

## From the President

On February 10–11 the BAA again set out its stall at the annual European Astrofest, held in Kensington, London. One of the great pleasures of this event is the opportunity it provides to catch up with familiar faces and meet new ones. The venue was full and the BAA stand had many visitors. Some were new or prospective members, others were old friends. Among the latter we had a visit from Patrick Moore, who was at Astrofest to sign copies of the 2012 *Yearbook of Astronomy* along with our own John Mason. We were also delighted to welcome Bill Sheehan from the USA, well known to us all as a historian of astronomy and author of many books on lunar and planetary topics.

Events such as this bring benefit to the BAA in unquantifiable ways by helping to raise awareness of our Association, and our thanks must go to all those who gave up their time to assist in running the stand over the two-day period.

It is important to raise the BAA's profile in other ways too. During January's BBC *Stargazing Live* the Association joined forces with the Baker Street Irregular Astronomers to help mount an observing event in Regent's Park in London. Despite poor weather with no hope of observing, more than 250 people turned up and the occasion was a great success in attracting more people into astronomy. The evening culminated with a raffle for a telescope, co-sponsored by the BAA and the Widescreen Centre. A fuller report appears below.

We hope to repeat such collaborative events, and at the time of writing the Association is making plans to be represented at the Kelling Heath star party in April, where we hope not only to mount a sales and membership stand, but also to be available to offer practical observing help and advice to attendees, whether they are BAA members or not. Similarly, we are currently discussing details of BAA participation in the European Plan-

etary Sciences Congress at UCL in 2013 September. This is a major professional congress, but it also encourages amateur participation, and the Association has already been represented at a preliminary planning meeting. More details will follow as soon as they are known.

Other ways in which we hope to raise our profile include the re-launch of the Exhibition Meeting as a flagship BAA event, as I mentioned in this column in the February issue of the *Journal*. Council is currently considering possible venues and formats, bearing in mind the views expressed in the recent membership survey.

We are also planning a major reconstruction of the Association's website. The importance of our online presence has increased enormously in recent years, and we need to exploit further the value of our website both as a way of increasing membership and as a service to existing members. Again, developments are underway and we hope to make further announcements soon. Meanwhile, we continue to be grateful to Callum Potter for the heroic and efficient way he continues to manage the ever-increasing workload posed by the present site. The amount of time and effort he has put into the task on our behalf, on a voluntary basis, is quite remarkable.

But the best ambassadors for the BAA are



The President (rear, left) with Sir Patrick Moore, David Boyd, Pauline Phillips and Lee Macdonald at the BAA stand at Astrofest. Photo by Alan Dowdell.

its members, and we can all do our bit to raise awareness in our local societies and on internet forums of what the Association has to offer its members. I do hope you will make the effort to do just that!

Meanwhile, I wish you clear skies (and warmer nights!) as Spring at last arrives.

**Bill Leatherbarrow, President**

## Stargazing Live in Regent's Park

With the return of the BBC's *Stargazing Live* programmes in January, the Baker Street Irregular Astronomers (BSIA) asked the BAA to team up with them to arrange a joint public event in Central London.

The BSIA, who derive their name from Sherlock Holmes' group of street urchins, is an informal society based in Regent's Park, London, promoting astronomy to the general public in the capital. They are sponsored by the Wide Screen Centre and run monthly observing events, as well as 'Astronomers in the Pub' where talks similar to our own Back to Basics presentations are given.

The evening of January 18 did not have the most auspicious of starts as Guy Hurst and I made our way from Baker Street tube station to the Monkey Gate near London Zoo, the only entrance to the Park open after dusk. After won-



'Stargazing Live' at the Hub in London's Regent's Park. Photo by Philip Stobbart.



Setting up telescopes at The Hub. Photo by Nick James.

derfully clear skies on the two preceding nights, tonight saw rain in the air, with the BBC predicting a downpour later.

The event was held at 'The Hub', a newly built café in the Park surrounded by a level con-

crete apron, ideal for setting up telescopes. Shortly after 6.30 people started to arrive, the Café opened and despite the dismal forecast the setting up began, with more of a sense of optimism than reality. As it was the first meeting after Christmas there were several new 'presents' to be played with and the BAA team gave assistance to the owners in getting their 'scopes out of the box and up and running.

As time went on more and more people arrived, incredibly given the prospect for actual viewing was almost nil. However the vibrant atmosphere pervading the Café was something to be

witnessed, beginners with a real enthusiasm for the subject, keen to ask questions and seek guidance and the BAA team pleased to help, with David Arditti and Alan Dowdell also distributing BAA promotional items. To support the

event, the BAA donated £100 towards the raffle prize of a beginner's telescope provided by the Wide Screen Centre, and Nick James made the draw for the winning ticket.

Overall a thoroughly enjoyable event with over 250 people braving the elements and testament to the fact that people are keen to find out about astronomy, even in Central London where the problem of light pollution is normally seen as an impenetrable barrier.

Whilst we were not blessed with clear skies, the rain did hold off and the unbounded enthusiasm of those attending, evidenced by one lady proudly showing me the picture that she had taken of Saturn on her iPhone, was contagious.

Following this successful collaboration we hope the BAA will arrange further events in the Park with the Baker Street Irregulars in the future. London members should keep an eye open for these (on Twitter and the BAA website) and we would be delighted to meet you there.

**Alan Lorrain**

## Aurora Section

Following some excellent auroral displays in 2011 August, September and October, we had two quiet months before the turn of the year, although there were numerous active areas on the Sun marked by a procession of spots. Most of the spots seemed to fragment or decay quite quickly and produced only C class flares, with little in the way of resulting auroral activity.

January this year saw a return to solar flare activity and an M3 class flare on Jan 19 resulted in a good display on the evening of Jan 22/23. This was seen into northern England and produced some excitement within the press resulting in a number of enquiries to the BAA office.

Several observers saw or photographed an unusual feature near, or perhaps even part of, the auroral arc on the evening of January 22. What looked like wave forms were seen below the arc as seen from UK but one image taken in Norway shows the 'waves' to be just above the arc. These appear to have been seen from about 19:40 UT to 20:15 UT.

At about 04:00 UT on Jan 23 an M8.7 class solar flare was noted at the same active site, sunspot 1402, which had been producing some C and M class flares for some days. The speed of ejection of the material from this flare was believed to be >2000 km/s and was estimated to arrive in the vicinity of Earth on Jan 24. The Kp index rose to 4 at 15:00 UT and by 21:00 had reached 5. Observers throughout the country could reasonably have expected to see some activity, perhaps even in southern England. Unfortunately most areas had total cloud cover. A few fortunate observers had brief breaks in the cloud and the first report of an auroral glow was received from Tony Cook in Wales, followed by reports from Alan Tough and Pete Sherman in north-east Scotland.

A brief increase in Kp value occurred in the early hours of February 15 but this was not



2012 January 22/23, 20:14 UT from Chapel of Garioch, Aberdeenshire. Graeme Whipps.

associated with a solar flare. It seems that the Bz tilted southwards for some time when the interplanetary magnetic field interacted with the geomagnetic field. David Small, from a site near Kelso, reported a faint aurora on the evening of Feb 15/16 and recorded this with an automatic camera. Alan Tough also reported a faint, quiet arc from Elgin.

Dave Gavine has prepared the following summary of auroral activity in 2011 December and 2012 January for which reports and images have been received. Many thanks to all observers who sent these.

### Aurora 2011-'12 December-January

**Dec 21/22:** Denis Buczynski at Tarbat Ness photographed a rayed band 23:46-23:57UT.

**Jan 18/19:** Gordon MacLeod at Wick 00:01-00:21UT: faint light, a few short rays.

**Jan 22/23:** CME, Kp= 5. Brilliant all-sky displays in Arctic Canada and Northern Scandinavia; spectacular photographs in January Aurora Gallery of Spaceweather.com. British observers reported from Unst (Shetland) to

Malton (N Yorkshire): rays first seen in cloud at 18:00 UT in Aberdeenshire, from 18:15UT a quiet homogenous arc observed over southern Scotland but active rays were seen below the arc further north, red-topped rays in Aberdeenshire from 20:13UT. Several observers photographed an unusual phenomenon, multiple parallel banding below the main arc, giving the appearance of bright striations. At Edinburgh at 19:30UT and 21:30UT horizontal streaming of diffuse ray bundles was seen. Auroral light last reported in Elgin at 03:45UT. Marked radio aurora.

**Jan 24/25:** 18:23-20:42UT, glow and possible arc through gaps in cloud reported from Elgin and Fochabers, faint glow at Aberystwyth. Rayed bands over Minnesota.

Observers: M. Alexander, I. Brantingham, J. Brausch (USA), D. Buczynski, A. Clitheroe, T. Cook, P. Foster, D. Gavine, C. Gentle, J. Henderson, M. Jeffrey, L. Jennings, K. Kennedy, T. Lloyd-Evans, G. MacLeod, T. McEwan, H. Meyerdierks, J. Shepherd, P. Sherman, A. Simmons, D. Small, R. Stapleton, A. Tough, F. Vincent, G. Watt, G. Whipps.

**Ken Kennedy, Director**  
ken.kennedy42@btinternet.com



## Solar Section

### 2011 December

The northern hemisphere quietened during December leading to an overall drop in the relative sunspot number for the month. The southern hemisphere remained fairly steady. Thirty four active regions were recorded by SWPC/NOAA during the month. Multiple sunspot groups were recorded on all days of the month.

**AR1358** N21°/190° survived from November and was seen in the NW quadrant on Dec 1 type Cso. The group proceeded to the western limb unchanged.

**AR1361** N19°/170° another survivor from the previous month type Dso. This group was near the CM on Dec 1 and progressed to the western limb mainly unchanged.

**AR1362** N08°/130° remained on the disk from the previous month and was in the NE quadrant on Dec 1. By Dec 3 the group was type Eso and remained mainly unchanged until it approached the western limb on Dec 9 as a type Hsx spot.

**AR1363** S20°/110° was in the SE quadrant near to the S limb on Dec 1 type Dsi. The group lengthened to type Ehi the following day and type Eki on Dec 4. The group returned to type Dho on Dec 8 and was seen on Dec 9 type Hax with an area of 260 millionths before rounding the western limb the following day.

**AR1364** N18°/104° was in the NE quadrant near to the E limb on Dec 1 type Hsx. The group remained unchanged until it entered the NW quadrant where it grew briefly to type Cso before reverting to a single penumbral sunspot as it approached the western limb.

**AR1374** S18°/352° appeared over the SE limb on Dec 8 type Hsx. On Dec 13 the group was nearing the CM with an area of 210 millionths, type Hkx. Two days later the group was type Cso consisting of a main penumbral sunspot and two smaller sunspots. By Dec 17 the group was 80 millionths in size and type Hsx and was unchanged on the following day rounding the western limb on Dec 20.

**AR1376** N19°/308° rounded the NE limb on Dec 13 type Bxi. The group disappeared the next day but re-appeared on Dec 15 as a single Axx sunspot. The group was again not seen on Dec 16 but re-appeared the next day as a single Axx sunspot and then grew to type Cso containing three small sunspots on Dec 18. By Dec 22 the group was close to the western limb, type Dko.

**AR1377** N12°/297° was also seen close to the NE limb on Dec 13 type Bxi. By Dec 15 the group was type Dso consisting of 6 sunspots in total with a penumbral leader and follower. The group had reduced to type Hsx on the next day and was type Cso on Dec 18. The group faded on the disk on Dec 20 in the NW quadrant.

**AR1382** S17°/260° was observed in the SE quadrant on Dec 20 type Dai. By Dec 22 the group had an area of 240 millionths and was type Eac which consisted of a collection of small penumbral and other sunspots throughout the group, the largest of which were in the central region.

**AR1384** N15°/199° was the largest group seen during December with an area of 450 mil-



Prominence imaged by Dave Tyler: 2011 Dec 17 at 12:00 UT

lionths. The group was seen on Dec 20 type Cki and by Dec 22 was a bipolar Dko group. The group was approaching the western limb on Dec 31 type Hhx.

**AR1389** S19°/090° was seen rounding the SE limb on Dec 28 as a single Hsx sunspot but had developed many followers by Dec 30 when it was fully on the disk. The group was type Ekc on Dec 31.

**AR1390** N09°/116° appeared on the disk in the NE quadrant on Dec 29 type Bxo and was still on the disk at the end of the month.

6 observers reported a Quality number of Q=14.53.

### H-alpha

#### Prominences

15 observers reported a prominence MDF of 5.39 for December.

A large prominence was seen on the NE limb at NE25° on Dec 3 which was also noted on Dec 6, 7 & 9 at the same location.

Two prominence hearths were visible on Dec 6, one consisting of two pyramid shaped prominences with a column between and the other a hedgerow further south.

On Dec 9 an Eiffel tower shaped prominence was noted on the NE limb and a hook shaped prominence was on the W limb on Dec 10.

A small loop prominence was on the W limb on Dec 15 and a long low prominence hearth graced the NE limb. A prominence hearth consisting of three elements was on the W limb on Dec 17 and a spike was seen on the SE limb.

On Dec 18 a filarom was noted over the E limb. Two arch prominences and pillars were on the NW limb on Dec 22.

A spectacular prominence was seen from Australia on Dec 23 on the NE limb where it reached an approximate height of 112,000km. By 21:45 UT the prominence had ejected from the limb and by 22:30 had reached a height of around 326,000km.

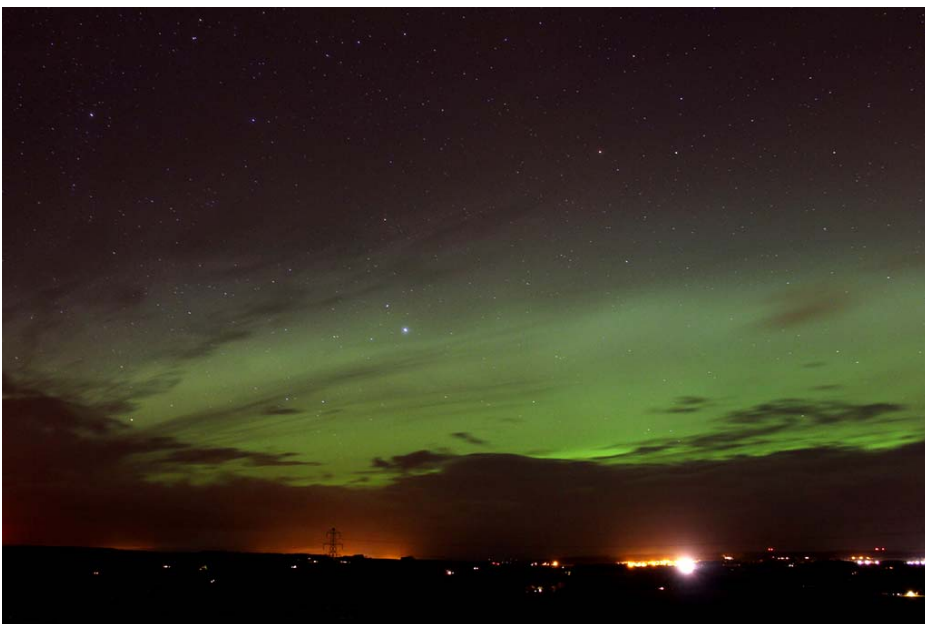
A large eruptive prominence was seen on Dec 24 at 13:00 UT on the SW limb about 15° high. A large arch prominence on the SW limb on Dec 27 was still present on Dec 28 & 29.

### Filaments & plage

11 observers reported a filament MDF of 5.38 for December.

Observers reported that filaments were numerous throughout December with thirteen being counted on the disk on Dec 9. Three filaments were in the NW quadrant on Dec 10 and also a filament appearing more of a 'smudge', near the N limb.

On Dec 15, the darkest filament of the eight counted on the disk was a north-south aligned



Aurora on 2012 January 22/23, 20:05 UT from Elgin, Morayshire. Alan Tough.



filament to the SE of AR1374. A long filament followed AR1377 extending to the E limb and curved north-south filament was seen to the south of the group. The majority of filaments were in the southern hemisphere.

Another 'smudge' like filament was near the W limb on Dec 17. Filaments were also seen in association with AR's 1375, 1376, 1377 and 1380.

The following day, several filaments were in the NE quadrant accompanying a filaprom on the E limb. A broad filament with a shorter line filament above it was noted in the NW quadrant approaching the W limb. A short filament preceded AR1374.

Three north-south aligned filaments parallel to each other were seen on Dec 22, midway between the centre of the disk and the N limb.

Plage was seen around AR1363. On Dec 15, plage was curving southwards from the eastern end of AR1377 and also alongside the filament placed to the south of the group. On Dec 17, plage encircled AR1380.

### CaK

All groups except one throughout the month had accompanying CaK plage. From Dec 3 to 13, plage formed a broken ring at N17°/065° about 5° from the spot group. From Dec 20 to the close of the month, CaK 'speckles' stretched across the disk at N10°/030°.

CaK MDF 12.07 (1 observer)

### BAA sunspot data, 2011 December–2012 January

| Day    | December   |            | January |     |
|--------|------------|------------|---------|-----|
|        | g          | R          | g       | R   |
| 1      | 7          | 100        | 4       | 55  |
| 2      | 7          | 102        | 5       | 73  |
| 3      | 7          | 114        | 6       | 101 |
| 4      | 7          | 120        | 6       | 88  |
| 5      | 8          | 125        | 6       | 79  |
| 6      | 7          | 110        | 6       | 84  |
| 7      | 8          | 103        | 6       | 86  |
| 8      | 9          | 118        | 5       | 82  |
| 9      | 7          | 90         | 3       | 57  |
| 10     | 6          | 82         | 3       | 52  |
| 11     | 6          | 84         | 3       | 49  |
| 12     | 4          | 60         | 3       | 39  |
| 13     | 4          | 60         | 4       | 62  |
| 14     | 4          | 58         | 6       | 90  |
| 15     | 3          | 47         | 8       | 108 |
| 16     | 4          | 63         | 8       | 114 |
| 17     | 5          | 65         | 8       | 118 |
| 18     | 5          | 75         | 7       | 109 |
| 19     | 6          | 85         | 5       | 76  |
| 20     | 5          | 90         | 4       | 84  |
| 21     | 5          | 91         | 5       | 93  |
| 22     | 4          | 73         | 5       | 87  |
| 23     | 5          | 88         | 5       | 85  |
| 24     | 4          | 66         | 5       | 76  |
| 25     | 5          | 77         | 4       | 60  |
| 26     | 5          | 94         | 3       | 40  |
| 27     | 5          | 73         | 4       | 54  |
| 28     | 6          | 83         | 3       | 36  |
| 29     | 6          | 84         | 4       | 44  |
| 30     | 6          | 78         | 3       | 49  |
| 31     | 6          | 81         | 4       | 63  |
| MDFg   | 5.64 (46)  | 4.78 (42)  |         |     |
| Mean R | 85.11 (41) | 73.93 (38) |         |     |

### 2012 January

Activity in the southern hemisphere remained fairly constant throughout January, although still generally low. The northern hemisphere has quietened leading to an overall drop in the sunspot number for the month. The comparatively low level of solar activity this close to the predicted sunspot maximum next year, seems to confirm that we are indeed experiencing a low activity solar cycle. Again, multiple sunspot groups were recorded on all days of the month.

**AR1386** S18°/149° survived from the previous month, now in the SW quadrant, type Hsx. The group progressed to the western limb unchanged rounding the limb on Jan 4.

**AR1388** S24°/102° another Hsx sunspot, also survived from December. This group remained unchanged during its progress across the disk and rounded the western limb on Jan 8.

**AR1389** S19°/084° was the largest group to survive from December, located in the SE quadrant. On Jan 2 the group was type Ekc with an area of 350 millionths. It consisted of a slightly asymmetrical leading penumbral spot and a collection of smaller following sunspots. All the followers had disappeared by Jan 6 to leave an Hkx sunspot. On Jan 9 the group was an Hsx type sunspot approaching the SW limb.

**AR1391** N11°/011° was seen close to the NE limb on Jan 2 as an Hsx single sunspot. By Jan 6 the group had developed to type Dkc, the leading sunspot containing most of the total area of the group at 320 millionths. On Jan 9 the group was type Eki consisting of 12 sunspots and two days later the group measured 170 millionths in area and was type Eac. By the following day the group was clearly in decline and on Jan 13 & 14 was type Dso consisting of only 4 sunspots as it approached the western limb.

**AR1393** N19°/052° formed on the disk on Jan 5.



Full disk image in H-alpha, 2012 January 2, 11:22 UT. Pete Lawrence

Initially a small Bxo group, this sunspot underwent rapid growth to type Dki by Jan 9 and Eac by Jan 11 as it approached the western limb.

**AR1395** N22°/312° rotated onto the NE limb on Jan 8, a single Hsx spot. The group was of the same appearance the next day but by Jan 12 consisted of two separate penumbral sunspots travelling close together aligned north-south of each other. By the following day the group consisted of two small penumbral spots travelling close together but aligned east-west of each other with the smaller sunspot leading. Also a cluster of small sunspots had formed to the SW of the group which subsequently became AR1398 (N13°/314°).

**AR1401** N17°/214° was seen close to the NE limb on Jan 14 type Hsx becoming type Cso the next day and type Eac on Jan 16. By Jan 19 the group was approaching the CM and a cluster of small sunspots had developed to the west of the group at N17°/227° (AR1407) preceding it. The group had an area of 420 millionths. By Jan 21 the main penumbral sunspot was towards the middle of the group but the next day the group was clearly breaking up with the largest sunspot now with the leaders again.

**AR1402** N30°/211° was first seen on the NW limb on Jan 15 some 10° to the north of AR1401. The group was initially Hax but type Hkx by Jan 16. By Jan 19 the group was type Dko with an area of 370 millionths, consisting of a small leading penumbral sunspot with a much larger irregular follower. This had changed shape by Jan 22 becoming more elongated with several small pores around the group. The group was last seen on Jan 27 on the W limb.

### North & south MDF of active areas g

|  | MDFNg                     | MDFsg     |
|--|---------------------------|-----------|
| December                                   | 3.32 (34)                 | 2.43 (34) |
| January                                    | 3.63 (31)                 | 1.70 (31) |
| g  | = active areas (AAs)      |           |
| MDF  | = mean daily frequency    |           |
| R  | = relative sunspot number |           |
| The no. of observers is given in brackets. |                           |           |



**AR1408** N06°/132° was first seen on Jan 21 close to the NE limb. The group consisted of two small penumbral sunspots close together and aligned east–west on Jan 22. The group underwent slight growth by Jan 26 becoming type Cso and was seen on Jan 30 as a Cso type group consisting of a small penumbral leader and smaller follower.

**AR1410** N16°/071 rotated over the NE limb on Jan 27 type Hsx. The group became type Cso on Jan 29 and was still type Cso the next day when it consisted of a medium sized penumbral sunspot with a small follower. A small ring of sunspots had developed to the immediate south of the group (AR1413 N08°/060°) which persisted on Jan 31.

6 observers reported a Quality number of Q=12.59

### H-alpha

#### Prominences

17 observers reported a prominence MDF of 4.90 for January.

On Jan 2 a tall prominence in the shape of an inverted 'V' was seen on the NW limb. A tower prominence was reported on the N limb on Jan 3 and a 'huge' prominence was seen on the NE limb on Jan 4.

A large arch prominence graced the SE limb on Jan 5.

A hedgerow prominence stretched across the W limb on Jan 8 for approximately 298,000km and by Jan 9 this had developed into a combination of looped prominences reaching about 84,000km in height.

Another hedgerow prominence was observed on Jan 11 on the NE limb stretching around the limb for about 382,000km. By Jan 12 the distance had increased to approximately 391,000km. The prominence was constantly making minor changes to its appearance and at 12:00 UT that day a distinctive filar prominence was just to the north of it.

A faint arch prominence was seen at NW30° on Jan 13. The SW limb produced a flame type prominence on Jan 14 with an estimated height of 110,000km.

On Jan 16, a prominence on the NW limb reached a height of 93,000km and another loop prominence reached about 84,000km high.

Jan 17 saw a 'huge' looped prominence appeared on the NW limb reaching around 102,000km in height and stretched across the limb for approximately 484,000km. Another appeared on the same limb on Jan 18 lifting the limb between 11:21 and 14:00 UT.

Two medium sized tree shaped prominences were standing close together on the SE limb on Jan 19 with plasma intermingling between them.

On Jan 21 a detached inverted 'V' shaped prominence was seen above the NW limb reaching an approximate height of 120,000km. Another detached bush type prominence was seen almost exactly on the opposite limb.

A low arch prominence was on the SE limb on Jan 23. A very large mass was also seen on the NE limb from 0°–12°. An Eiffel Tower-shaped prominence was seen on the NE limb on Jan 27

with a long thin arc prominence to the north of it, possibly connected.

#### Filaments & plage

12 observers reported a filament MDF of 4.32 for January.

On Jan 2 a filament was seen at N20°/094° aligned north–south (this was also present on Jan 6). There was also an area of plage possibly associated with AR1390 (N09°/122°).

Three filaments were seen in the NE quadrant on Jan 3, two being long curves. Another filament at 0°/340° to N20°/340° was seen on Jan 7 & 8.

On Jan 9, a curving north–south aligned filament was trailing AR1395.

A long broken filament was seen on Jan 12 trailing AR1391. The filament was aligned north–south and was forked on the southern end. The filament was still present on the following day but it was thicker at the southern end and no longer forked. A long straight east–west aligned filament was seen in the south not far from the S limb.

A broad filament was seen in the NE quadrant on Jan 14 which was still present the following day. This same filament was seen nearing the W limb on Jan 21. Plage was also seen around AR1396 (N26°/288°) on both days. A filament

was also to the north of this group on Jan 15.

A long curved filament aligned north–south preceded both AR1401 and 1402 on Jan 16 which was still present but thickened, on Jan 19. Another long straight filament was mid disk in the northern hemisphere and another in the SE quadrant preceding AR1399 (S23°/225°).

Plage was seen around the CM and around ARs 1401 and 1402 on Jan 21. Long filaments ran the length of both AR1401 and AR1402 on Jan 22.

On Jan 23 & 27 a filament was seen at S22°/140° to S35°/120°. A prominence observed on Jan 23 was seen as a filament on Jan 27, S05°/100° to N10°/090°.

On Jan 30 a broad filament mass was seen in the SW quadrant and also two straight filaments. Filaments were seen in association with AR1410 and AR1413. A broad diffuse filament was also in NW quadrant to the NE of AR1408.

#### CaK

CaK plage was still very active on the disk even in the southern hemisphere in the absence of spot groups.

CaK MDF 10.61 (1 observer).

Lyn Smith, *Director*

### Campaign for Dark Skies

## Good Lighting Award for Leicester temple



On a freezing evening in 2012 February, CfDS coordinator Bob Mizon and committee member Martin Morgan–Taylor presented the BAA–CfDS Good Lighting Award to the main Hindu temple in Leicester, the BAPS Shri Swaminarayan Mandir. Temple PR officer Nerendra Vagela took Bob and Martin on a tour of the Mandir, and they went outside to admire the subtle lighting scheme that picks out the features of this newly built, elaborate structure without spillage into the night sky or surroundings. Intelligent lighting is the rule inside the building, and energy saving was one of the major principles in its design.

The Temple is the first religious building to receive the Award, and Mr Vagela promised to try to spread the good-lighting message to other establishments of that faith.

Bob Mizon, *Coordinator*



## Mercury & Venus Section

### Venus in 2011–12: third interim report

#### Dichotomy

By the time this report appears in the *Journal*, Venus will just have passed through dichotomy. Predicted half-phase will have occurred on 2012 Mar 29.34 according to calculations by Jean Meeus.<sup>1</sup> In reality the more shaded terminator causes the disk to look dichotomised some 4–7 days ahead of schedule. Good estimates of phase will be of value to continue the historical record of exactly how many days early observed dichotomy actually is, for the effect is variable from elongation to elongation. Estimates in white light or with Wratten 25, 15, 44, 47 and 58 filters are worthwhile. The phase is best measured from 50mm diameter drawings. Images can also be useful here, but only if they are not enhanced, for increasing the contrast will reduce the apparent phase by darkening the terminator.

Typical views of the planet near dichotomy are shown in the fine series by the late Paul Doherty, taken from the Section records for the 1977 E. elongation: see Figure 1. This was a very well-observed elongation,<sup>2</sup> when I too made many observations.

Around dichotomy is the best time to look for any irregularities along the terminator and at the cusps. It is interesting that modern observers show few irregularities in the terminator of the crescent. Dark markings, poor seeing and optical illusion contrive to produce such appearances, and doubtless we are all more aware of this today, and reluctant to record impressions on the boundary between suspicion and reality. Older observers such as Beer & Mädler<sup>3</sup> (Figure 2) more freely showed irregularity in their drawings, but were also well aware of the presence of illusion in planetary observation.

CCD and webcam images almost never show obvious terminator (or limb) irregularities, but should still be scrutinised for possible occurrences. However, both the old and new observations often reveal that the S. cusp near dichotomy can appear more rounded ('blunted') than the north. We have discussed this phenomenon in detail in our exhaustive reports covering the years 1991–1998 and 1999–2006, which are available on the Section's website.

#### Phenomena of the narrow crescent phase

The current (2012 March) issue of *Sky & Telescope* contains a thoughtful piece by Tom Dobbins about the Ashen Light,<sup>4</sup> with historical notes and sound observational advice. The author cites my BAA Ashen Light statistics paper as 'an exhaustive review of the British Astronomical Association's observational archives', but in fact it was an exhaustive account of the work of just two of the BAA's long-standing observers, namely Henry McEwen and Patrick Moore. (The paper itself<sup>5</sup> is not actually cited by Dobbins.) As Dobbins writes, this is a mystery that has never been satisfactorily resolved. The effect was particularly well seen during several elongations of the 1950s.

One person who intensively studied the phenomenon in the 1950s was the late Valdemar Axel Firsoff (1910–'81),<sup>6</sup> who often sent his work to the BAA. In Figure 3 we give some of his drawings.<sup>7</sup> Before inferior conjunction in 1958 there was a fortnight (1957 Dec 29–1958 Jan 13) during which ten BAA observers including Firsoff saw the Light prominently and often without doubt.<sup>8</sup> At the 1959 morning elongation, Firsoff observed it on Oct 8 (Figure 3). Firsoff did not contribute to the Section Report at that elongation,<sup>9</sup> but at least one other observer recorded the Ashen Light, on Sep 28. Like others who saw the phenomenon well, Firsoff described lighter areas within the general faintly illuminated nightside. In his book *Life Among the Stars*,<sup>10</sup> Firsoff recalled a later view on 1961 Mar 27 under superb seeing conditions when the Ashen Light stood out clearly on the dark side: '...as I watched it out of the corner of my eye, I could discern little points of light, like misty stars, scat-

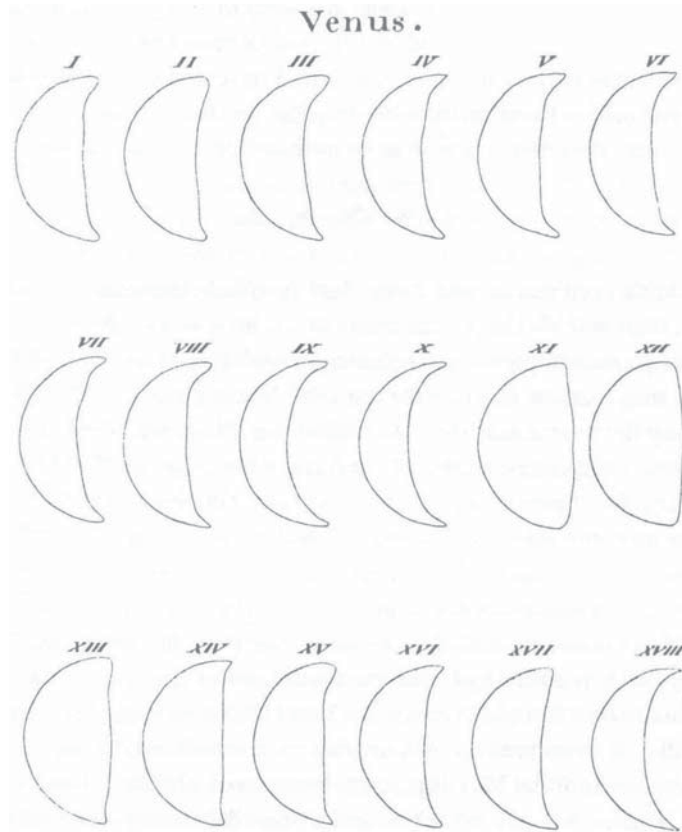


Figure 2. Outlines showing irregularities in the terminator and cusps of Venus, by W. Beer & J. H. von Mädler.<sup>3</sup>

tered in it here and there'. The BAA Report of the same elongation<sup>11</sup> contains a few positive records by others during 1961 Feb 20–Mar 26. Moore's notebook<sup>5</sup> contains a remarkably accordant record of it for Mar 26, one day before Firsoff. The Light was suspected, Moore noted: '...a slightly different hue from the sky; mottled – the full circle.'

Observers can make a great contribution to our work by undertaking a regular Ashen Light patrol. An aperture of 75mm or above will suffice. You need a good horizon so that Venus can be observed (at relatively low altitude) once the sky is reasonably dark. Observe the planet to see whether or not the dark side is faintly illuminated. Record details such as instrument, magnification, date, time and conditions. You may be able to make several patrols per night. Negative observations should be logged and sent in too. (Any daylight report of the dark side appearing darker than the sky is a well-known illusion.) It will be worthwhile trying out different filters.

If the Ashen Light is seen, try to hide the bright crescent by an occulting bar in the field (or failing that by the edge of the field of view), and note whether the light remains visible or not. Obviously confirmatory images would be very desirable. Please contact the Director at once by phone or e-mail if you do have any success.

In the June *Journal* we may have more to write about the crescent phase, the nightside thermal emission, the cusp extensions, Ashen Light and the forthcoming transit. For now, let us admire some of the detailed and careful obser-

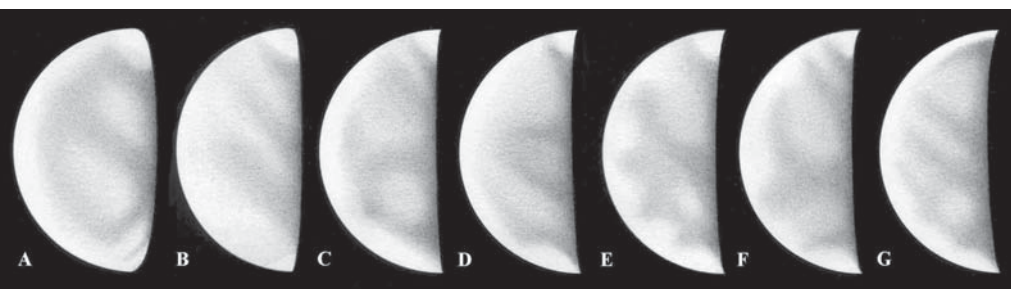
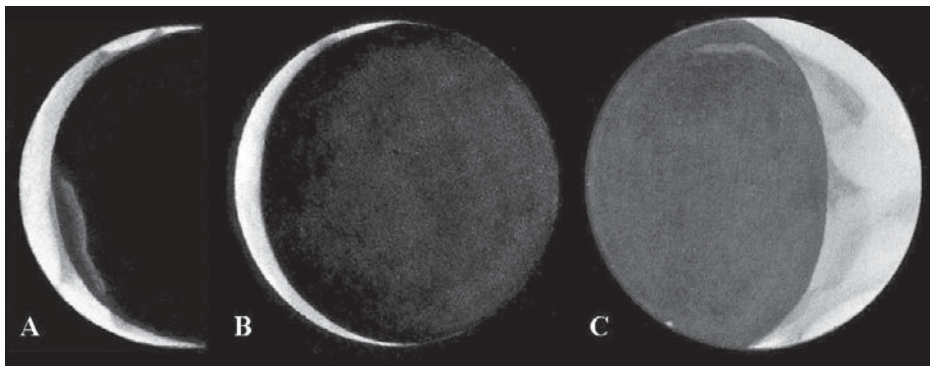


Figure 1. Drawings by P. B. Doherty of the evening elongation of Venus in 1977 with 419mm refl., x250 to x320, and W15 yellow filter. Only two were previously published.<sup>2</sup> (A) 1977 Jan 9d 15:15UT, (B) Jan 19d 16:15UT, (C) Jan 25d 15:45UT, (D) Jan 28d 14:35UT, (E) Jan 29d 15:40UT, (F) Jan 30d 13:50UT, (G) Feb 1d 13:50UT. (South is uppermost in all figures.)



**Figure 3.** Observations of Venus and the Ashen Light in 1958 and 1959 by V. A. Firsoff, with 165 and 320mm refls.,  $\times 200\text{--}300$ .<sup>7</sup> (A) 1958 Jan 5 (yellow-green filter). The light crescentish area on the dark side was uncertainly glimpsed; (B) 1958 Jan 13 (green filter). The Ashen Light visible in its entirety; note also the cusp extensions; (C) 1959 Oct 8 (red filter). On the dark side, note the lighter arc in the south within the general background of the Ashen Light, as well as a light spot at the dark limb.

vations by H. C. Russell made in 1874, which I have been able to reproduce from an original source<sup>12</sup> (Figure 4). The illuminated arc along the limb of Venus is the main point of interest, as it will be this June.

### Current observations, 2011 Dec–2012 Feb

As I complete this report on 2012 February 15, we are finally receiving a decent number of observations of Venus (from 16 observers), even if the snow of the last week or two has temporarily reduced the flow of work. However, we still need more visual observations and observers. Figure 5 shows a comparison of ultraviolet and infrared images. Sean Walker's images of Feb 5 and 9 were made at closely similar atmospheric longitudes and the general similarity of the UV markings is obvious. The images by Daniele Gasparri on Jan 16 were also taken at a similar longitude. Finally, note the greatly increased size of the S. cusp cap

on Feb 11 on the image by Jean-Jacques Poupeau. These sudden increases in size have also been witnessed by *Venus Express*.

The images also show elusive details in the infrared. Gasparri achieved a high level of resolution by stacking some 12,000 images. This is practicable with a slowly rotating planetary atmosphere, but would be impossible with say Jupiter.

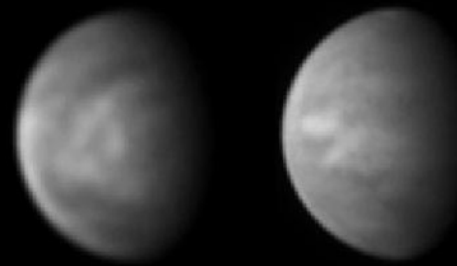
The data also reveal nearly exact accord between independent and near-simultaneous drawings by Gianluigi Adamoli and the Director on Jan 3 and 12. A similar accordance was found between the Director's drawings of Jan 23 and 31 and ultraviolet images by both Poupeau and John Sussenbach on Jan 27, when broad dark shading adjoined the N. cusp (Figure 5).

Other images by Walker record obvious markings in the visible region which vary with wavelength. Dave Tyler on Feb 1 also imaged a horizontal shading near the S. cusp in red light. Observers must use the infrared blocking filter when imaging Venus in the visual waveband if their work is to record these features. ▶

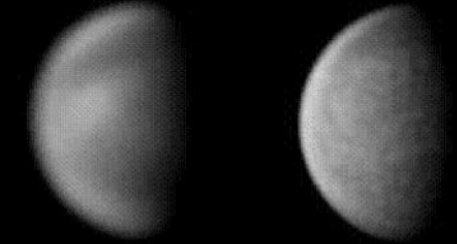
## Venus 2012 E. Elongation

UV

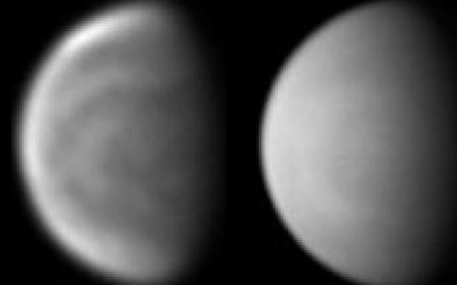
IR



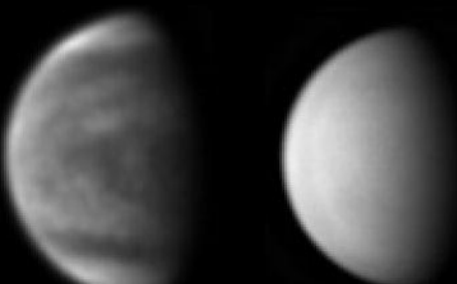
Jan 16.594 Gasparri



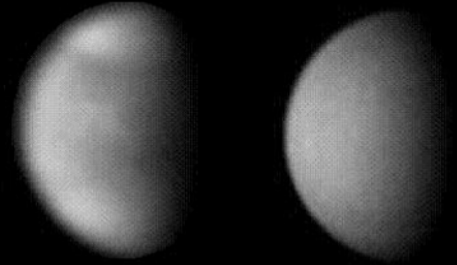
Feb 4.678 Poupeau



Feb 5.899 Walker

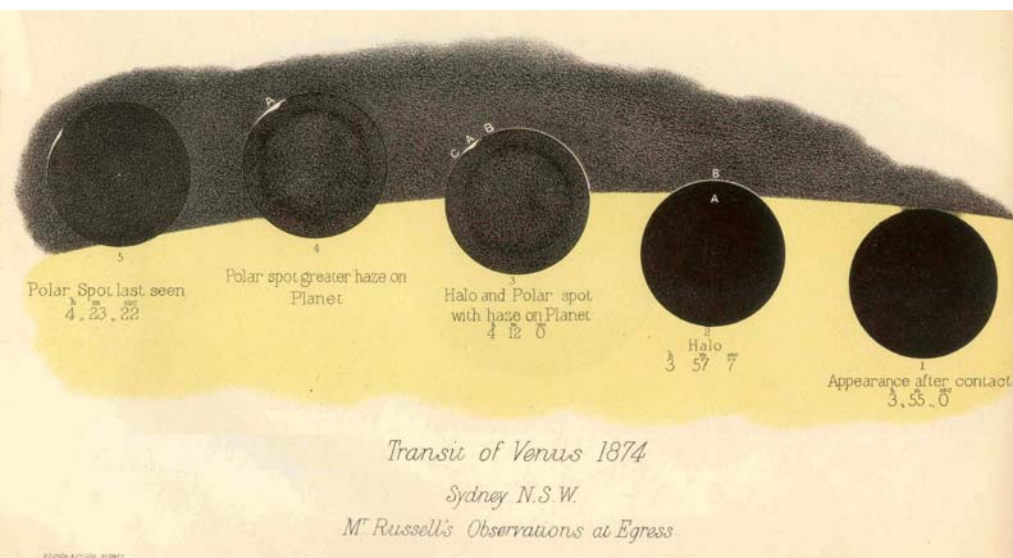


Feb 9.928 Walker



Feb 11.692 Poupeau

**Figure 5.** Images of Venus in the UV and IR by D. Gasparri (356mm SCT with IR 700nm filter), J-J.Poupeau (350mm Cass. with Astrodon UV filter and RG1000 IR filter) and S.Walker (320mm refl. with IR filter for  $\lambda > 685\text{nm}$ ). Decimal dates are calculated for the times of the UV images.



**Figure 4.** The transit of Venus in 1874 observed at egress by H. C. Russell.<sup>12</sup> I have never seen this lithograph reproduced elsewhere in colour. The source contains other colour plates of Russell's drawings, as well as many by other observers.



## Novel/Supernova Patrol

# Supernova 2011ht in UGC 5460

Tom Boles of Coddham reported his discovery of an apparent supernova of magnitude 17.0 in the galaxy UGC 5460 on an image of 2011 Sept 29.182UT during searches for the UK Nova/Supernova patrol, and this was announced on *TA E-Circular 2770* after confirmation was obtained on Sept 30. The measured position (see below) placed it 12.4"E and 17.2"N from the galaxy's nucleus.

The Central Bureau now require spectral confirmation before formal announcement of a supernova, and during the interim ask for it to be posted to their 'Transients Object Confirmation Page' on the Web with a temporary designation which, for this object, was PSN J10081059+5150570.

### Astrometry (536 stars used)

Boles 2011 Sept 29: RA 10h 08m 10.58s DEC +51 50' 57.1" (2000)  
 Mobberley 2012 Feb 24: RA 10h 08m 10.57s DEC +51 50' 57.4" (2000)

A prompt response was received from Andrea Pastorello et al., Dipartimento di Astronomia, Universita di Padova, that a spectrum of Sept 30 suggested it might be an eruption of a luminous blue variable (LBV), often referred to as a 'supernova imposter'. They added that at a distance of 19.2 Mpc the absolute magnitude would be about -14.4. The object therefore did not receive a supernova designation.

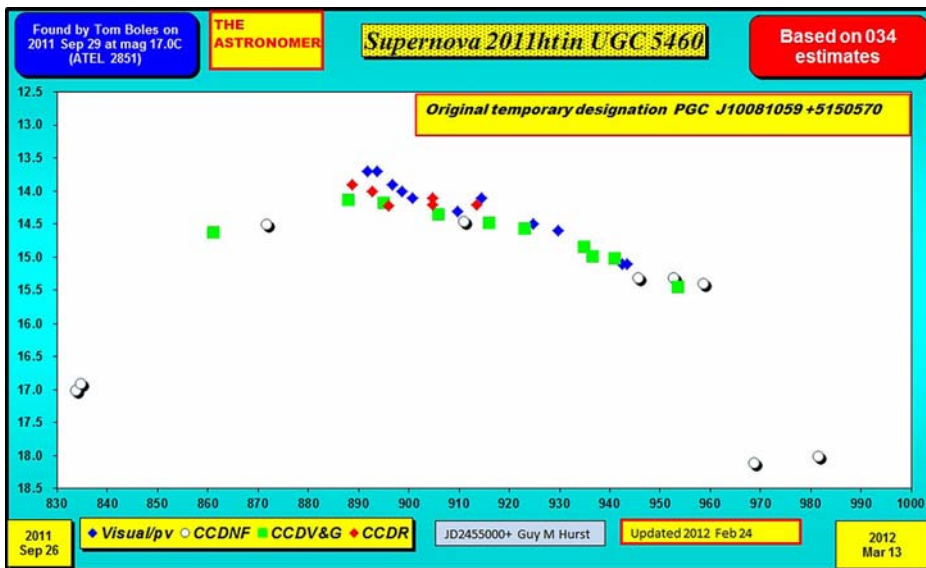
On 2011 Oct 26, the author measured a V

magnitude of 14.6 using the Sierra Stars 0.61m Cassegrain (BAA funded project) thus showing a substantial brightening. The lightcurve below then showed the more normal linear decline of a typical supernova, but an earlier V maximum of 14.1 around 2011 Nov 22 also suggested a revision of the absolute magnitude to -17, too bright for an 'imposter'. This resulted in a belated re-designation to SN 2011ht.

Coverage became sparse but by the end of 2012 January the object was measured to have faded to 15.4 on unfiltered images. Then totally unexpectedly on 2012 Feb 11 an unfiltered image by the coordinator using the Bradford Robotic Telescope at first seemed to suggest the object had disappeared in a somewhat dramatic fade of at least 2.5 magnitudes! A suspect was found of about magnitude 18.1 and astrometry by Martin Mobberley of further images allowed comparison with the original discovery shots by Tom Boles confirming it was within 0.3" of the discovery, and that they were one and the same.

Such a sudden deep fade may be more symptomatic of a dust event and optical obscuration. Discovery of unusual objects such as this one provides valuable information to investigate the behaviour of these LBVs.

If observers wish to monitor the future behaviour of this star and have sufficiently large apertures please contact the patrol coordinator for further details.



Guy M. Hurst, Coordinator

## Mercury & Venus Section – continued

Observations for the next report (for the June *Journal*) should reach me at the latest by the middle of April. Good observing!

Richard McKim, Director

### References & notes

- 1 Times of theoretical dichotomy of Venus from 2000 to 2040 have been published in: J. Meeus, *J. Brit. Astron. Assoc.*, **110**, 83 (2000)
- 2 J. Hedley Robinson, *ibid.*, **88**, 73–78 (1978)
- 3 W. Beer & J. H. von Mädler, *Beiträge zur Physischen Kenntniss der Himmelschen Körper in Sonnensysteme*, Weimar, 1841
- 4 T. Dobbins, *Sky & Telesc.*, **123**(3), 50–54 (2012)
- 5 R. J. McKim & P. A. Moore, *J. Brit. Astron. Assoc.*, **117**, 265–272 (2006)
- 6 I knew V. A. Firsoff slightly. Contrary to published obituaries, he was born in the Ukraine. His family moved to Poland after the Russian Revolution and he grew up in the Tatra mountains, later studying English, Philosophy and Astronomy at Krakow University. After briefly working as a professional astronomer in Swe-

den, he came to live in England at the outbreak of WW2, making a living by translating patents and writing popular books about politics, military skiing, travel, and – finally – astronomy, moving first to Scotland, and later to Glastonbury. In his later works Firsoff became more controversial, but his writing is always interesting. I owe my early interest in Mercury, Venus and Mars to his little paperbacks.

- 7 These particular versions were taken, for convenience (with slight enhancement in contrast for clarity) from V. A. Firsoff's book *The Interior Planets*, Oliver & Boyd, 1968.
- 8 P. A. Moore, *J. Brit. Astron. Assoc.*, **69**, 22–26 (1959)
- 9 P. A. Moore, *ibid.*, **71**, 146–148 (1961)
- 10 V. A. Firsoff, *Life Among the Stars*, Allan Wingate, 1974, p.77
- 11 P. A. Moore, *J. Brit. Astron. Assoc.*, **72**, 262–265 (1962)
- 12 *Observations of the Transit of Venus, 9 December 1874; made at stations in New South Wales, under the direction of H. C. Russell, Government Astronomer*, Charles Potter, Sydney, 1892; plate 25.

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## Mars Section

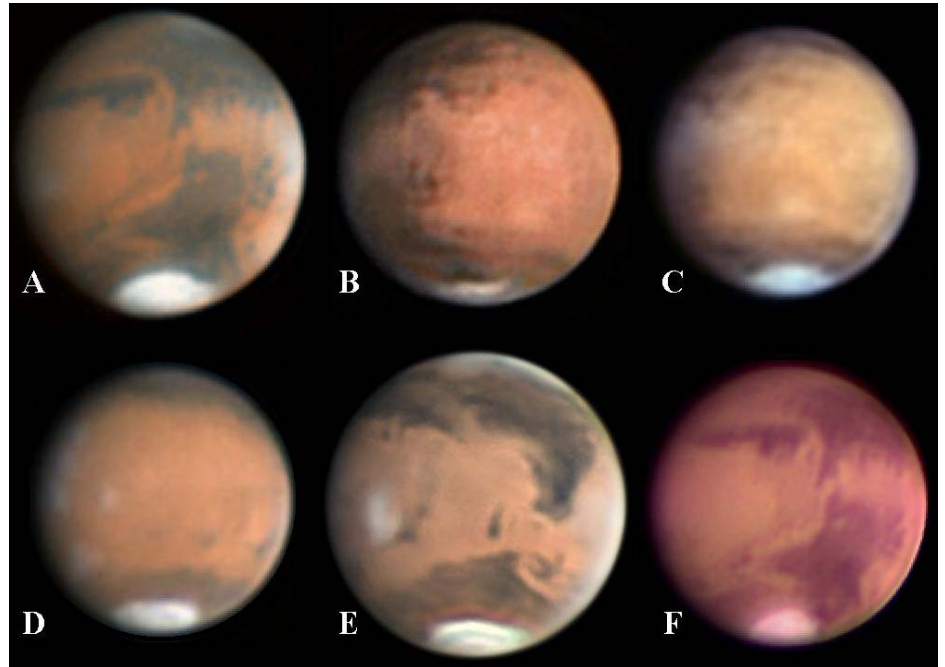
## Mars 2011–'12: first interim report

## Mars probes: the latest news

The *Curiosity* rover and NASA's *Mars Science Laboratory* mission will be featured in a forthcoming Section Note about the proposed landing site in Gale crater. The probe was launched successfully on 2011 Nov 26, and further details are to be found in the popular press. (See for example E. Lakdawalla, *Sky & Telesc.*, **122**(6) 22–30 (2011).) Touchdown – and its landing will certainly be both novel and daring – will be between 2012 Aug 6 and 20, and the nominal mission life will be 687 Sols.

The Russians had intended to recommence their unmanned planetary programme with their *Phobos-Grunt* craft. This probe, launched on 2011 Nov 8, was intended to land on Phobos and return a soil sample to Earth. It carried *Yinghou-1* (Firefly), a small Chinese Mars orbiter, which would have been released into martian orbit. However, the Russian probe failed to leave Earth orbit. Our contributor from the Netherlands, Ralf Vandebergh, is experienced in imaging the International Space Station and other orbiting objects, and was able to catch *Phobos-Grunt* on several occasions (see Figure 1). He writes: 'This picture was taken on November 29, when I first had a chance to observe the stranded Russian probe on the second day of the visible observing window over the Netherlands... *Phobos-Grunt* was passing close to Altair... *Phobos-Grunt* roared across the sky as bright as a star. It had an obvious reddish colour visible in the tracking scope, or at least that was my impression in the few seconds of the pass, while I was concentrated on aligning the crosshairs of my viewfinder with an object passing by with an angular velocity of 1.68 degrees per second.'

The craft re-entered the atmosphere and burnt up on 2012 Jan 15.



**Figure 2.** Recent images of Mars. (South is uppermost.) (A) 2012 Jan 17, CML= 003°, R(G)B image, 356mm SCT, D. A. Peach. (B) 2012 Feb 11, CML= 084°, RRGB image, 279mm SCT, J. Sussenbach. (C) 2012 Jan 26, CML= 106°, RGB image, 279mm SCT, T. Kumamori. (D) 2012 Jan 21, CML= 158°, RGB image, 405mm Dall-Kirkham, S. Buda. (E) 2012 Feb 3, CML= 254°, RGB image, 410mm refl., D. C. Parker. (F) 2012 Feb 7, CML= 359°, RGB image, 410mm refl., T. Barry.

## Observations of Mars in 2011–'12 before opposition

Prospects for this apparition were reviewed by the Director in the 2011 October *Journal*.<sup>1</sup> By 2012 mid-February observational work was to hand from 42 contributors: see Figure 2.

The usual seasonal phenomena have been witnessed, including the transition from north polar hood to polar cap. The large cap was very promi-

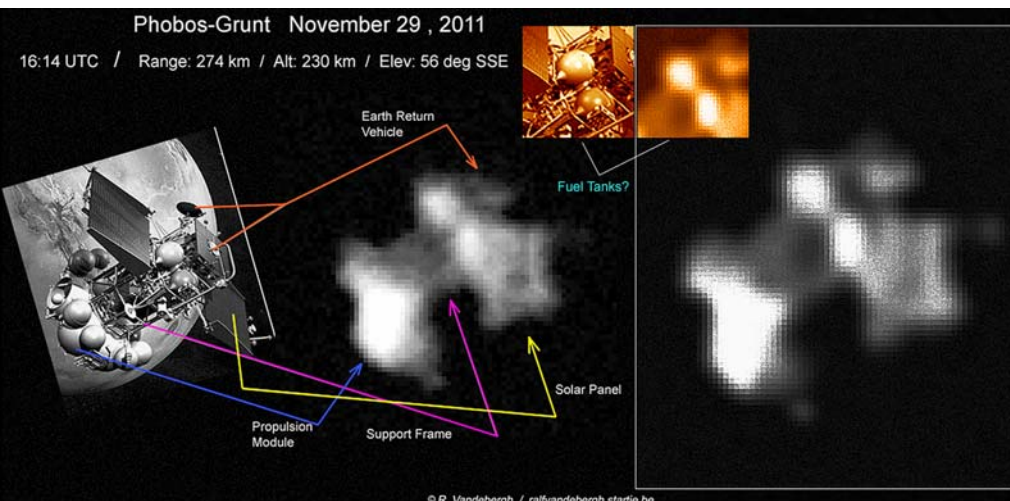
nent in late 2011, and it showed a rather prominent annular rift as well as some bright patches. The usual separation of *Olympia* from the cap has been witnessed very recently, while the best images of Feb 11 and 12 were the first clearly to reveal a small dust storm around longitudes 160–170° above the fragmenting cap, and close to its edge. The dust appeared darker than the NPC, but was lighter than the cap's surroundings, over which the dust propagated. The activity can be traced further back for several days; the data to hand will permit a complete account of the event to be written later.

Meteorology has been recorded by many observers, including the usual orographic clouds over the *Tharsis Montes* and *Olympus Mons*. The surface features look to be nearly identical to the 2010 opposition, but there are a few small changes to be caught if one looks very carefully. In particular, there is a slight fading and shrinking of the long-enduring dark patch in *Aetheria*, which is located at the NW corner of the *Elysium* shield. (This marking is sometimes called the *Hyblaeus* development.) Compare these images with those from 2010 in the issue of the *Journal* cited above.

We intend to produce another Interim Report later in the apparition.

**Richard McKim, Director**

<sup>1</sup> R. J. McKim, *J. Brit. Astron. Assoc.*, **121**(5), 258–259 (2011)



**Figure 1.** *Phobos-Grunt* imaged in Earth orbit on 2011 Nov 29 compared with a library photograph. 254mm refl., R. Vandebergh.



### Meteor Section

## Observers battle cloud and moonlight to view the 2011 Geminids

The Geminids are currently the most active of the annual meteor showers, but in 2011 December observers in the UK had to battle mist, clouds and bright moonlight to get a view of the shower.

In 2011 the peak of the Geminids occurred at about 15h UT on December 14, during daylight hours in the UK. Observers on the west coast of the USA had the best views, as dawn broke on Dec 14, and it appears that the peak ZHR may have exceeded 170 meteors/hr at this time.

Richard Fleet, observing from Wilcot near Pewsey in Wiltshire managed to see 28 Geminids during breaks in the cloud cover between 20:15 and 21:15 UT on the evening of Dec 14/15. Alongside his visual observing Richard imaged a number of bright Geminid trails on Dec 14/15 between 19:41 and 21:48 UT and during gaps in the cloud between 22:27 and 00:11 UT. He used 10-second exposures before moonrise but only 5 seconds afterwards to reduce the background sky brightness.

From Sunderland, photographer Colin White's patience was rewarded when gaps in the cloud appeared after 22:00 UT and he managed to record a fair number of bright Geminids looking out over the sea, even against the bright moonlit sky. Later that same night, Peter Mugridge from Epsom, Surrey observed 11 Geminids between 00:05 and 01:05, again through gaps in the cloud cover. Although well after the peak, UK observations indicate that the Geminid ZHR was still in excess of 150 m/h at 21h on Dec 14, but declined steadily during the night to around 100 m/h by dawn.

From Great Baddow, near

Chelmsford in Essex, Peter Meadows carried out automatic imaging of the Geminids using an Imaging Source monochrome DMK AU03 camera with Opticstar 2.8 to 12.0mm f1.4 lens. Each image was of 10s duration. The camera was pointed towards the zenith and slightly south. Imaging took place between 22:20 UT and 07:00 UT on Dec 14/15. Observing conditions were fair, with cloud from 00:45 to 01:50 UT, 02:20 to 03:15 UT, 04:00 to 04:45 UT and from 05:10 UT. The Moon was near the edge of the camera field of view after midnight. Ten bright Gemi-

nids and a sporadic meteor were recorded.

The most successful automated observations were carried out by Nick James from northern Chelmsford, using a Watec 902H2 Ultimate camera with a 3.8mm, f/0.8 lens in a waterproof, heated CCTV housing. The camera has a field of view of 96x72° and is aimed at a point around 45° elevation in the SE. This system appears remarkably effective and detects stars down to between mag 2 and mag 3 on raw video frames. On Dec 13/14, Nick recorded 13 bright Geminids in two sessions interrupted by a long spell

*Below: Composite image of Geminid trails captured in gaps between clouds on 2011 December 14/15 between 22:27 and 00:11 UT. ©Richard Fleet.*





*Left: A bright Geminid over the sea against a moonlit sky at 03:43 UT on 2011 Dec 14/15. Colin White.*

*Above: Video image sequence of a long, very bright Geminid passing above Jupiter in Pisces in partly cloudy skies at 19:55:34 UT on 2011 Dec 14/15. Nick James.*

*Right: Video image sequence of a bright Geminid passing below Aldebaran and the Hyades at 22:37:22 UT on 2011 December 14/15. Nick James.*

*Below: Video image of a bright Geminid streaking through the bowl of the Plough at 04:55:35 UT on 2011 Dec 14/15. Peter Meadows.*



of Dec 16/17, and on Dec 17/18 and 18/19. David Swain's two-hour visual watch on the evening of Dec 17/18 noted no Geminids, and only five were picked up by Nick James' video system after midnight the same night in nearly 5½ hours of observation. It is clear that by dawn on Dec 18 observed Geminid rates had dropped below the background sporadic level.

As always the Director is most grateful to all the observers who took the time and trouble to contribute to the Section's observations of the Geminids in 2011 December in rather trying conditions.

Meteor observing is not generally considered a hazardous occupation, so the Director is grateful to Storm Dunlop for bringing to his attention a report in the *Los Angeles Times* which described how a man trying to catch a glimpse of the Geminid meteor shower late on Tuesday December 13 ended up driving his Mustang off a cliff in the Angeles National Forest! A helicopter search team rescued the man, who plunged 100 feet off a hill at 11:30 pm on Glendora Mountain Road. After rescue workers reached him, he was able to walk away with only minor injuries.

**John W. Mason**, Director

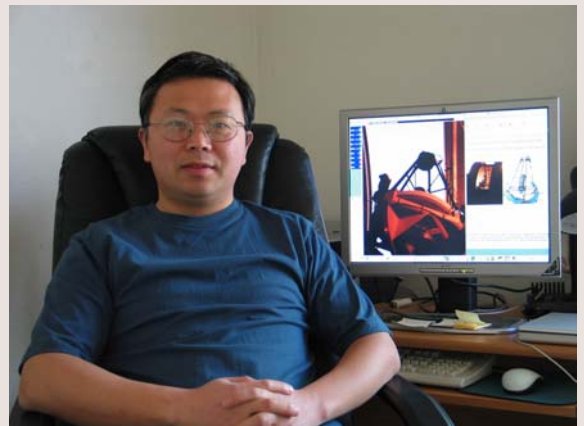
of cloud cover, but eight of these were picked up in the predawn hour ending at 06:33 UT. The following night, Dec 14/15, although overall rates were clearly declining, Nick recorded a magnificent total of 105 bright Geminids between 19:55 and 05:08 UT. In his best hour, from 23:00 until midnight, 23 Geminids were recorded.

Another observer who is beginning to try out video recording, using a former security camera mounted on his roof, is Stan Armstrong of High Wycombe, who was also out on Dec 14/15 and managed to capture several bright Geminids with his still experimental system.

The following night, Dec 15/16, Gordon MacLeod observing from Bower, by Wick in the far north of Scotland, managed to glimpse three Geminids and a bright sporadic between 21:00UT and 22:00 UT in fair conditions with some cloud cover. By now the Geminid ZHR had dropped to below 25 m/h. Nick James' automated video system showed quite clearly the rapid decline in detected rates for bright Geminids in sessions during the early morning hours

## Weidong Li, 1969–2011

British supernova patrollers were saddened to hear of the sudden death of California astrophysicist Weidong Li on 2011 December 12. Ever since he joined the Lick Observatory Supernova Search (LOSS) in 1997 Weidong has been a source of advice and motivation in our SN searches. He provided many spectrograms and confirmation images during the 14 years that we knew him. He was a true friend to the amateur community and will always be remembered as one of 'the good guys.' He is irreplaceable and will be sorely missed.



**Tom Boles**