

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

October 2003

“The Story of Star Names”

Dr Mark Hurn

(Inst. Of Astronomy, Cambridge)

The Night Sky this Month

By Bob Dryden

Moon:

The highlight of this period is the total lunar eclipse which occurs on the night of November 8th/9th. It's a Saturday night / Sunday morning event which means many of you can stay up late (remember to ask a responsible adult before doing so though). Technically, the eclipse starts at 22.15 UT when the Moon starts to enter the Earth's penumbral shadow. However, the change in shading on the Moon's surface is very subtle and very few people will notice it. The main part of the eclipse starts at 23.32 UT as the umbral shadow starts to encroach on the Moon. Mid eclipse is at 01.18 UT, and the Moon starts to leave the umbral shadow at 01.30 UT. The Moon is only crossing the southern edge of the shadow so it is likely the bottom of the lunar disc will stay quite light, but you will have to have a look to find out. The Moon will be in Taurus, which means it will be high in the sky and the whole event is visible from start to finish - cloud permitting. Even if you do not plan to watch the whole thing, I would recommend you set your alarms for about 01.15, and at least have a look out of your window. You never know when the next chance to see one will occur so take the opportunity now if it is clear.

Planets:

Mars continues to be bright in the southern half of the sky but this month will probably be the last to chance for you to see it well. It is now fading and getting smaller as the Earth and Mars move apart. Seeing conditions allowing, you can still see detail on the disc with a suitable telescope.

Saturn is slowly rising earlier now. The rings are still wide open and as the planet is in Gemini, it reaches a very high altitude in the early hours. This is giving excellent views of the system. Both Saturn and Jupiter (which is still in the morning sky at the moment) will return to the evening sky in a month or two.

Both **Venus** and **Mercury** are strictly speaking moving into the evening sky but both will be very very difficult to see yet.

Meteors:

There are two notable meteor showers active this period. First, there are the Orionids which can be seen between October 16th and 27th. Maximum night is the 20th. There will be some interference from the Moon but you should see a few meteors in the morning sky. The other shower is the Taurid stream, which is active between October 20th and November 30th. Maximum is November 3rd. There are plenty of dark nights (ie: Moon free) available as the shower covers several weeks and often Taurid meteors are quite bright even if there are not very many of them per hour.

Occultations:

There is one occultation you might like to try for on November 10th. Upsilon Taurus is a 4.4 mag star that will reappear from behind the Moon at 22.36 UT. Any small telescope should show this event. The star reappears at PA 256 degrees on the Moon.

You may read that Mercury is occulted by the Moon on October 25th and as this a rare event you might want to try and see it. Well, you will have to try very hard indeed as it occurs at 12.21UT (i.e. midday) and the Moon and Mercury will be quite literally next to the Sun. Apart from the possible dangers of getting the Sun in your telescope by accident, I think it will be impossible to see either the Moon or the planet so close to Sol.

Moon Phases:

Full: 10th Oct.; Last Qtr: 18th Oct.; New: 25th Oct.;
1st Qtr: 1st Nov.; Full: 9th Nov.

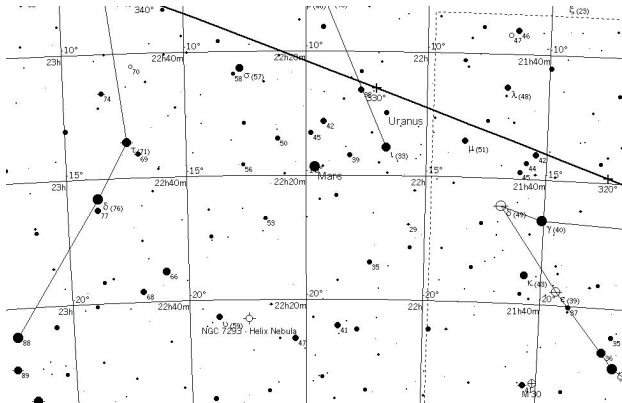
This month's Deep Sky Object

By Paul Warren

Ever since I started this column for SpaceWatch, I have never repeated earlier articles. Well, for this month I going to cover the same ground that was covered last year by Scottish Paul's article on the Helix Nebula (NGC7293).

As I recall, Paul described the Helix Nebula from the perspective of the imager. I will now describe it from the perspective of the visual observer.

The Helix is one of those DSOs where a telescope equipped with GOTO makes the job of locating very much easier than having to star hop to. I'm afraid that as far as star hopping is concerned for this DSO, that it's a matter of skill as there aren't many bright stars to help you. The best starting position at the moment is probably Mars, but after that you'll need a good chart to guide you down to the Helix.



I tried looking for the Helix last year, and came away empty handed. I'm not too sure why this was so. Anyway, my first sighting of it was at the recent observing evening in Abingdon. It took me a little over 5 minutes to locate it, and when I looked through my eyepiece, bingo, there it was! And it is big – about half the size of the full moon. It is the low surface brightness that is responsible for making this DSO tricky to see.

Now, my scope was equipped with an O III filter, and this is more or less an essential accessory for this planetary nebula. I must add here as an aside that the O III filter works very well on planetary nebulae, whereas for emission nebulae I tend to use the UHC filter. Without a filter, the Helix is not to be seen.

I repeated my sighting of it from my back garden a few nights later. It really is amazing that no trace of the nebula can be seen without a filter, with a UHC filter it shows up weakly and with an O III filter it shows up well enough to detect variation of the nebulosity itself.



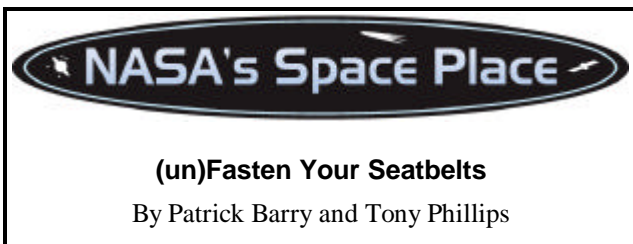
Now, with a filter in place, although this allows you to see the nebula, the filters do kill off the stars that can be seen seemingly through the nebula. If you want to make a sketch of this nebula, showing the stars in the nebula, then you must do two sketches, one without a filter (but showing all the stars), and one with the filter showing the nebula. You then must combine the two sketches to achieve a result, which should resemble the above image.

Daylight Fireball in Wales

Just to show you all how easy it is to take astronomical photographs, here is a photograph of a daylight fireball taken by a 15-year-old schoolboy in Wales last month. Using no more special equipment other than his digital camera and his skateboard, Jonathon Burnett from Pencoed near Bridgend, took this photograph showing an object probably several feet across breaking up in the Earth's upper atmosphere. This is according to NASA anyway, who were so impressed with Jonathan's pictures that they placed them on their web site.



It just goes to show that to take good photographs all you need is luck. You just need to be in the right place at the right time, carrying the right equipment with you, looking in the right direction, have quick thinking, accurate positioning and a steady camera mount. Apparently fireballs like this happen somewhere every day, so keep your eyes peeled. I expect similar pictures from all of you ready for next month's SpaceWatch.



The "fasten seatbelts" light turns off, and you get up to ask the stewardess for a pillow; it's going to be a long flight. Only a kilometer ahead in the cloudless sky, a downward draft of sheering winds looms. When the plane hits these winds, the "turbulence" will shake the cabin violently and you could be seriously hurt.

You don't know about those winds, of course, and neither does the pilot. Today's weather satellites can't see winds in clear skies: they rely on the motion of clouds to infer which way the winds are blowing.

"Believe it or not, their best indication of wind sheer right now is warnings from aircraft that have gone through it ahead of them," says Bill Smith of NASA's Langley Research Center.

But a new satellite technology being pioneered by NASA and NOAA could improve this shaky situation. It's called GIFTS, short for

Geosynchronous Imaging Fourier Transform Spectrometer. GIFTS is an infra-red sensor that can detect winds in cloudless skies by watching the motions of atmospheric water vapor. Water vapor is mostly invisible to the human eye, but it reveals itself to GIFTS by the infra-red radiation it absorbs.

Smith is the lead scientist for EO-3, a satellite designed to test out this new technology. Slated for launch in 2005 or 2006, EO-3 will carry GIFTS to Earth orbit where it can produce 3-dimensional movies of winds in the atmosphere below.

These wind data will not only improve safety, but also help the airlines save money. Knowing the winds along a flight route allows airlines to adjust the plane's fuel load accordingly, thus reducing the weight that the engines must lift. Saved fuel means saved money and less pollution.

GIFTS can help planes avoid another potentially lethal problem, too: Ice forming on their wings. If a cloud contains "supercooled" water droplets whose temperature is below freezing, those droplets will form ice on the wings of planes that pass through it. By looking at about 1700 different frequencies of the light coming from clouds, GIFTS can measure the temperature of the cloud top and determine whether it contains water droplets that could cause aircraft icing. With information from GIFTS in hand, pilots can simply avoid clouds that appear dangerous.



EO-3, carrying the GIFTS instrument, will be in a geosynchronous orbit for extended monitoring of large regions of our planet and enabling observation of weather patterns at higher resolution than possible with existing geostationary satellites.

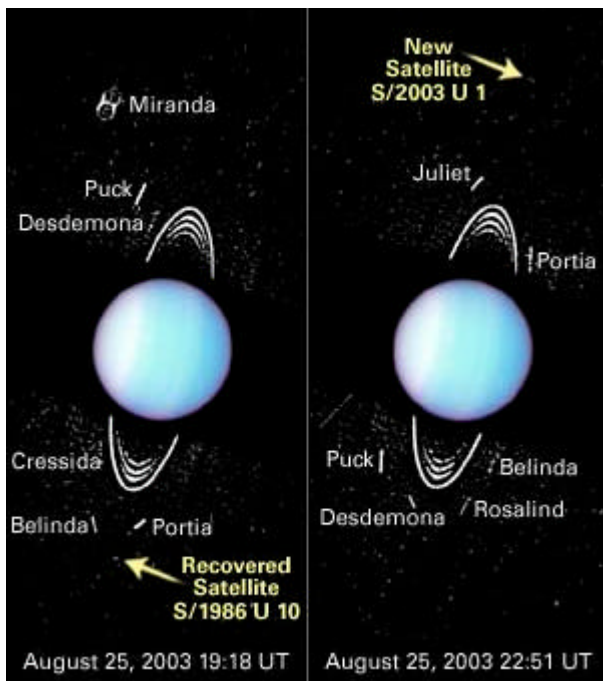
Once EO-3 demonstrates the accuracy of GIFTS, airlines will be able to capitalize on this potential to make flying a cheaper and safer experience.

Learn more about the GIFTS instrument and other advanced technologies being tested on the EO-3 mission at nmp.jpl.nasa.gov/eo3. Kids can go to The Space Place to play a data compression game related to EO-3 at spaceplace.nasa.gov/eo3_compression.htm.

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

### Hubble Discovers New Moons around Uranus

Astronomers have discovered two of the smallest moons yet found around Uranus. The new moons, uncovered by NASA's Hubble Space Telescope, are about 8 to 10 miles across (12 to 16 km) -- about the size of San Francisco. They are so faint that they eluded detection by the Voyager 2 spacecraft, which discovered 10 small satellites when it flew by the gas giant planet in 1986.



The newly detected moons are orbiting even closer to the planet than the five major Uranian satellites, which are several hundred miles wide. The two new satellites are the first inner moons of Uranus

discovered from an Earth-based telescope in more than 50 years. Images taken on Aug. 25, 2003 with Hubble's Advanced Camera for Surveys were used to make the discovery. The International Astronomical Union (IAU) announced the finding last month. The Hubble telescope observations also helped astronomers confirm the discovery of another tiny moon that had originally been spotted in Voyager pictures.

### FURTHER DISCUSSION

The society's e-mailing list is used by members to comment on all things astronomical, as well as other related and not-so-related subjects. The list is also used to publicise "first-clear-night" observing evenings and for alerting members to hot observing news.

To subscribe: send an email to [abiastro-subscribe@topica.com](mailto:abiastro-subscribe@topica.com). You will then receive all e-mails sent to the list. To post e-mails on the list: send an email to [abiastro@topica.com](mailto:abiastro@topica.com). To unsubscribe: send an email to [abiastro-unsubscribe@topica.com](mailto:abiastro-unsubscribe@topica.com)

### Ntlworld customers

Ntlworld subscribers may be experiencing difficulties in receiving Topica messages at present. This is a Topica/NTL issue affecting many mailing lists and the two companies are understood to be working to resolve it.

Don't forget the Society's web site: [www.abingdonastro.org.uk](http://www.abingdonastro.org.uk). Our webmaster, Chris Holt 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

**20<sup>th</sup> to 22<sup>nd</sup> Oct. (FCN):** 8pm. Observing Evening, Britwell Salome. Your last chance to view Mars?

**3<sup>rd</sup> Nov.:** 8pm. Beginners' Meeting in the Perry Room.

**10<sup>th</sup> Nov.:** 8pm. Talk by Adrian Jones (Reading Astro. Soc.) "Astronomy with Webcams and Security Cameras"

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