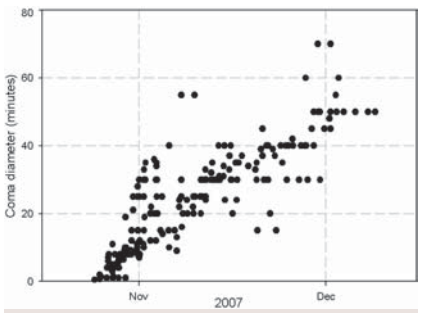
*Comet Section*

## Comet 17P/Holmes surprises us all

Periodic comet 17P/Holmes has been quietly orbiting the Sun since its discovery – by one of the 'Original Members' of the BAA – on the evening of 1892 November 6. Edwin Holmes had been observing in rather poor conditions, and decided to have a look at the Andromeda galaxy before packing in for the night. He was surprised to see something unexpected in the finder, and exclaimed so loudly that his wife came to see what was amiss. He had discovered a new comet. His initial report was met with some scepticism, but was quickly confirmed. As observations came in the coma steadily increased in size and the comet slowly faded. Then in January it brightened again, bringing it back into naked-eye view. Thereafter it faded and continued its way round the Sun, being lost between 1906 and 1964, following a Jovian encounter in 1908. A further Jovian encounter in 1968 reduced the perihelion distance to near its present 2.1 AU, with a period of seven years.

In 2007 the comet passed perihelion on May 4, and was slowly fading from 15th magnitude when, on October 24, Spanish observers recorded it much brighter than expected. It continued to brighten rapidly over the next 24 hours. Serendipitous observations with the Super-WASP wide-field imaging system on La Palma had captured the start of the comet's outburst, and show that it brightened from mag 9.7 to 8.6 over 2.6 hours at a rate consistent with the linear expansion of an optically thick coma. Extrapolating backwards in time suggests that the outburst commenced on October 23.8. The brightness peaked at around 2.4m but the almost stellar coma began to grow, eventually reaching almost a degree across. The total brightness changed little, fading as a solid body would do, although the surface brightness did begin to drop. This is as expected for an expanding cloud of dust. Assuming an inverse square law of brightness, the comet reached an absolute magnitude of –0.3, compared to its initial +10 based on an inverse sixth law.



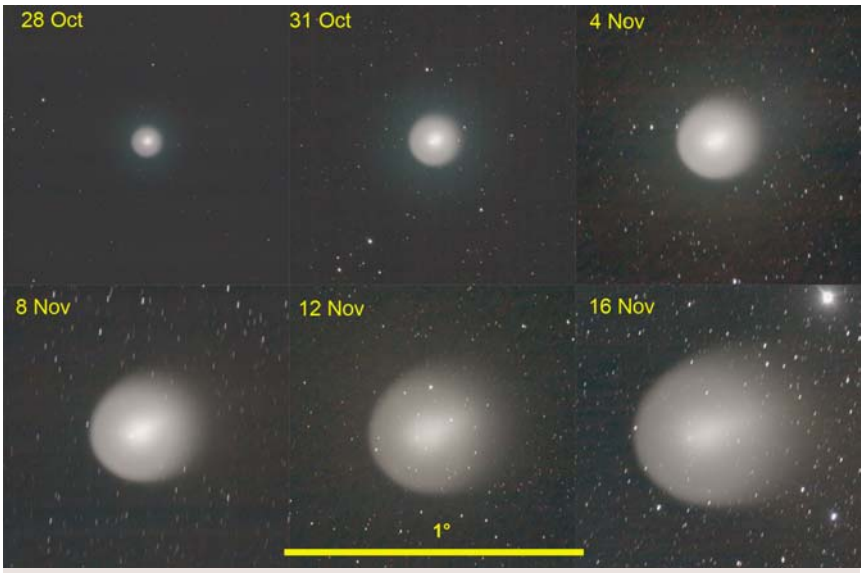

The coma diameter of comet 17P/Holmes at its 2007 outburst, from Comet Section observations.

The UK weather in November co-operated very well and many observers were able to take lengthy series of images, showing the development of the comet in exquisite detail. A few of these are reproduced here and on page 44, and you can find others on the Section web page. A week after the outburst, the comet showed a disc-like inner coma, a more diffuse, but strongly defined middle coma, and a very faint gaseous outer coma. This gas coma grew rapidly and appears to have dissipated. The middle coma developed a more parabolic shape, described by Martin Mobberley as 'like a jellyfish'.

Explanations for the outburst mechanism abound, and it is certainly a much bigger outburst than those seen for example in 29P/Schwassmann–Wachmann, which are no more than 5 magnitudes. These are thought to be driven by an internal heat wave triggering sublimation of carbon monoxide. Comet 41P/Tuttle–Giacobini–Kresak brightened by perhaps 10 magnitudes in a pair of outbursts in 1973, however these were short lived affairs, lasting no more than a fortnight.

The Holmes event clearly involved a large amount of dust, with less gas, and one suggestion is the shedding of a large slab of material like talcum powder. A second outburst like that of 1893 cannot be guaranteed, but if one does occur I hope it will be a BAA member who detects it first. Go out and observe!

**Jonathan Shanklin,** *Director*




Images of Comet Holmes in late 2007 by Nigel Evans, showing the expansion of the coma. Canon 10D digital camera, 500mm lens. *N. S. Evans.*

## From the President

At last we have moved the office back to Burlington House (BH) following its refurbishment and what a wonderful looking office we now have. But the move back has not been without its trials and tribulations. Not the least of these was the fact that it turned out that BH was not ready for our return on the specified date! Nonetheless, the office staff, Jean and Madeleine, together with tremendous help from a number of other BAA personnel, particularly Peter Hudson and several members of the Library Committee, managed to overcome all obstacles (literally – there were any number of contractors still on site). Even as I write this (mid-December) the staircase will effectively be closed for a week whilst new stair carpet is laid, and now I have just learnt there is water coming through the ceiling. And all the while the staff continue to answer your queries!

But our membership is largely one of observers as has been stated before, so what about Comet 17P/Holmes? Is it a coincidence that it should herald in a new President? Undoubtedly yes, but what an extraordinary sight. (And it was noted that even the Director of the Variable Star Section was seen observing it!) It just goes to show how we must keep a watch on the heavens at all times and be ready for the unexpected. We are also lucky that we live in times that allow such wonderful images to be taken and shared with us all. But do we always share our observations with others? Is this not what the *Journal* is about? Articles need not be technical or highbrow

suitable only for the specialist planetary observer or variable star enthusiast. Take for example the excellent article by Damian Peach in the last *Journal*. I'm sure many of us could write about our observations and techniques in a similar fashion and I'm also sure we don't have to go to exotic places to do so.

I mentioned last time that most of my observing is carried out remotely nowadays and it has been interesting that I'm starting to get more enquiries about how I do it and in some cases for the same reason – I can no longer tolerate the cold for long periods at a time. (The description by Damian about observing in temperatures of over 25°C brought forth great envy, and after all, the comfort of the observer is paramount!). I was fortunate to listen to a talk about remote observing by Tonny Vanmunster from Belgium at a Variable Star Section meeting many years ago, and being specifically about variable stars, the talk was of great interest to me. Also my interest was further kindled when Mark Armstrong and Tom Boles described their wonderful supernovae patrols. I don't want to go into too much detail here as I may describe the procedure in more depth later, but very briefly I use a modern 'Goto' telescope in an observatory which is only big enough to house the telescope.

This can be accessed from outside the observatory for setting up purposes. After this initial procedure, which involves little more than centring a bright star in the eyepiece, there is no longer any need to access it unless I wish to change filters (but I'm working on that). The telescope and CCD camera is 'hard-wired' to a PC in an adjacent shed (the 'Control Room'!). This is an old PC which drives two monitors. These are not essential but I find them useful. One displays the image being downloaded and the other an image from *Guide8* – my favoured planetarium software. The latter also drives the telescope from one object to the next.

This 'Control Room' PC is then networked to another, more modern, PC in my study and what is really important, in the warm. From here I can see and control precisely what is on the remote PC so I can send the telescope to whatever object I wish to observe next. Very similar to Tom and Mark's systems and many others, I am sure. Furthermore, I've come to realise that I do not have the time to search for a large number of objects night after night and instead prefer to concentrate on a long time-series on a single object. At this time of the year this may mean setting up on one object at the start of the night, moving to another by, say, midnight, when I go to bed, and then setting the alarm to wake me up to shut down the telescope just before dawn when I'll return to my warm bed. So don't call me before 9 a.m. if the night before has been fine. I'm still in bed!

**Roger Pickard,** *President*

Roger Pickard's 300mm Schmidt–Cassegrain telescope (with dew shield) prepared for a night of remote observing.

# Solar Section

## *2007 September*

As low as activity was in August, September was even lower with only three minor groups appearing all month. Again the southern hemisphere 'dominated'. Most observers reported Sept 4, 6 and 27 as blank and all observers reported 7th to 26th inclusive blank.

**AR969** S06°/189° survived from the previous month as an Hsx spot close to the western limb but was not seen on Sept 2.

**AR970** S07°/124° also survived from August, type Bxo near to the CM. The group was last seen on Sept 6, still type Bxo, close to the western limb.

**AR971** N03°/113° was first seen on Sept 28 type Cro consisting of a small penumbral spot and four satellite spots. The group was still evident on Sept 30 with the same number of spots.

The mean quality number (Q) for August was 2.05.

### *H-alpha*

#### *Prominences*

12 observers reported a prominence MDF of 3.14 for September.

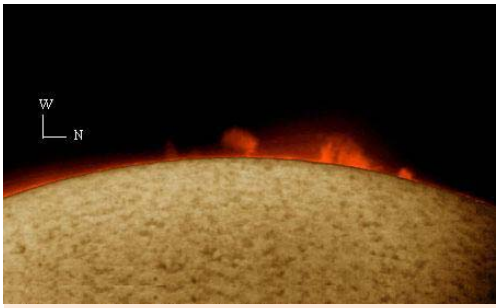
Eric Strach noted a 'remarkable inverted J type' on the western limb at N51° on Sept 4 and Mark Walters reported 'two nice parallel loop prominences arcing over the NE limb' on the same day. Bill Leatherbarrow observed three striking and contrasting prominences on this day, a fine double-arched delicate plume at 10° E of South; a vigorous, eruptive prominence with detached plumes just south of east and a double arch with adjacent plume ENE, resembling a McDonalds sign.

On Sept 5 three 'dense pillars' were seen in the same area as the J-type prominence of the previous day. The most northerly pillar had a slender arc connecting it to a small prominence at N49°.

Ken Medway noted a 'tall spire like prominence' on the NW limb on Sept 8 with a filament close to the limb 'connecting' to the prominence. This combination was still present on the next day.

Sept 14 brought some lively activity, a large triangular quiescent flame prominence appearing on the eastern limb visible between 09:34 and 18:34 UT.

Monty Leventhal in Australia reported a pillar type prominence rising to a height of 112,000km on the NE limb on Sept 16.




Prominences at 22:25 UT, 2007 Sept. 15. *Monty Leventhal.*

A large loop prominence was observed on the NW limb on Sept 20.

Peter Meadows reported seeing prominences on all his eleven observing days but the largest spike prominence was seen on Sept 22 on the NE limb.

Lee Macdonald noted two prominences on the E limb on Sept 25 and also a detached prominence to the NW and a very small active prominence to the W.

### Filaments

On Sept 2 a small short filament was seen alongside AR970.

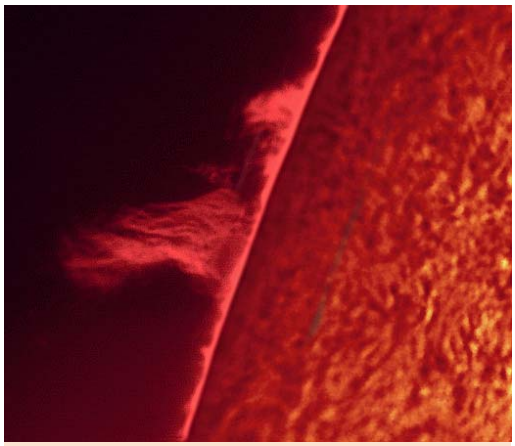
Two small filaments were seen in the NE quadrant close to the NNE limb on Sept 10 and two medium-sized dark filaments were seen in the NE quadrant on the 11th.

On Sept 13 a filament was seen at the SE limb leading to a limb prominence and a large dark filament, possibly in two components, was seen in the NNE sector.

An isolated small filament was observed on Sept 23 at S10º/190º and plage was noted around AR971 on Sept 30.

### Flares

Ernest Richardson noted a flare on Sept 1 at 08:25 UT which was 'equatorial'. A further flare was noted on Sept 7 at 13:15 UT by Mike Houchen.



Prominence seen at 08:43 UT on 2007 Sept 23. *Dave Tyler*.

## BAA sunspot data, 2007 September–October

| | *September* | | *October* | |
|---|---|---|---|---|
| *Day* | *g* | *R* | *g* | *R* |
| 1 | 2 | 20 | 0 | 1 |
| 2 | 1 | 14 | 0 | 1 |
| 3 | 1 | 10 | 0 | 0 |
| 4 | 0 | 5 | 0 | 0 |
| 5 | 1 | 9 | 0 | 1 |
| 6 | 0 | 1 | 1 | 13 |
| 7 | 0 | 0 | 1 | 12 |
| 8 | 0 | 0 | 0 | 2 |
| 9 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 1 |
| 19 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 |
| 27 | 0 | 2 | 0 | 0 |
| 28 | 1 | 11 | 0 | 0 |
| 29 | 1 | 12 | 0 | 0 |
| 30 | 1 | 13 | 0 | 0 |
| 31 | | | 0 | 0 |
| *MDFg* | 0.23 (53) | | 0.07 (46) | |
| *Mean R* | 3.24 (46) | | 0.97 (42) | |

## North & south MDF of active areas g

| | *MDFNg* | *MDFSg* |
|---|---|---|
| *September* | 0.06 | 0.14 (36) |
| *October* | 0.00 | 0.07 (34) |

g = active areas (AAs)
MDF = mean daily frequency
R = relative sunspot number
The no. of observers is given in brackets.

## 2007 October

White light activity decreased again with only two minor groups making brief appearances.

**AR971** S01º/112º remained on the disk from the previous month type Bxo. It was not seen after Oct 1.

**AR972** S05º/020º was on the disk on Oct 6 and 7 type Bxo consisting of two small spots near the central meridian. The group faded on the disk and did not reappear.

## H-alpha

### Prominences

13 observers reported a prominence MDF of 2.31 for October. Most prominences were small and unremarkable but several were worthy of note.

Monty Leventhal reported a prominence on the NE limb extending to a height of 102,000km on Oct 1. A hedgerow prominence appeared on Oct 2 on the NW limb extending some 279,000km around the limb and 93,000km in height. This was still evident on Oct 3 although reduced in extent.

Lee Macdonald reported a medium-sized hedgerow type prominence at the W limb on Oct 9 and Monty Leventhal observed an arch prominence on the NW limb extending to a height of 65,000km.

Ken Medway saw a low arch prominence on the SW limb on Oct 10.

Peter Meadows observed a spike prominence on the NW limb on Oct 13 and a spire on the SW limb on 14th.

On Oct 19 Eric Strach reported an array of three pillar prominences at N44º on the W limb with the central prominence high and curving northwards towards the adjacent pillar. The same region went on to produce small prominences on the following day.

Bill Leatherbarrow also reported several small prominences on Oct 20 and 21 and a complex single hearth of four prominences on the NNW limb on the latter day. Eric Strach reported a single pillar at N48º on Oct 21 which had changed its shape into a more massive pyramidal structure by 23rd, leaving only a small remnant by Oct 24.

Bill Leatherbarrow reported a very large group of two flame prominences at the E limb on Oct 23, associated with small prominences.

Monty Leventhal observed an arch prominence on the NW limb rising to a height of 65,000km on Oct 28 which had grown into a spike some 112,000km in height by the following day. Eric Strach also reported a jet type prominence at N37º on the W limb on the same day. Eric also observed some new prominence activity on Oct 29 on the E limb, producing a pair of substantial pyramidal prominences at N44º and a single, partly detached prominence at N40º. Bill Leatherbarrow confirmed a 'major prominence group at the E limb' on this same day.

Several spike prominences were reported on the NW limb on Oct 31 and a loop prominence in the northern polar region rose to a height of 112,000km.

### Filaments

Few filaments were seen during the month. A dark filament was spotted on the disk just west of south on Oct 12 and on Oct 14 a pair of filaments were seen near the E limb joined together into a 'U' shape. On Oct 17 a small but distinct chevron shaped filament was observed in association with a CaK patch at S06º/240º.

### Flares

No flares were reported during the month. Monty Leventhal reported a surge on Oct 5 starting at 23:20 UT and ending at 23:35 UT in association with AR972.

**Lyn Smith,** *Director*

*Mercury & Venus Section*

# Recent BAA studies of Mercury

Successful photography or imaging of Mercury has always been a difficult task. The amazing skill of Camille Flammarion's observer Ferdinand Quénisset in the early 20th century made him the first person to photograph actual albedo features on the planet using the 9¾-inch (248mm) refractor of the Juvisy Observatory near Paris.[1] This early result was not repeated until the 1930s at the Lowell Observatory,[2] and the first really good early photos were obtained at Pic du Midi from 1942 onwards by Bernard Lyot and his successors. Closely following the 1960s radar discovery of the 59-day rotation period, the first reliable Earth-based maps were drawn in the late 1960s by Henri Camichel, Audouin Dollfus and John Murray, and these cartographers were largely dependent upon the Pic du Midi and New Mexico datasets of photographs and drawings.[3–5] Even higher resolution has been achieved in recent decades by a group from Boston University using the Mt Wilson 60-inch reflector (though on one date only in 1998 August), whilst our own Section member Johann Warell achieved very high resolution through multi-filter imaging with the Swedish vacuum solar telescope on La Palma in the course of his professional research.[6,7]

Since 2000, BAA observers have contributed several hundred CCD and webcam images of the innermost planet to the Section. Early results were published by R. M. Steele[7] and the writer.[8] As NASA's *Messenger* spacecraft nears its first encounter with Mercury,[9] this seems the right time to illustrate what has been achieved in the last few years.

For the record, Table 1 provides a list of all those who have contributed observations of Mercury to the Section since its reformation in 1991. We are not publishing pre-1991 BAA work in this note, with two exceptions. Firstly, David Gray contributed high resolution observations at a number of morning elongations up till 1998,[10] and we have found it useful to include some of his earlier drawings here. Secondly, we take the chance to publish some work by the late Paul Doherty (a former BAA Mercury Coordinator) who also observed with a large telescope: his observations covered several evening elongations during 1976–'78 (Figure 1). (Doherty's earlier observations with a small instrument have not been reviewed: many of his beautiful drawings have appeared elsewhere.[11])

Figure 2 (which, like all the others, has south uppermost) presents a black and white collage of the best images of Mercury that have been submitted to the Section up to 2007 late November. In many cases the objectivity of the features was confirmed by multiple images taken during the same observing session, or by comparison with images on adjacent days. As the caption shows, the work of Chris Hooker (Wantage, Oxon.), Ed Lomeli (Sacramento, California, USA) and the late Erwin Van der Velden (Brisbane, Australia) was especially useful in this compilation, while high resolution was also achieved by others such as Bruce Kingsley (during a visit to Barbados). Figures 1 and 3, for comparison, are montages of drawings by Paul Doherty (Stoke on Trent, Staffs.) and David Gray (Kirk Merrington, Co. Durham). Other visual observers have also made superb series of drawings, above all Mario Frassati of Italy (who has published his own work[12]). Frassati's recently updated map (received a few weeks ago) covering all work up to 2006 is reproduced here as Figure 4. Doherty and Gray were two of the few observers who made useful ▸ *p.8*

## Table 1. Contributors of BAA Mercury observations, 1991–2007

We exclude observers who provided only images of transits of Mercury or of its occultations by the Moon. Observers were UK-based unless otherwise stated.

***Observers who provided drawings of Mercury, 1991–2007***

G.–L. Adamoli (Italy), S. Beaumont, R. Braga (Italy), O. Cole–Arnal (Canada), D. Fisher, M. Frassati (Italy), M. A. Gélinas (Canada), M. Giuntoli (Italy), D. Gray, P. T. Grego, W. H. Haas (USA), A. W. Heath, C. Hernandez (USA), A. P. Johnson, L. T. Macdonald, G. Macleod, R. J. McKim, C. Meredith, R. W. Middleton, P. Milanese (Italy), D. Niechoy (Germany), I. S. Phelps, R. W. Schmude (USA), P. A. Smith, D. del Valle (Puerto Rico), J.–F.Viens (Canada).

***Observers who provided photographs of Mercury, 1991–2007***

R. Buggenthien (Germany), J. C. D. Marsh, R. W. Schmude (USA), A. Vincent.

***Observers who provided CCD/webcam images of Mercury, 1999–2007***

A. Allen (USA, *per* F. J. Melillo), D. L. Arditti, M. Brown, C. J. Hooker, T. Ikemura (Japan), B. A. Kingsley (UK and Barbados), W. Kivits (Netherlands), P. R. Lazzarotti (Italy), H.–G. Lindberg (Sweden), E. Lomeli (USA), F. J. Melillo (USA), C. Meredith, M. Morgan–Taylor, R. Nunes (Portugal), T. Olivetti (Thailand), D. A. Peach (Barbados), C. Pellier (France), J. Sussenbach (Netherlands), E. Van der Velden (Australia), S. Walker (USA), K. Yunoki (Japan).

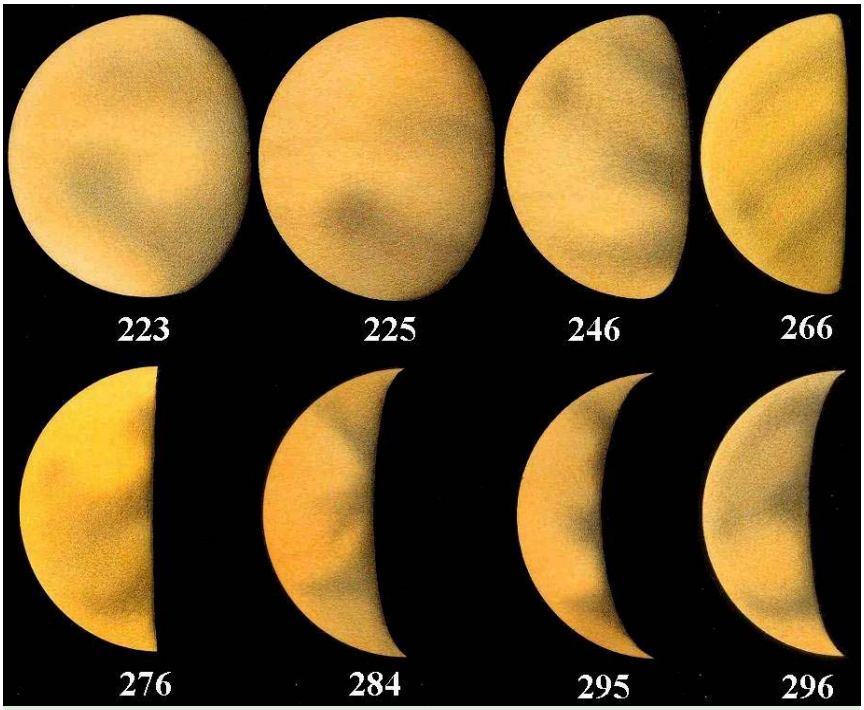



**Figure 1.** BAA Mercury drawings by Paul Doherty with 254mm refl., ×280, ×320 (1976) and 419mm refl., ×248, ×372 (1977–'78), in order of increasing CM longitude.

***First row:*** CM 223: E 1978 Mar 12; 225: E 1977 Mar 28; 246: E 1977 Apr 2; 266: E 1976 Apr 22.

***Second row:*** CM 276: E 1976 Apr 24; 284: E 1978 Mar 25; 295: E 1978 Mar 27; 296: E 1976 Apr 28.

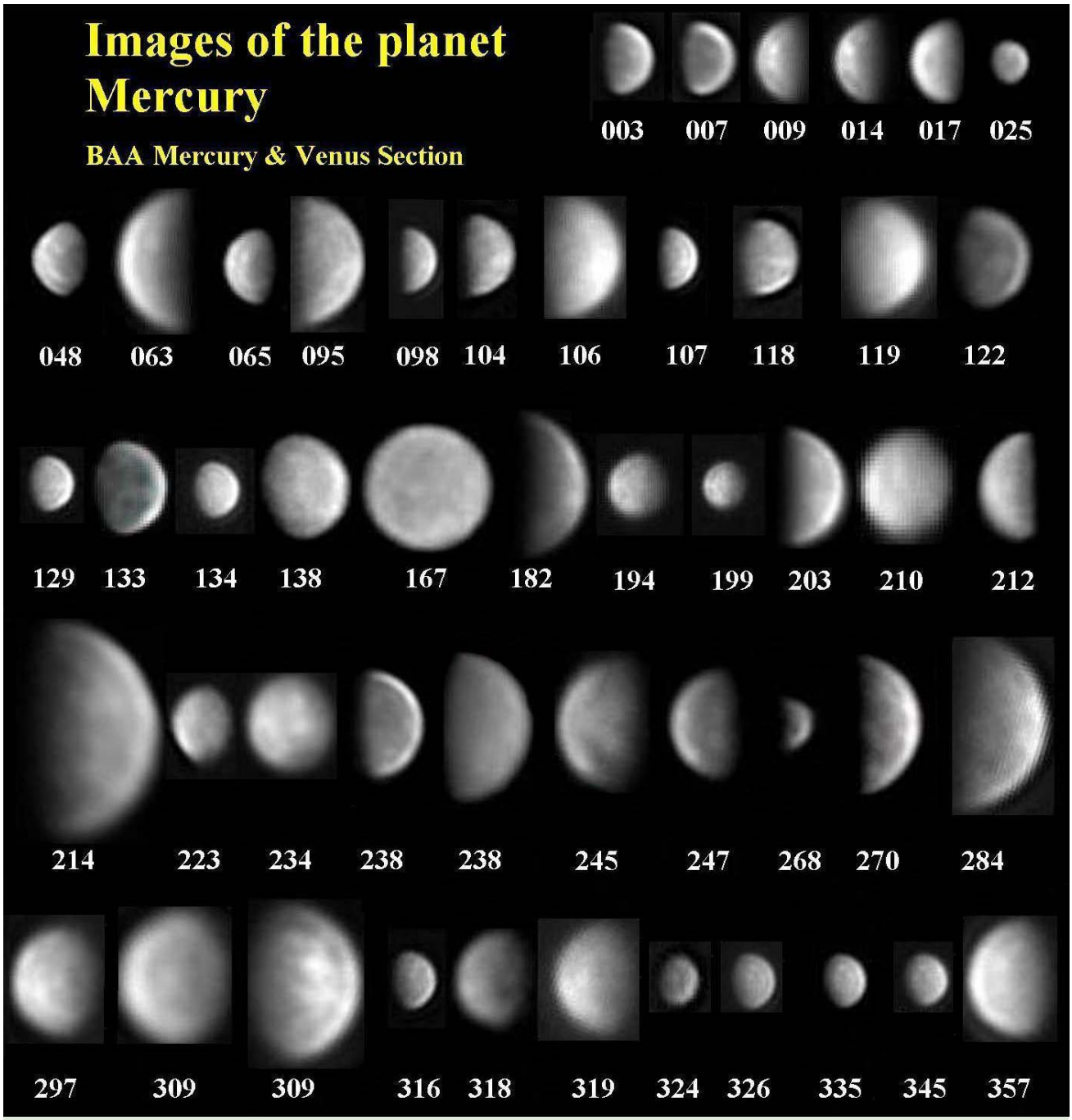



**Figure 2.** BAA Mercury CCD/webcam images by A. Allen (254mm refl.), C. J. Hooker (254mm refl.), B. A. Kingsley (279mm Schmidt–Cass.), W. Kivits (356mm Schmidt–Cass.), E. Lomeli (235mm Schmidt–Cass., except for CM 309° (A) taken with 102mm OG), F. J. Melillo (203mm and 254mm Schmidt–Cass.), M. Morgan–Taylor (203mm catadioptric), Z. Pujic (310mm refl.) and E. Van der Velden (203mm and 235mm Schmidt–Cass). South is uppermost in all Figures. The CM longitude is stated beneath each image. 'W' denotes a morning elongation and 'E' an evening one.

*First row:* CM 003: W 2003 Feb 11, Van der Velden; 007: W 2003 Feb 12, Van der Velden; 009: E 2007 Sep 25, Lomeli; 014: E 2007 Sep 26, Lomeli; 017: E 2006 Oct 12, Lomeli; 025: W 2006 Dec 16, Hooker.

*Second row:* CM 048: E 2007 May 15, Lomeli; 063: E 2006 Oct 21, Lomeli; 065: E 2007 May 18, Lomeli; 095: W 2005 Aug 26, Lomeli; 098: W 2006 Aug 11, Lomeli; 104: W 2005 Aug 28, Lomeli; 106: W 2006 Aug 13, Lomeli; 107: W 2006 Aug 13, Lomeli; 118: W 2005 Aug 31, Lomeli; 119: W 2007 Jul 31, Lomeli; 122: W 2007 Aug 1, Hooker.

*Third row:* CM 129: W 2006 Aug 18, Lomeli; 133: W 2006 Aug 19, Hooker; 134: W 2006 Aug 19, Lomeli; 138: W 2006 Aug 20, Lomeli; 167: W 2006 Aug 27, Kivits; 182: W 2005 Apr 24, Pujic; 194: E 2007 Jan 22, Lomeli; 199: E 2007 Jan 23, Lomeli; 203: W 2005 Apr 28, Van der Velden; 210: E 2006 Feb 10, Lomeli; 212: E 2002 Sep 5, Van der Velden.

*Fourth row*: CM 214: W 2006 Apr 15, Kingsley; 223: E 2006 Feb 13, Lomeli;234: E 2007 Aug 27, Lomeli; 238 (A): W 2005 May 5, Van der Velden; 238 (B): W 2005 May 5, Pujic; 245: E 2007 Feb 3, Morgan-Taylor; 247: E 2007 Feb 3, Hooker; 268: W 2002 Jun 29, Melillo; 270: W 2006 Nov 22, Allen; 284: W 2007 Nov 7, Lomeli. ▸ *next page*

drawings at large gibbous phase: most drawings of Mercury show little detail, and tend to favour the dichotomised disk or the smaller phases, and as such are rarely useful for mapping.

Figure 5 reproduces the standard albedo chart of the planet.[3] Readers are left to make their own comparisons between these illustrations. The BAA CCD images – excellent though they are – do not reveal any details not already recorded on the best ground-based drawings or photographs, so that they aid previous studies only by very marginally improving positional accuracy. Note that only half the planet, covering longitudes *circa* 20° through 190°, was imaged by *Mariner 10* during its three encounters in 1974–'75,[13] so the detailed appearance of the rest of the surface remains – until *Messenger's* programme commences very soon – unknown territory. It will be fascinating to see (for example) the whole of Mercury's most striking feature, the *Caloris* basin (centred at about +30°, 190°).

One image from Figure 2 was obtained by Ed Lomeli with an aperture of only 102mm, and clearly demonstrates (if proof were needed) that visual observers using similar instruments really could objectively record such markings in the past. For example, Henry McEwen, Director of the Section between 1895 and 1955, studied Mercury during a long lifetime with nothing larger than a 5-inch Wray refractor.[8,14] The white patches at the limb, understandably regarded as white clouds by Eugène Antoniadi[15] and others, are in reality related to groups of bright ray craters. Indeed, the suggestion that these patches might represent lunar-like rayed craters was (as far as I am aware) first made by McEwen in 1948.[16] Gerard Kuiper independently reiterated this view in 1970[17] immediately prior to the flight of *Mariner 10*. David Graham[18] and Frassati *et al.*[12] have further discussed these features of the planet in previous volumes of the *Journal*, whilst Davies *et al.*[19] neatly summarised the entire matter as follows: 'On Mercury, the albedo variations seem to be due to the brightness of the extensive ray systems, because the albedos of the large flooded basins do not differ greatly from those of the surrounding cratered terrain.'

In concluding, it will be apparent from Figure 2 that not all longitudes have been recorded with equal success by our members, and I will be glad to continue to receive further good images for the satisfaction of improving our ground-based record of this most elusive little world.

**Richard McKim,** *Director*

*Figure 2, continued from previous page*

*Fifth row:* CM 297: E 2007 Sep 10, Lomeli; 309 (A): E 2006 Sep 28, Lomeli; 309 (B): W 2007 Nov 14, Lomeli; 316: W 2006 Dec 1, Lomeli; 318: E 2007 Sep 15, Hooker; 319: E 2007 Sep 15, Lomeli; 324: W 2006 Dec 3, Melillo; 326: W 2006 Dec 3, Lomeli; 335: W 2006 Dec 5, Lomeli; 345: W 2006 Dec 7, Lomeli; 357: E 2006 Oct 8, Lomeli.

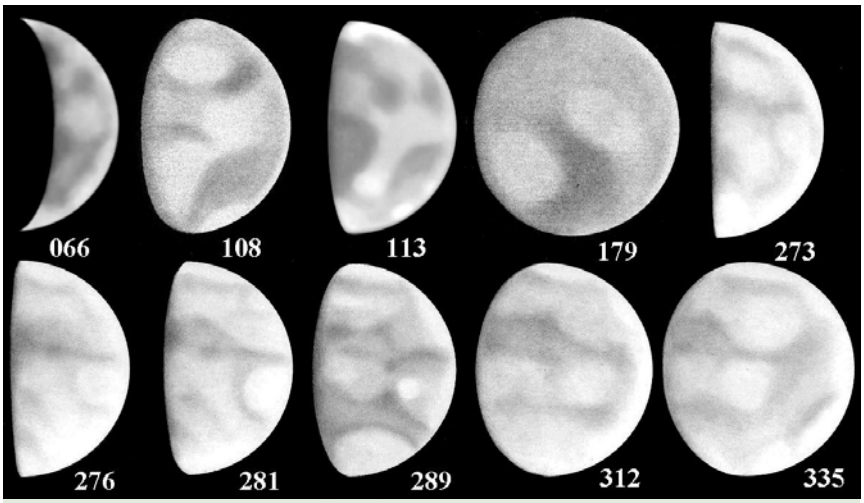



**Figure 3.** BAA Mercury drawings by David Gray with 415mm Dall–Kirkham Cass., ×248–415, arranged in order of increasing CM longitude. Gray often employed an apodising screen and/or a W22 orange filter (and sometimes others) to enhance contrast. Seeing good throughout except for CM 179° (fair).

***First row:*** CM 066: W 1998 Dec 11; 108: W 1988 Oct 29; 113: W 1998 Dec 19; 179: W 1988 Nov 13; 273: W 1995 Oct 20.

***Second row:*** CM 276: W 1996 Oct 4; 281: W 1996 Oct 5; 289: W 1997 Sep 21; 312: W 1995 Oct 28; 335: W 1995 Nov 2.

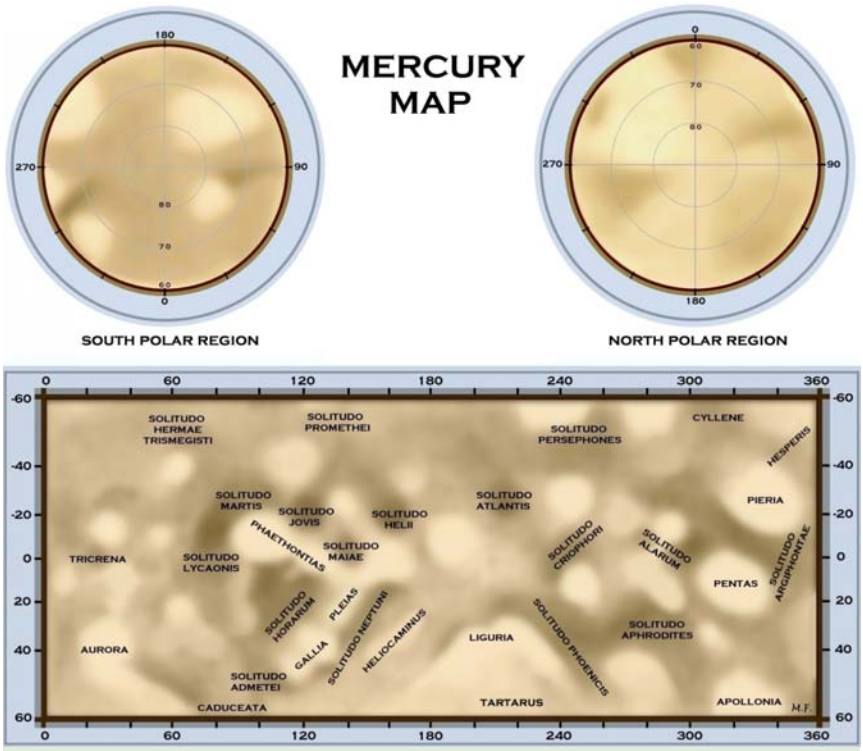



**Figure 4.** Chart of Mercury by Mario Frassati (Crescentino, Italy) from personal observations (203mm Schmidt–Cass). The chart covers the years 1997 to 2006.

## References

1 McKim R. J., 'The Flammarion Observatory, Juvisy', in P. Moore (Ed.), *1996 Yearbook of Astronomy*, Macmillan, 1995, pp 207–219

2 Slipher E. C., *A Photographic Study of the Brighter Planets*, Lowell Observatory & the National Geographic Society, 1964

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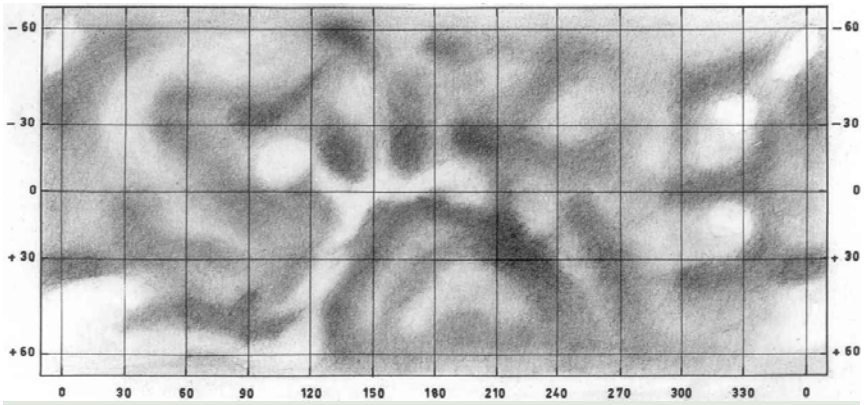



**Figure 5.** The standard albedo map of Mercury, compiled from ground-based photographs and drawings, after Camichel & Dollfus, 1968.[3]

## Jupiter Section

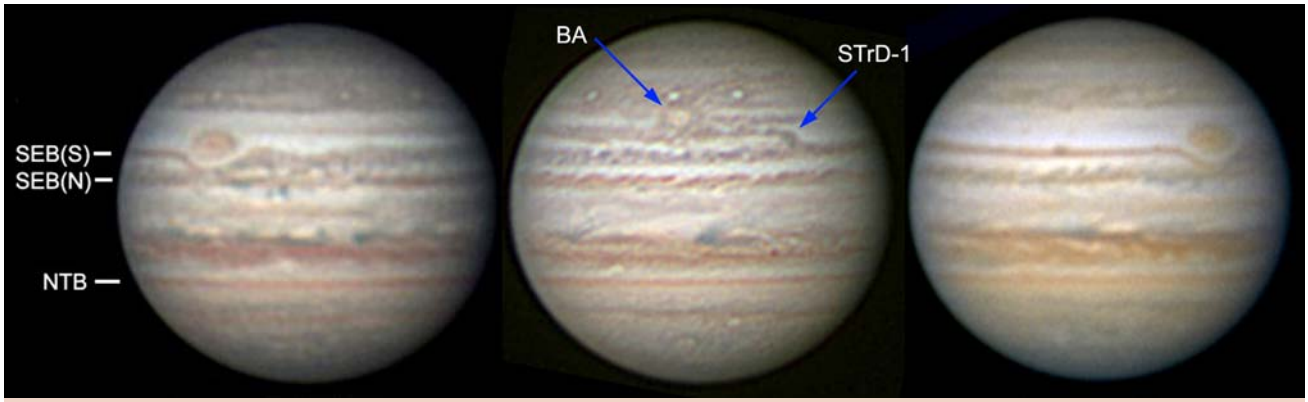
# Progress of Jupiter's global upheaval

Jupiter's planet-wide changes were still continuing as the 2007 apparition drew to a close. In September and October, the events that had been so remarkable in earlier months were winding down. The North Temperate Belt, newly revived, had a strong orange colour all around the planet. The revival of the South Equatorial Belt was also approaching completion, both north and south components being dark at all longitudes. There was still turbulence in the belt following the Great Red Spot, but on a small scale; the GRS was still a conspicuous orange oval.

The South Tropical Disturbances (STrDs) persisted, and the retrograding dark spots on SEB(S) continued to recirculate at STrD-1. These spots also still tended to merge, so by the end of August, 16 of the 17 spots produced on SEB(S) had recirculated and merged to form just two dark spots in the prograding current. But these spots broke up again within a few days, and subsequent SEB(S) retrograding spots were smaller and less distinct, so that it was not possible to track them thoroughly in September, although the Circulating Current may have still been operating. By this time a massive dark STB had formed preceding STrD-1.

The Equatorial Zone had been exceptionally dark in the first half of the year, but this grey and brown shading was fading gradually from July onwards. Thus the planet was gradually returning to a more normal appearance.

**John H. Rogers,** *Director*




**Images showing the state of the planet in 2007 September.**

*Left:* Sep.18, 09:18 UT, CM1=72, CM2=155, CM3=68; Kenkichi Yunoki (Japan), by courtesy of the ALPO-Japan web site; includes the GRS and the source region of the SEB Revival.

*Middle:* Sep.23, 21:33 UT, CM1=228, CM2=269, CM3=183; Fabio Carvalho (Brazil); includes oval BA and STrD-1.

*Right:* Sep.23, 10:41 UT, CM1=33, CM2=86, CM3=358; Stefan Buda (Australia); GRS at right.

*Campaign for Dark Skies*

# Skybeams and 'light art' defined as 'advertising' for planning purposes

Skybeams and light projections have been a long standing problem, not just because of possible light pollution, ecological and public safety issues, but also because there was confusion as to when planning permission was required. Under some circumstances a light beam could be used for 28 days without needing planning permission, whilst other users such as circuses would always need planning permission. The celebrated Guildford case saw a skybeam classified as an advert, and so needing planning permission (after lobbying by the Campaign for Dark Skies with local support), but this was not binding on later cases. So there was a lack of firm national guidance, or a court judgment clarifying the issue. However, the situation is now much clearer due to the new Town and Country Planning (Control of Advertisements) (England) Regulations 2007.

The change (which currently only applies in England) comes after a CfDS reply to the UK Government's 2006 consultation on an update to the original advertising control regime (1992, 1994 and 1999). The CfDS outlined the potential problems posed by these lighting forms, the ambiguity over their advertising status and suggested that they be classified as advertisements and require express planning permission. This would give local authorities the ability to consider the impact of the lighting on the night sky, local road users and wider ecological and environmental factors. The new Regulations came into force on 2007 April 6 and paragraph 155 of the circular adopts these requests:

'Lasers, search lights and beams of light should be regarded as advertisements and will require express consent. All illuminated advertisements projected onto buildings, or landscapes, or sky require express consent. All these kinds of illuminated advertisements should be considered on a site specific basis taking account of amenity and public safety issues.' **(http://www.communities.gov.uk/documents/planningandbuilding/pdf/321506)**

The high visibility of skybeams has led to concern over road safety. A recent display at a major road junction in Leicester. *CfDS.*

While this is a significant move forward, the real litmus test will come in the form of local authority attitudes to enforcement, bearing in mind the very variable response shown by local authorities to artificial lighting being made subject to statutory nuisance. BAA Council member Sheridan Williams reports that the latest of many skybeams at Milton Keynes was shut down in 2007 September following one e-mail to the council, with the local authority citing the new provisions. However Leicester City Council declined to act against a travelling circus which used a skybeam for one week in autumn 2007; the council felt it would not be worthwhile acting against a breach of such short duration, even though the beam was adjacent to a major road and roundabout. As a result the success of the new provision very much lies in the hands of local authorities.

**Martin Morgan–Taylor,** *Legal advisor, CfDS*

Skybeams in Guildford in 1999. *Photo by Grant Privett/CfDS*

# Another Good Lighting Award presented

The BAA Campaign for Dark Skies' Good Lighting Award, signed by Sir Patrick Moore and Dr John Mason, has now been presented to over 200 recipients who have chosen and installed well directed lamps. One of the most recent, in November 2007, was Zeta Solar of Bicester, Oxfordshire. Zeta specialises in solar lighting products. CfDS was impressed with the environmental credentials of their new 'SunFlower' luminaire. Not only does it direct all its emissions below the horizontal, but also dims automatically when nobody is about, and uses solar energy to recharge its battery.

Pictured at the award presentation at Oxford Science Park in November 2007 are *(l. to r.)*: Rob Horsfield, Services manager, Oxford Science Park, Phil Shadbolt, Zeta Solar, and Bob Mizon, CfDS. (Photo suppied by CfDS.)

CfDS recommends that good practice be reported and rewarded: merely criticising poor lighting is not a productive strategy. We welcome suggestions for further award candidates on **www.britastro.org/dark-skies**.

**Bob Mizon,** *Coordinator, CfDS*