



## Ordinary Meeting & Christmas Lecture, 2011 December 10

held at the Royal Astronomical Society, Burlington House, Piccadilly, London W1

**Prof Bill Leatherbarrow, President**  
**Hazel Collett, Ron Johnson & Nick James, Secretaries**

The meeting was opened by the President who welcomed members to the third Ordinary Meeting of the 122nd session. The minutes of the last meeting were agreed by the audience to be correct and were signed by the President. There were 17 new members proposed for membership, and the audience agreed that they would be duly elected members of the Association.

Nick James, Papers Secretary, said that he did not have any new *Journal* papers to announce at this meeting but promised that there were plenty in the system.

The President informed the audience that we were honoured this afternoon as we had with us Norman Rogers, who has been a member for 70 years having joined on 1941 November 29. There was an approving round of applause from all.

The President then introduced the Christmas Lecturer Professor Dame Jocelyn Bell Burnell, whose talk was titled 'Will the world end in 2012?'



*Prof Dame Jocelyn Bell Burnell*

### Will the world end in 2012?

Prof Bell Burnell said that this talk was an overview of what type of disaster could affect the Earth. The media, and especially that in the USA have been suggesting the Mayan calendar which began in Aug 11 3114 BC predicted that the earth will be destroyed on 2012 Dec 21 at 11:11 a.m., or maybe 11:12 a.m. Prof Bell Burnell felt that she was on good grounds to say this would not happen, but thought it would be interesting to consider what *could* happen.

Solar storms were first to be considered, especially as we are reaching solar maximum in 2013. However as the Earth has been through many storms and we are still here, it was thought unlikely they would cause the Earth's destruction. The only difference now is that we have many satellites which may cause problems to us if damaged by high solar activity.

She then considered magnetic reversals on the Earth, as we are about overdue for the next one. However as there have been about 11 such changes in the last 3 million years and the Earth has survived, so a future one should be interesting but not a disaster.

What happens if a planetary alignment occurs

with all the planets being on one side of the solar system? Again as this would cause about one two hundredths of the effect of the Moon causing tides, this would not be the end of the Earth. There are no alignments in 2012, the next being in 2040, so we have plenty of time to consider this in the future.

Prof Bell Burnell then conceded really the only possible Earth destroying situation, that of a major impact from space. The mythical object Nibiru was supposed to have been an object seen about 2500BC by the Sumerians, and is claimed to be returning to hit the earth in December 2012.

Again it was felt this was unlikely, however the Earth has been hit many times in its past and we should expect to be hit again.

Prof Bell Burnell then discussed the sources of these disaster myths and claimed they were generated to promote these ideas to the public in order to advertise future films. She condemned this practice.

After a few questions from the audience which added to the concerns of these publicity myths the President thanked Prof Bell Burnell for her talk.

The President then introduced Professor Andrew Lyne from the University of Manchester and Jodrell Bank Observatory, who gave a talk titled 'Pulsars: Nature's finest cosmic clocks'.

### Pulsars: Nature's finest cosmic clocks

Prof Lyne described the formation of pulsars from a supernova explosion, when the angular momentum and magnetic flux is conserved from the original star, creating these cosmic lighthouses with intense electric fields set up on the poles. Asymmetry of the explosion can give a velocity to the pulsar of 100–1000 km/s in any direction; some escape the galaxy. Due to this there are only a few binary pulsars, however due to transfers of mass these can have very stable spin rates. These stable

pulsars have very narrow pulses and can be good cosmic clocks, with errors of only 1 second in 30 million years.

The first binary pulsar discovered was PSR 1913+16 in 1975. The double pulsar J0737-3039 can be used as a test for general relativity. These doubles can provide very accurate mass and orbital information. General relativity predicts that gravity waves will be generated as the two objects get closer, and these could be detected from the Earth.

Prof Lyne then described the object J1719-1432, known as the Diamond Planet, which is a Jupiter-sized pulsar formed from a carbon White Dwarf and thus could be formed of diamond.

Prof Lyne illustrated his talk with video clips of cartoons of pulsars and with sound recordings of their radio emissions. After various questions from the audience the President thanked Prof Lyne for his talk.

Before introducing Nick James to give the Sky Notes for the next month, Prof Leatherbarrow reminded the audience that the Association would be involved in Stargazing Live on 2012 January 18 at an event in Regents Park, London. Everyone would be welcome to attend.

Nick James gave a summary of recent solar activity with images by Pete Lawrence, a drawing of Uranus by David Gray, and Jupiter imaged by Damian Peach. He reminded the audience that the Geminds on Dec 13–16 can produce up to 100 meteors per hour, but this year the Moon is going to interfere. The Quadrantids shower will be at its maximum on January 4. He showed images of a very bright fireball seen on December 4 which was brighter than the full Moon.

The meeting was closed at 17:45.

**Alan Dowdell**

Videos of these talks may be downloaded from the Members' section of the BAA website, [www.britastro.org](http://www.britastro.org)



**Radio Astronomy equipment supplies**

Very Low Frequency Receiver  
Dual-axis Magnetometer  
Data Logger and Controller  
Free Software for all platforms

[www.ukraa.com](http://www.ukraa.com)