Letters

News from Hanwell Community Observatory

From Mr Christopher Taylor

The 0.76m public-use reflecting telescope at Hanwell Community Observatory

Following the note in last February's *Journal* (*JBAA*, **120**(1), 9) , readers may be interested to hear that the new 30-inch (0.76m) reflector at Hanwell delivered a magnificent view of M42 Orionis one glorious night of early March, when stars to below 16th magnitude were obvious in the telescope and Sirius so brilliant it could be *projected* as a bright spot of light a yard or more from the eyepiece. The great nebula plainly showed not only the [OIII] green of the central regions so familiar from views in smaller instruments, but also Hα red as a rusty edging to the outstretched 'wings', all rendered in a detail and with a definition reminiscent of a deep image taken with a large professional telescope; a truly awe-inspiring sight. HCO hopes to begin public astronomy with the new instrument shortly.

We are also now looking ahead to setting up a permanently mounted solar facility on the Hanwell site, whose motivation is twofold: firstly, to provide visitors the possibility of a first-hand observational experience during daylight hours, something which may be of particular interest to local schools & colleges; and secondly to use solar astronomy to focus more closely than, in general, our nocturnal public events will do on overtly educational ends in relation to the teaching of the physical sciences, an aim to which the Sun, of all celestial bodies, is pre-eminently suited. The plan is to make as many different ways of viewing the Sun available to visitors as we can, so giving the experience variety and interest in both visual and scientific terms.

To achieve this, the intention is to mount a coelostat-fed suite of instruments fixed in the meridian, generating images of the whole disk by white-light projection, by direct view in Hα and at higher resolution by neutral-filtered direct view, as well as images of the solar spectrum both by projection at low resolution and in greater detail by direct view to display the Fraunhofer lines in all their glory. By identifying the principal lines in the latter by chemical element – or even projecting actual comparison spectra alongside it – we can, of course, link the observatory experience directly to GCSE & A-level physics and chemistry, for instance, to provide some of their content with a 'real-world' illustration of unique vividness.

If any reader is interested in becoming involved in any way in this next phase of HCO public astronomy we really would like to hear from you. We would also like to hear from anyone who may be able to help with the acquisition of a suitable 2-mirror type coelostat delivering a beam between 4 and 12 inches clear aperture: it doesn't matter how old and well-worn, as long as the optical surfaces are undamaged and the mechanicals serviceable. In either event, please telephone 01295 730762 and leave a message.

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WZ Cassiopeiae

From Prof R. F. Griffin

Mr Abdul Ahad, in his letter in the December *Journal* (**120**(6), 374 (2010)) described his search, conducted bibliographically, for the double star with the greatest colour contrast. He recognised that the reddest stars are carbon stars, and from tabulated colour indices selected WZ Cas and its visual companion as having the greatest contrast of any pair, at least as far as magnitude 8.5.

His conclusion might be called into question on several grounds. First, the 'companion' of WZ Cas is just a field star almost a minute of arc away from WZ, so as a double star the pair is open to objection on the grounds of being merely optical. Secondly, the colour sensitivity of the human eye is greater for bright objects than for faint ones, so a bright pair such as Albireo or γ And may appear more strongly contrasted than a faint pair even though the objective difference in measured colour index may be smaller. Thirdly, the close juxtaposition of the components in many visual double stars such as γ And and ε Boo enhances the apparent contrast. And finally, carbon stars are notoriously variable, not just in magnitude but in colour too, and it is probably no more than fortuitous that WZ Cas should happen to have one of the largest numerical values of (B–V) in the database consulted by Mr Ahad.

I could support some of these points from my own experience. As a schoolboy and then an undergraduate I was an enthusiastic member of the Variable Star Section, and I made visual observations of WZ Cas on nearly 250 nights in 1953–'57. It did not take long for me to realise that the fearful colour difference between the variable and any available nearby comparison star made for great difficulty in comparing them, so I adopted the scheme of using the smallest possible optical power (I had a number of very small telescopes) that sufficed to enable me to see the stars clearly. When it was near the limit of vision, the variable's colour was quite unobtrusive, so a magnitude comparison was readily made, even if its actual meaning may not have been too certain! Subsequently[1] I have had WZ Cas on a programme of radial-velocity measurements, mostly made at the Cambridge 36-inch telescope, and have observed it on more than 500 nights, so I have some familiarity with its appearance. I certainly notice how its colour, as well as its magnitude and radial velocity, fluctuates.

The connection between colour perception and apparent magnitude is well illustrated by the following anecdote. On 1983 October 16, with my collaborator J. E. Gunn, I observed WZ Cas for radial velocity with the instrument at the coudé focus of the 200-inch reflector on Palomar Mountain, which a rough calculation shows to have something like a million times the light-grasp of the naked eye – a matter of fifteen magnitudes.[2] The star came into the field of the finding eyepiece such a blinding red colour, like a traffic light on 'stop', that the night assistant (to whom of course the telescope was a commonplace but who nevertheless had evidently never seen anything like that previously) felt constrained to put out an invitation to anybody who might be in the dome at the time to come and see it – and several people whose presence there was unsuspected did promptly arrive to share the astounding sight!

R. F. Griffin

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1 T. Lebzelter, R. F. Griffin & K. H. Hinkle, *A&A*, **440**, 295 (2005)
2 R. F. Griffin & J. E. Gunn, *ApJ*, **191**, 545 (1974)

Maximum elongations for Mercury & Venus

From Prof J. C. Vetterlein

Venus reached maximum elongation (E) from the Sun on 2010 August 20.

There is a curious sentence appearing in the later editions of *General Astronomy* by Sir Harold Spencer Jones (it does not occur in the first edition of 1922). From Chapter X, second paragraph under Mercury, we have: 'The stellar magnitude of Mercury at greatest elongation varies between –1.2 and +1.1, according to distance.'

This loose statement (uncharacteristic of the meticulous former Astronomer Royal) struck me immediately. It is quite clearly factually wrong since even within the wide range of Mercury's elongations such extremes in magnitude could not be reached. It prompted me to compare the characteristics of phase and magnitude for the two inferior planets at their maximum elongations from the Sun.

Examining the data for Mercury from 2010 May to 2013 July (21 elongations) we see that Mercury has a magnitude of +0.6 on 2013 June 12 (phase 38.3%, elongation 24.3°) and on February 16 of the same year, a magnitude of –0.5 (phase 52%, elongation 18.1°).

Not surprisingly Venus, with its highly symmetrical orbit, demonstrates very little variation between maximum elongations, thus: phase 48.4% mag –4.3 and at phase 51% mag –4.4. The extremes in elongation values themselves are likewise consistent, falling between 45.4° and 47.1° approximately.

The other notable difference between the two planets is that maximum brilliance occurs for Mercury close to superior conjunction (mag –2.3 in the most favourable circumstances) whereas for Venus maximum brilliance (–4.7) occurs when the phase is around 25% to 27%. Theoretically both planets when centrally transiting the Sun's disk will reflect no sunlight towards Earth at all (Venus with its atmosphere will scatter some light earthwards) and so may be considered to be black bodies with an infinitely high stellar magnitude.

Some of this poses a little difficulty to compilers of internet information on Mercury where ranges in magnitude for the planet are variously quoted as anything between +5.0 and something approaching –2. Wikipedia, at my suggestion, has adopted a maximum brilliance for Mercury indicated by a visual magnitude of –2.3. The other end of the scale is more problematical!

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William Maximilian Lindley (1891–1972)

From Dr Jeremy Shears

I am researching the life of W. M. ('Max') Lindley who served as the fifth Director of the BAA Variable Star Section between 1939 and 1958. He spent most of his life in Trevone, Cornwall.

I would be most interested in hearing from anyone who has any knowledge of Lindley, direct or indirect. I would also be interested to learn what became of his instruments, particularly his 5.5-inch (140mm) and 2.37-inch (60mm) Cooke refractors.

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