

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

10th May 2010

Annual General Meeting

followed by a talk by Bob Dryden
on his second trip to New Zealand

Tonight is our Annual General Meeting, which is your chance to influence how your society is run. Afterwards former chairman Bob Dryden will give us a talk about his second trip to New Zealand and another glimpse of the southern skies.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Mercury: Mercury is now in the morning sky and reaches greatest elongation on 26th May when it will be 25° from the Sun. Unfortunately, this is a very poor apparition and you will have great difficulty finding the planet in the morning twilight. At best, Mercury will be just 5° above the horizon at sunrise.

Venus: At a very bright magnitude -3.9, it is hard to miss Venus hanging in the evening twilight. Solar elongation increases from 28° to 37°, and Venus reaches peak altitude at the end of May when it will be about 23° high at sunset. The planet is approaching Earth, so increases in apparent size from 11.5" to 13.7", while the phase decreases from 0.8% to 0.7%. There is a nice photo opportunity on the evening of 16th May when the 2.9 day old crescent Moon will be just to the left of Venus.

Mars: Moving from Cancer to Leo during this session, Mars continues to fade, reaching mag. +1.2 by June. Telescopically, Mars is a disappointment now as it is barely 6" in apparent size making it very difficult to see any surface detail. Equally, Mars is presently at gibbous phase, but it is difficult to actually see because of Mars's small size. The planet is close to the bright star Regulus in Leo between 5th and 10th June. They are closest together on the 7th and 8th. During June, Mars, Saturn, and Venus are in a straight line across the west, albeit, a very long line.

Saturn: Currently residing in Virgo, Saturn is well placed during this session. It is bright enough to be easily found shining at about magnitude +1.0. The rings are still at an acute angle for viewing, increasing slightly from +1.7° to 1.8°, but the good news is they continue to open for the rest of the year.

Jupiter: Visible in the morning sky, Jupiter continues to move away from the Sun. At sunrise in June, Jupiter is about 25° above the horizon. Between 31st May and 18th June, Jupiter and Uranus are less than 1° apart. They are closest on the 8th June when they are about 0.5° apart which means they will both be in the same eyepiece field of view. This is quite a

rare occurrence and so it is worth getting out of bed early for. You can have a practice run on the morning of 6th June when there is another photo opportunity as the crescent Moon will be just above Jupiter and Uranus.

Uranus + Neptune: Neptune is the better placed of these two planets at the moment. On the Capricornus/Aquarius border, it will be in the south at about 25° high at sunrise in June.

Uranus is in Pisces, much lower at sunrise at the moment making it a bit harder to find – except the bright planet Jupiter is close by giving you a nice easy guide.

Comets: There are three comets above 10th magnitude this session.

The first is *81P/Wild*, crossing Virgo (just left of Spica). It is fading now, going from mag. +9.3 to mag. +10.3.

The second comet is *C/2009 K5 McNaught*. This one is also fading, mag. +9.9 to mag. +10.6 as it crosses from Cepheus into Camelopardalis.

The good news is that the third comet is getting brighter. *Comet C/2009 R1 McNaught* goes from mag. +10.2 to mag. +6.1 by mid-June. It is moving quite rapidly, crossing Pegasus, Andromeda and Perseus, which of course means it is in the morning sky.

Dwarf planet: We don't usually have this category, but the dwarf planet *1 Ceres* is at opposition on 18th June when it will be in Sagittarius, just above the Teapot asterism. Shining at mag. +7.2 at opposition, it will be an easy binocular object.

Asteroids: *2 Pallas* fades to mag. +9.2 by June, crossing Corona Borealis and Boötes.

4 Vesta is in Leo, and is also fading, reaching mag. +7.8 by June. This is still bright enough to be found in binoculars though.

If we are including asteroids around 9th magnitude, then *15 Eunomia* needs a mention. Although at mag. +9.8 in May, it reaches mag. +9.2 in June (mag. +9.0 at the end of June). The difficulty is that Eunomia is in Sagittarius so will be very low down.

12 Victoria is doing the opposite to Eunomia, in that it is fading, decreasing from mag. +9.2 to mag. +9.8 by June. Opposition is on 11th May, and as Victoria is in Libra, it will quickly fall towards the twilight so this session is your last chance this apparition to see it.

MOON PHASES:

New: 14th May; First Qtr: 20th May; Full: 27th May; Last Qtr: 4th June.



A ROCK HOUND IS BORN

by Patrick L. Barry and Dr. Tony Phillips

It's tough to be a geologist when you can't tell one rock from another. Is that a meteorite or a chunk of lava? A river rock or an impact fragment? Houston, we have a problem!

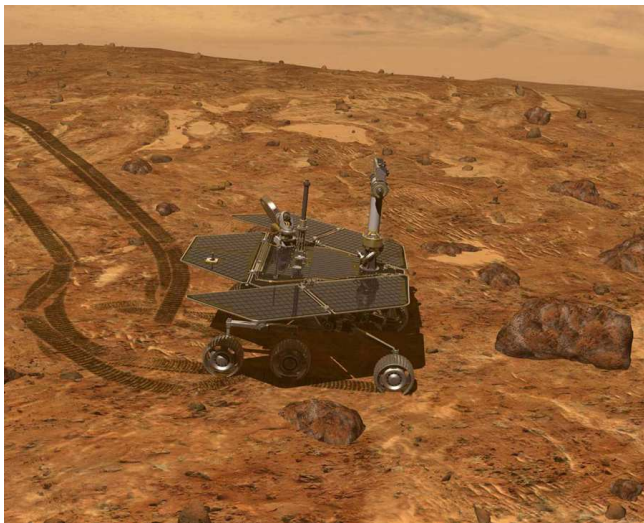
It's a problem Spirit and Opportunity have been dealing with for the past six years. The two rovers are on a mission to explore the geology of the Red Planet, yet for the longest time they couldn't recognize interesting rocks without help from humans back on Earth.

Fortunately, it is possible to teach old rovers new tricks. All you have to do is change their programming—and that's just what NASA has done.

"During the winter, we uploaded new software to Opportunity," says Tara Estlin, a rover driver, senior member of JPL's Artificial Intelligence Group, and the lead developer of AEGIS, short for Autonomous Exploration for Gathering Increased Science. "AEGIS allows the rover to make some decisions on its own."

Estlin and her team have been working for several years to develop and upload increasingly sophisticated software to the rovers. As a result, the twins have learned to avoid obstacles, identify dust devils, and calculate the distance to reach their arms to a rock.

With the latest upgrade, a rock hound is born.



Opportunity spots a rock with its NavCam that its AEGIS software says meets all the criteria for further investigation.

Now, Opportunity's computer can examine images that the rover takes using its wide-angle navigation camera (NavCam) and pick out rocks with interesting colors or shapes. It can then center its narrower-angle panoramic camera (PanCam) on targets of interest for close-up shots through various color filters. All this happens without human intervention.

The system was recently put to the test; Opportunity performed splendidly.

At the end of a drive on March 4th, the rover settled in for a bit of rock hunting. Opportunity surveyed the landscape and decided that one particular rock, out of more than 50 in the NavCam photo, best met criteria that researchers had set for a target of interest: large and dark.

"It found exactly the target we would want it to find," Estlin says. "It appears to be one of the rocks tossed outward onto the surface when an impact dug a nearby crater."

The new software doesn't make humans obsolete. On the contrary, humans are very much "in the loop," setting criteria for what's interesting and evaluating Opportunity's discoveries. The main effect of the new software is to strengthen the rover-human partnership and boost their combined exploring prowess.

Mindful that Opportunity was only supposed to last about six months after it landed in 2004, Estlin says "it is amazing to see Opportunity performing a brand new autonomous activity six years later."

What will the rock hounds of Mars be up to six years from now? Stay tuned for future uploads!

Learn more about how the AEGIS software works at <http://scienceandtechnology.jpl.nasa.gov/newsandevents/newsdetails/?NewsID=677>. If you work with middle- or high-school kids, you'll find a fun way to explore another kind of robot software—the kind that enables "fuzzy thinking"—at: http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml#fuzzy.

This article was provided courtesy of 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

April's talk was given by Mark Radice, who joined AAS in the 1990's when he first became interested in Astronomy. He now does his observing from Amesbury. 'Deep Sky Astronomy' was a real 'grass-roots' talk and how refreshing, too! It really brought back the buzz of when I first got into Astronomy just over 30 years ago.

There are always new tips and reminders to make life as an observer easier. (Hoodies, for example, to keep your head warm)

Mark started with the simplest form of observing - using the naked eye to note star colours and follow variable stars. Then he moved on to simple observing aids, starting with binoculars to look at easy double stars and clusters. Oh yes, I remember when he mentioned Kemble's Cascade in Camelopardalis and the open cluster NGC 1502, and my personal 'wow' when I saw NGC 1502 with averted vision in a small telescope. (Do it – you'll see what I mean.)

He then went on to talk about using a larger telescope (he uses an 8 and a half inch Dobsonian) and planning an observing session. Useful tips included making plans and then checking on sky conditions by looking at the stars of Ursa Minor and being prepared to change your plans if necessary. And forget the faint fuzzies in the summer, as the sky never gets dark enough.

He steered away from any hi-tech stuff apart from using a UHC filter for nebulae. He even avoided photography and stuck to making sketches instead.

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

To post messages to the list, please send them to abingdonas@yahooogroups.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

24th May 8pm Beginners' Meeting in the Perry Room.

14th June 8pm Speaker meeting: Dr Jonathan Horner (Open University) "Jupiter – Friend or Foe?"

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

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

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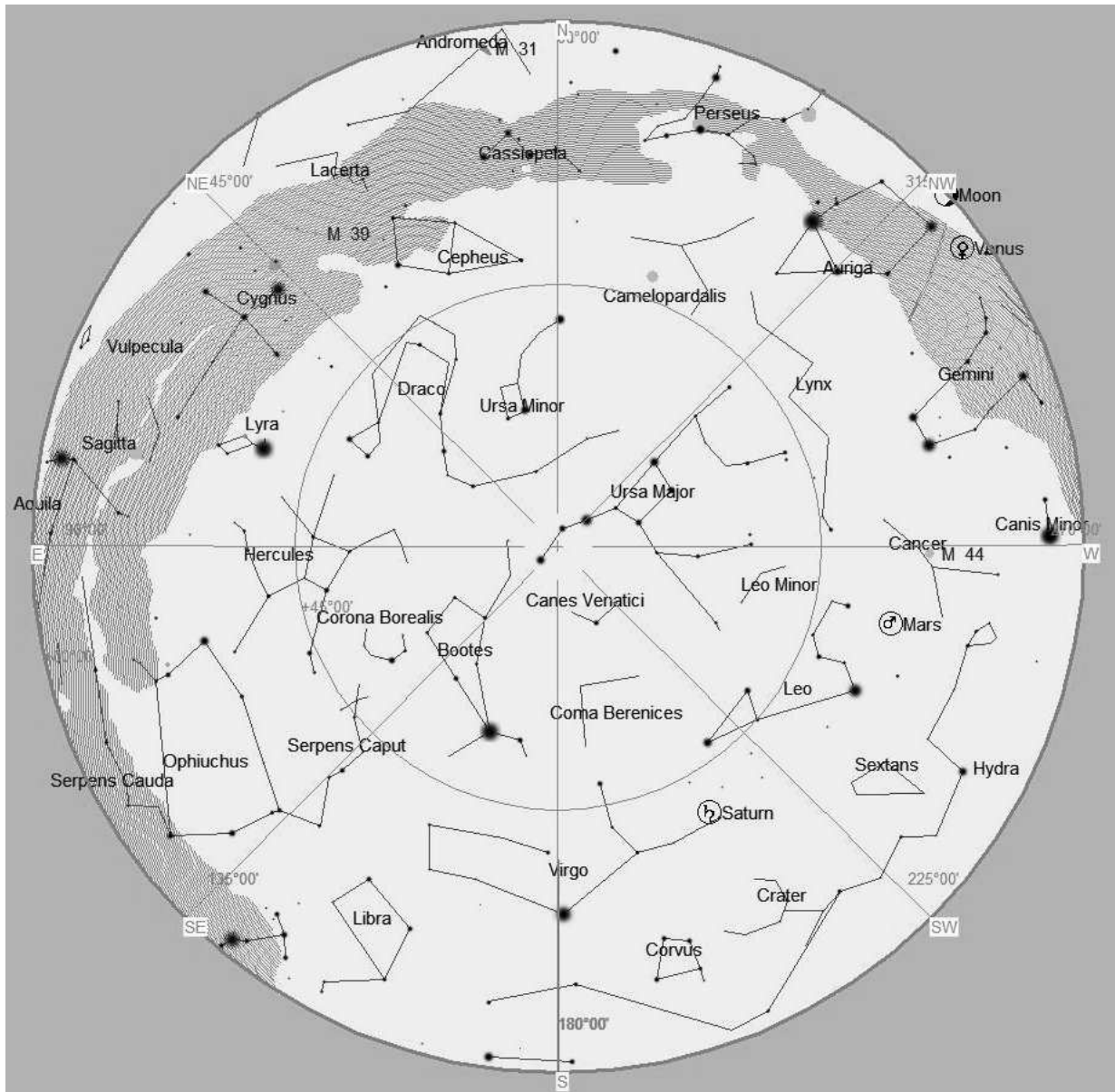
A PHOTO OF COMET MCNAUGHT (C/2009 K5) BY JULIAN MOLE

Julian used a Canon 40D with a 560mm focal length lens, and stacked 14 x 150-second exposures at f/8 using a speed of ISO 1600. The stacking was done using Deep Sky Stacker in 'Comet' mode (the images being aligned and stacked on comet's nucleus – hence the trailing stars due to the comet's relative motion across them). 34 dark frames were used.



Julian would like to hear from anyone who has seen this comet visually.

STAR CHART



The Night Sky at 23:00pm (BST) next Saturday (15th May)

You'll have to stay up late if you want to see any stars at this time of the year. Mars and Saturn are still visible, Mars in the south-west between Cancer and Leo, and Saturn in Virgo. Due south is the red star Spica in Virgo. Above and slightly to the left is Arcturus, the brightest star in the celestial northern hemisphere. Right overhead is the Plough of Ursa Major – its tail points to Arcturus. The Galaxy is low down in the north at this time of year. Look out for the 'summer triangle' of bright stars: Vega (in Lyra), Deneb (in Cygnus) and Altair (in Aquila). They will climb higher as summer arrives until they are almost overhead in the evenings.

Believe it or not, Venus is still visible, just above the horizon, even at 11pm, quickly following the thin crescent Moon down below the horizon.