

Cleveland and Darlington Astronomical Society  
Minutes of Ordinary Meeting held on Friday 13 May 2011 at 1930hrs  
in Wynyard Woodland Park Planetarium

Chairman Barry Hetherington opened the meeting at 1935 hours.

1. Notices

i) Ed Restall announced that the Planetarium will remain in operation for some time, to allow a reduced but sustainable programme to be developed. The post of Planetarium Director has been changed to that of a part-time Planetarium Co-ordinator.

ii) Neil Haggath distributed four information packs to new members. The next ordinary meeting will be on Friday 10 June. Prof. Christine Done of Durham University will talk on "The Dark Side of the Universe".

2. Lecture for the evening: Roger Pickard, Director of the Variable Star Section of the BAA – "Variable Stars"

The theme of Roger Pickard's talk was to explain how the visual observers of the VSS went about visual observing of variable stars, with binoculars or telescope, and estimating their magnitude. Variable stars had been observed using the naked eye for more than 160 years. Initially only the naked eye was used, but nowadays binoculars and telescopes have extended the range of magnitudes observable from down to mag. 6 to mag. 15 or fainter.

Only a few variable stars were known at first, but now the observing programme of the VSS contains many tens of stars, which vary in a variety of different ways. Some change only by fractions of a magnitude and others vary by up to 15 magnitudes. Nomenclature has had to develop over the years from using a single letter plus the constellation, through double letters and now, sensibly, a V number. Some constellations have more than 3000 variables and there are more than 30,000 to observe.

Visual observations rely on training the eye to recognise 0.1 magnitude differences between a reference star and the variable, or on making comparisons between the variable and two reference stars that straddle the variable in magnitude. Since 1890, the BAAVSS has recorded more than 2 million observations, and 200 stars appear on the currently recommended observation lists. Several examples were given of typical stars being observed today and the comparison charts available from the BAAVSS website. We were even shown photographs of typical observation fields of view to have a go at estimating the magnitude of the variable ourselves. Some advice and some of the pitfalls were also described.

There are three main categories of variable stars: Pulsating, Eclipsing Binaries and Eruptive. The Pulsators include Cepheids, RR Lyrae types, Miras and RR Tau types. In this category, the star pulsates in size and magnitude, with a regular or variable frequency varying from days to many years. One fifth of all the stars in the sky are Eclipsing Binaries, which vary as one star passes in front of the other in our line of sight. Eruptives are only a few percent of all stars and are binary systems in which material is being taken from one star by the other until a massive explosion occurs, giving rise to a rapid eruption in magnitude at unpredictable intervals.

The demise of visual observations has been predicted for several decades now, the expectation being that photography or CCD observation would render visual observations unnecessary (and over the last few years techniques with DSLR cameras are also being developed, which are very

accurate). However, because of the ease of carrying out visual observations, this has not proved to be the case. The data still being gathered by the BAAVSS amateurs are continuing to prove useful and sought after by those in the professional world of astronomy.

### 3. Vote of thanks and closure of the meeting

After a lively question session, the Chairman proposed a vote of thanks to Roger Pickard and closed the meeting at 2045.

*AM, 15/05/2011*