

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

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Dr Andrew Ball –
Open University

“Landing on a Comet”

Well, what wonderful photographs we got from the European Space Agency's Huygens lander on Saturn's satellite, Titan, which appears in some respects to be remarkably Earth-like, while in others, it is the exact opposite.

We've had a comet (Machholz) around now since the beginning of the year. Those of you who haven't seen it have missed the best of it by far. You will struggle to find it now in Abingdon's light-polluted skies, though from a dark site you will still see it easily in binoculars.

We have a new observing site in Marcham, which we shall be trying out for the first time in early March. Do come along if you can.

THE NIGHT SKY THIS MONTH

by Bob Dryden

The Planets:

There are two highlights this session, and the first one is **Mercury**. Mercury passes through superior conjunction with the Sun on February 14th before moving into the evening sky. It will probably be visible from about 1st or 2nd of March as it moves through Aquarius and Pisces. Greatest Eastern elongation (ie: its furthest point east of the Sun) is on 12th March at 18 degrees. It will shine at -0.5 mag on this date and should be easily visible once it goes dark, low in the south west. As there are no bright stars in this part of the sky at this time, scan low down with binoculars and the lone 'star' you see will be Mercury. If you need a guide, the Moon will be 3.5 degrees south of Mercury on the evening of March 11th. After March 12th, the planet moves rapidly back towards the Sun and will be lost to sight by about the 20th.

Venus is now getting too close to the Sun to see, while Mars is low in the south east at dawn in Sagittarius and quite difficult to find. Mars will actually be less than half a degree from the globular cluster M22 on 19th February if you fancy a challenge with binoculars.

Saturn is on view all evening, still just below Castor and Pollux in Gemini, while **Jupiter** is slowly rising earlier and earlier each night. At the moment Jupiter still doesn't rise much before midnight, but is a magnificent sight once

well above the horizon. On 19th February, Jupiter is just 14 arc minutes south of the bright star Theta Virgo which will make an interesting sight in binoculars or telescope.

Asteroids: Last month there was the asteroid Flora on view, this session it is 2 Pallas. Pallas is approaching opposition in Virgo and it brightens from mag 7.7 to 7.2 so it is easy to see in a pair of binoculars. On February 22nd it is 23 arc minutes from the bright star Gamma Virgo if you need a pointer to find it.

The Moon: Don't forget to give the Moon a look whenever you can. Many people tend to forget, or ignore, Earth's satellite but some of the best astronomical 'wow' moments are when people look through a telescope at the Moon. Added interest occurs on March 14th at 21.32 UT as the Moon occults Delta Aries. This will happen at a reasonable altitude (17 degrees) in the west, but as the star is mag 4.5, you may need a small telescope to see it (or well mounted binoculars).

Comets: Last month we talked about 4 comets, and these 4 are still around this session. Two of them, 62P/Tsuchinshan (in Coma Berinices) and 69p/Taylor (in Lynx) are fading and should be around mag 11. Comet C/2003 T4 Linear however is brightening and could reach about mag 6.5/7.0 by the middle of March so hopefully it will be bright enough to see in binoculars. You will have to get up in the morning though as it is moving through Sagitta, Delphinus, and Equuleus. The fourth comet to mention is actually our second highlight of the month I mentioned at the start. Comet C/2004 Q2 Machholz has put on a good show so far (even if it didn't have a spectacular tail). Although it is fading now from about mag 5 to 7, you should still be able to find it quite easily in binoculars and the good news is it is well up in the sky for most of the night. It is moving through Cassiopeia and Cepheus and by early March it will be fairly close to Polaris, the Pole star.

MOON PHASES:

Last Qtr: 2nd Feb.; New: 8th Feb.; First Qtr: 16th Feb.; Full: 24th Feb.; Last Qtr: 3rd Mar, New: 10th Mar.

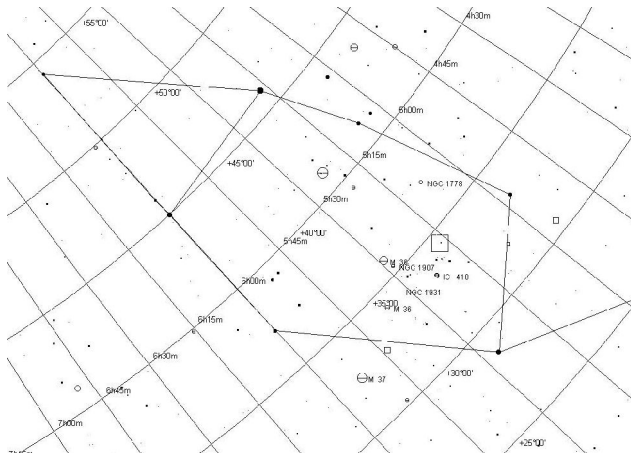
THIS MONTH'S DEEP SKY OBJECTS

Charioteering the skies

by Paul Warren

This month I'm going to take you on a little tour of the constellation of Auriga. This constellation is famous for its three Messier clusters, M36, M37 and M38, but there's more to Auriga than these offerings.

All of the objects are marked on the finder chart. However, be warned that NGC1893 is marked as IC410. This is due to the software used to generate the chart and also that NGC1893 is embedded with IC410. However, a 12 inch scope and dark skies are required to see IC410!



All of my observations in the following paragraphs were made with a Celestron C8 SCT. Unless indicated otherwise, I think that all of the DSOs should be within the grasp of a 5 inch scope. Also, unless indicated to the contrary, all of the DSOs in this section are open clusters (which is hardly surprising as the Milky Way streams through this constellation).

We start off with NGC 1778, which is a faintish cluster. However, it is reasonably well detached (i.e. its boundaries are fairly obvious). It looked to me to be oblong in shape and I counted around 30 stars in it.

Next on the list is NGC 1893 (marked as IC 410 on the chart). This is a fairly bright cluster with about 50 stars visible. I hasten to add that there was no sign whatsoever of the nebulosity from IC 410!

Now we come to one of the giants in Auriga, namely M38. This is a big, bright and splashy cluster. I could see several dark areas (or gaps) in the cluster, and counted around 80 stars in it. Its shape made me think of a spider about to pounce on its prey, just to its south and in the same field of view, namely...

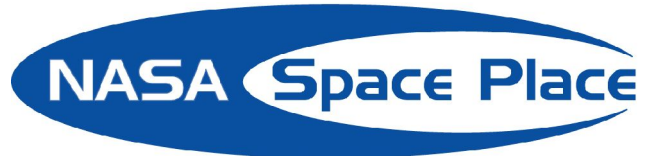
...NGC 1907. This cluster is small, compact and not bright. Its size and compactness make it look almost like a globular cluster. I counted about 15 stars in it, but there was an area where there were unresolved stars (thus giving its globular-like appearance). It's only a small cluster, and yet it held my attention for a surprisingly long time.

Now to get a break from the open clusters, we stumble upon NGC 1931. This is a small emission and reflection nebula. I saw a small blob, a bit like an unfocussed star. It forms a near square with three nearby stars.

Now we come to one of the other showpieces of Auriga, namely M36. This is an obvious cluster and well detached. I counted about 70 stars in it, and at first glance, its shape reminded me of the Star of David shape.

Finally, we come to the richest cluster in Auriga, namely M37. This is a very rich cluster, there being too many stars for me to count. However I estimated that I could see 150+ stars. There is a bright orange star just off centre, and there are some nice dark lanes to be seen too.

There is still more to be seen in Auriga than what I have described here, but I hope that this will whet your appetite to go out and explore it for yourselves.



STARDUST UP CLOSE

by Patrick L. Barry and Dr. Tony Phillips

Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are left-over bits from the "construction" of our solar system.

Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth.

But comets have long been frustratingly out of reach -- until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet ... and the most surprising.

Scientists had thought that comets were basically "rubble piles" of ice and dust -- leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris. To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought:

"Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called 'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust.

Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the comet is made: how strong or dense or brittle it is, for example.

Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.

It's heading our way: ancient, hard-won, possibly surprising and definitely precious dust from the construction zone.

Find out more about the Stardust mission at stardust.jpl.nasa.gov. Kids can read about comets, play the "Tails of Wonder" game about comets, and hear a rhyming story about aerogel at <http://spaceplace.nasa.gov/en/kids/stardust/>.



The Stardust spacecraft used a grid holding aerogel to capture dust particles from comet Wild 2. In this test, high velocity dust particles are stopped unharmed at the end of cone shaped tracks in a sample of aerogel

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

NOTICES

New CfDS Local Co-ordinator – Oxfordshire

David Birkett has kindly agreed to take over from Deborah Hambly as the Oxfordshire local representative for the Campaign for Dark Skies, the BAA initiative to reduce the amount of light pollution in the skies of Britain. Please contact David at this meeting or contact her over the next month.

Observing site

We would still like to find a suitable permanent observing site. It needs to have car parking, be dry, easily accessible, and fairly dark. Obviously, the last requirement is relative as it's difficult to find a truly dark site anymore. We would be willing to pay an annual rent for the use of a site, but we are not rich so the sum would have to be moderate. Does anyone know of an organisation/farm/charity, etc. with some bit of land/car park/similar, that they don't use at night who might be willing to let us go there? Ideally, we would like to stay close to Abingdon but our option may not be that great. Please note, we do NOT want to build an observatory, or anything else for that matter. We just want somewhere to set up the telescopes, as we do on an observing evening at the moment.

Observing Evenings Organiser

We are also asking for a volunteer to take over the organising of the Observing Evenings. The new organiser would take over from this coming September as the present programme has already been arranged. Whoever takes over does not have to keep to the present arrangements of 'the first clear night' etc, or just one observing week a month. He/she can do as they like in this regard, and even organise the events at the actual evening if they want to. We are really going to need a volunteer because without one there will be no observing sessions next season at all as Bob definitely cannot continue in this role. So, if you want to have a chat with Bob about the job, even if you are only considering the position, feel free to phone or email, or see him at one of the meetings.

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 view the messages on the web go to:

<http://www.smartgroups.com/groups/abastro> .

To subscribe to the list either go to this web page and click on "Join the Group" or send an email to abastro-subscribe@smartgroups.com . You will then receive all e-mails sent to the list. To post e-mails on the list: send an email to abastro@smartgroups.com . To unsubscribe: send an email to abastro-unsubscribe@smartgroups.com

Don't forget the Society's web site:

www.abingdonastro.org.uk

Our webmaster, Chris Warwick 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

21st Feb: 8pm. Beginners' Meeting in the Perry Room.

7th – 9th March (FCN*): 8pm Observing Evening at a new site in Marcham. See Bob tonight for a map. [FCN = 'first clear night' – ring Bob on 01491 201620 to confirm before setting out.]

14th Mar.: 8pm. Speaker Meeting: Dr Sarah Dunkin (RAL), "ESA Mars Project, Aurora".

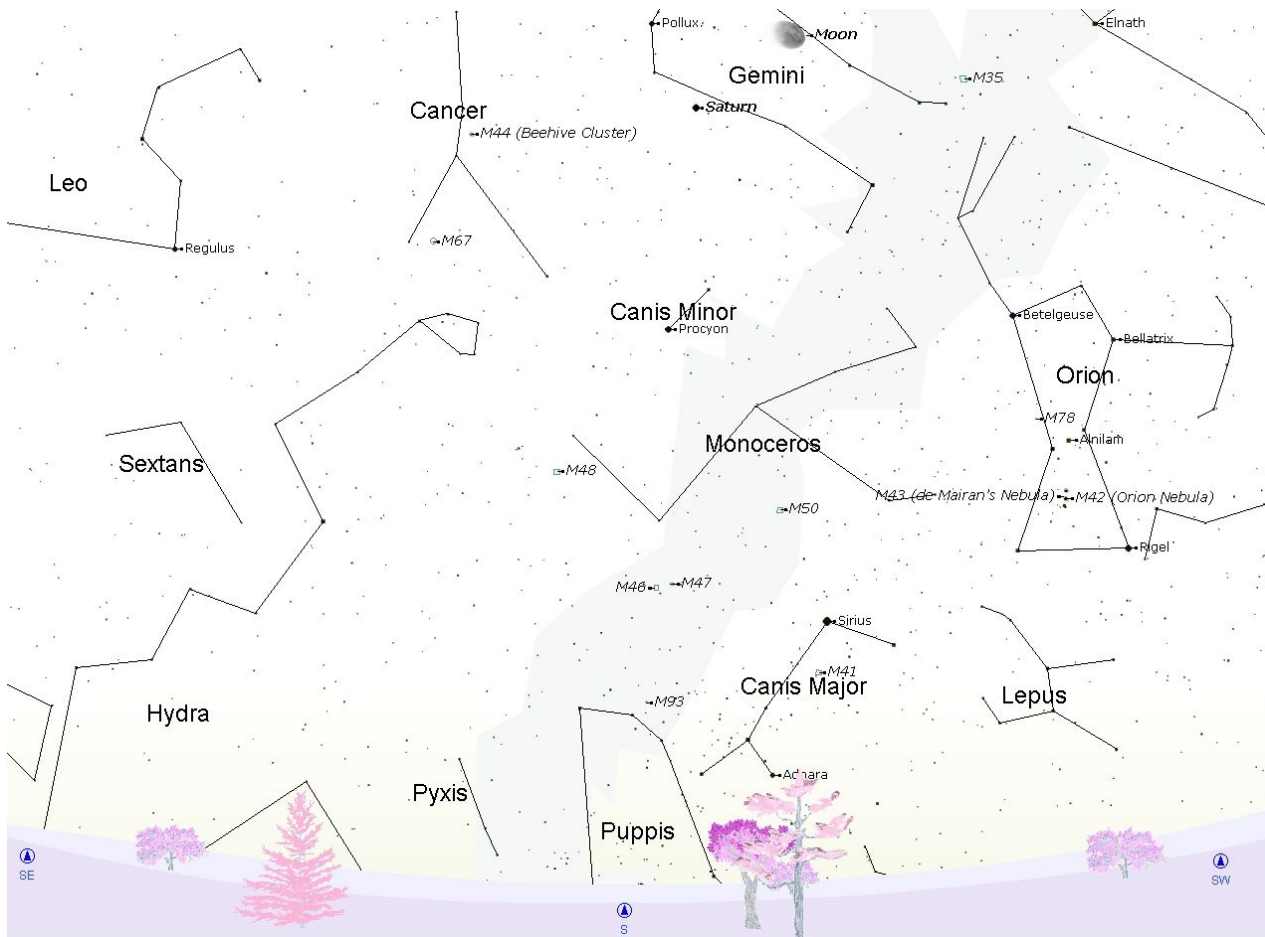
The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your help and contributions. Please send any news, observations, photos, etc. to:

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STAR CHART

View looking south at 10pm next Saturday (19th February).



Stretching upwards from the southern horizon is the Milky Way. Sweep around this region with binoculars or a small telescope, and you will see hundreds of stars. This is our Galaxy, edge on. From the northern hemisphere, we are looking out towards the edge of the Galaxy. From the southern hemisphere, one looks towards the centre of our Galaxy, which appears much brighter, though the centre itself is much dimmed by dust clouds. That's one reason why the skies in the southern hemisphere appear more spectacular than those in the northern. The main reason, however, is the lack of light pollution, the scourge of every British astronomer, along with clouds and neighbours' security lights.

In this view Orion is in the south west. Look for Saturn in Gemini, to the bottom right of Castor and Pollux. Can you see which satellite is Titan? Jupiter rises in the east about 11.30pm.