

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

13th September 2010

Dr Robert C. Smith
(University of Sussex),
'Stars that Go Bang in the Night'

Welcome back to another season of Abingdon Astronomical Society. I hope you all had a good summer. Did any of you go south to see more of the southern skies? If so, you could always volunteer to give a ten-minute after-tea talk. Our chairman Ian is always on the look-out for after-tea speakers. Tonight our main speaker has come up from Brighton and is going to talk to us about exploding stars.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Sun: This year the autumn equinox falls on 23rd September at 03.09 UT. The Sun will be in Virgo as it crosses the celestial equator heading south for the winter. The nights are then longer than the days for a few months.

Mercury: Mercury is just beginning the best morning apparition of the year. It is already visible just before dawn and becomes much easier to see as it approaches Greatest Western Elongation on 19th September when it will be 18° from the Sun. The ecliptic forms a sharp angle with the horizon at this time of year so the planet appears to shoot up into the sky rather than hug the horizon. On 13th September Mercury rises about 04.30 UT, which is about an hour before the Sun, and shines at a rather meagre magnitude +1.8. By the time it reaches elongation on the 19th it comes up just over 1.5 hours before the Sun and has brightened to mag. 0.0 making it much easier to find. On 1st October the planet is moving back towards the Sun so it returns to rising about an hour before the Sun but has increased its brightness considerably to mag. -1.1 so it will be an easy naked eye object. Superior conjunction with the Sun occurs on 17th October so Mercury will be increasingly difficult to see after the first week of October.

Venus: While Venus has spent the latter part of the summer in the evening sky, it has stayed very low down, which meant it was not as obvious as it might have been. Even now, it is just 5° above the horizon at sunset low in the west and by 11th October it is setting with the Sun. Elongation decreases from 44° in mid September to 26° by mid October but the bright magnitude -4.4 will help in finding the planet. If you can point a telescope at Venus, you can watch the phase change over time as it goes from a nearly half phase in September to a lovely thin crescent by October. In addition, Venus is physically approaching Earth so its apparent size increases to a whopping 52" (which is bigger than Jupiter appears!). In fact, during October, you only need a pair of binoculars to see the crescent phase as Venus appears so large.

Mars: This planet has also spent the summer hugging the western horizon, and it continues to do so throughout this session. Its rather faint magnitude +1.5 makes it a difficult object to find against a bright twilight sky. It is there though, crossing Virgo before entering Libra at the end of September. If you can find it, do not expect to see much in a telescope. Its tiny 4" size, and its very low altitude, means detail on the disc will be unobservable.

Jupiter: Jupiter currently resides in Pisces, and reaches opposition on 21st September. Shining at mag. -2.9 means it is hard to miss, low in the east after dark. By October it will be up all night, and any small telescope will show the cloud belts on the disc and the 4 moons that revolve around it. Of interest at the moment is the fact that the south equatorial belt on Jupiter's disc has disappeared. This has happened before, and now observers are waiting for it to reform. So an autumn project for you would be to keep watch on Jupiter to see if you can record the date when the missing belt starts to return.

Saturn: Unfortunately, Saturn is in conjunction with the Sun on 1st October so is unobservable this session.

Uranus: This is another planet that reaches opposition on 21st September, the same date as Jupiter. This is not coincidence, as they are right next to each other in the sky. On the 21st, Uranus will be 51" north of Jupiter (which is about the size of the full Moon) so both will be in the same field of view of a low power eyepiece. This does not happen very often so I encourage you to try to see the event. Uranus is much fainter than Jupiter at mag. +5.7 but it is still easy to see in binoculars. During October the two planets move slightly further apart and Uranus is left of Jupiter by mid October.

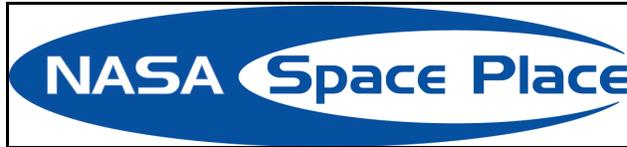
Neptune: At magnitude +7.8, Neptune is somewhat fainter than Uranus but as long as you have a finder chart, it is perfectly possible to see it using binoculars. Currently on the border of Aquarius and Capricornus, Neptune passed opposition in August so is visible all night long.

Comets: There is potentially a nice comet coming into view this session. I say potentially because comets are slightly unpredictable beasts and don't always do what they are supposed to. If it does perform as expected, comet 103P/Hartley will be shining at about mag. +8.4 in Andromeda by 13th September so you will only need a small telescope or good binoculars to see it. By 22nd September the comet crosses in to Cassiopeia, and then into Perseus on 6th October. All the while it should continue to brighten, reaching mag. +5.3 by 11th October (it is predicted to peak at mag. +4.7 in the 3rd week of October). This means, of course, that the comet is well placed for evening viewing and should be an easy one to see.

Asteroids: For asteroid fans, there are just two brightish ones on view this session. **6 Hebe** fades from mag. +7.7 to mag. +8.1 as it crosses Cetus, while 8 Flora also fades from mag. +8.2 to mag. +8.9 crossing Aquarius. Good binoculars and a decent finder chart are all that is needed to see these two, but you will have to wait until closer to midnight to allow them to get above the horizon.

MOON PHASES:

New: 8th Sept.; First Qtr: 15th Sept.; Full: 23rd Sept.; Last Qtr: 1st Oct.; New: 7th Oct.

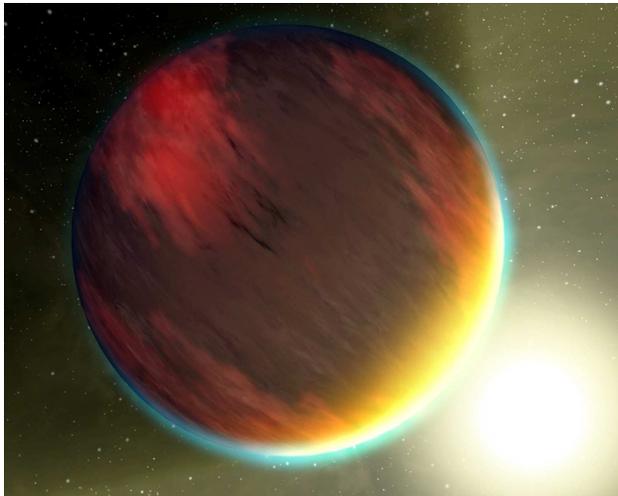


THE HUNT IS ON!

by Carolyn Brinkworth

The world of astronomy was given new direction on August 13, 2010, with the publication of the Astro2010 Decadal Survey. Astro2010 is the latest in a series of surveys produced every 10 years by the National Research Council (NRC) of the National Academy of Sciences. This council is a team of senior astronomers who recommend priorities for the most important topics and missions for the next decade.

Up near the top of their list this decade is the search for Earth-like planets around other stars—called “extrasolar planets” or “exoplanets”—which has become one of the hottest topics in astronomy.



Artist's rendering of hot gas planet HD209458b. Both the Hubble and Spitzer Space Telescopes have detected carbon dioxide, methane, and water vapor—in other words, the basic chemistry for life—in the atmosphere of this planet, although since it is a hot ball of gas, it would be unlikely to harbor life.

The first planet to be found orbiting a star like our Sun was discovered in 1995. The planet, called “51 Peg b,” is a “Hot

Jupiter.” It is about 160 times the mass of Earth and orbits so close to its parent star that its gaseous “surface” is seared by its blazing sun. With no solid surface, and temperatures of about 1000 degrees Celsius (1700 Fahrenheit), there was no chance of finding life on this distant world. Since that discovery, astronomers have been on the hunt for smaller and more Earth-like planets, and today we know of around 470 extrasolar planets, ranging from about 4 times to 8000 times the mass of Earth.

This explosion in extrasolar planet discoveries is only set to get bigger, with a NASA mission called Kepler that was launched last year. After staring at a single small patch of sky for 43 days, Kepler has detected the definite signatures of seven new exoplanets, plus 706 “planetary candidates” that are unconfirmed and in need of further investigation. Kepler is likely to revolutionize our understanding of Earth's place in the Universe.

We don't yet have the technology to search for life on exoplanets. However, the infrared Spitzer Space Telescope has detected molecules that are the basic building blocks of life in two exoplanet atmospheres. Most extrasolar planets appear unsuitable for supporting life, but at least two lie within the “habitable zone” of their stars, where conditions are theoretically right for life to gain a foothold.

We are still a long way from detecting life on other worlds, but in the last 20 years, the number of known planets in our Universe has gone from the 8 in our own Solar System to almost 500. It's clear to everyone, including the Astro2010 decadal survey team, that the hunt for exoplanets is only just beginning, and the search for life is finally underway in earnest.

Explore Spitzer's latest findings at: <http://www.spitzer.caltech.edu>. Kids can dream about finding other Earths as they read “Lucy's Planet Hunt” at: <http://spaceplace.nasa.gov/en/kids/storybooks/#lucy>.

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

VISIT TO OBSERVATORY

As members of the society should already know by now (after receiving their newsletters) we have arranged a visit to Blackett Observatory, Marlborough, on Friday 17th September, 7.30pm.

The observatory is based on the grounds of Marlborough College in Wiltshire and houses a 10" refracting telescope which was built in 1860 by Thomas Cook of York. This telescope has a rich history which was recounted to the society by Marlborough College's Head of Physics Charles Barclay in a presentation during the 2008 season. Now we have a chance to visit the observatory in which the fully restored telescope now lives, and possibly even look through it if the weather is kind to us. Places are limited to 20 so if you are interested in attending this visit please let me know tonight or by email:

julianmole@hotmail.co.uk or telephone 01235 531507.

Individuals can make their own way to Marlborough or can liaise with others going to share a car journey (I will do my best to put those without transport in contact with others local to them, wherever possible).

I shall be providing travel details, including a map of how to get to the college and observatory once in Marlborough, in the next few days.

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.yahogroups.com>. You can also unsubscribe from the list here.

To post messages to the list, please send them to abingdonas@yahogroups.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 main meetings. You are most welcome to join us.

DATES FOR YOUR DIARY

20th Sept. 8pm Beginners' Meeting in the Perry Room.

4th – 6th Oct. (FCN) 8pm Observing Evening at Britwell Salome. Ring Ian on the night to confirm on 07817 687627.

11th Oct. 8pm Speaker meeting: Barry Kellett, (RAL), 'SMART-1 – Europe's First Mission to the Moon!'

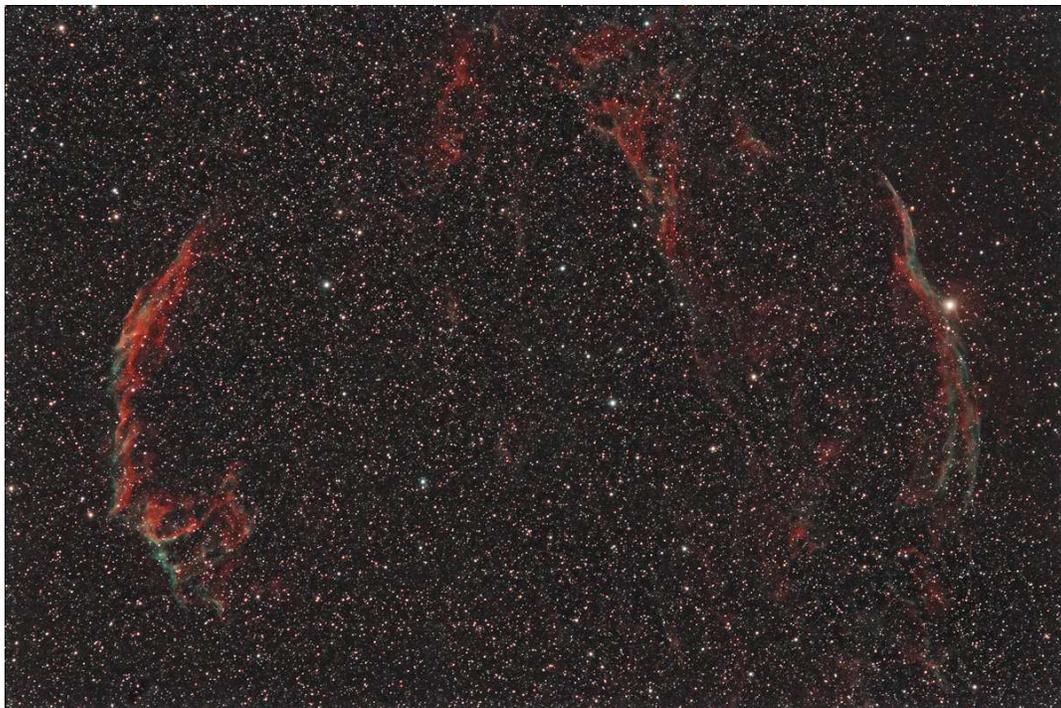
The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your stories & contributions. Please send any news, observations, photos, etc. to:

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

E-mail: AbAstro@ATRamsey.com

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DRAWING A VEIL, OR RATHER PHOTOGRAPHING ONE



Veil Nebula in Cygnus by committee member Julian Mole taken on 7th July with a DSLR camera.

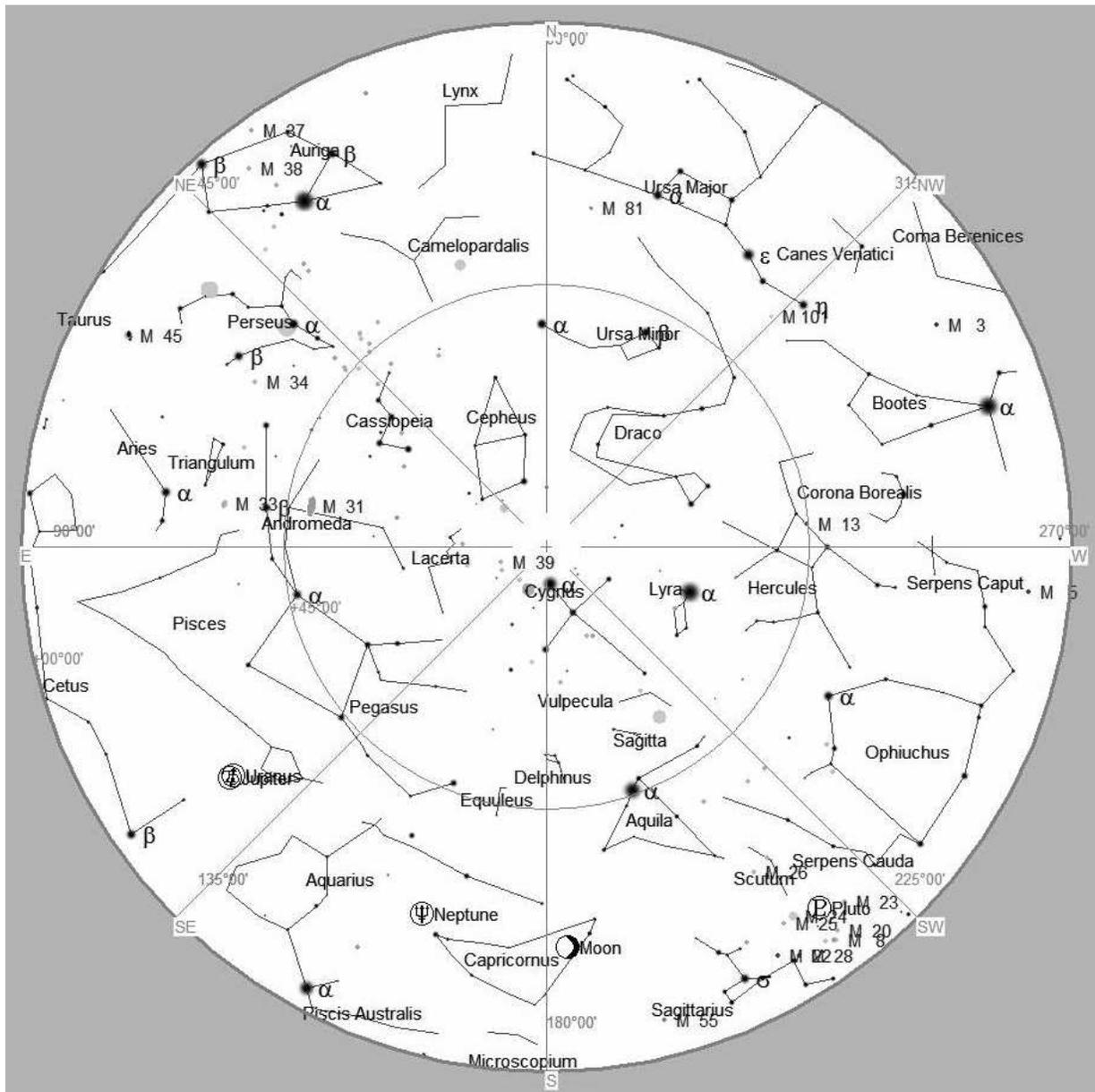
Image Details:

Modified Canon 40D, Astronomik CLS filter, 400mm lens at f/5.6; Exposures: 26 x 240 secs, f/5.6, ISO 1600.

Stacked in Deep Sky Stacker (Calibration files; 34 Darks, 31 Flats, 30 Flat Darks, 30 Bias).

Processing done in Photoshop and PixInsight LE.

STAR CHART



The Night Sky at 22:00pm (BST) next Saturday (18th September)

Cygnus and Lyra are overhead with the Plough of Ursa Major low in the north. The square of Pegasus is in the east – see if you can see our nearest neighbour galaxy, M31 in Andromeda – use the square to find it: top left star of the Square of Pegasus – two stars left, one and a half stars up and there it is, easily visible in binoculars, and with the naked eye if you are in a dark sky (i.e. not Abingdon!).

Jupiter is very bright in the south-east.