

Ordinary Meeting, 2002 February 23

held at the Scientific Societies' Lecture Theatre, 23 Savile Row, London W1

Mr Guy Hurst, President

Ron Johnson and Nick James, Secretaries

The President welcomed members to the fourth meeting of the 112th session. Before starting the proceedings, the President invited the audience to stand as a mark of respect for *****, who sadly died in December. The minutes of the meeting of 2002 January 5 were then read, approved and signed. Mr. Johnson stated that ***** presents had been received, and the audience applauded the donors:

Mr. Johnson thanked those members who had helped at Astrofest, and reported takings of £2,100. ***** candidates were proposed for election, and the 10 [?] candidates proposed at the last meeting were approved by those members present. The President invited any new members to introduce themselves at coffee. Mr. James stated that two papers had been accepted by Council for publication in the Journal:

*****, by Patrick Moore

*****, by Bob Steele

The President announced that the Deep Sky Section meeting would be held on March 9, and the next Ordinary Meeting would be on March 16. He remarked that Prof. Meikle's talk on supernovae on March 16 would be topical given that this subject had been raised at the recent Cambridge ProAm meeting. Finally, the President invited Roger Dymock to make an appeal for observers to make follow-up observations of Near Earth Asteroids – a field where professional resources are limited – before inviting Dr. David Whitehouse, science editor of BBC News Online, to speak on the history of the Moon.

A Biography of the Moon

Dr. Whitehouse opened by suggesting that no book could ever capture the Moon's full character, as it is surrounded by mystery and myth. Historically it has been praised, and given many names including the Greek "hecate" – power from afar. It has been associated with changeability, power, and even female fertility. Some believe that the religious significance of a return after three days has origins in the return of a new moon.

The speaker emphasised that lunar observations were recorded well before Galileo. In the 1500s, Leonardo produced many line drawings of the Moon, around half of which are still unaccounted for and may lie in the Vatican's vaults. Earlier still, in 1430 Van Eyck placed the Moon in the backdrop of his Crucifixion scene. This was revolutionary at the time, as previous artists had painted attempted to paint through God's eyes, removed from material things such as the Moon.

Prehistoric moon observations from circa 3500BC are recorded at the Knowth burial site in Ireland where the ceiling of a tomb is clearly decorated with stars and lunar crescents. Engravings on a large boulder resemble the moon, and are orientated precisely to match the Moon as it would be seen rising as its light shone into the tomb. In the 1940s, cave paintings were discovered in the Lascaux caves in France showing the constellation of Taurus with a bull, indicating this association to be prehistoric. But groups of 29 dots also commonly appear – possibly a lunar calendar. Squares mark the absence of the Moon. These paintings have been dated as early as 20,000BC.

Dr. Whitehouse then compared two Space Races – firstly that of the 17th century to map the Moon with the aid of Lipperhay's invention of the telescope – and secondly the more familiar race during the Cold War era. The first telescopic lunar map is believed to be that of the English physician William Gilbert from around 1600. This was closely followed by Thomas Harriot, a wealthy English polymath, who drew detailed scientific maps in 1609. The speaker commented on his disappointment that these maps, surely a great national treasure, lie in the storeroom of a stately house in Sussex. The names we now attribute to lunar features are credited to Riccioli – a Jesuit priest who mapped the Moon in 1651. Curiously, his job description at the Vatican was to attempt to bring astronomy down, and to prove Ptolemaic celestial mechanics. However when he named the features on the Moon after celebrities he clustered people according to the nature of their contribution, and placed himself as a scientist rather than a religious figure, possibly a sign of where he felt his greatest contribution was.

The speaker then discussed the Space Race of the 1960s, focussing on the results. It was found that Moon samples were very similar to the rock found on Earth with the water removed. This is useful when attempting to ask where the Moon came from. The Darwinian theory of a droplet of Earth material being thrown off in its early formation,

or the idea of the Moon being captured gravitationally are both implausible. The angular momentum of the Moon supports a theory that an impactor the size of Mars split the early “proto-Earth” into two pieces in an oblique collision. Were this the case, the speaker proposed that the impact would have split the Earth in 15 minutes, and accumulated into the Earth-Moon system in two weeks. Hence the Moon was almost certainly formed in under a year. All this is in good agreement with the findings of the 1970s.

Finally, the speaker put forward a case for establishing a manned Moon colony. Recent observations of the lunar poles by Lunar Prospector had indicated that in some regions where the Sun has not shone for 2-3 billion years cometary water could have accumulated. As well as being useful for human survival, this could also be used to make rocket fuel. Polar regions also offer mountaintops with sunlight 97% of the day, ideal for solar panels. Furthermore as these are close to very cold regions, effective heat engines could be established. Dr. Whitehouse urged that such a moonbase would increase public interest in Space, and could be achieved in as little as 2 years if resources were invested into it.

After much applause for the fascinating talk, the meeting broke for tea. After the break, the President commented on the superb attendance at the preceding Comet Section meeting, expressing his hope that more comet observation might result. He then invited Mr. Martin Mobberley to give Sky Notes.

Sky Notes

Mr. Mobberley reported that the weather had not been kind for recent occultations. The Jovian occultation of January 26 had only been visible through gaps in the cloud, whilst that of February 23 had been at low altitude and had been clouded off for most observers. He expressed his hopes for the occultation of Saturn on March 19, which would be visible to 28% of Britain and would take place at 9pm, a more sociable hour than other recent events.

The speaker reported the discovery of a mag 12.3 hypernova by Hirose, which was mag 14.5 and prior to maximum at discovery. This pre-maximum discovery had allowed good spectral measurements. To emphasise the scale of this event, the speaker pointed out it would appear mag -18 if viewed within a few light years of the origin. The speaker also reported that V838Mon was not following the expected light-curve for a nova, although Maurice Gavin reported that his spectral observation had shown a K-type spectrum with H α lines, indicating it was a nova.

Moving onto Jupiter, the speaker showed several beautiful images by Damian Peach, with many features of interest well-resolved. He suggested that the cliff-top location of Mr Peach’s observatory, by the sea, might have enhanced his seeing. Mr. Mobberley went on to report the discovery of comet Ikeya-Zhang by two dedicated Japanese observers. Linear would not have discovered this comet as its low altitude (<20 degrees) presented a substantial challenge. Currently at mag 6, though difficult to observe due to its low altitude, the speaker suggested it could reach mag 3 at maximum on March 18. The measured arc correlated well with that for the comet of 1661, and this match was favourable for a good show.

The speaker closed by calling for observations of 7P-Pons-Winnecke, due to peak on May 14, and 2000WM-Linear. Jonathan Shanklin echoed the call for observations of 2000WM-Linear, “you never know what it’s going to do!” The audience applauded Mr. Mobberley for his lively show, before the President welcomed Mr. Andrew Elliott to show an occultation video.

Occultation Videos

Mr. Elliott emphasised modestly that occultation observation was primarily for fun, and not useful science. He then showed a clear video by Ray Emery of the occultation of Jupiter on January 26, which had been filmed despite poor weather. The speaker suggested that a mountainous region on the Moon should be visible in profile as Jupiter illuminated the lunar terrain from behind, and this was indeed visible in the video footage. The speaker went on to report that the occultation of February 23 had been too low in the sky for him to observe.

The speaker reported that interesting results had been derived from the observations of the occultation of an unnamed bright star by Uranus’ satellite Titania in 2001 September. Measurements of the shape and possible atmosphere of Titania would soon be processed, although timings had already indicated a 1% correction to the ephemeris of Uranus. In space this corresponds to a shift of a few thousand kilometres for Uranus.

Following the applause for Mr. Elliott’s videos, the President welcomed Mr. Melvyn Taylor to give the afternoon’s final talk on binocular astronomy.

Observing Variable Stars with Binoculars

The speaker started by promoting binoculars as an ideal observing instrument for novices. He argued that a pair of 10x50 binoculars offer a saving of possibly £1,000 compared to a useful telescope, and are also useful outside astronomy. It should be remembered that all of George Alcock's discoveries were made by binocular astronomy.

Mr. Taylor saw the biggest emphasis in binocular astronomy to be comfort and ease of use. To demonstrate this he showed slides of several ingenious setups for aligning the binoculars to sit nicely over the observer's eyes, including a yoke on which the observer rests his head, and even a specially designed observing chair with binoculars mounted. He emphasised that there was no great restriction on the aperture available to binocular observers, using an image of a full garage binocular observatory to demonstrate this. The limiting magnitude is often determined by the quality of mounting, and the speaker urged observers looking for faint objects to seek very stable mounts. Binoculars are good for a very wide range of targets, ranging from comets and deep sky to meteors and solar work (with appropriate filters). They are also ideal for eclipses.

In variable star observation, the speaker warned that numerous errors can creep into the observations of the unwary. He urged that the eyes should be given at least ten minutes to adjust to night vision before starting scientific work. He also warned of the danger of bias, where expectation can sway one's interpretation. Mr. Taylor recommended RZ Cassiopeia as a good variable star to practice observing, as it is relatively easy to locate and varies on a timescale of around five hours. For eclipsing binary systems, observations every 10-15 minutes were recommended to determine the period.

To close, the speaker stressed that expensive equipment was by no means a requirement in amateur astronomy. To illustrate this he showed a broken half-binocular which had been used to discover a mag 7 variable system.

Following the applause for Mr. Taylor's talk, the President added a personal comment that the tale of a discovery made with a broken pair of binoculars should go to show that it is possible to get results with minimal equipment. On that note, the meeting was adjourned until 2002 March 16.

Dominic Ford