

# SPACEWATCH

the newsletter of the Abingdon Astronomical Society

10<sup>th</sup> December 2007

Nik Szymanek –  
'Astrophotography'

The last time I heard Nik Szymanek speak was at a very wet Kielder Forest Astro Camp in October 2004, where he showed us the most amazing astronomical photographs. Nik really pushes the envelope on amateur astrophotography, and tonight I am sure you are all in for a real treat.

May I take this opportunity to wish you all a very Merry Christmas and a Happy New Year.

## THE NIGHT SKY THIS MONTH

by Bob Dryden

**Sun + Earth:** We reach the winter solstice on 22<sup>nd</sup> December at 06.08 UT which means the Sun is then starting to move north again. While it means the nights are getting shorter, at this time of year they are still very long giving you lots of observing time. On January 3<sup>rd</sup> the Earth reaches perihelion at 147 million kilometres from the Sun. In other words, we are the nearest we are going to be to the Sun all year.

**Mercury:** Mercury reaches superior conjunction on 17<sup>th</sup> December and then moves into the evening sky. For most of this session it will not be visible although you may be able to locate it very low in the south west by mid January.

**Venus:** Although Venus is moving back towards the Sun, it is still difficult to miss in the morning sky as it is a very bright -4.0 mag. It rapidly moves through Virgo, Libra, Scorpius and ends up in Ophiuchus. This means its altitude will be decreasing over the session as its elongation from the Sun also decreases from 42 degrees to 36 degrees. It will only be, approximately, 15 degrees high at sunrise by mid January.

**Mars:** This planet will be the star of the session, [Ed. Yes, he really did write that!] reaching opposition on 24<sup>th</sup> December. At opposition it will be a stunning -1.6 mag, fading slightly to -1.4 mag by the end of the session. Mars rises at about 17.00 UT in early December so is observable almost from sunset. Opposition occurs with the planet in Gemini so later in the night it passes virtually overhead which should give us great telescopic views. On the morning of 24<sup>th</sup> December, at around 04.00 UT, the Moon passes very close to Mars (in northern Scotland there is an actual occultation if you fancy a road trip for Xmas) which could give some interesting views. This will be the best Mars is going to be for several years so make the most of any observing chances through December and January.

**Saturn:** Still in Leo, Saturn is really a late night object as it does not reach a decent altitude until after midnight. However, it is always worth looking at but the rings are now much more edge on (at an angle of just 6.6 degrees) making the views slightly different to those you are used to.

**Uranus + Neptune:** Neptune is getting harder to find now as it moves towards the evening twilight but Uranus is still visible for a while after dark. At magnitude +5.8 a pair of binoculars are all you will need to see it.

**Jupiter:** Jupiter is in conjunction with the Sun on 23<sup>rd</sup> December and so is not visible at the moment.

**Occultations:** We have the final occultation of the Pleiades on 21<sup>st</sup> December. The event starts around 21.15 UT and finishes around 22.00 UT. The Moon will be at a bright gibbous phase but the Pleiades will be disappearing behind the dark edge. They will be high in the south at the time so observations will be easy.

**Meteors:** There are two major meteor showers this session, both very favourable. First we have the Geminids, active from 7<sup>th</sup> to 16<sup>th</sup> December. The maximum occurs on 14<sup>th</sup> December at 11.00 UT so the evening of the 14<sup>th</sup> will probably be the best time to watch, although the morning of the 14<sup>th</sup> just before dawn should also be a good time to observe. The Moon sets at about 20.00 UT so you will have a good dark night to watch for meteors. There are about 100 meteors an hour at maximum, so by the evening of the 14<sup>th</sup> there still could be 60/70+ an hour, so wrap up warm and get out there.

The other major shower is the Quadrantids which is active between 1<sup>st</sup> and 6<sup>th</sup> January. This shower is best observed in the early morning rather than the evening. Maximum is at 06.00 UT on the morning of the 4<sup>th</sup> when there will be about 100 meteors an hour around dawn. Incidentally, the radiant for the Quadrantids is in the constellation of Bootes, not the constellation of Quadrant – which does not exist of course. A thin crescent Moon rises about 05.00 UT but it should not interfere with observations. This will be the last good meteor shower until April. In fact, it will be the only major shower visible in 2008 as the others are all ruined by a bright Moon.

**Comets:** 17P/Holmes has been spectacular throughout November and will, hopefully, still be on view through December and January. It does not move out of Perseus so should be easy to find. As it is not supposed to be as bright as it is, we do not know if it will remain bright through the session or if it will fade, only time will tell.

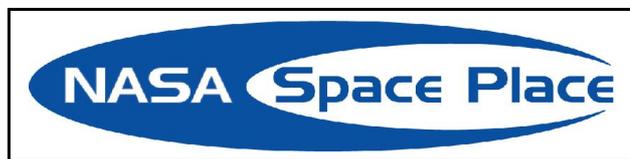
8P/Tuttle is another comet that should be easily visible throughout December and January. It is starting to move more rapidly now, traversing Cepheus, Cassiopeia, Andromeda and ending up in Cetus. Starting at magnitude

+6.5, brightening up to +4.9 by January 5<sup>th</sup>, and fading slightly to around +5.0 by mid January, it should be easily visible in binoculars, and perhaps even reaching naked eye brightness if we are lucky. On 30<sup>th</sup> December at 22.00UT Comet Tuttle will be just 20 arc minutes west of M33 in Triangulum which should be a very interesting observation. The Moon rises about 23.00UT so make sure you have a look before then.

A third comet, comet 46P/Wirtanen, will also be around this session but it will be a much fainter +9.5 mag. It will be an evening object in Aquarius, but quite hard to see as it will be quite low in the south west.

### MOON PHASES:

Last Qtr: 1<sup>st</sup> Dec.; New: 9<sup>th</sup> Dec.; 1<sup>st</sup> Qtr: 17<sup>th</sup> Dec.; Full: 24<sup>th</sup> Dec.; Last Qtr: 31<sup>st</sup> Dec.; New: 8<sup>th</sup> Jan '08.



### GOING MY WAY?

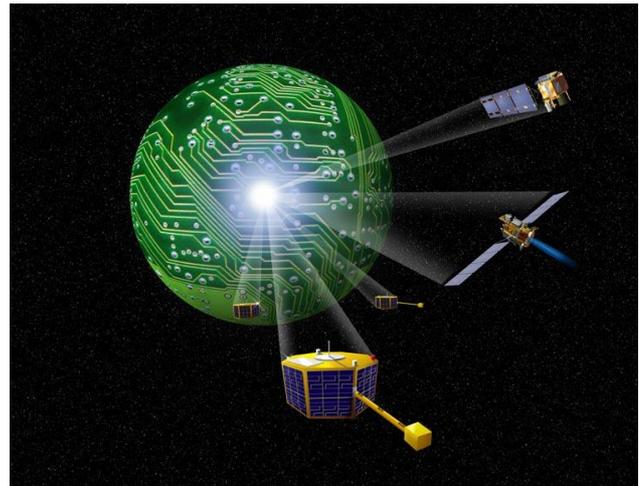
by Diane K. Fisher

Not many endeavors require that you plan the mode of transportation before you even know what it is you are transporting. But weighing the physics and economics of getting any sort of cargo to space is a major part of designing a space mission.

It's one of the first issues that NASA's New Millennium Program (NMP) considers when planning a new mission. NMP has the forward-looking job to identify promising new technologies for space exploration. It then helps to mature the technology so it will be available to space missions of the future. If the technology cannot be tested adequately on Earth, the last part of this process is to actually send the technology into space. With carefully documented test results, future mission planners can confidently incorporate the new technology into their designs.

But where to begin? On call from the start, Linda Herrell is the New Millennium Program Architect. Given a list of proposed technologies, she has the job of figuring out the feasibility of wrapping a mission around them.

"We might be considering six or more technologies, anything from solar panels to imagers to masts for solar sails to more intelligent software. Of those, we may choose four. My job is to answer the question—can the selected technology be transported to and operated in space within the constraints of a low-cost technology validation project?"



Along with the list of possible mission payloads (the technologies), Linda also has a list of spacecraft to put them on, as well as a list of launch vehicle parameters. *All* she has to do is try them out in every possible combination (of which there are thousands) and see what might work.

"Fortunately, we have a software tool to help with this analysis," says Linda. When it comes down to it, her job is primarily to figure out how to get the technologies into space.

"Sometimes, it's like figuring out how to get across town when you don't have your own car. You have to get creative."

She keeps a database of all possible options, including riding piggyback on another spacecraft, hitching a ride on a launch vehicle as a secondary payload, or sharing a launch vehicle with other NASA, Department of Defense, or even commercial payloads.

Her assessment is but one of a gazillion factors to be considered in planning a mission, but it is indeed one of the very first "details" that forms the foundation for the rest of the mission.

Find out some of the technologies that NMP has already validated or is considering at:

[nmp.nasa.gov/TECHNOLOGY/innovative-tech.html](http://nmp.nasa.gov/TECHNOLOGY/innovative-tech.html).

Kids will enjoy watching Linda's cartoon alter-ego talk about her job at [spaceplace.nasa.gov/en/kids/live](http://spaceplace.nasa.gov/en/kids/live).

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

### LAST MEETING'S TALK

by Gwyneth Hueter

Gordon Rogers is the South's answer to Denis Buczynski. If you can make a decent packet as a butcher or a property dealer then you can build yourself a (money-object) fantastic observatory. (And chuck in a

Takahashi refractor as a secondary telescope to a 16 incher)

Although Denis is better-known than Roger for his observations at his Conder Brow observatory near Lancaster, he can't boast that his observatory pier runs right up through his house.

Roger's talk was mainly about the construction of his observatory, especially the pier – eight metres deep and 18 feet above ground. It was no easy task, even if your pocket is pretty deep, but he does happen to have a son who is a builder.

The 16 incher happens to be a Ritchey-Chretien, which is a bit like a Cassegrain but with hyperbolic mirrors so you don't need the front corrector plate. (So it's like a mini version of Hubble or the Keck telescope.) 16 inches may not sound that big but it does have an adaptive optics unit. Phew!

Gordon also showed some awesome aerial views of the house and its observatory, just outside Long Crendon, but needless to say the astrophotography he does is pretty breathtaking. Have a look at his pictures on [www.gordonrogers.co.uk](http://www.gordonrogers.co.uk).

#### FURTHER DISCUSSION

If you are not already on our internet mailing list, then why not log on to YahooGroups. The list is called 'abingdonas'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. To read through previous messages click on <http://groups.yahoo.com/group/abingdonas/>.

To join the abastro list, please go to <http://www.yahoo.com>. You can also unsubscribe

from the list here. To post messages to the list, please send them to [abingdonas@yahoo.com](mailto:abingdonas@yahoo.com).

Please note that you will need to sign up with a YahooID if you do not already have one. You can do this on the above page.

Further information about the mailing list can be found on the abingdonas webpage at <http://groups.yahoo.com/group/abingdonas/>.

Further discussion on astronomy and many other topics takes place at the Spread Eagle pub in Northcourt Road after the meeting. You are most welcome to join us.

#### DATES FOR YOUR DIARY

**17<sup>th</sup> Dec.** 8pm. Beginners' Meeting in the Perry Room.

**6<sup>th</sup> – 8<sup>th</sup> Jan.** (First clear night) Observing Evening at Britwell Salome. Phone Ian on 01491 824266 for details. And wrap up warm!

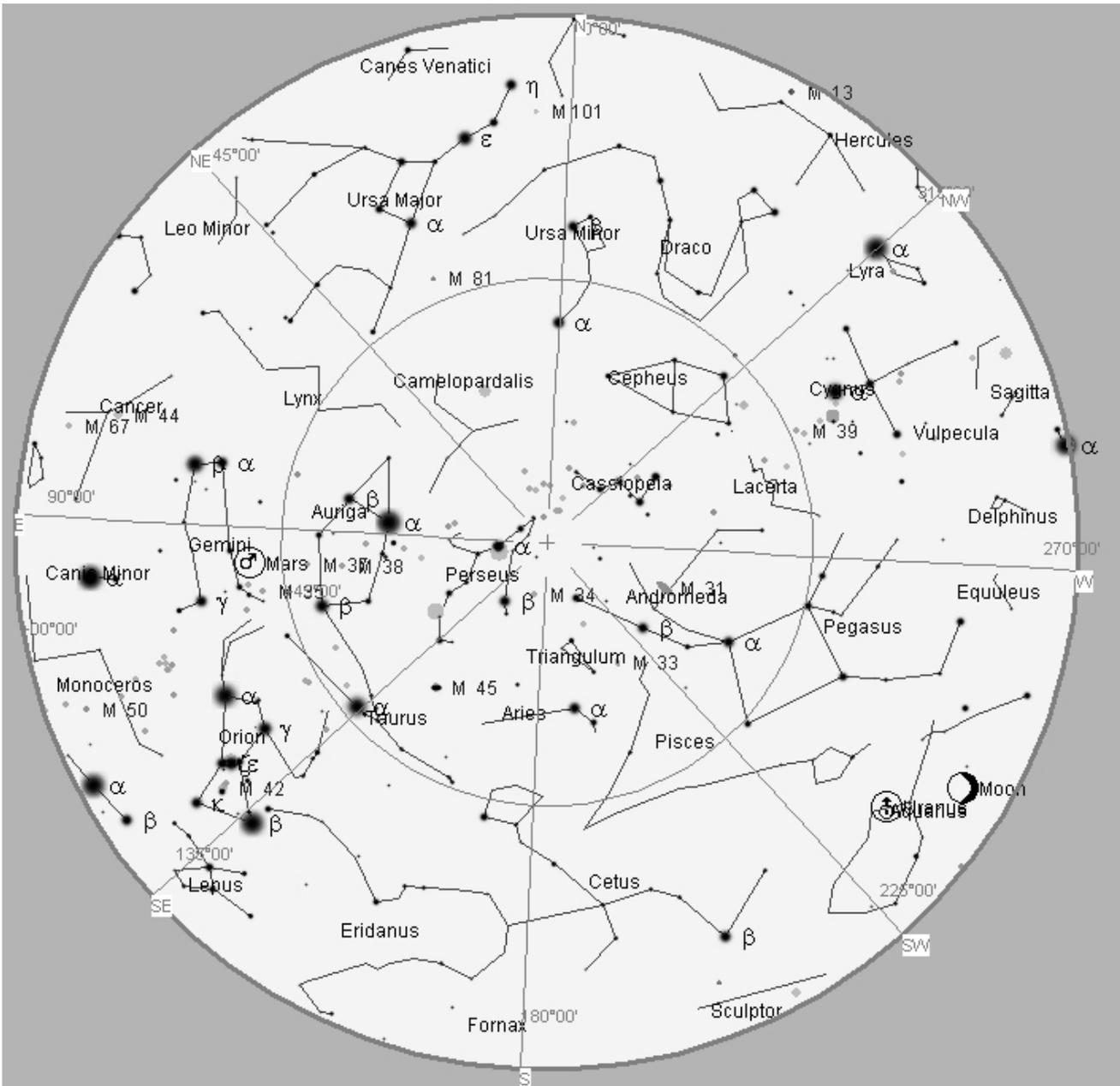
**14<sup>th</sup> Jan.** 8pm Speaker meeting: Chris Hooker (Newbury AS) – “Solar System imaging with a webcam”.

The editor of “SpaceWatch” is Andrew Ramsey, who would very much appreciate your stories & contributions. Please send any news, observations, photos, etc. to:

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## STAR CHART



**The Night Sky at 9pm (GMT) next Saturday (15<sup>th</sup> December)**

Right overhead is Perseus and the ‘W’ of Cassiopeia. Look out for the extra, rather fuzzy ‘star’ which is Comet 17P/Holmes. It is not hard to find. Binoculars will show that it is not at all star-like in reality. Nearby is another fuzzy patch – our nearest galaxy, M31, in Andromeda. Orion is now rising earlier to dominate the south-east at 9pm. Follow the belt up and to the right to find the bright reddish star Aldebaran and beyond the Pleiades, or Seven Sisters. Mars is now getting very bright indeed, also in the south-west, in Gemini.