Letters

The oldest identified classical nova

From Mr Göran Johansson

On March 8 this year *Nature* magazine published an investigation of the dwarf nova Z Camelopardalis.[1] The sixteen investigators concluded that the star had been a classical nova roughly 2000 years ago. This immediately reminded me of an ancient Chinese text. So I persuaded *Nature* to publish on July 19 my comment that this is actually the oldest recorded classical nova.[2]

Ho Peng Yoke's translation of the account was published in *Vistas in Astronomy* in 1962, and runs like this: 'During the ninth month of the fourth year of the Yuan-Feng reign-period (of the Emperor Hsiao-Chao-Ti) (17th October to 15th November) a 'guest star' appeared at the Tzu-Wei (Enclosure) between the star Tou-Shu (alpha UMa) and the Pole (Star).' The year is 77 BC.

At a distance of 163 parsecs (530 light years) the nova was presumably about as bright as Mars or Jupiter. Possibly it was even as bright as Venus. During a few weeks it would have been the brightest star in the sky. It almost formed a rectangle with α Ursa Minoris, β Ursa Minoris and α Ursa Majoris. I don't know what ancient people thought about this, but it has been suggested that the cult of Mithras started around this time. The participants of that cult believed in astrology. Perhaps there is some kind of connection.

Until this discovery, an object from the 1670s had been the oldest identified classical nova. But now we have one which is more than six times older. This nova is even more than twice as old as the supernova in 1006, the object so far known as the oldest accepted case of an old guest star verified with modern methods.

I doubt it would be possible to identify any older classical nova in the surviving texts. But I am quite optimistic that it may be possible to find some ancient picture related to this nova. Some researchers have found interesting results while investigating ancient coins. Other researchers investigated rock carvings which are even older.

I would like to encourage people to search for mediaeval novae in the surviving texts. There may easily be a few. There is even the possibility that the surviving texts include more classical novae than supernovae.

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1 M. M. Shara *et al*., *Nature*, **446**(7132), 2007
2 G. H. I. Johansson, *Nature*, **448**(7151), 251 (2007)

The apochromatic dialyte refracting telescope

From Mr John Wall

With reference to Rick Blakley's letter in the August *Journal*,[1] we apologise if we misinterpreted his paper. If Mr Blakley had had recourse to experiment, he would have discovered the Wall concept for himself. Wall placed an F2 flint corrector at the design position downstream from the field lens, instead of a BK7; consequently, the re-imaging lens set was quite small. In all experiments, including those for the 30-inch refractor now at Hanwell in Oxfordshire, the lens set was no larger than 60mm in diameter. The optical tests showed that there was no vignetting of the objective lens by the re-imaging lens being too small.

Testing also showed that the images were very achromatic, in fact there was an indication that the system could be made apochromatic. When Peter Wise took John Wall's original concept and ray traced it, he discovered that this was so. He went on to further develop the system to a very high degree of perfection, where the spot size was diffraction limited right across a flat field, and the colour correction was better than apochromatic, with a theoretical Strehl of 0.99%+. This telescope has recently been built, and is now undergoing tests; it lives right up to its design criteria, and is giving stunningly good images. A test at ×500 on stars at the edge of the field shows them to have a perfect white diffraction pattern. This telescope is to be launched on to the commercial market in the near future, and the WallWise system will set the trend for all future refractor design, of which Peter Wise has already evolved ramifications.

The truth is, that there are many ways of solving the problems posed by the retrofocal dialyte concept. There are in fact no obsolete designs, only that Duplov, Blakley and Wall & Wise have arrived at the same colour correction, albeit by different routes. One system is not superior to the others, except that the WallWise has a very compact design, and the current production 200mm refractor is only 1.3m long, making it very viable for future telescope systems.

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1 Blakley R., *J. Brit. Astron. Assoc.,* **117**(4), 202 (2007)

Venus in transit, daytime seeing, and images of Mercury

From Dr R. J. McKim, Director, Mercury & Venus Section

I have read Christopher Taylor's letter[1] in the August *Journal*, in which he points out that Venus was observed in hydrogen alpha light at transit as early as 1874. In this context, Mr Taylor felt that a statement in my Venus Report of 2004[2] was historically inaccurate. However, in the abstract of that paper, I actually wrote that [in 2004] the entire phenomenon was witnessed for the first time ever in hydrogen alpha light. I chose those words with care, and I certainly did not claim that it was merely observable for the first time ever in H-alpha.

Before the invention of the spectroheliograph (whose principle we owe to Hale, Deslandres and Evershed),[3] no hydrogen alpha disk phenomena could be detected by the use of Janssen and Lockyer's spectroscopic 'open-slit' technique except, as the early observers quickly discovered – and as Ovenden[4] explains – the more intense solar flares. F. J. Sellers[5] also gives useful historical details.

In the wake of being clouded out for the Mercury transit of 1973, and as a rather new BAA member at the time, I well recall Harold Hill's impressive contemporary sighting of Mercury silhouetted against the inner corona,[6] Mr Taylor's earlier letter to the *Journal*,[7] and another by R. M. Baum[8] upon the same theme. But all these observations refer to Mercury or Venus appearing in silhouette against the inner corona or chromosphere near the limb, so the statement in my paper remains accurate.

Mr Taylor's description[1] of the beauty of the fine crescent of Venus with its extended horns viewed in full daylight near inferior conjunction is classical, and it is to be regretted that few observers at present are attempting (or reporting) such sightings. With experience and caution this work can be rewarding. As I write this note on August 9, I have just come indoors from enjoying a very similar view at the eyepiece. I hope Mr Taylor will contribute future Venus observations to the Section.

Turning to John Vetterlein's recent letter,[9] I fully agree with him that daytime seeing can be very good. Of course, many observers fail to shield the telescope tube from direct sunlight, and may therefore experience tube currents. Many of the classic visual observations of the planet at Meudon and Pic du Midi were made with a sunshade fixed to the dome slit. Christopher Hooker[10] deserves great credit for his Mercury imaging, and a forthcoming Mercury & Venus Section Note will publish a selection of the best Mercury images covering most longitudes of the planet, for comparison with the best BAA drawings. However, there remain some unfilled gaps in the imaging record, and their completion should prove a worthy observational challenge to observers of the innermost planet.

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1 C. Taylor, *J. Brit. Astron. Assoc.*, **117**(4), 203 (2007)
2 R. J. McKim *et al.*, *ibid.*, **117**(2), 65–76 (2007)
3 R. J. Bray & R. E. Loughhead, *Sunspots*, Dover Books, 1979, p. 8
4 M. V. Ovenden, *J. Brit. Astron. Assoc.,* **64**, 106–112 (1954). The first flares detected by the open-slit method were viewed by J. N. Lockyer and Fr Secchi in 1869, and Young in 1870. Lockyer, in his classic book *The Chemistry of the Sun* (1887), pp. 116–118, referred to them as 'prominences' seen against the disk, not realising that they were a new phenomenon.
5 F. J. Sellers, *Mem. Brit. Astron. Assoc*., **37**(2), (1952)
6 H. Hill, *J. Brit. Astron. Assoc*., **84**, 297–298 (1974)
7 C. Taylor, *ibid*., **85**, 67 (1974)
8 R. M. Baum, *ibid.*, **85**, 67 (1974)
9 J. C. Vetterlein, *ibid*., **117**(4), 203 (2007)
10 C. J. Hooker, *ibid*., **117**(4), 202–203 (2007)

Discovery and nomenclature of the Mare Orientale

From Sir Patrick Moore, CBE, FRS

My first drawing of the Mare Orientale was made in 1948, and I reported it to the BAA Lunar Section, because it was not on any of the maps in my possession and I thought (naively) that it was new. I did believe it to be a limb-sea of the Mare Smythii type, and I discussed it with Wilkins – suggesting the name 'Mare Orientalis' or the Eastern Sea.

It seems therefore that others had seen the edge of the sea before I did in 1948.[1] I didn't have Franz' map in 1948, and I can't read German anyway.

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1 R. Baum & E. A. Whitaker, *J. Brit. Astron. Assoc.*, **117**(3), 129 (2007)

Memories of Michael Gadsden

From Dr Wilfried Schröder

I first met Michael Gadsden[1] at the International Association of Geomagnetism and Aeronomy (IAGA) assembly in Edinburgh, 1981. His name was already familiar to me, especially from my correspondence with my Scottish friend, James Paton, who also worked on noctilucent clouds and auroras. Paton was a pleasant, friendly man, and there was the added advantage that I could write to him in German. We corresponded regularly from the time of the IGY (International Geophysical Year), when he had worked with Cuno Hoffmeister of Germany. I sent Paton my monthly tables of observations, and my publications, most of them in German. He was interested in auroras and other atmospheric phenomena such as enhanced airglow and noctilucent clouds and often made reference to the work of Michael Gadsden.

Michael and I first spoke together at the auroral lecture given by Syun-I. Akasofu at Edinburgh and I was happy that he knew my name. He also organised a most interesting 'stone circle tour' of the area between Edinburgh and Aberdeen, which was much enjoyed by all participants. From that time I sent him my papers and our next meeting was at the International Union of Geodesy & Geophysics (IUGG) Assembly at Hamburg in 1983, where he joined the discussions of the session of the Interdivisional Commission on History of which I was convener. At a coffee break in this session, the subject of noctilucent clouds came up as Lanzerotti, Gadsden and I stood chatting. Lanzerotti was at that time the editor of the well-known Springer book series 'Physics and Chemistry in Space' and suggested that a book on NLC be written. Michael's response was 'Okay, with Wilfried' and I was both happy and surprised. This was the moment of germination of our noctilucent cloud book which finally appeared six years later.[2] The manuscript was delivered to Springer in 1987. At IAGA 1989 a prospectus for the book was displayed at the meeting, but it had still not appeared in print. 'Our book, where is our book?' asked Michael. I answered 'It will come' and in late 1989 it was printed and distributed world-wide. Feedback was favourable and there were some good reviews, and the scientific world accepted the work with gratitude. We were also happy that many amateurs and observers, including members of the BAA, enjoyed the book and sent us their comments and observations.

At this time I was working hard in the historical commission of IAGA (two sessions at the meeting in Exeter in 1989, three sessions at Vienna 1991), in writing some books and on further work in solar-terrestrial physics on auroras in the Maunder minimum. Later we met again in Kühlungsborn, during an interesting meeting to which Pro-▸

fessor von Zahn had been invited, and the IAGA meeting. Our last contact was during the IUGG meeting of 1999.

Gadsden was a very kind man and a good friend. He was also an excellent mentor, with clear ideas, and insight into many different problems. I am thankful that we had a similar hobby, the observation of noctilucent clouds, the legacy of which is many nice photographs and letters. I will never forget him.

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1 Obituary, *J. Brit. Astron. Assoc.*, **114**(1), 47 (2004)
2 Gadsden M. & Schröder W., *Noctilucent Clouds*, Springer–Verlag, Berlin, 1989