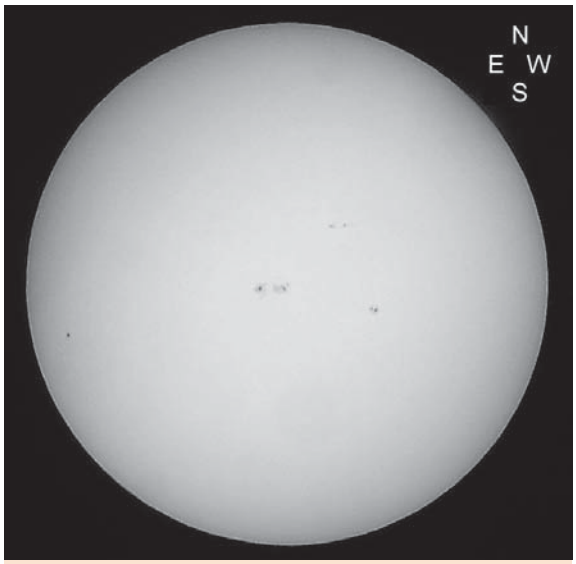
The beginning of May saw a Dsi type group at –15°/32°, which was by then west of the CM, develop rapidly from May 2 to 4. Thereafter, the group decayed as it passed over the W limb on May 5 & 6. In comparison, the north showed only a single small spot at +16°/50° but this had disappeared by May 3 leaving the northern hemisphere spotless until May 12.

On May 7 the south showed two small Active Areas. One of these was a Cso type group at –12°/318°, which had developed into a type Dso after crossing the CM a few days earlier but then decayed to a single spot with two faint satellite spots by May 7.

Activity then began to pick up again after May 11. On May 14 two naked eye spots were visible either side of the CM at –9°/200° and –3°/178°. A third group was also visible nearby (and the only activity visible on the northern hemisphere at this time) at +9°/193°. This together with the two southern groups formed a neat triangle of sun-



2004 May 25 at 11:03 UT. CCD image in H-alpha of the spot group at –10°/37° showing a filament through the group. *Eric Strach.*



2004 May 15. Whole disk image of the Sun in white light showing the three spot groups at –9°/200°, –3°/178° and +9°/193° near the centre of the disk. *Peter Paice*.

spots at the centre of the disk (see image of May 15). The southern spots were visible to the naked eye until about May 17.

On the same day but over at the E limb was a single spot at –8°/119°. This was the reappearance of the group seen previously at the end of April at –8°/114°. This time it did not show much change during its passage across the disk but it was associated with a broad filament observed in H-alpha light.

The southern group of early May reappeared on the E limb on May 20 at –10°/37°. It developed so that by May 23 it was type Fki and spanned some 15° of longitude. It was visible to the naked eye on May 24 & 25 as it crossed the CM, its estimated area was 650 msh. Thereafter it decayed and later crossed the W limb on May 31.

Hydrogen alpha

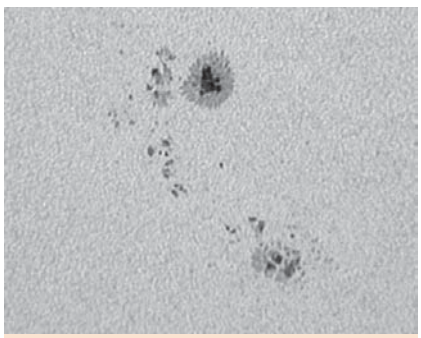
Prominence MDF for May 5.86 (8 observers). The prominence MDF was about the same level as last month.

May 13 saw a prominence eruption on the E limb at latitude +7°. It did not reach a great height but did show continual change. It was also associated with two filaments on the disk which eventually merged into a very broad single filament.

As the sunspot group at –10°/40° crossed the CM it showed a filament that passed through the centre of the group on May 25 (see image). Radial fibrils were also seen coming from the most westerly sunspot.

A long filament was seen on May 5 from +10°/30°E to +25°/45°E. This crossed the CM on May 7 and reached the W limb on May 11. Some prominences were then observed on May 13 on the W limb from lat. +9° to +26°.

Another broad filament was seen on May 15 associated with the sunspot group at –9°/119° extending southwards to the limb and on May 30 to the east of the group at –14°/280°. A streak of bright hydrogen was seen between the follower spot and the flat filament which hugged the E limb. A prominence was also visible at lat. –19°.



2004 May 26. Image of the group at –10°/37°. North is top right and east is top left. *Damian Peach*.

Geoff Elston, *Director*

2004 June

June brought a further reduction of sunspot activity and with an MDF of only 2.86 it was the lowest recorded since mid-1998. Northern hemisphere activity was particularly low and the Sun was virtually spotless for the first 13 days.

The southern hemisphere was more active and on June 2 a Dai group at –8/281° became active, but after crossing the CM on June 5 it started to fade, leaving just faculae in its position approaching the W limb.

On June 6 a single spot had developed on the disk at –8/224°. It developed into a Dao group and as such was the only spot visible on June 8, the day of the Transit of Venus, when it was straddling the CM. It faded quickly after that and was no longer seen after June 10.

A single spot rotated onto the disk on June 10 at –11/120°. It is very likely the return of the spot at –8.5/119° seen in a similar position on May 15. It remained a single Hsx spot throughout its passage (as it also did in its previous rotation). It was last seen close to the W limb on June 21.

On June 12 the solar disk became more active with the appearance of two groups on the E limb, first the leader of a northern group at +12/79° and then the leader of a southern group at –08/62° on June 13. Both areas developed into important Fki groups with the southern group dividing on June 16/17. By June 19 it had divided further to give four parts to the umbrae, and as such dominated the disk. The northern group crossed the CM on June 19, the southern on 20/21 at a mean position of –10/57°. The follower spot of the northern group started to fade on June 20 and eventually disappeared, and the remaining leader was on the W limb on June 25. The southern group retained its extent and eventually the follower crossed the W limb on June 27. After that the disk became much quieter.

Hydrogen alpha

A cluster of prominences was seen on the E limb on June 1 at +18 to +28°. On June 2 it

BAA sunspot data, 2004 May–June

	May		*June*	
Day	*g*	*R*	*g*	*R*
1	2	45	3	45
2	2	32	2	40
3	2	36	2	37
4	3	42	2	27
5	2	37	2	34
6	2	27	2	28
7	2	19	2	34
8	2	28	2	26
9	2	29	2	30
10	3	33	2	26
11	3	35	2	26
12	3	45	2	23
13	3	44	3	33
14	4	70	3	41
15	4	77	4	53
16	6	93	5	72
17	6	85	5	73
18	6	80	4	72
19	6	79	4	77
20	5	64	5	103
21	5	64	5	91
22	4	57	4	82
23	4	61	4	75
24	5	77	3	53
25	4	68	3	38
26	2	49	2	25
27	2	42	2	31
28	2	35	2	33
29	2	39	2	30
30	3	46	2	23
31	3	45		
MDFg		3.27 (54)		2.86 (54)
Mean R		51.06 (48)		43.64 (50)

North & south MDF of active areas g

	MDFNg	*MDFSg*
May	0.91	2.71 (34)
June	0.85	2.14 (36)

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

was more compact between +21 and +27°. A very bright prominence appeared on the W limb at –33° on June 11 at 11.10 UT. At 11.22 UT it seemed to have doubled and become twisted.

On June 12 a minor eruption was recorded at +07° on the E limb. This short jet veered southwards at an acute angle at 12.10 UT. At 12.42 it became very bright red-pink. It gradually enlarged around 12.47 UT but never attained any unusual height.

On June 14 an interactive prominence was observed on the E limb at 10.45 UT, extending between a straight jet at +20° and a compact prominence at +21°. By 15.05 UT the jet part had increased in height and by 16.40 UT it was detached from the limb and much fainter, after which it erupted. The compact part changed shape but did not erupt.

Mike Beales, *Director*

Aurora Section

2004 June

The general level of geomagnetic disturbance has been declining since January. Very quiet days on June 11 to 13 could be traced back through several solar rotations to February 26. Similarly very quiet days on June 20 to 25 were traced back to January 12. There were quite disturbed conditions on June 15, 28 and 29 with lesser activity on 01, 02, 05, 06, 09, 10 and 14, but no transient storm sudden commencements.

With quiet geomagnetic conditions coupled with the summer twilight it is not surprising that no aurorae were reported from the UK in June. However in his darker skies and with a corrected geomagnetic latitude akin to Fair Isle in Shetland, Jay Brausch at Glen Ullin, North Dakota, reported auroral activity with glows, arcs and rays on June 13/14, 14/15, 15/16 and 28/29. The second and fourth events were the most active with rays rising to an altitude of 20 to 24°. All events took place in the morning hours and correlated with the more active geomagnetic conditions.

It is not unusual to have quieter geomagnetic conditions in summertime except, as in 2003, when coronal hole activity is enhanced during the decline of sunspots. Instead there is the summer peak in the frequency and extent of noctilucent clouds (NLC). The table gives a preliminary summary of UK and overseas reports on NLC sightings by members of the Aurora Section as at 14th July. Note that the most widespread NLC (on 25/26) took place close to the summer solstice. Records of past years show that the period around the solstice favours the apparition of significant displays.

In addition to the table, international reports were received from Alaska (3), Canada (6), Germany (12), The Netherlands (3), in flight North Atlantic (2), Norway (1), Poland (1), Sweden (1) and the USA (1). In due course Dr David Gavine will analyse all NLC observations for the year and prepare a report on the activity.

R. J. Livesey, *Director*

Preliminary summary of NLC sightings in 2004 June

Date (2004 June)	*No. of UK observers*	*Location of most southerly observation*	*NLC types observed*
04/05	1	Morpeth	I, II, III
09/10	1	Morpeth	I, II, III
10/11	3	Taunton	I, II, III
11/12	1	Taunton	I, III
12/13	6	St Lawrence Bay	I, II, III, IV
14/15	2	High Wycombe	II
15/16	1	Morpeth	I, II
16/17	1	High Wycombe	I, II
21/22	2	Wallsend	I, II, IV
24/25	2	Wallsend	I, II, IV
25/26	15	Sheffield	I, II, III, IV
27/28	6	Morpeth	I, II, III
28/29	3	Wallsend	I, II, III
30/01	1	Morpeth	II

Date (2004 June)	*No. of overseas observers*	*Location of observers*
07/08	1	Glen Ullin (North Dakota)
12/13	2	Glen Ullin; in flight N. Atlantic
16/17	3	Copenhagen; Ronne (Denmark); in flight Germany
18/19	1	Glen Ullin
22/23	1	Vildbjerg (Denmark)
23/24	1	In flight N. Atlantic
24/25	1	Glen Ullin
28/29	1	Ronne

Near Earth Object discovered via the Internet

On 2004 June 14, Ken Pavitt, a Hampshire-based amateur astronomer, discovered a fast moving asteroid (SW40Dv). This was confirmed on the NEO Confirmation Page by Peter Birtwhistle and others and announced on MPEC 2004-L66 with the designation 2004 LA10.

However, Ken does not own a telescope. He registered a few months ago with the University of Arizona's Spacewatch Fast Moving Objects (FMO) project, which is equivalent for asteroid discoverers to the SOHO archive for comet searchers, and provides an opportunity to search for NEOs (Near Earth Objects) using the World Wide Web. The Spacewatch project has found that FMO traces on their images, which appear as faint but distinct streaks, are almost impossible to separate using computer software from noise, CCD artefacts and artificial satellites. The human eye and brain, however, can distinguish these features and stands a good chance of identifying those which are 'real'.

Twelve NEOs have been discovered since January by FMO project members around the world, but Ken's is the only one found so far from the UK. BAA members with broadband internet connections are encouraged to find out more at **http://fmo.lpl.arizona.edu/FMO_home**. Many thanks to Peter Birtwhistle for drawing our attention to this interesting opportunity.

Hazel McGee