

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

11th September 2006

**Dr Ian Lewis (Oxford University):
'Astronomical Spectroscopy: Mapping
the Universe 400 Galaxies at a Time'**

Welcome to the new season of Abingdon Astronomical Society meetings. I hope you've all enjoyed the summer and are now looking forward to those long dark evenings when you can observe at a civilised hour. Our new chairman, Ian Smith, has put together a packed programme of invited speaker meetings, member speaker meetings and observing evenings, both at dark sites and in Abingdon. I hope you enjoy these events.

THE NIGHT SKY THIS MONTH

by **Bob Dryden**

Sun – It is that time of the year again when we reach the autumn equinox and the days become shorter than the nights. This year the Sun crosses the celestial equator on 23rd September at 04hr 3 mins UT.

This session is, generally, a poor one for the major planets. While **Venus** will be visible, but only just, for the middle part of September, it is for all intents and purposes too close to the Sun for observation, as is **Mars**. **Jupiter** is visible in the evening sky but is increasingly difficult to see as it too approaches the Sun. **Saturn** starts this period in Cancer, low in the morning sky, but by mid-October it gains a more respectable height by the time the Sun rises. In mid-September the planet is about 20 degrees above the horizon an hour before the Sun appears but by mid-October it is about 40 degrees high at the same time.

Uranus and **Neptune** - With the major planets not favourably placed, this is the time to turn your attention to the two lesser observed planets. Both are well placed for observation in the evening sky.

Neptune is in Capricornus and well on view shortly after sunset. Uranus is in Aquarius and is just past opposition which means you should give it an hour or so after sunset to let it gain some height before trying observations. At magnitude 5.7 (Uranus) and 7.8 (Neptune), both are easily visible in binoculars. They will both look like a 'star', as you will need a

telescope and steady seeing to resolve them into a disc.

Eclipse - There is an annular solar eclipse on 22nd September but do not get excited as it is only visible from the Earth's southern hemisphere.

Occultations – Technically, there is an interesting lunar occultation of the Pleiades star cluster on 12th September but you will need a perfectly flat and clear north eastern horizon to see anything.

There are two reappearances of bright stars, Alcyone (mag 3.0) at 20.51 UT and 27 Tau (mag 3.8) at 21.30 UT, but they will be right on the horizon when it happens so virtually unobservable.

A slightly easier occultation to see will happen on 1st October at 20.36 UT when Omega Sagittarius will be covered by the Moon. Even so, you will still need a pretty clear southern horizon as the Moon will only be about 10 degrees high at the time.

Asteroids – For asteroid hunters, 7 Iris is starting to make itself visible now. Close to the Pleiades, 7 Iris will be mag 7.9 by October (and so visible in binoculars), reaching peak brightness in November.

Aurora - Autumn is usually peak season for aurora so keep your eye on the northern horizon for any glows. Even though the Sun is near the minimum of its cycle it does not mean there are no aurora. In fact, one of the greatest displays in modern times occurred close to solar minimum and just last week there were moderate auroral displays across northern USA and Scandinavia so things are happening.

Moon – While many of us curse the Moon because it drowns out the stars, spare a thought for our satellite on 15th September. On that date it will be at its greatest geocentric northern declination for 37 years. In fact, it will be the farthest north of any of the planets in the 21st century!

MOON PHASES:

Full: 7th Sept.; Last Qtr: 14th Sept.; New: 22nd Sept.;
First Qtr: 30th Sept.; Full: 7th Oct.



DEADLY PLANETS?

by Patrick L Barry & Dr Tony Phillips

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars—it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

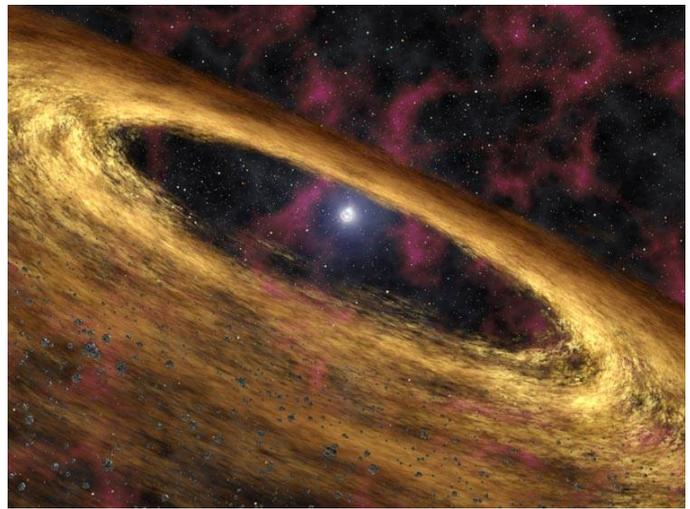
NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across

the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at <http://www.spitzer.caltech.edu/>. In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to <http://spaceplace.nasa.gov/en/kids/live/> for a great place to introduce kids to infrared and the joys of astronomy.



Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND CONFERENCE

by former AAS member Deborah Hambly
in New Zealand

It has been a busy winter enjoying the sights of the centre of our galaxy and putting the finishing touches on my 'Skydome' observatory. June was spent preparing for the Royal Astronomical Society (NZ) conference in New Plymouth where David Levy was scheduled to be the guest speaker. It turned out that we had a lot in common as he had

also grown up in Montreal, Canada, we had both done oral presentations in high school on comets and finally, we are both enthusiastic about public astronomy outreach. David was invited to the observing site of my host Andy Dodson (whose pictures are on www.spaceweather.com) and so on Sunday morning we woke up at 4:30am in order not to miss the opportunity to observe with two comet greats – Levy & New Zealand's own Rod Austin. They didn't discover any comets, but it was an enjoyable event and I managed to stay awake throughout the rest of the day!

At the AGM, I received a nomination from Grant Christie, MBE 2006 & Stardome Observatory) and then won an election so I'm now an RASNZ Council member.

I also participated in the conference by submitting a poster paper entitled "Astronomy Adventures". The theme of the conference was New Zealand's contribution to Amateur Astronomy, and my poster showed the adventure that brought me to New Zealand.

The conference was also attended by Arne Hendon, director of the AAVSO (Variable Stars) and I'm now keenly getting up to speed on this topic in the hope of being able to start using the 14" and a special CCD camera to assist with the observations.

At the conference I also met Graham Blow, a leader in the field of star occultations for upwards of 30 years. He talked me through the latest systems where a GPS feed sends time, accurate to the millisecond and timestamps this on to your videotape for later

analysis. This is also an exciting area which I hope to have operational for the next clear occultation.

All in all the conference was a fantastic opportunity to meet the group from the "Stardate" observing weekend in January, gain expertise from presentations and hear and meet famous astronomers.

FURTHER DISCUSSION

The Society's web site is www.abingdonastro.org.uk Our webmaster, Andrew Ramsey, is always on the look-out for members' photographs to put on there. Don't forget you can read back copies of SpaceWatch on the web site too.

DATES FOR YOUR DIARY

18th – 20th Sept 8pm. Observing evening at Abbey Meadow, Abingdon.

25th Sept. 8pm. Beginners' Meeting in the Perry Room.

9th Oct. 8pm. Speaker Meeting: Talk by Dr Danielle Bewsher (RAL): "Living with a Star".

The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your help and contributions. Please send any news, observations, photos, etc. to:

Mail: A.T.Ramsey, 35 Cope Close, OXFORD, OX2 9AJ.

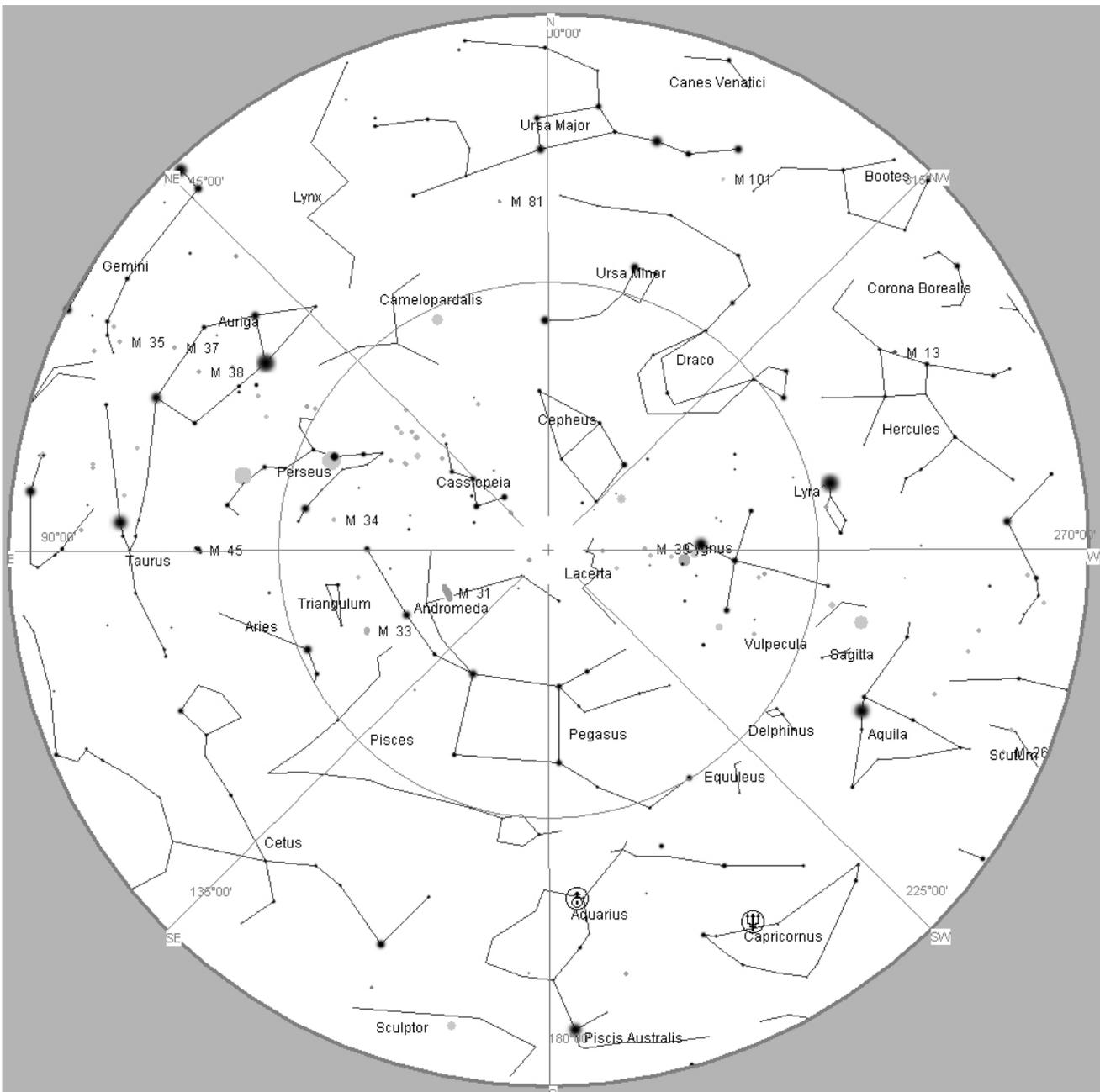
E-mail: AbAstro@ATRamsey.com Phone: 01865 245339



Part of a photograph that member Paul McGale took of the Full Moon last Thursday, shortly after the end of the partial eclipse.

He says that the Moon was too low to photograph from his house during the eclipse. However, I got a good view from the University Parks in Oxford. How about you?

STAR CHART



Looking south at 11pm next Saturday (16th Sept.)

The Milky Way arcs high in the sky at this time of year. Sweep some binoculars through Cygnus, Cassiopeia and Perseus and you will see hundreds of faint stars in every field. Look out also for M31 – the spiral galaxy in Andromeda. Go from the top-left of the square of Pegasus, hop two stars to the left, and two stars up. Just above and to the right of this you will see a fuzzy blob. This is the nearest galaxy to the Milky Way and is two million light-years away. It is visible to the naked eye from a dark sky site.

This chart was produced using the freeware program Cartes du Ciel. The curved southern horizon is at bottom. The zenith is shown by the small cross in the centre.