

Ordinary Meeting, 2006 October 25

held at New Hunts House, Guys Hospital, London Bridge, London SE1

Richard Miles, President

Ron Johnson, Hazel Collett and Nick James, Secretaries

The President opened the first meeting of the 117th session, and, in the absence of the Meetings Secretary, invited Dr Nick Hewitt to read the minutes of the final meeting of the previous session. These were approved by the audience and duly signed. The President announced that 118 new members were proposed for election; those 65 who had been proposed at the previous meeting were approved and declared duly elected. The President welcomed any new members in the audience to introduce themselves to him at the end of the evening.

Mr Nick James, Papers Secretary, announced that three papers had been accepted by Council for publication in the *Journal*:

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The President announced that the next Ordinary Meeting would be held at the present venue on November 25, when the speakers would include Dr Andrew Bell, giving an update on the analysis of data from the *Huygens* probe and the ongoing work of the *Cassini* orbiter, and Prof. Mike Barlow (UCL), on the subject of planetary nebulae. Before then, the Association would be holding the fourth in its popular *Back to Basics* series of workshops on October 28, to be hosted by the Cotswold Astronomical Society.

The President then introduced the meeting's first talk. Given the media excitement in recent weeks over the International Astronomical Union (IAU)'s decision to downgrade Pluto's status from that of a 'planet' to that of a 'dwarf planet', there were unlikely to be many members who had not heard the news. As Pluto fell within the remit of his section, Mr Roger Dymock, Director of the Asteroids and Remote Planets Section, was invited to give an account of the changes.

Reclassification of Pluto

Mr Dymock explained that two of the resolutions passed at the General Assembly of the IAU in Prague on August 14-25 had concerned the classification of solar system bodies – numbers 5 and 6. Resolution 5 prescribed that such bodies should be divided into three categories. The first of these, 'planets', contained those objects which satisfied three requirements – that they (a) were in orbit around the Sun, (b) were of sufficient mass for self-gravity to mould them into 'round' shapes, and (c) had cleared all material from the neighbourhood of their orbits. Mr Dymock remarked that (c) seemed somewhat vague – what degree of clearance was required? No doubt, with increasing study of extrasolar planets in years to come, this would be a debate for the future. In the meantime, there were eight confirmed 'planets': the traditional list, minus Pluto.

The second category of Resolution 5 was '*dwarf planets*', members of which had to satisfy (a) and (b) above, but did not have to have cleared the neighbourhoods of their orbits. Thirdly, '*small solar system bodies*' were all other solar-orbiting bodies, excluding artificial satellites.

Resolution 6 referred specifically to Pluto, determining that it should be classified as a dwarf planet, adding that it was the prototype of the set of trans-Neptunian bodies. The speaker pointed out that this second resolution seemed largely superfluous; Pluto's classification was already clear from the previous resolution.

Returning to Resolution 5, the speaker added that the category of dwarf planets would include a wide range of bodies in the outer solar system, including *plutinos* – objects just outside Neptune's orbit, and, like Pluto, locked into a 2/3 orbital resonance with it – trans-Neptunian objects, Classical Kuiper Belt Objects (KBOs), Scattered Disc Objects (SDOs), and some of the larger members of the Asteroid Belt such as Ceres. Such sub-categorisations would not officially be recognised by the IAU; these objects would officially be classed only as 'dwarf planets' or 'small solar system bodies'. As far as the speaker was aware, however, no definitive list of candidate dwarf planets had yet been published, though several unofficial lists could be found on the web.

To close, the speaker remarked that the name of his Section was no longer entirely accurate; it should surely be changed to 'The Small Solar System Bodies (Asteroids), Dwarf Planets and Pluto-Like Objects Section (SSSB(A)DPPLoS)'. He suspected the name wouldn't catch on, though.

Following applause, a member asked why Pluto's moon Charon was on the list of bodies which might be classified as dwarf planets, given that it was in orbit about Pluto, not the Sun. Mr Dymock replied that it was unclear what decision would be made here. Charon's size was sufficiently similar to that of Pluto that the system might be

classified as a binary pair of dwarf planets. As yet, there was no definition which could be used to distinguish binary planet pairs from planet-moon pairs – scope for more IAU legislation, perhaps.

After thanking Mr Dymock for his clear account of the matter, the President invited the evening's final speaker, Mr Nick James, to become the first Sky Notes speaker of the post-Mobberley era.

The October Sky

Continuing from the previous talk, Mr James added that, according to reports he had heard, the IAU intended to give minor planet 2003 UB313 the name *Eris*. It had been the discovery of this object which had sparked the recent debate, on account of its being larger than Pluto and yet not classified as a planet. The name seemed most appropriate, as Eris was the Greek personification of strife and discord.

Turning to the present sky, Mr James reported that it was not a good one for planetary observers. Mars had reached superior conjunction on October 23 and Venus would do likewise on October 27; Mercury would be at inferior conjunction on November 8, transiting the Sun in the process, and Jupiter would be at superior conjunction on November 21. The only naked eye planet which was not too close to the Sun to be seen was Saturn, and even that did not rise till midnight. It was, however, a beautiful morning object, situated in Leo.

There was one way, however, to observe the other planets, and that was to download images from the LASCO solar-coronagraph on the SOHO satellite. The speaker showed an image which he had downloaded on October 17, in which Mars, Venus and Spica were all visible. He remarked that each appeared with horizontal 'wings'; they were massively over-exposed by LASCO's CCD, and during the exposure, the collected charge had overflowed into neighbouring pixels in the array. He had been amused, however, by the number of websites which reported them to be the wings of UFOs; members could find them with a simple *Google* search.

NASA's *New Horizons* probe, being sent to Pluto and the Kuiper Belt, would shortly be passing Jupiter, receiving a gravitational sling-shot in the process. Some superb images of Jupiter had already been returned from the encounter, and more, of higher resolution, would be taken as the probe grew closer in coming weeks. After passing Jupiter, it would travel for eight further years, reaching Pluto in 2014, but not going into orbit around it; it would instead go on to study other Kuiper Belt Objects. The speaker remarked that now that Pluto was a mere dwarf planet, Jupiter was the only true 'planet' which *New Horizons* would ever visit.

Turning to another NASA probe, Mr James reported that *Mars Reconnaissance Orbiter* (MRO) had just finished descending into its mapping orbit around Mars and was now capable of returning images of staggering detail, measuring up to 25,105 by 34,530 pixels and resolving features as small as 27 cm on the surface. The first published image had been of Victoria Crater, a target which the *Opportunity* rover was likely to study in coming months. The quality of the image was such that the rover was clearly to be seen, and even the shadow cast by its *PanCam* camera boom was clearly visible. The speaker added that there were plans to image the likely crash sites of *Mars Polar Lander* and *Beagle 2*, with the hope of learning more about the causes of failure in each case. However, the uncertainties in the locations of these crash sites would be a problem, especially in the case of *Beagle 2*. These high-resolution images had a field-of-view of only 6 km, and took a whole day to transmit back to Earth, limiting MRO to taking most of its images at lower resolutions and zoom levels.

Turning next to comets, Mr James reported that the recent drought of good visual objects seemed to have ended with the coming of Comet 2006 M4 (SWAN), discovered by amateurs Rob Matson and Michael Mattiazzo in the publicly-available online data archive of the SWAN instrument on the SOHO satellite. The speaker reported that he had observed it to have brightened dramatically over the past few days, by about 2 magnitudes, to mag ~4.5. Guy Hurst, in the audience, added that he too had recorded this brightening. An evening object, it was to be found in Hercules over the next couple of weeks. It would be an easy binocular target, and depending how its brightening continued, possibly naked-eye-visible in dark skies.

Mr James added that SWAN was a very powerful tool for comet hunting, not to be confused with SOHO's solar coronagraph, LASCO, which often caught more attention on account of being a prolific discoverer of sun-grazing and Kreutz Group comets. SWAN observed in the ultraviolet, in the Ly α line of atomic hydrogen (121.6 nm), taking whole-sky images thrice weekly. The primary purpose of these images was to study solar flares through their excitation of the neutral interstellar hydrogen surrounding our solar system, but they were also superbly suited to detect hydrogen gas around comets, which made up the bulk of the point-sources seen by SWAN.

One other comet demanded mention: 2006 T1 (Levy), discovered on October 2 by David Levy, an amateur from Arizona. Though it was now fading at mag 10.5 and fast sinking south, it remained of interest because of the rarity of its having been discovered by an amateur.

On the night of November 18/19, the Leonid meteor shower would peak. Though the enhanced activity shown by the shower around the turn of the millennium, brought by its 33-year cycle, was now well passed, Asher & McNaught, whose modelling of the parent dust-stream had proven so successfully predictive in the past, had suggested that a brief resurgence might be observed in a window around 04:45 UT on November 19. According to

their models, a rate of 100-150 ZHR might momentarily be reached – equivalent to a good Perseid display. Neil Bone, Director of the Meteor Section, would be keen to hear of both positive and negative observations; both were valuable. A dark observing site was to be recommended, as the stream tended to produce fast and faint meteors.

The speaker briefly mentioned that he had heard reports that Nova Cygnus 2006 had brightened to mag ~11. This had not been expected and its future behaviour was uncertain; naturally, the Variable Star Section would appreciate observations.

Turning to the *International Space Station* (ISS), Mr James commented upon the recent and widely-publicised flight (STS115) of the space shuttle *Discovery* to install new solar panels to the station – only the second shuttle flight to have taken place since the *Columbia* disaster. There had been some speculation about how much the new panels would enhance the ISS's visual magnitude. On the previous night, the speaker had seen it pass overhead, and it had appeared remarkably bright: certainly mag –3, perhaps mag –4. Moreover, it had been deep red in colour throughout the whole duration of the pass; the speaker wondered whether the new panels reflected red light preferentially. He compared the sight to Venus in brightness, and to Mars in colour. The next pass over the UK would be on 27th, at around 7pm BST, and would be followed by a series of further passes over following days. More information could be obtained from the *Heavens Above*¹ website.

Mr James closed by mentioning the forthcoming transit of Mercury across the face of the Sun on November 8. Unfortunately this would be occurring in UK night-time, and so members would need to travel to see it, ideally to the Pacific vicinity. He wasn't too disappointed; he recalled from its previous transits that Mercury was a tiny dot against the solar disk. However, Mike Maunder, in the audience, said that he was travelling to New Zealand to observe it.

Following the applause for Mr James' talk, the President adjourned the Meeting until 2.30 pm on November 25 at the present venue.

References

¹ <http://www.heavens-above.com>