

# Ordinary Meeting, 2008 October 29

held at the Royal Astronomical Society, Burlington House, Piccadilly,  
London SE1

**Roger Pickard**, President

**Ron Johnson, Hazel Collett and Nick James**, Secretaries

The President opened the first meeting of the 119th Session and invited Dr Nick Hewitt to read the minutes of the final meeting of the previous Session on the behalf of the Meetings Secretary. These were approved by the audience and duly signed. It was announced that 58 new members were proposed for election, and those 18 new members who had been proposed at the previous meeting were approved by the audience and declared duly elected. Mr Nick James, Papers Secretary, reported that four papers had been approved for publication in the *Journal*:

**[Check These]**

*The Opposition of Mars 2001*, by Richard McKim

*A history of the visual detection of material...*, by Richard Baum

*A Schmitt-Cassegrain telescope remounted*, by Martin Mobberley

*Comet disruption, a statistical approach for nearly isotropic comets*, by ???

The President announced that the next Ordinary Meeting would be held on Saturday November 22 at the present venue. Before then, the Association would be holding a *Back to Basics* workshop in York on November 1. The President then invited Mr Nick James to present this month's Sky Notes.

## The Sky in October

Mr James remarked that the sky had been rather uneventful of late, and that as a result his Sky Notes were likely to be rather short. Turning first to the planets, he reported that Mercury had been well placed in the south-eastern pre-dawn sky over the past few weeks, but was now heading fast towards conjunction on November 25. It currently appeared at mag  $-1$ , but would remain visible for only a few more days. Venus was slowly emerging from superior conjunction, and would become a brilliant evening object from mid-November through until early March. It would be occulted by the Moon on December 1, and the speaker recommended the close approach of this pair as a good photo opportunity.

Mars would be at opposition on December 5, and would consequently be unobservable for the next few months. Jupiter remained bright in the south-western evening sky, but was now setting at around 11pm and would reach conjunction in January. Uranus and Neptune were well placed in the evening sky, in Aquarius and Capricornus respectively.

The principal planet of interest at the moment was Saturn. It was currently in Leo and rose at around 1am UT, becoming well placed for observation shortly before the onset of morning twilight. Over the next few months, it would rise progressively earlier until reaching opposition on 2009 March 8. Its rings were almost exactly edge-on at present, appearing as a thin line across its disk, and consequently its telescopic appearance had lost some of its unique appeal and its naked-eye brightness was diminished by 1-2 magnitudes as compared to a few years ago. The speaker explained that as Saturn moved around its 30-year orbit, the tilt of its rings with respect to our line of sight varied between limits of  $\pm 26^\circ$ , and that twice in each orbit our sightline passed through the plane of the rings and they briefly appeared edge-on. This had last happened in 1995-6, and would happen again on 2009 September 4.

Although the rings were barely visible in their present orientation, inclined at only  $2.5^\circ$ , the speaker added that this was a rare opportunity to observe other phenomena – most notably, transits and occultations of its moons. He explained that most of Saturn's larger moons, with the exception of Iapetus, orbited in the same plane as the rings, but further out. When this system of rings and moons was even moderately inclined to our line of sight, the moons appeared to circle the planet's disk on the sky without ever passing across it. Only for a period of a few months around the time of each ring-plane crossing could transits, eclipses and occultations be observed. A full discussion of these events could be found in the October *Journal*<sup>1</sup>, and a list of dates could be found in the Association's *Handbooks* for 2008 and 2009.

The ring-plane crossing event itself would unfortunately be unobservable, since it would take place only 13 days before Saturn's conjunction on 2009 September 17. Consequently, observers would see Saturn disappear into evening twilight whilst showing a diminishing slither of the south face of its rings at the end of its current apparition. It would then reappear in morning twilight at the end of 2009 showing a slither of the north face of its rings.

Mr James reported that the Sun remained largely inactive after reaching solar minimum in mid-2007. It was showing occasional small sunspots – the most recent had been visible for a few days around October 12 – but past experience showed that these modest features did not signal that a new sunspot cycle was getting under way. The long duration of this solar minimum was not historically unprecedented, but was unusual: one had to look back nearly a century to find similarly long minima. Despite the lack of sunspots, however, prominences were still visible on the solar limb to those observers who had suitable H $\alpha$  filters for their telescopes.

Turning to meteor showers, the speaker reported that the two best-known autumn showers – the Orionids and the Leonids – would both be severely affected by moonlight this year. However, the Taurids, perhaps an under-observed shower, had been active at low levels since mid-October, and would remain so until late November. The next few days would be an especially good time to observe them, since there had been a New Moon on October 28.

The speaker explained that although the quoted zenithal hourly rates (ZHRs) for the Taurid shower – around 10 – were relatively low, it rewarded patient observers with a higher proportion of bright slow-moving fireballs than other showers. He added that this was not its only unusual feature. Unlike other showers, its activity did not show a sharp, clearly-defined maximum, but it instead produced meteors at a roughly constant rate over a period of weeks. Moreover, the meteors emanated from two distinct radiant – one situated close to the Pleiades and another close to the Hyades. He explained that these two radiants were attributed to two very old and diffuse streams of material, thought to have been ejected at two distinct epochs from comet 2P/Encke. Between these two epochs, the comet's orbit had apparently changed subtly, moving the radiant of the shower. Recent modelling of these debris streams by Asher & Izumi<sup>2,3</sup> suggested that the Earth would be passing through a particularly well-populated part of the stream this year, and that an above-average incidence of bright fireballs might be expected as a result.

Mr James went on to talk about an exceptional near-Earth asteroid, 2008 TC<sub>3</sub>, which had been discovered earlier in the month by Richard Kowalski on 2008 October 6 at around 7h UT using the 1.5m Catalina Sky Survey (CSS) telescope on Mount Lemmon. Early astrometry had suggested that this object was on a collision course for the Earth, and in contrast with previous such alerts, the probability of collision on this occasion had been calculated to be very high. However, photometry had shown that the object measured no more than around 2-3 metres across, assuming it to have a typical albedo, and so it was clear that its impact with the Earth would be benign. It would generate a spectacular fireball upon impact with the upper atmosphere, but would burn up completely before reaching the ground. The speaker remarked that the discovery of this object might have been expected to generate a media frenzy, but it had in fact received little attention from the press, who had been preoccupied at the time in reporting the collapse of Iceland's banking system.

The predicted time of the impact had been 02h45 UT on October 7, less than 24 hours after the object's discovery. As a result, there had been very little time to observe it, and amateurs, informed of the discovery by the Minor Planets Center (MPC), had played a key role in monitoring it on account of having telescopes spread over a wide range of longitudes, able to keep track of it continuously over its 20-hour lifespan. Unfortunately the UK had been under mostly cloudy skies at the time, although Peter Birtwhistle had found a break in the cloud for long enough to obtain photometry which had determined its rotation period to be 97 seconds.

Mr James reported that the object's eventual atmospheric ingress had occurred over a very remote desert location in Sudan. Consequently, it seemed that no ground-based observations had been made of the fireball. There were claims that a nearby CCTV camera had seen it, but the speaker explained that he personally found these doubtful. The European weather satellite *Meteosat 8*, on the other hand, had clearly detected the explosion using its 3.9-micron infrared water-vapour radiometer. The US government had also reported having detected the explosion using an undisclosed military satellite.

No fragments of the object had yet been found on the ground, although given the remoteness of the Sudanese desert, the search could be expected to take some time. Mr James remarked that if any fragments were found, he hoped one might be given to Kowalski, who would then become the first astronomer able to display in his office a sample from an astronomical body that he himself had discovered telescopically. Mr James went on to remark that whilst comets were routinely classified as *defunct* when they were known to have disintegrated, this was the first time that a designated asteroid was known to have entered this state.

Dr Richard Miles, in the audience, remarked that since the discovery of 2008 TC<sub>3</sub>, the CSS had gone on to discover two more asteroids which had also made record-breakingly close approaches to the Earth. He wondered whether the quick succession of these events was the result of some change in the programme's search strategy.

Mr James closed his Sky Notes with a review of comets, but said that none were especially promising at the moment. Comet 2008 A1 (McNaught) was currently the brightest comet in the sky at mag 8, but it was poorly placed for UK observers, low in the southern sky in Ophiuchus. A transparent sky and good horizon would be prerequisite to see it. Comet 2006 W3 (Christensen) was a much easier prospect, being well placed in the evening sky in Cephus; it was currently at mag 10 and brightening rapidly.

Turning to the work of comet discoverers, the speaker mentioned that two long-lost periodic comets had recently been rediscovered. First, D/1896 R2, originally discovered by Giacobini in 1896 and last seen in 1897, had been rediscovered by Koichi Itagaki and Hiroshi Kaneda at mag 13 in CCD images taken on September 10. Then, D/1892 T1, originally discovered by Barnard and not seen since the year of its discovery, had been rediscovered by Andrea Boattini at mag 17 on October 7. These two comets had now been given names of 205P/Giacobini and 206P/Barnard-Boattini respectively. The speaker noted that these two had both been among the eleven missing comets which had been listed as likely candidates for recovery in a *Journal* paper<sup>4</sup> by Richard Buckley in 1977; of these eleven, all but five had now been found. Given recent advances in CCD imaging, and the number of patrols searching for comets, it seemed likely that the remaining five – D/1884 O1, D/1886 K1, D/1894 F1, D/1895 Q1 and D/1918 W1 – would be recovered soon, if they were still extant.<sup>5</sup>

Following the applause, the President adjourned the meeting until Saturday November 22.

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Dominic Ford

## References

<sup>1</sup> Foulkes M., *J. Brit. Astron. Assoc.*, **118**(5), 294-296 (2008)

<sup>2</sup> Bone N., *J. Brit. Astron. Assoc.*, **118**(5), 241-242 (2008)

<sup>3</sup> Asher D.J. & Izumi K., *Mon. Not. R. Astron. Soc.*, **297**, 23-27 (1998)

<sup>4</sup> Buckley R.J., *J. Brit. Astron. Assoc.*, **87**(3), 226-239 (1977)

<sup>5</sup> Shanklin J.D., *The Comet's Tale*, **28**, 2 (2008)