

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

8th May 2006

AGM, followed by:

Owen Brazell: "American Star Parties"

So who has managed to see the Wacky Comet? Comet Schwassmann Wachmann 73P passed only 7.3 million miles away from the Earth at its closest approach on Thursday. The comet has now split up into several fragments, at least two of which are visible in a small telescope or binoculars.

Tonight is our Annual General Meeting - your chance to say how you want your society to be run. After the formalities, Owen will be giving a talk on American Star Parties.

THE NIGHT SKY THIS MONTH

by Bob Dryden

Comets: This session probably the most interesting occurrence will be the passage of comet 73P Schwassmann-Wachmann. It was always going to be an event worth looking out for as the comet was coming so close to Earth, but it has become a spectacular event as the comet has broken into so many pieces.

The main comet fragment, fragment C, will be closest to us on 12th May but how bright will it be? This is now virtually impossible to predict because of the break up. However, by early May it was already on the verge of naked eye visibility so hopes are that it will be an easy binocular object at least. Being so close to us, the comet will appear to race across the sky crossing Cygnus, Vulpecula, Pegasus, Pisces and Cetus in just three weeks.

The other fragments are following behind at various distances. Most are too faint for most observers but some are definitely visible in small telescopes. It is very rare to get the chance to see several 'comets' in the sky at one time so don't waste observing opportunities.

Keep an eye on the internet for breaking news about the breaking comet. Two sites you might want to try are www.spaceweather.com and ww.skyhounds.com which are carrying news and pictures.

The Planets:

Mercury: Invisible at the beginning of this session, Mercury moves through superior conjunction on 18th May and in to the evening sky. This will be a fairly good apparition and by mid June the planet will be crossing Gemini, low in the west after sunset.

Venus: Still very low in the morning sky, Venus is so bright that it is not too difficult to see just before dawn towards the south east. Elongation (the distance between the planet and the Sun) is actually decreasing now from 43 degrees in mid-May to 37 degrees by mid-June but the planet will remain in the morning sky for the rest of the summer. On the morning of 24th May a nice crescent Moon will be just 3 degrees north of Venus. As both will be close to the horizon, it will be easy to include any horizon objects in an image, which always helps to make pleasing picture.

Mars: While Mars is now relatively faint at mag. +1.6, it is actually moving towards M44, the Beehive cluster in Cancer. In mid-June Mars actually crosses the cluster. To add even more interest to the occurrence, Saturn is also close to the Beehive and the two planets become ever closer throughout this session. They will be closest to each other on 16th June and around that period they will both fit into the field of view of a low power eyepiece.

Jupiter: Unfortunately Jupiter is not going to get very high above the horizon for the next few years but do not let that stop you from pointing your telescope at it as there will still be something to see even if the view may not be the best possible. Jupiter is above the horizon as it goes dark now and is difficult to miss as it is the very bright 'star' low in the south east. Being low in Libra means that the observing window is short and by the end of August will be over so make the most of any opportunities you get through summer.

Saturn: As already mentioned, Saturn is close to the Beehive cluster and is on view for the early part of the evening towards the south west. The rings are still open at an angle of -19 degrees so a telescopic view is very pleasing.

Uranus + Neptune: For those who like to something more of a challenge when observing the

planets, Uranus and Neptune are back on view but you will have to look just before dawn. Aquarius and Capricorn are the constellations you need to look at to find these two planets, along with a pair of binoculars.

Occultations: For those of you interested in this phenomenon, there is somewhat of a treat on the night of May 13th/14th. At 23.10 UT the Moon will cover 4.5 mag star 2 Scorpius and at 23.31 UT the star will reappear again. You will need a clear southern horizon though as the Moon will be only about 7 degrees high at the time. At 02.13 UT another bright star, this time Pi Scorpius, will be occulted. Again, the Moon will be low down although it will be at a slightly higher 12 degrees.

MOON PHASES:

First Qtr: 5th May; Full: 13th May; Last Qtr: 20th May; New: 27th May; First Qtr: 3rd June; Full: 11th June.



WHO WANTS TO BE A DAREDEVIL?

by Patrick L Barry & Dr Tony Phillips

When exploring space, NASA naturally wants to use all the newest and coolest technologies—artificial intelligence, solar sails, onboard supercomputers, exotic materials.

But “new” also means unproven and risky, and that could be a problem. Remember HAL in the movie “2001: A Space Odyssey”? The rebellious computer clearly needed some pre-flight testing.

Testing advanced technologies in space is the mission of the New Millennium Program (NMP), created by NASA’s Science Mission Directorate in 1995 and run by JPL. Like the daredevil test pilots of the 1950s who would fly the latest jet technology, NMP flies new technologies in space to see if they’re ready for prime time. That way, future missions can use the technologies with much less risk.

Example: In 1999, the program’s Deep Space 1 probe tested a system called “AutoNav,” short for *Autonomous Navigation*. AutoNav used artificial intelligence to steer the spacecraft without human intervention. It worked so well that elements of AutoNav were installed on a real mission, Deep Impact, which famously blasted a crater in Comet

Tempel 1 on July 4, 2005. Without AutoNav, the projectile would have completely missed the comet.

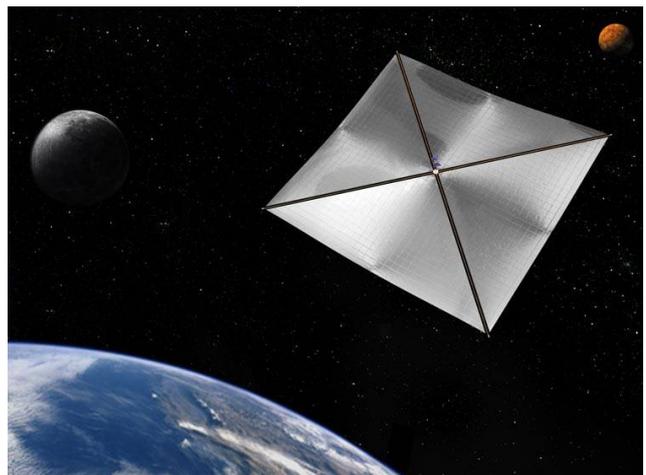
Some NMP technologies “allow us to do things that we literally could not do before,” says Jack Stocky, Chief Technologist for NMP. Dozens of innovative technologies tested by NMP will lead to satellites and space probes that are smaller, lighter, more capable and even cheaper than those of today.

Another example: An NMP test mission called Space Technology 9, which is still in the planning phase, may test-fly a solar sail. Solar sails use the slight pressure of sunlight itself, instead of heavy fuels, to propel a spacecraft. Two proposed NASA missions would be possible only with dependable solar sails—L1 Diamond and Solar Polar Imager—both of which would use solar sails to fly spacecraft that would study the Sun.

“The technologies that we validate have future missions that need them,” Stocky says. “We try to target [missions] that are about 15 to 20 years out.”

A menagerie of other cool NMP technologies include ion thrusters, hyperspectral imagers, and miniaturized electronics for spacecraft navigation and control. NMP focuses on technologies that have been proven in the laboratory but must be tested in the extreme cold, vacuum, and high radiation environment of space, which can’t be fully recreated in the lab.

New NMP missions fly every year and one-half to two years, taking tomorrow’s space technology for a daredevil test drive.



Artist's rendering of a four-quadrant solar sail propulsion system, with payload. NASA is designing and developing such concepts, a sub-scale model of which may be tested on a future NMP mission.

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

FIRST ANNUAL MESSIER MARATHON

by former AAS member **Deborah Hambly**
in New Zealand

Friday the 21st of April was the first of four possible dates for our first Messier Marathon. The day dawned with brilliant sunshine and not a cloud in the sky. The first marathoner arrived mid-afternoon and enjoyed a walk on the beach. By 6pm several more had arrived, and a large tent and BBQ was all set up. We had a 12" and an 8" reflector, two refractors, and a pair of binoculars all set up in front of SkyDome observatory at Baylys Beach. The scopes were all focused on Saturn and we attracted a large audience of adults and children alike who walked by on the sidewalk just outside and came in to enjoy the spectacle and ask questions.

Our first target was M45, Matariki which we viewed through binoculars before it set. We continued picking up 3 more in Auriga, and enjoyed the moonless night to take in M1 the Crab Nebula. The Orion Messier objects (M78, 42,43, 79) were easy targets. We moved on through Gemini (M35) and Cancer (M44, 67) and then were pleasantly surprised at the lovely heart shape presented by M50 in Monoceros, mid-way between Sirius and Procyon. This was a target we seemed to have all previously looked over and we ogled it with admiration vowing to add it to our lists of favourite open clusters.

The night was crisp, our dew shields and hats were on, and we relaxed feeling safe that we had made a good start. We continued on with Canis Major, Puppis and Hydra picking up another four open clusters (M41,47,46,48,93). Then we came to Leo, sitting perfectly due North, but with more challenging objects – the start of the feared faint galaxies (M95,96,65,66). M105 is listed as the smallest apparent diameter of all the Messier objects at 4 arc seconds. However, there were many fainter galaxies to come before the night would be over. We noted that globular cluster, M3, in Canes Venatici was described as "bright and large" but after having seen the best globular "Omega Centauri" earlier in the evening, found that all others really seemed insignificant by comparison. The Black Eye galaxy (M64) in the Coma cluster of galaxies (M98,M99,M100,M85) took real imagination, and I noted that the Globular M53 was even less impressive than M3.

Next up were the Virgo galaxies (M84,86, 87,89,90,88,91,58,59,60,49,61 and 104). Virgo was a little lower on the horizon, and we worked through these as a team comparing notes on our view through the eyepiece to verify that we were actually all looking at the same thing! For example, I saw M87 as a peace sign with the galaxy at the top end of the symbol.

Meanwhile we had checked the transit times of the Great red spot on Jupiter and we watched as it approached the centre. In the early hours of the morning we looked up the co-ordinates of the "Wacky" comet and saw at least one

of the fragments in the constellation Corona Borealis after defogging our scopes with hairdryers. [Ed. Charles Messier would be proud of you! He made his list of "objects to avoid" so that he could discover comets.]

A couple of clouds blurred our view of the horizon and we skipped past the objects in Serpens, Lyra, Hercules, Cygnus, Vulpecula, Sagitta and Ophiuchus. Looking nearly directly overhead we continued with Scorpius and Corona Australis picking up the Cats Eye (M4), and several others (M80,19,6,7). We tried our filters out on M62 the flicking nebula, but couldn't detect any nebulosity.

As the crescent Moon rose, faint clouds rolled in, and we were forced to finish our marathon early. We waited until 4:30 am, drinking copious cups of coffee and tea but we were not able to pick up any more targets. However, we were glad to have made a great attempt of it, to have succeeded with the most difficult galaxies, and all agreed to try it again next year!

NOTICES

Please note that due to difficulties with the SmartGroups e-mailing list (messages taking up to a week to arrive!) we have set up a new list on Yahoo groups. The new list is called "abingdonas" – go to www.yahogroups.com. The two lists are running in parallel at present but the new list is proving far more reliable.

FURTHER DISCUSSION

The Society's web site is www.abingdonastro.org.uk. Our webmaster, Andrew Ramsey, is always on the lookout 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

15th May 8pm. Beginners' Meeting in the Perry Room.

5th June 8pm. Beginners' Meeting in the Perry Room.

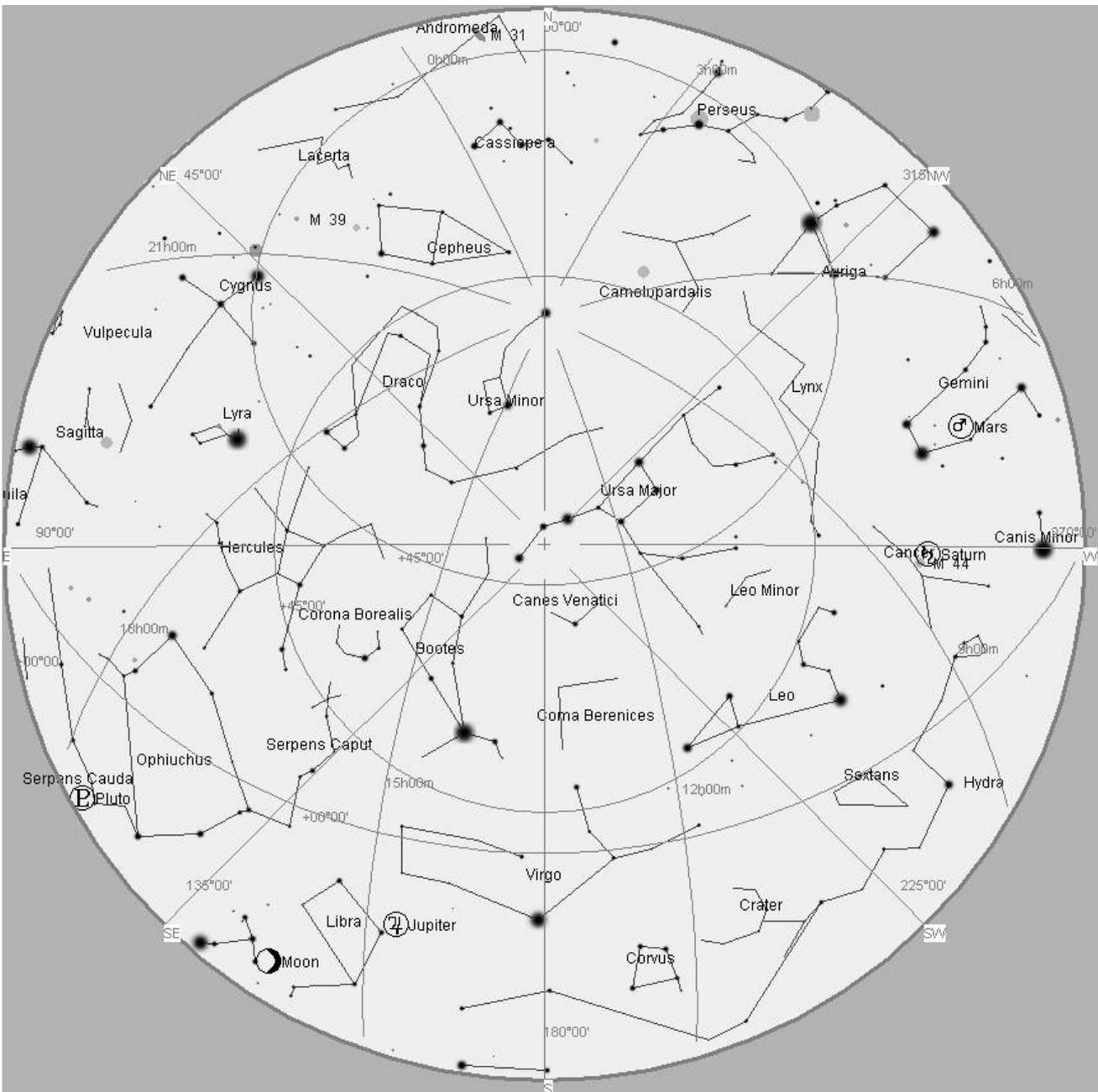
12th June 8pm. Speaker Meeting: Talk by Prof. Nigel Smith (RAL): "Searching for WIMPS in the UK, Dark Matter down the Boulby Mine".

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



Looking south at 11pm next Saturday (13th May)

Leo dominates the southern sky in the late evening at this time of the year. To the left of Leo the brightest star in the northern hemisphere, the yellowish star, Arcturus shines. The Plough, part of Ursa Major, is pretty much overhead. Jupiter is rising earlier and earlier now and can now be seen before midnight in the east. A small telescope will show its four largest satellites, and you can watch them as they shift position from night to night. Saturn is in Cancer, near the Beehive, its rings tilted very favourably towards the Earth at present. Mars will join it later in the month. If you can find a dark sky site, Virgo is rich in galaxies, and is well worth looking at through a moderate telescope.

This chart was produced using the freeware program Cartes du Ciel. The curved southern horizon is at bottom. The zenith is shown by the small cross in Ursa Major.