Letters

The partial solar eclipse of 2011 January 4

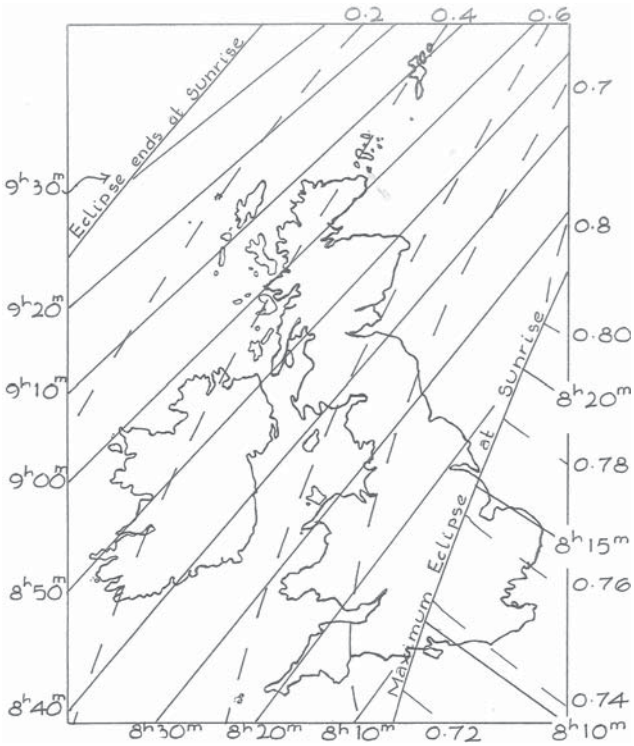

Figure 1. Local circumstances in the British Isles of the partial eclipse of 2011 January 4 .

From Mr Peter Macdonald

The eclipse of 2011 January 4 is visible from Europe (except the extreme north), northern Africa and western Asia, the greatest magnitude (0.86%) being attained at sunrise in northern Sweden around longitude 21°E, latitude 65°N. The eclipse occurs at the Moon's ascending node and belongs to a series which began in 1776 and becomes annular in 2101.

In the British Isles the eclipse occurs at sunrise, the magnitude ranging from 0.25 in Lewis to 0.77 along the north Norfolk coast. The Table gives some local circumstances. The Sun's azimuth at rising is measured from the north point of the horizon through east. The angles P and V at last contact are reckoned from the north point of the solar disk through east and anticlockwise from the Sun's vertex, respectively.

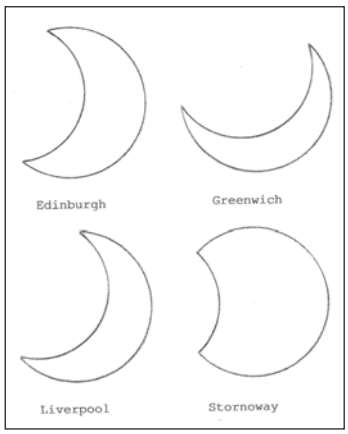

Figure 2. Appearance of the eclipse at various locations in the British Isles.

The penumbra over the British Isles is illustrated in Figure 1 from which it is possible to obtain the circumstances of the eclipse for any location. Solid lines give the Universal Time at sunrise and broken lines the eclipse magnitude. To the east of the line marked 'Maximum eclipse at sunrise', the calculation of which includes a correction for refraction, greatest eclipse is visible with the Sun (just) above the horizon. For example at Greenwich the eclipse reaches maximum at 08h 12m with a magnitude of 0.75%. To the west of this line greatest eclipse is invisible as the Sun is still below the horizon, so at sunrise the obscuration is already decreasing, thus at Edinburgh the Sun rises at 08h 43m, the magnitude being 0.59%.

Figure 2 illustrates the appearance of the eclipse at various locations in the British Isles.

Table 1. Local circumstances for the partial solar eclipse of 2011 January 4

	Sunrise		*Mid-eclipse*		*Eclipse ends*		
	UT	*Az.*	*UT*	*Mag*	*UT*	*P*	*V*
	h m	*°*	*h m*	*%*	*h m*	*°*	*°*
Edinburgh	8 43	132	–	*0.59	9 34	70	92
Greenwich	8 05	127	8 12	0.75	9 31	69	92
Lerwick	9 07	139	–	*0.43	9 43	71	89
Liverpool	8 27	129	–	*0.69	9 30	69	93
Plymouth	8 16	126	..–	*0.69	9 24	67	94
Stornoway	9 11	135	–	*0.28	9 34	70	92

*At sunrise, which occurs after maximum eclipse

Peter Macdonald

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A Venus green flash

From Mr Colin Henshaw

Further to Richard Baum's letter in the June *Journal* about a 'green flash' observed as Venus set, I observed this once from Zimbabwe in the late 1980s. I was quite amazed when I saw it and at first I didn't recognise what I had seen, and only realised a few moments later. It was quite impressive.

Many years later after I came to Saudi Arabia, I was with a colleague from Poland while we were on a trip to the Red Sea coast. The sky was perfectly clear with an astronomical horizon. The Sun was about to set, and I explained to my friend that when the Sun sets under such conditions, it is reputed to flash green just before it disappears. His attitude was '.... and the rest!' So I told him to bear with me and watch. Sure enough the Sun sank lower, and flashed green just before it disappeared. He was astonished. Here was a person who, until a few seconds earlier, had never even heard of this phenomenon, then found himself in a situation where he saw it for himself – a truly magic moment.

Colin Henshaw

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From Mr R. H. Peeling

On 2010 April 3 I read the above e-bulletin with Richard Baum's observation report of a green flash from Venus as it set on March 1. That evening the opportunity presented itself to see if I could see anything unusual as Venus set.

2010 April 3, 20:31 UT. Location: Western edge of North York Moors near Osmotherley. 54.3567°N, 1.2639°W, altitude 260m.

I watched Venus setting with 8×40 binoculars. Conditions weren't good with a band of cloud close to the horizon. Venus was naked eye but Mercury was not due to the cloud. Both Venus and Mercury were mostly a shade of deep orange-red. In the atmospheric disturbance both planets were fluttering between colours through red, orange, yellow and whitish but never green.

Then as Venus went behind the band of cloud it started to fade then there was a sudden flash of brighter and very definite green and with that it was gone. I am sure it was cloud Venus went behind because I was still able to very briefly glimpse Mercury as a more expected orange colour as it faded also.

I was very surprised to apparently repeat Richard Baum's observation at the first attempt but the flash was certainly green.

2010 April 4, 20:07 UT. Location: Eaglescliffe, Stockton-on-Tees. 54.5395°N, 1.3406°W, altitude 17m

I decided to try using the roof ridge of a nearby house as an artificial horizon. As Venus set behind the ridgeline of the roof I watched through 8×40 binoculars. As the planet reached the roofline I saw a very small rainbow replace the planetary image, which ranged from red at the bottom to green at the top which descended and faded to lose red first and then green last as the planet set further. By adjusting my angle of view I was able to repeat this twice more. This did not look at all the same as the phenomenon seen the previous night although the last colour seen was green.

Rob Peeling

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From Mr Michael Maunder

The Green Flash isn't only a horizon effect but can happen whenever there is laminar flow. When the air is stable (steady or constant wind), flashes, and multiple ones at that as each layer of the distorted solar image sets, can be seen a considerable distance above the horizon and can and will be multiple in good conditions, as follows:

2010 March 13. As the Sun was setting with its lower limb a solar diameter above the Alderney sea, the multiple layered Sun shed 3 brilliant green flashes and 4 lesser examples at the top before the Sun moved into sea mist. The multiple layers continued to shed but without obvious colouration in the grey – I saw well over 30!

With these laminar flow conditions, do look out if you can and don't be put off and wait until sunset proper when murk obscures the true horizon. It's a common misconception that the green flash can only be seen at the true horizon. All it needs are temperature layers. Some of the best flashes I've seen have occurred at sunset over houses, literally a 'Cat on a hot tin roof' situation.

Mike Maunder

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Erratum

Journal Letters, Vol. **120**(3), 2010 June, page 185. 'A Venus Green Flash'. The binocular size should read 15×70 not 15×50. *(Apologies – Ed.)*

Astronomers have observed noctilucent clouds for 125 years

From Dr Wilfried Schröder

In 1883 the great eruption of Krakatoa took place. Following this, all over the world intense colours were observed in the sky. In June 1885 Thomas W. Backhouse (1842–1920) noted a small silvery cloud band in the twilight sky. This was a new form of clouds which had not been reported before. A few days later Otto Jesse (1838–1901) also detected the clouds in the twilight from Berlin. They appeared regularly, and Jesse observed them continuously.

Backhouse made only a few sporadic observations but Jesse started a regular programme of research. He collected all available data from land and sea. He published instructions for observers to collect the data and send them to him. Some research was also done by T. Tseraski from Russia, who gave different height determinations and descriptions.

At that time Jesse was a member of the Berlin Observatory, whose Director was Wilhelm Förster. Jesse started a regular observing programme, at first by regular visual observations. In 1887 he began photographic study of noctilucent clouds. From different stations near Berlin photographs were taken to determine their height. The most interesting result was that the clouds appeared nearly constant at 82km height. They showed variability in colour, and formations (bands, veils, rips, patches), and drifted with different velocities.

From observations in the years since 1887 it was found that they sometimes disappear, and the brightness varies. Several researchers suggested that the clouds would vanish permanently, but they reappeared again later.

A theory of the clouds was not published. Many observers suggested a relationship to the Krakatoa event and its pollution of the upper atmosphere. In this connection it is also of interest that since the mid-19th century increased industry has caused pollution of Earth's atmosphere, not just Krakatoa. Because no physical data of the upper atmosphere was available, Jesse could not give a general theory of noctilucent clouds.[1,2]

Many amateurs have participated in the investigation of NLC. Many observers published their observations in the German journal *Meteorologische Zeitschrift*. An association of friends of astronomy and cosmic physics existed in Germany, and in this society an active group worked on haloes, twilight and noctilucent clouds. Leaders were F. S. Archenhold, Förster and Jesse. They published in different journals instructions for observing the clouds, including photographic observations. Jesse built up a system of simultane-

Observing Saturn this apparition

From Dr David Arditti

I was surprised to see the letter from Alan Heath and Paul Abel in the June *Journal* (**120**(3), 2010) urging CCD imagers of Saturn not to exaggerate the contrast in their images. All the planetary imagers I know spend a great deal of time actually looking through their telescopes, and are highly alert to the need for their images to represent as accurately and objectively as possible the changing appearance of the planets. All the images of Saturn I have seen this apparition, and certainly those published in the *Journal* and on Section web pages, closely resemble the eyepiece view in terms of the intensity of the belts. Sometimes imagers exaggerate contrast for particular purposes, for example to bring out low contrast spots, and this is a legitimate method when it is clearly explained what has been done.

I support continued visual observation for the reasons given in the letter, but it is undoubtedly the case that imaging has allowed us to detect and follow far more subtle and finer detail on Saturn than was previously possible.

David Arditti

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ous measurements around Berlin, with stations in Nauen, Warnemünde, and Berlin–Steglitz. This enabled simultaneous photographic observation and recording of the clouds, and during the years after 1887 they collected more than 1000 photos.

After Jesse's death in 1901 the Berlin programme was cancelled. Förster published a few notes related to the Tunguska event in June 1908 and Halley's Comet in 1910, but in subsequent years the interest depended on the interest shown by observers. No systematic observations were made until the International Geophysical Year in 1957, although in Russia noctilucent clouds were observed between 1920–1940. In the IGY many groups of amateurs worked on observations of the upper atmosphere (aurora, increased airglow and NLC).

In the UK under the leadership of James Paton (Edinburgh) many observers collected data and sent them to him, and he published an annual report. Paton was a leading expert on auroras and noctilucent clouds, and worked within the BAA.[3] After his death McIntosh and Mrs Hallissey published annual tables of NLC data for a few years.

Later Michael Gadsden was interested in noctilucent clouds, and in 1989 published a monograph with Wilfried Schröder.[1] Also, Gadsden published some interesting special studies on NLC.

In the early Soviet Union commissions existed, partly associated with the Academy of Sciences, and the observers there did good work. Different amateur societies were connected with the commissions of the Academy. Leading scientists, e.g. Sharonov, Grishin, Khvostikov, Villmann, Vasilyev and Avaste published their results in special conference books. In 1966 an international conference on noctilucent clouds was held in the Soviet Union, and several national NLC conferences were organised there. In Germany Wilfried Schröder has collected NLC data since 1957 and in 1975 published a monograph on it.[4] Also, the director of the Sonneberg Observatory, Professor Cuno Hoffmeister, was interested in this subject. In Scandinavia George Witt and F. H. Ludlam published studies in the well-known journal *Tellus*.

A development came with data from North America, where Benson Fogle did good work since 1963. He worked at the Geophysical Institute of College Park, Alaska, coordinating data from US observers, and published his thesis under the title *Noctilucent Clouds* (1966). He also published the first photographs of noctilucent clouds from the southern hemisphere in Punta Arenas (Chile).

Jesse's studies signalled the beginning of 'aeronomical research', the regular study of the upper atmosphere, now called 'aeronomy'.

Wilfried Schröder

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References

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2 W. Schröder, *Noctilucent Clouds*, Bremen: Science Edition, 1998
3 J. Paton, 'Noctilucent clouds', *Meteorological Magazine*, **93** (1964), 161
4 W. Schröder, *Entwicklungsphasen der Erforschung der Leuchtenden Nachtwolken* (*Development phases of noctilucent cloud research*), Berlin: Akademie–Verlag, 1975

An appeal for Doherty art

From Mr Dale Holt

For 12 months I have been trying to obtain some examples of artistic work or copies of work by the late Paul Doherty (1947–1998) but so far to no avail.

Despite the fact that Paul was no longer around when I started exploring our shared interest, I found the relatively small amount of his work that I have seen to be hugely inspiring. I understand that he was a prolific astronomical artist, writer, speaker and general populariser of observational astronomy right up until his untimely death. This being the case there must be a good deal of his work hidden away in cupboards and drawers out there in the homes and observatories of BAA members.

I have a treasured copy of his delightfully illustrated book co-written by Patrick Moore, *Atlas of the Planets*, published by Hamlyn in 1980. Paul also published *Building and using an Astronomical Observatory*, but I have not been able to obtain a copy of this work. I also understand that via his association with *Astronomy Now* in the 1990s a series of postcards was produced depicting Paul's art work; others have informed me that these were issued free with the magazine but again I have yet to see any personally.

The purpose of my letter is to appeal to members to part with any of Paul's work if they have some to spare, or to copy and share with me if they can. My ultimate aim would be to own an original piece of his art to inspire me on a daily basis to keep practising with my own pencils.

Dale Holt

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The 'nominative takeover'

From Dr Michael A. Covington

I want to note, but not pass judgement on, a trend. Traditionally, star designations are followed by the genitive (possessive) form of the constellation's Latin name. In recent years I have occasionally seen professional astronomers using the nominative (basic) form of the name instead, so that each constellation's name has only one form. Instead of Alpha Orionis, Eta Carinae, or Alpha Centauri they say Alpha Orion, Eta Carina, and (presumably) Alpha Centaurus.

Some constellation names trouble even experienced Latinists. It is easy to mix up Pisces (two fish, genitive Piscium) with Piscis Austrinus (one fish, genitive Piscis Austrini). In Coma Berenices (gen. Comae Berenices) the Greek name Berenice is already genitive and does not change form. And the genitive Doradus of Dorado is totally made-up, since the word is actually Spanish.

Many astronomers would doubtless enjoy being rid of these challenges. I don't know whether to approve of the 'nominative takover,' but as a style-setter for English-language astronomical publications, the BAA should discuss it.

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(P.S. Yes, I am the Michael Covington who is better known for writing books about astrophotography.)