SPACEWATCH

the newsletter of the Abingdon Astronomical Society

10th March 2008

Charles Barclay (Blackett Observatory)
–
'The Barclay Equatorial (the oldest GoTo telescope in the world'

Spring is coming (despite the weather!); the nights are getting shorter; Mars is setting earlier; Jupiter is so low; Venus is too close to the Sun…. but don't worry – Saturn is high in the south and there is still plenty to see in the sky.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Sun: The Sun crosses the equator on March 20th at 05.48 UT, i.e. it is the spring equinox. This means that after this the days will be longer than the nights. While bad news for observing the stars, it means there is more time to observe the Sun. Not that there is much to see at the moment in visible light. The solar cycle is well and truly at a minimum with virtually no sunspots visible. There is activity however in hydrogen light with prominences and filaments appearing regularly.

Mercury + Venus: Both these planets are extremely difficult to see this session as they remain very, very low in the south-east at dawn. They are both close together, less than one degree apart on March 26th but they only rise about half an hour before the Sun so a very clear south eastern horizon will be needed to view the event. This is your last chance to see Venus this apparition as it will soon disappear behind the Sun.

Mars: Crossing Gemini, Mars is nice and high in the evening sky, albeit getting fainter, fading from magnitude +0.3 to +1.0. It is still easily visible though. As the disc is now very small it is going to be difficult to see any detail but at the end of March and into early April the planet reaches quadrature. This means that we cannot see the whole disc (because of the angles between the Earth, Sun, and Mars), instead it looks gibbous like a ¾ Moon. So the challenge this session is to see if you can actually see the Mars quadrature phase.

Jupiter: While bright, at magnitude 2.1, Jupiter remains low in Sagittarius. Additionally it means that the planet is only visible just before dawn so this is not the ideal time to be looking for it.

Saturn: This is the best planet this session as it is just past opposition and so visible all night long. It is not difficult to find as it is the brightest 'star' in the east as it goes dark. The other bright star (but not as bright as Saturn) just to its right is Regulus. The rings are not wide open at the moment but once the planet is well above the horizon you should still be able to see them in a small telescope. Another challenge this session is for you to look for Titan, the brightest of Saturn's satellites. Titan is mag. +8.3 which makes it easily visible in a small telescope or even steadily held binoculars. It is best to find a chart on the internet or a magazine that shows you where Titan is on any given date relative to Saturn so you know where to look. As a guide though, Titan will be immediately north of Saturn on 10th and 26th March and 11th April. Conversely, it will be immediately south of the planet on March 18th and April 3rd.

Occultations: On March 12th a crescent Moon crosses the northern part of the Pleiades from about 19.00 UT to 21.00 UT. The Moon misses most of the brighter Pleiades this time round but as the occultations occur on the dark limb of the Moon it will be easy to see the slightly fainter stars occulted. The Moon will be high in the west during all of this event making it easy to watch.

Comets: There are no bright comets visible this session but 46P/Wirtanen is still around. Although it fades from about mag. 9.7 to 11.5, it crosses Taurus and Auriga so it will be fairly high in the sky so worth trying for. This part of the sky is sprinkled with attractive star patterns and deep sky objects so the fields the comet crosses could well be very nice at times.

Algol: For those who might want to watch a star change brightness in real time, Algol is the one to try. It fades from mag.2.1 to 3.4 in about 4 hours, and then brightens again over the next four hours. The convenient minima this time are March 19th at 1.9UT, 21st at 22.7UT, April 8th at 3.6UT, 11th 0.4UT, and 13th 21.2UT.

MOON PHASES:

New: 7th Mar.; 1st Qtr: 14th Mar.; Full: 21st Mar.; Last Qtr: 29th Mar.; New: 6th Apr.

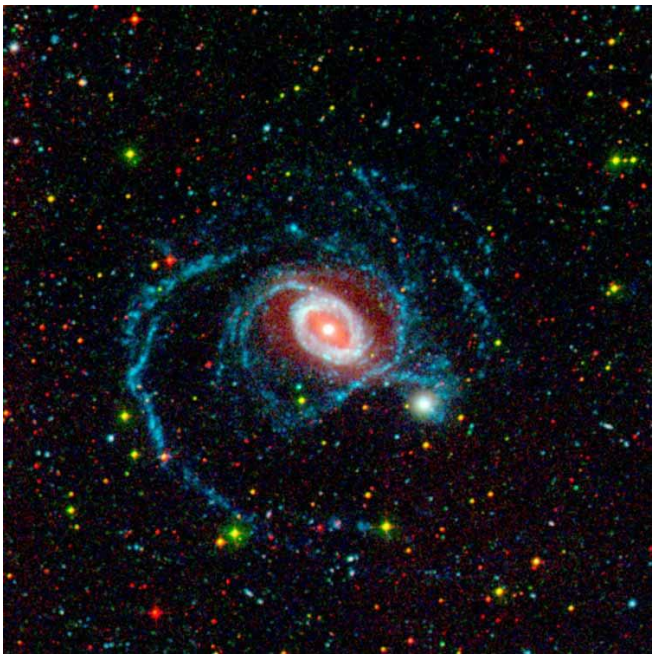
NASA Space Place

INVISIBLE SPIRAL ARMS

by Patrick L. Barry

At one time or another, we've all stared at beautiful images of spiral galaxies, daydreaming about the billions of stars and countless worlds they contain. What

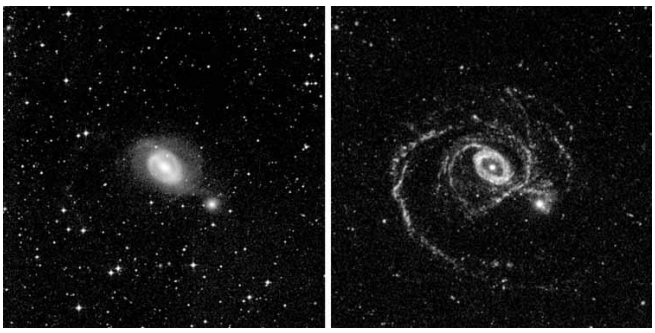
mysteries—and even life forms—must lurk within those vast disks?



In this image of galaxy NGC 1512, red represents its visible light appearance, the glow coming from older stars, while the bluish-white ring and the long, blue spiral arms show the galaxy as the Galaxy Evolution Explorer sees it in ultraviolet, tracing primarily younger stars. (Credit: NASA/JPL-Caltech/DSS/GALEX).

Now consider this: many of the galaxies you've seen are actually much larger than they appear. NASA's Galaxy Evolution Explorer, a space telescope that "sees" invisible, ultraviolet light, has revealed that roughly 20 percent of nearby galaxies have spiral arms that extend far beyond the galaxies' apparent edges. Some of these galaxies are more than three times larger than they appear in images taken by ordinary visible-light telescopes.

"Astronomers have been observing some of these galaxies for many, many years, and all that time, there was a whole side to these galaxies that they simply couldn't see," says Patrick Morrissey, an astronomer at Caltech in Pasadena, California, who collaborates at JPL.



Galaxy NGC 1512 is represented in both images. The visible light image on the left shows the glow of older stars, while the Galaxy Evolution Explorer ultraviolet image on the right shows the ring and long, spiral arms, tracing primarily younger stars. (Credit: NASA/JPL-Caltech/DSS/GALEX).

The extended arms of these galaxies are too dim in visible light for most telescopes to detect, but they emit a greater amount of UV light. Also, the cosmic background is much darker at UV wavelengths than it is for visible light. "Because the sky is essentially black in the UV, far-UV enables you to see these very faint arms around the outsides of galaxies," Morrissey explains.

These "invisible arms" are made of mostly young stars shining brightly at UV wavelengths. Why UV? Because the stars are so hot. Young stars burn their nuclear fuel with impetuous speed, making them hotter and bluer than older, cooler stars such as the sun. (Think of a candle: blue flames are hotter than red ones.) Ultraviolet is a sort of "ultra-blue" that reveals the youngest, hottest stars of all.

"That's the basic idea behind the Galaxy Evolution Explorer in the first place. By observing the UV glow of young stars, we can see where star formation is active," Morrissey says.

The discovery of these extended arms provides fresh clues for scientists about how some galaxies form and evolve, a hot question right now in astronomy. For example, a burst of star formation so far from the galaxies' denser centers may have started because of the gravity of neighboring galaxies that passed too close. But in many cases, the neighboring galaxies have not themselves sprouted extended arms, an observation that remains to be explained. The Galaxy Evolution Explorer reveals one mystery after another!

"How much else is out there that we don't know about?" Morrissey asks. "It makes you wonder."

Spread the wonder by seeing for yourself some of these UV images at www.galex.caltech.edu. Also, Chris Martin, principle scientist for Galaxy Evolution Explorer —or rather his cartoon alter-ego—gives kids a great introduction to ultraviolet astronomy at http://spaceplace.nasa.gov/en/kids/live#martin .

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

David Whitehouse, the BBC's science correspondent, as ever gave us a very entertaining presentation about the Sun.

The Sun is a fundamental building block of the universe, in other words an average star. Once you know about the Sun you know a lot about stars! And the British Isles seems to have led the way; what may be the first ever solar picture is from central Ireland, a possible representation of a solar eclipse (30 Nov, 3340 BC, engraved in rock). Then the first sunspot drawings

(viewed through smoke) seem to have been made in December 1128, by the medieval monk Richard of Worcester.

Coming to the present day, Dr Whitehouse could not avoid mentioning the sunspot 11-year cycle and the fluctuations in the number of sunspots over the centuries, so that the mini ice-age of the 17th and 18th centuries brought the Inuit to northern Scotland, looking for a home…. The Sun had very little sunspot activity in that time. Three hundred years later we are seeing much more sunspot activity and we are talking about global warming. Dr Whitehouse says our 11-year solar cycle peaks are much stronger at the moment. He entertained us with films showing the development of magnetic fields starting off with sunspots and finally getting so tangled up as to cause solar flares. When filmed in X-rays you see the magnetic fields in loops above the surface.

The Sun, being a gaseous body, does not have a surface which is homogeneous, in other words parts of the surface rotate at different speeds, hence the ever-varying magnetic fields.

After that Dr Whitehouse got into Science Fiction (speculation) mode. How do we cope when the Sun runs out of fuel and starts to expand and heat up? Could we move to Mars, then Europa, then Titan? What about sling-shotting an asteroid (the size of Texas!) past the Earth and sending us out into a much wider orbit? And to get the Science Fiction fans salivating even more you could repeat that action every 60,000 years and move our planet out further again.

Dr Whitehouse left us spellbound with visions of the planets being bounced around the solar system…

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.yahoogroups.com . You can also unsubscribe from the list here. To post messages to the list, please send them to abingdonas@yahoogroups.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

17th Mar. 8pm. Beginners' Meeting in the Perry Room.

7th – 9th Apr. (First clear night) Observing Evening at Abbey Meadow, Abingdon. Phone Ian on 01491 824266 for details.

14th Apr. 8pm Speaker meeting: Dr Laurence Newell (BAA Radio Astronomy Group) – "An introduction to radio astronomy in the BAA".

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

A LITTLE EXTRA…

I'm sorry that last month's Spacewatch didn't get printed – it is available on the web at:

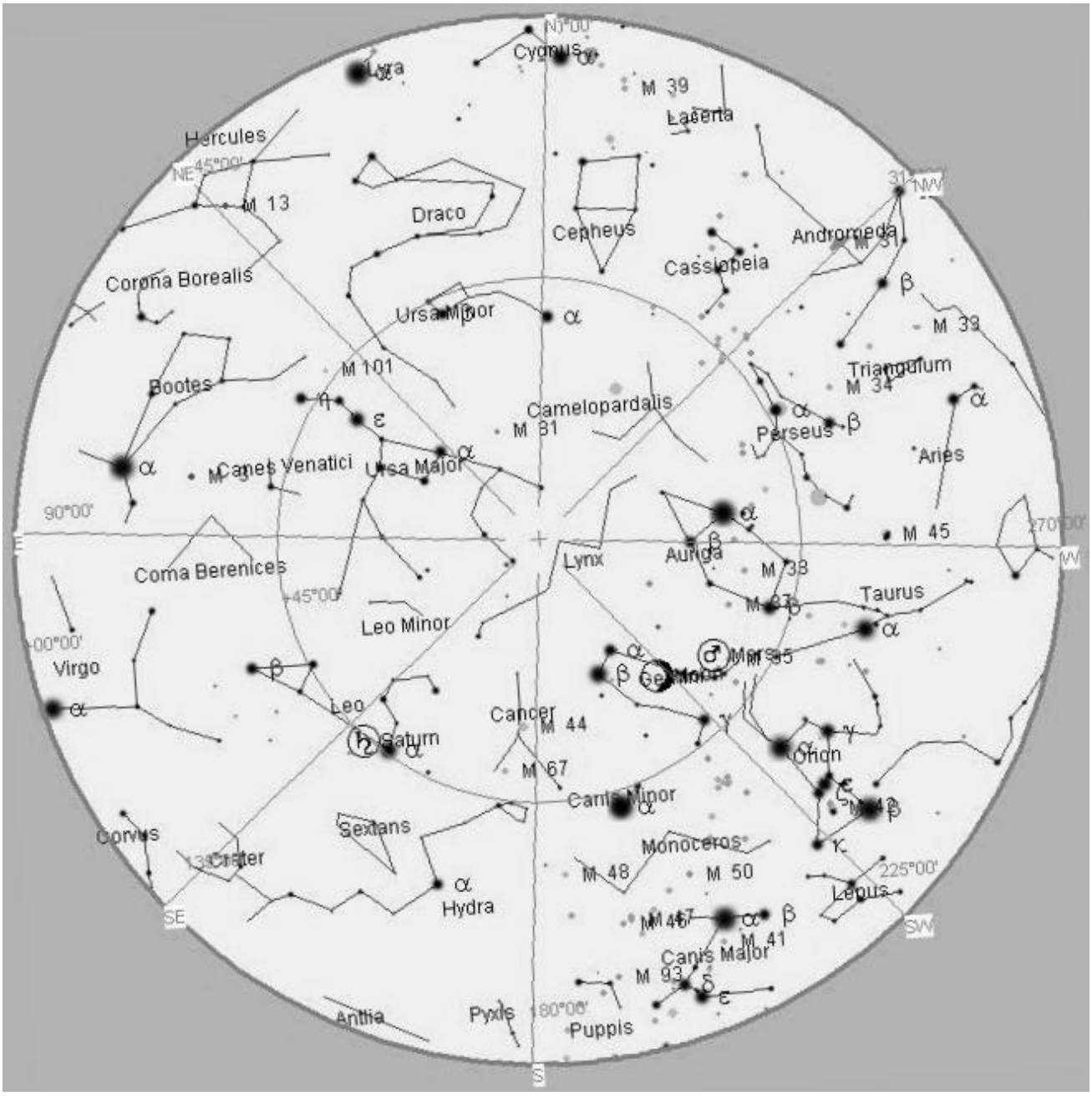
www.abingdonastro.org.uk/pdfs/SW2008Feb.pdf .

But if you don't have access to the internet and want a printed copy, please ask me for one.

Anyway, here again is Cliff's picture of the Orion Nebula, as I know he would like to see his work in print!

The Horsehead Nebula in Orion by Cliff Jones, Abingdon Astronomical Society *- 80mm TMB at f/6, SXV H9 CCD, L 35x180s, RGB 35x180s*

STAR CHART



The Night Sky at 9pm (GMT) next Saturday (15th March)

Mars is still visible, though its disk is much smaller now. Saturn is bright and further east in Leo. Ursa Major is high above, and there is a crescent Moon in Gemini.