

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

12th October 2009

Jane Gregory (UCL),
'Sir Fred Hoyle'

Tonight Dr Jane Gregory will tell us all about the controversial astronomer Sir Fred Hoyle, who famously coined the phrase "the Big Bang Theory", not because he believed in it, but precisely because he didn't and he wanted to ridicule the idea. Hoyle challenged several other well-accepted theories too. Sometimes it is a good idea to really question people's basic assumptions as it is all too easy to be led astray by an elegant-looking theory which appears to solve many puzzles, but which is, in fact, just plain wrong!

THE NIGHT SKY THIS MONTH

by Bob Dryden

Mercury: You might just be able to see Mercury in the next few days, but it will become increasingly difficult as the planet moves closer to the Sun. It reaches superior conjunction on 5th November, after which it will reappear in the evening sky.

Venus: Venus is moving closer to the Sun but by virtue of its great brightness (-3.8mag) it is still very easy to find as it crosses Virgo low in the morning twilight. On October 12th Venus rises about 2 hours before the Sun, but that decreases to just 90 minutes by mid-November. As Venus is also approaching superior conjunction, the planet's disc appears to shrink slightly, and is almost at 'full' phase. On 13th October Venus and Saturn are just half a degree apart (which is equal to the width of the full Moon) and both will be visible in the same field of view of your telescope. The morning of 16th October has a nice crescent Moon, Venus, Saturn, and a rather difficult-to-see Mercury, all close together in the morning twilight which should be a very pretty sight.

Mars: Brightening now, Mars crosses quickly from Gemini into Cancer this session. It reaches magnitude +0.2 by mid November, at which time its diameter reaches 8.5", so you might just be able to start seeing some surface detail. In mid October Mars rises about 23.00UT, but that becomes 22.00UT by mid-November. If you have a telescope, point it at Mars and you will find that the disc is not circular at the moment. Due to the angle between Mars, Earth, and the Sun, we can only see about 80% of Mars disc so it shows a distinctly gibbous phase for the next few weeks. Between 30th October and 2nd November Mars crosses the open cluster M44. Also known as the Beehive, M44 is attractive in binoculars and the sight of Mars in the field of view just adds to the scene. If you need a guide to Mars, on 9th November the Moon is close by. Mars will be the bright 'star' near the Moon.

Jupiter: This is your last chance to view Jupiter as by mid-November the planet will be getting rather low in the sky at sunset. Still in Capricornus, shining at a stunning -2.5 mag, Jupiter is easy to find low in the south at sunset. If you do need a guide, then on 26th and 27th October a first quarter Moon will be nearby.

Saturn: Saturn is also in Virgo, but is much fainter than Venus at just +1.1 mag. The planet will still be an easy naked-eye object though, rising about 04.30UT in October, and 03.00UT in November. Normally a small telescope will easily show you the rings, but the Earth has just passed through the ring plane so they are much harder to see at the moment. Give it a try however, as they open to 3.5° by November which means you might just be able to see them.

Uranus + Neptune: Both these planets are becoming well placed for viewing, especially by November. Uranus is now near the Aquarius/Pisces border and gets about 35° above the southern horizon. Neptune is still in Capricornus which means it is a bit lower at just 25°. Both, however, are easy targets for binoculars if you have a decent finder chart.

Occultations: It is not often that a first magnitude star is occulted by the Moon, but we do have such a thing this session, on 21st October. Alpha Scorpius, otherwise known as Antares, is the star involved, and it goes behind the Moon at 14.55UT, and reappears at 16.09UT. Hang on, I hear you say, that's in the afternoon, it will still be daylight. Yes, unfortunately it will. If this event occurred at night, it would be an easy naked eye event, but as the Sun will still be up, you will need a telescope. This is a rare chance to see a star during the daytime. If you can find the Moon with a telescope, you will be able to see Antares as the Moon closes in on it. The hard part will be finding the Moon as it will only be a fairly thin crescent. [Ed. Be very careful not to accidentally find the Sun in your telescope, as if you do, you won't be seeing much more afterwards!]

Meteors: There are two meteor showers worth mentioning this session. The first is the Orionids which are active between 16th and 27th October. The maximum is on 20th when the hourly rate is about 20. While you may see one or two in the early evening, you need to wait until after midnight to see the shower at its best. The Moon is just 2 days past new on the 20th so as long as it's clear, there is nothing to stop you watching for the meteors.

The second active meteor shower is the Taurids. This one performs between October 20th and November 30th. While the maximum is 3rd November, the hourly rate is low at just 10 meteors per hour and the Moon is full on 2nd November, so meteor watches are not recommended at

this time. However, the Taurids produce quite slow, and often bright, meteors throughout the active period so keep your eyes open for them.

Asteroids: 3 Juno continues on its way across Aquarius, but fades from +8.0 mag. to +8.5 mag. by November which means it is becoming increasingly harder to see in binoculars.

Comets: 88P/Howell is still about in the evening sky, crossing Ophiuchus. It's at its brightest at the moment (+9.1 mag.), and slowly fades to +9.4 mag. by mid November so you will need a telescope for this one.

Another comet, 2007 Q3 Siding Springs, is slowly brightening now. This one is crossing Leo, and then Virgo in November, so it is a morning object. It reaches magnitude +10.3 by November so a medium size telescope is probably required to find this one.

MOON PHASES:

New: 18th Oct.; First Qtr: 26th Oct.; Full: 2nd Nov.; Last Qtr: 9th Nov.

LAST MONTH'S TALK

by Gwyneth Hueter

Grant Privett lives in Wiltshire but still associates himself with Shropshire AS, and his own title to his talk sounds much better than what we put in the programme: "Going deep, or, in pursuit of the stupidly dim". In other words, imaging deep deep-sky objects.

He is not ashamed of admitting that he likes the thrill of the chase – he chooses the deepest deep sky objects because (in his words) everyone's done the bright ones and someone can always do them better than you anyway.

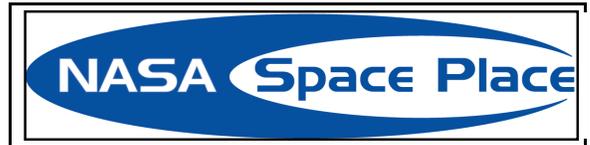
He then goes into how to do it:

- Keep your equipment simple – telescope easy to stabilize and align. You don't need fancy optics, as the dimmest objects don't need better than one quarter wavelength.
- Chair and small chart table. Lots of insulation layers and cavity soled shoes essential. [Ed. Anyone heard of cavity sole insulation?]
- Watch out for stray lighting. Keep 90 to 120 degrees away from the Moon and other lighting, which can get into the scope otherwise, sometimes through the focuser. (Even reflections off phone lines can intrude – he's getting really serious here!)
- Keep the optics clean and well-collimated.

He then discussed actual picture taking and stacking images in order to remove background noise. Pixel mapping removes the effects of dud pixels on your CCD screen. Grant recommends stacking at least around 100 images to get the best noise cancellation. He admits to stacking 1600 images once (sadly he didn't say on what).

He uses a 250mm reflector and regularly gets down to 20th mag. One of his shots was of dwarf galaxy Leo 1, whose brightest star is 18th mag. Another favourite of his is Gyulbudaghian's variable nebula, not just because he likes the name, but because you can see the nebula change from week to week. (I googled it and it belongs to the very young variable PV Cep.). He has also imaged dwarf planet Eris (UB313, 19th mag).

Just like a typical adrenaline junkie, he is never satisfied, and one day he hopes to get down to 23rd mag, because that was the limiting magnitude of the great Mount Palomar telescope.



SPITZER, THE SEQUEL

The Spitzer Space Telescope is getting a second chance at life.

The liquid helium "lifeblood" that flows through the telescope has finally run out, bringing Spitzer's primary mission to an end. But a new phase of this infrared telescope's exploration of the universe is just beginning.

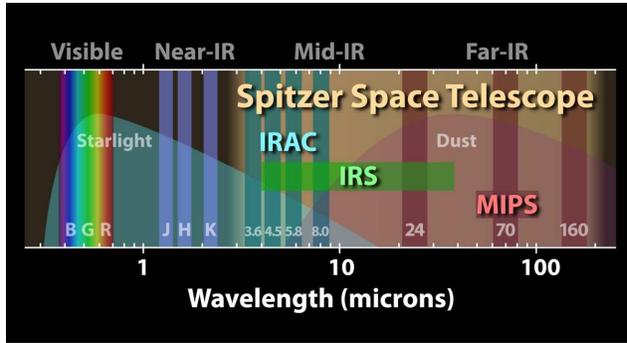
Even without liquid helium, which cooled the telescope to about 2 degrees above absolute zero (-271°C), Spitzer will continue to do important research—some of which couldn't easily be done during its primary mission. For example, scientists will use Spitzer's "second life" to explore the rate of expansion of the universe, study variable stars, and search for near-Earth asteroids that could pose a threat to our planet.

"We always knew that a 'warm phase' of the mission was a possibility, but it became ever more exciting scientifically as we started to plan for it seriously," says JPL's Michael Werner, Project Scientist for Spitzer. "Spitzer is just going on and on like the Energizer bunny."

Launched in August 2003 as the last of NASA's four Great Observatories, Spitzer specializes in observing infrared light, which is invisible to normal, optical telescopes.

That gives Spitzer the power to see relatively dark, cool objects such as planet-forming discs or nearby asteroids. These objects are too cold to emit light at visible wavelengths, but they're still warm enough to emit infrared light.

In fact, all warm objects "glow" with infrared light—even telescopes. That's why Spitzer had to be cooled with liquid helium to such a low temperature. Otherwise, it would be blinded by its own infrared glow.



The “warm mission” of the Spitzer Space Telescope will still be able to use two sensors in its Infrared Array Camera (IRAC) to continue its observations of the infrared universe.

As the helium expires, Spitzer will warm to about 30 degrees above absolute zero (-243°C). At that temperature, the telescope will begin emitting long-wavelength infrared light, but two of its short-wavelength sensors will still work perfectly.

And with more telescope time available for the remaining sensors, mission managers can more easily schedule new research proposals designed for those sensors. For example, scientists have recently realized how to use infrared observations to improve our measurements of the rate of expansion of the universe. And interest in tracking near-Earth objects has grown in recent years—a task for which Spitzer is well suited.

“Science has progressed, and people always have new ideas,” Werner says. In its second life, Spitzer will help turn those ideas into new discoveries.

For kids, The Space Place Web site has a fun typing game using Spitzer and infrared astronomy words. Check it out at spaceplace.nasa.gov/en/kids/spitzer/signs.

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

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 meeting. You are most welcome to join us.

DATES FOR YOUR DIARY

19th Oct. 8pm. Beginners' Meeting in the Perry Room.

26th – 28th Oct. (FCN*) 8pm Lunar observing evening at Abbey Meadow, Abingdon. Ring Ian on 07817 687627 for confirmation. [FCN = First clear night].

9th Nov. 8pm Talk by Kim Ward (RAL), 'Space Instruments'.

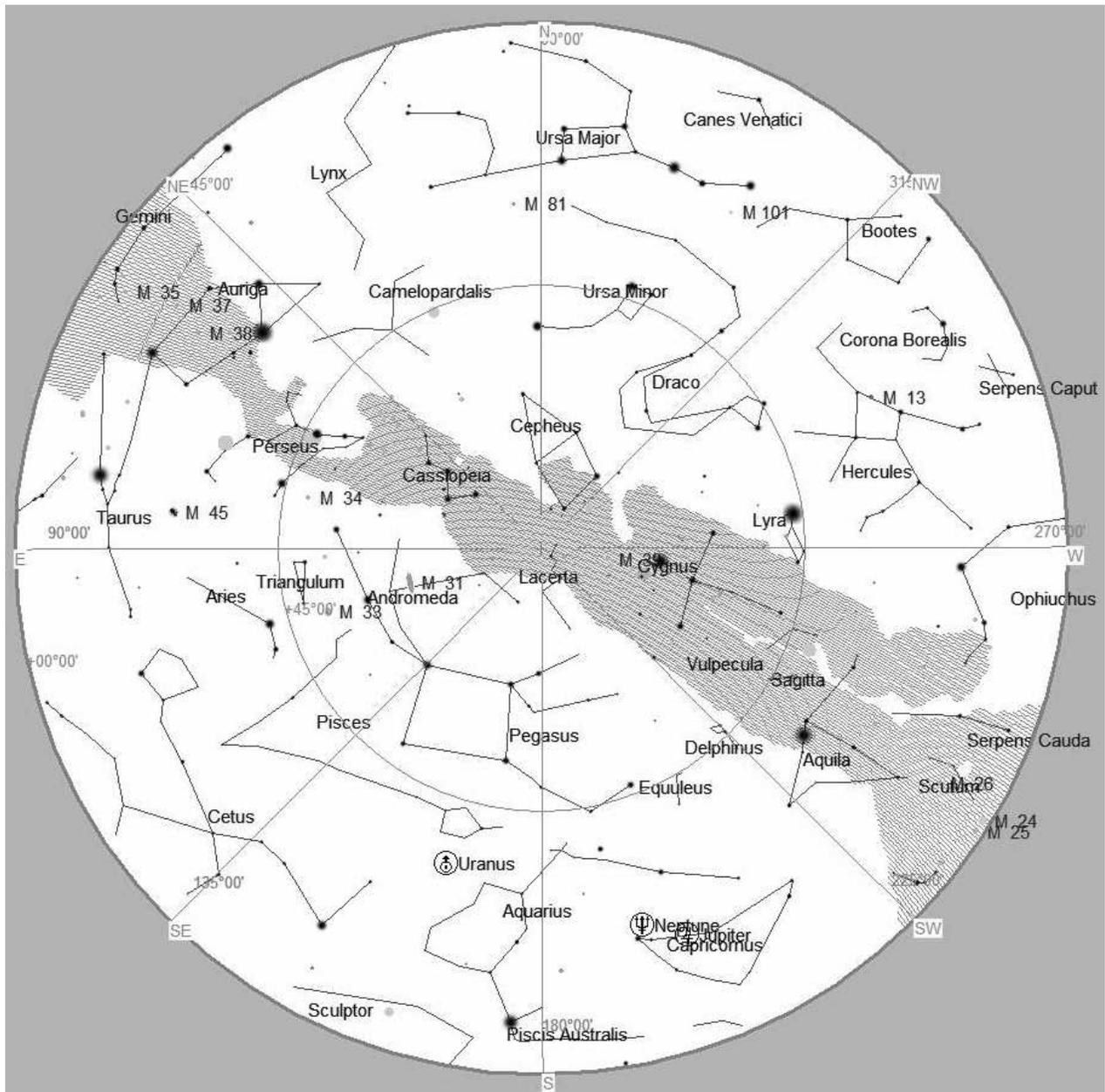
The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your stories & contributions. Please send any news, observations, photos, etc. to:

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

E-mail: AbAstro@ATRamsey.com

Phone: 01865 245339

STAR CHART



The Night Sky at 22:00pm (BST) next Saturday (17th October)

The Milky Way is right overhead at this time of the year. From a dark site it is a remarkable sight. The square of Pegasus is high in the south – use it to find our nearest galactic neighbour, M31, the Great Spiral in Andromeda. Jupiter is very low in the south-west, Neptune slightly higher and Uranus higher still and eastwards. You will need binoculars to see the latter two. Why not sweep the Milky Way from horizon to horizon using binoculars – you may find a deck chair useful for this to avoid cricking your neck.

Several of our members have started photographing objects using their digital SLRs, either coupled to their telescopes or using telephoto lenses and a driven mount. If you want advice on this, then join our mailing list (details in “Further Discussion”).