Caithness Skies

What's Up There (April '06)

Spring is here (I think!) and although the nights are getting shorter it should also mean that they will be somewhat warmer with a reduced risk of frostbite for those wishing to observe the night sky.

There is plenty to see whether you are going to observe with the naked eye, binoculars or a telescope. There is even the possibility of glimpsing a comet during this May, so read on and check out "what's up there".

In this newsletter is a selection of interesting items/events to look out for in the Caithness skies during April & May 2006. To compliment the brief info provided some relevant web links have been included that will provide, if nothing else, something to view when the skies are cloudy.

Stargazing Guide

Orion, Taurus & Mars Feb'06

M45 thro' a small telescope

Mars in Taurus Feb '06

The prominent winter constellations of Orion and Taurus are now disappearing towards the western horizon as darkness falls (see previous newsletter for details on these). But fear not they are being replaced by a new set of constellations, that although they don't stand out as well, are full of interest all the same.

http://www.caithness.org/nightsky/febmarch2006/index.htm

Celestial Signpost – The Plough

If you have difficulty finding your way around the night sky then just now is a good time to learn as the Plough, which is directly overhead on spring evenings, makes an excellent celestial signpost. The bright stars Dubhe and Merak in the Plough are well known to many as the pointers to the Pole Star which due to it lying at the celestial north pole has been a navigational aid to humans for many centuries. Using this distinctive group of stars it is also possible to find your way to many other constellations in the night sky, such as Gemini, Leo, Hercules and Arcturus in Bootes.

The Plough – Signpost in the sky

Pole Star (Polaris)

Polaris, the brightest star in Ursa Minor (The Little Bear) is a huge supergiant star about 9,000 times as luminous as the Sun. A small telescope will show it to consist of 2 stars and recent images from the Hubble Space Telescope has shown it to be a triple star system.

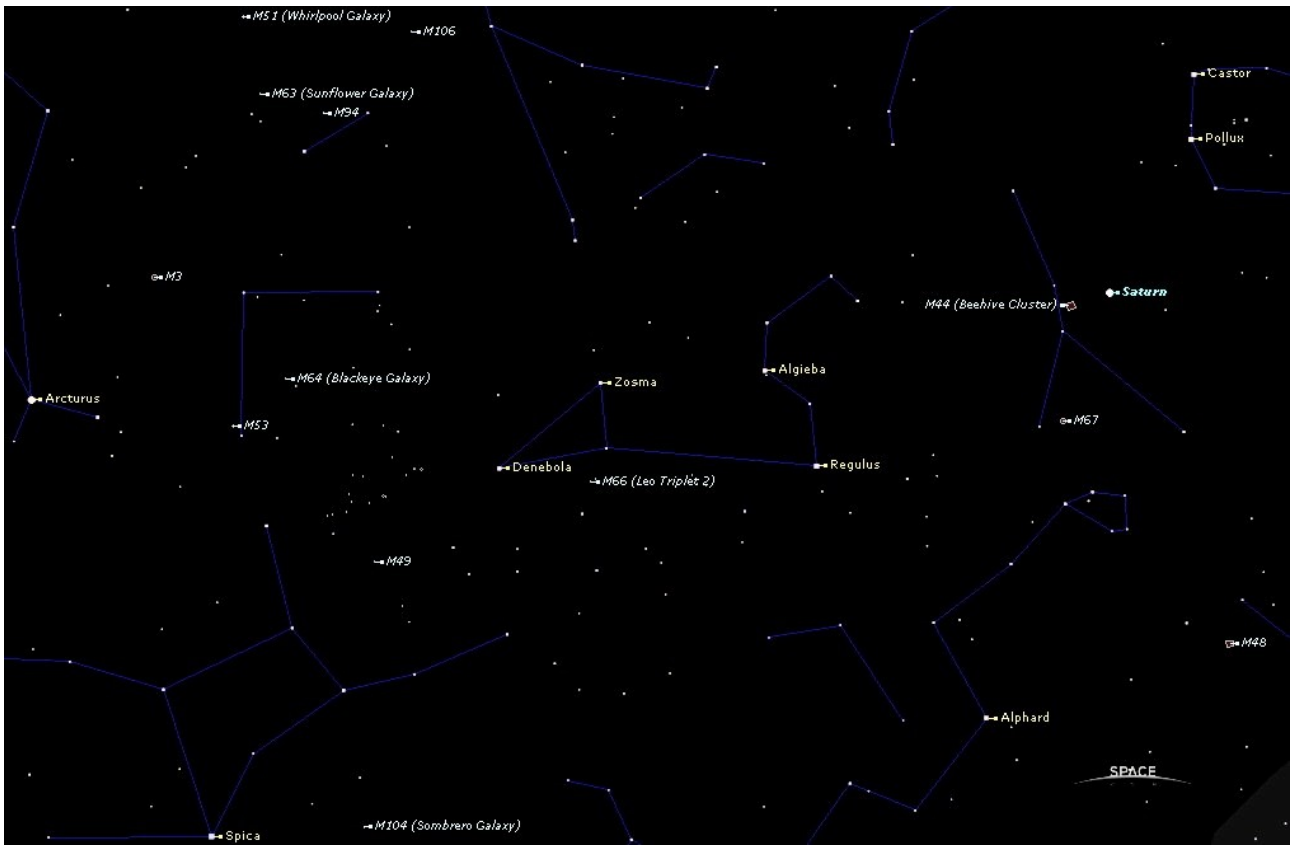
Polaris thro' a small telescope

If viewed through binoculars, Polaris can be seen to be part of a chain stars that make up the rough shape of an engagement ring, with Polaris being the diamond.

Polaris & Engagement Ring Asterism

Related Web Links

http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/02/
http://www.astro.uiuc.edu/~kaler/sow/polaris.html
http://home.xtra.co.nz/hosts/Wingmakers/Ursa%20Minor.html



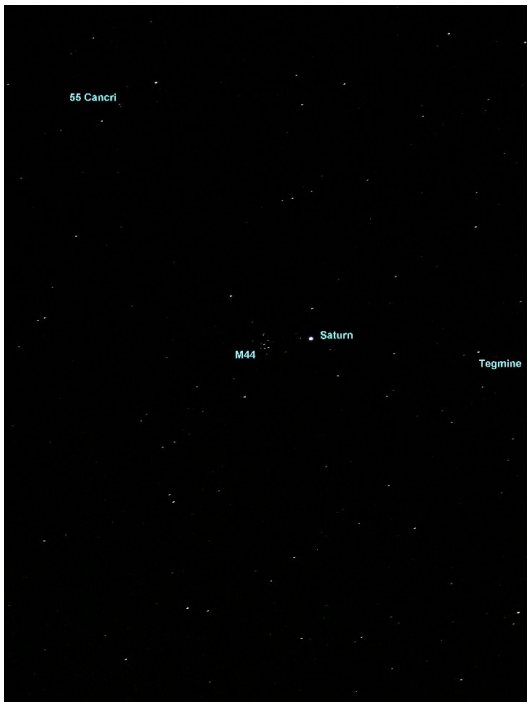
View South in the Early Evening during April

Cancer

This fairly inconspicuous constellation is in prime position for viewing during April just after dark. This year the presence of the bright planet Saturn in it makes it easy to find.

M44, Beehive Cluster thro' a small telescope

Despite it's lack of bright stars & small size there are quite a few interesting objects in it.



Cancer with Saturn & M44 mid photo

There are two fine open star clusters, the Beehive Cluster (M44) and M67. The Beehive Cluster is a fine sight through binoculars and is a favourite of mine. M67 is one of the oldest known open clusters and is visible in binoculars, although a small telescope shows it better.

The star zeta cancri (Tegmine) is actually a multiple star system consisting of at least 5 stars, although small telescopes will only show two of them. Iota Cancri, the brightest star at the top of the constellation is also a binary star worth seeking out as its two stars show beautiful colour contrast, one being blue and the other pale orange. Binoculars can apparently separate the two, but I have to admit that I can't separate them without a telescope.

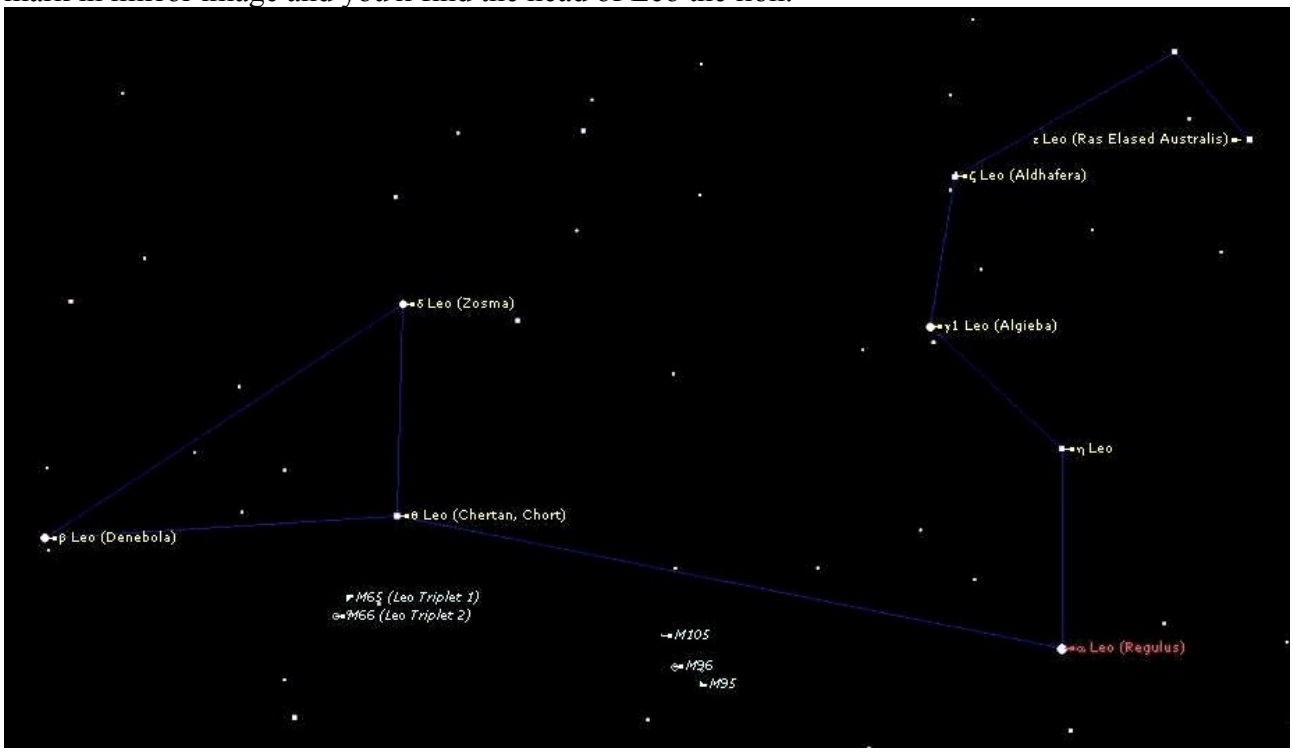
Even more interesting is the nearby star 55 Cancri which

is the first confirmed 4 planet system (outwith our own solar system) and is being extensively studied to provide insight into planetary formation and evolution. Its other claim to fame is that until recently (see news section below) it contained the smallest known extrasolar (ie not of our solar system) planet.

Related Web Links
http://home.xtra.co.nz/hosts/Wingmakers/Cancer.html *What's of interest in Cancer*
http://home.xtra.co.nz/hosts/Wingmakers/55%20Cancri%20Solar%20System.html
http://www.solstation.com/stars2/55cnc2.htm
http://seds.lpl.arizona.edu/messier/m/m044.html *Info on M44, the Beehive Cluster*

Leo

The constellation of Leo dominates the early evening sky to the south. It has a distinctive shape and should not prove too hard to find – look for a bright star (Regulus) at the bottom of a large question mark in mirror image and you'll find the head of Leo the lion.



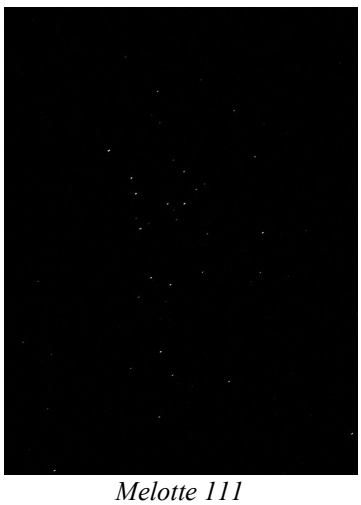
There are a number of interesting objects in Leo (galaxies and double stars), but unfortunately a small telescope is really needed to see them.

Related Web Links
http://home.xtra.co.nz/hosts/Wingmakers/Leo.html
http://www.astro.uiuc.edu/~kaler/sow/regulus.html

Coma Berenices

Although there are no bright stars in this part of the sky this constellation contains one of the finest open star clusters for binoculars in Melotte 111. It can be found to the left of the bright star Denebola in Leo.

Related Web Links
http://home.xtra.co.nz/hosts/Wingmakers/Coma%20Berenices.html



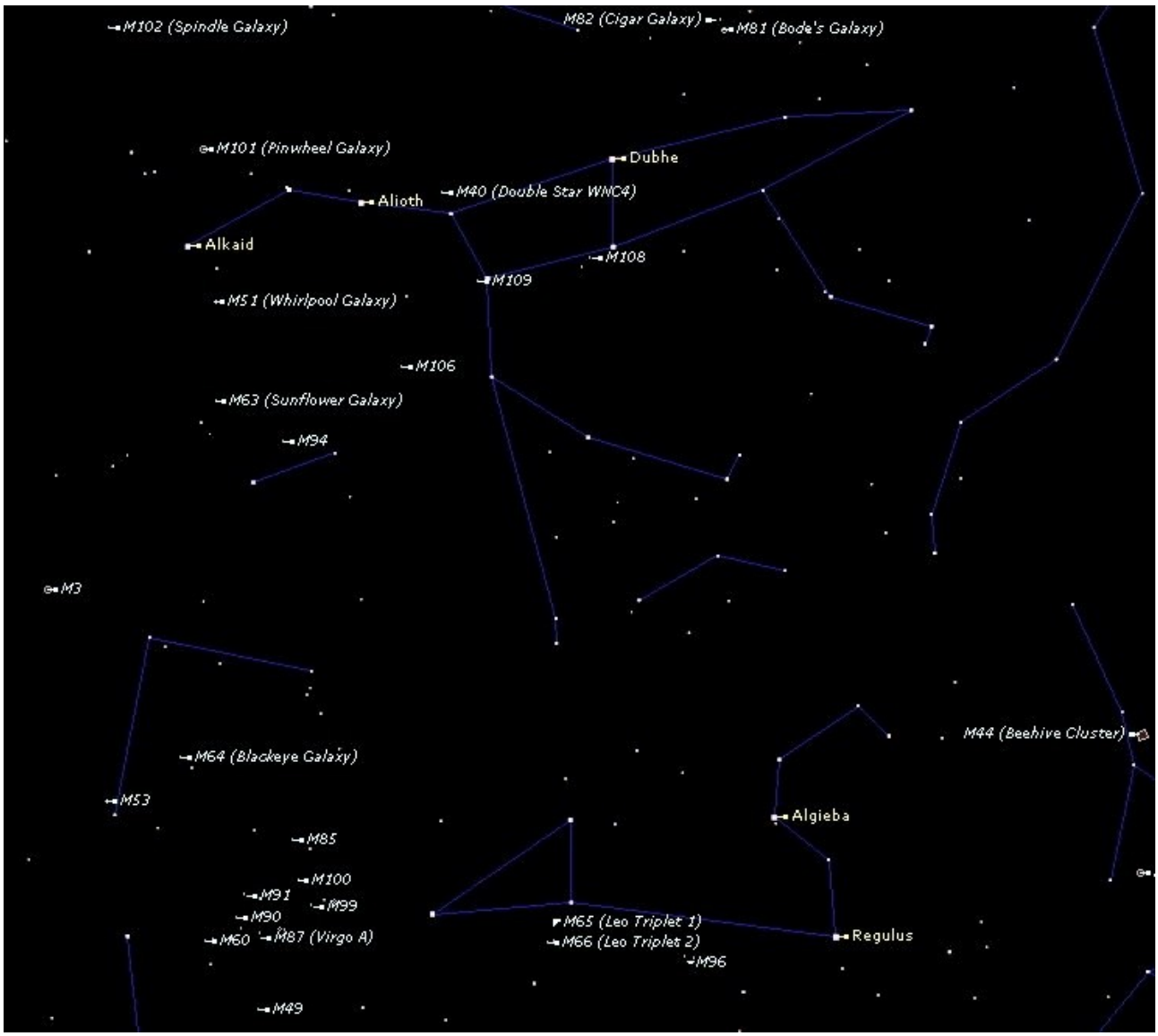
Melotte 111

Galaxies Galore

Spring is the time of year when galaxies abound in the night sky just after dark. There are plenty to pick from, starting in Ursa Major overhead and stretching southwards to the constellations of Leo, Coma Berenices and Virgo. Unfortunately a telescope is required to see most of them and even then they tend only to show up as bright fuzzy patches. Detail only really becomes visible through larger telescopes or long exposure photos.

Don't let that put you off having a look if the sky is clear and dark (ie little affected by light pollution or the Moon). When you think about it, if you see any then you're looking at objects that are outwith our own galaxy, the Milky Way, and are many millions of light years away from us. As a result, we're seeing them as they looked millions of years ago – it has taken light that long to get to us!

There are a few galaxies that are visible in binoculars, the easiest to spot probably being Bode's Galaxy, M81 (& M82 beside it); the Pinwheel Galaxy, M101; the Whirlpool Galaxy, M51 and M66 in Leo. Remember to allow your eyes to become dark adapted before seeking out these faint objects and use averted vision to look “at” them.



Galaxies Galore in the Spring Sky

Galaxies tend to congregate in clusters and about 50 million miles away in the constellation of Virgo is an enormous cluster containing around 2000 galaxies, but this is beaten by a cluster of 3000+ galaxies located in the nearby constellation of Coma Berenices. Some quite amazing photos of these clusters have been obtained by large telescopes (see links below).

Related Web Links

http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/10/image/a *Hubble photos of spiral galaxy M101 in Ursa Major*
http://www.seds.org/messier/m/m101.html
http://hubblesite.org/newscenter/newsdesk/archive/releases/1997/01/text/ *M105 & black holes*

http://antwrp.gsfc.nasa.gov/apod/ap020203.html *Coma Cluster of Galaxies*
http://teacherlink.ed.usu.edu/tlnasa/pictures/litho/comacluster/index.html
http://hubblesite.org/newscenter/newsdesk/archive/releases/1995/07/text/

http://www.seds.org/messier/more/virgo.html *Virgo Cluster of Galaxies*
http://www.seds.org/messier/more/cgi/m087etc_map.html
http://www.seds.org/messier/m/m087.html & *http://www.seds.org/hst/M87Disk.html* *Evidence of supermassive black hole in M87*

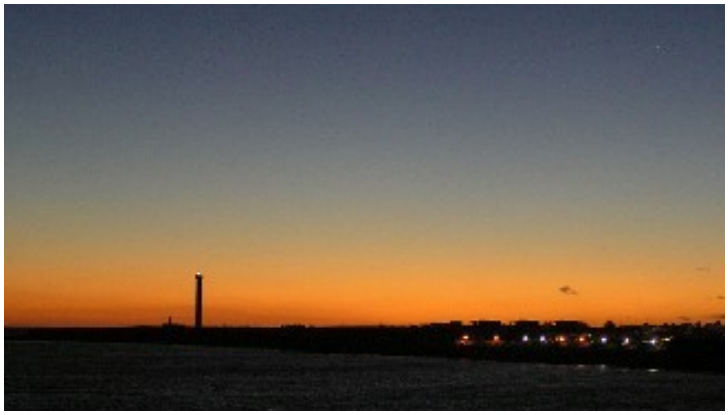
http://hubblesite.org/newscenter/newsdesk/archive/releases/2003/01/text/ *Abell 1689 Galaxy cluster in Virgo - The biggest zoom lens in the universe!*

http://vegas.astronomynv.org/Tutorials/avertedvision.htm *Explanation of "averted vision"*
http://skytour.homestead.com/files/nightvis.html

Planets

Mercury

This planet being so close to the Sun is always a difficult one to see. I'm happy to now report that after years of trying to catch sight of it I managed while off on holiday last month.
During April and the first half of May, Mercury will be seen low in the brightening sky just before sunrise. The best time to see it will be around 8th April when it will be furthest separated from the Sun in the morning sky, although it will be very low in the sky and therefore very difficult to see.



Mercury (top right) at Sunset (Lanzarote end Feb '06)

Venus

Venus is a dazzlingly bright object in the morning sky throughout April & May, with a telescope showing it as an approximately two-thirds illuminated disc.
On the 18th April Venus will be a good marker for anyone wanting to find the planet Uranus which will be visible in binoculars about a moon's diameter below Venus. Viewed through a telescope, Uranus will appear as a very small greenish disc.

Mars

Mars brightness in the night sky is now fading as it steadily moves further away from the Earth. During the past few months it has moved through the constellation of Taurus and will pass through Gemini during April and May. On the 15th April Mars passes approximately 1 degree (2 times the diameter of the Full Moon) to the right of star cluster M35.
I managed to get a few good photos during February when it was nearby the Pleiades. Although the photo opposite does not show it all that clearly, the contrast between the orange/red hue of Mars and the blue/white of the stars in the Pleiades was very evident on the night. Here's a tip for helping see the colours of the stars a bit clearer – slightly defocus your binoculars when viewing through them.

Mars (left) nearby the Pleiades in Feb 06

Related Web Links – Mars Photos
http://hubblesite.org/newscenter/newsdesk/archive/releases/2003/22/
http://www.digitalsky.org.uk/Mars/mars-2005.html

Jupiter

Jupiter will be visible as a bright object low in the sky to the south around midnight. It is possible to see the four brightest moons of Jupiter with binoculars – take a note of their positions and watch how they change from one night to the next.

A small telescope will show up the cloud bands on the planet itself, but with its low position in the sky, you'll have to be lucky to get good enough seeing conditions to see fine detail. Unfortunately Jupiter will be even lower in the sky next year so this year will be your best opportunity for a few years to come.

Saturn

Saturn will be visible high in the southwest just after dark, and although just past its brightest a small telescope will allow its magnificent rings to be seen and also a few of its brighter moons – Titan is certainly easy to pick out and I've also managed to spot Iapetus, Rhea and Dione with my 5" refractor.

Saturn thro' a small telescope (Mar 06)

Saturns rings are currently fairly open when viewed from Earth, but will steadily tilt until they become edge on in 2009, so this year will be the best chance to view them for some years to come.

Saturn remains close to the Beehive Cluster (M44) and will be joined by Mars in mid June. The best photo opportunity however will probably be on the 30th and 31st May when the crescent Moon, Mars and Saturn are all in close proximity (within 10 degrees) at the northwest horizon just after sunset.

Related Web Links
http://saturn.jpl.nasa.gov/multimedia/poll/index.cfm *Photos from the Cassini mission*
http://saturn.jpl.nasa.gov/multimedia/images/image-details.cfm?imageID=1310 *Photo of Titans surface*

Other Events/ Objects of Interest

Recent Eclipses

Lunar: Unfortunately the clouds eclipsed everything on the 14th, so there wasn't much to see (from my part of Thurso at least). If you want to see an example of what a lunar eclipse would look like then go to:

http://www.mreclipse.com/LEphoto/LEgallery1/LEgallery2.html
http://www.mreclipse.com/LEphoto/NLE2002/NLE2002-3w.JPG is a photo showing a penumbral eclipse, which is the type that occurred on the 14th March.

The next lunar eclipse visible from Caithness will be on the 7th September 2006, but will be a partial one, with only a tiny part of the moon entering the Earth's shadow. The next total lunar eclipse visible from here will be on 3rd March 2007 just before midnight.

Solar: The weather for the partial solar eclipse on the 29th was excellent and anyone with the right viewing equipment would have got a good view of it in Caithness. Only a small part (about 10%) of the sun was obscured by the moon during this eclipse. I managed to get the photo opposite of it at noon when it was nearing the end of the eclipse.

Partial Solar Eclipse on 29th March

The next solar eclipse visible from Caithness will be on the 1st August 2008, with just over 40% of the Sun being hidden by the Moon. After that we have a long wait until 4th January 2011 for the next one, but most of the eclipse will have happened by the time the sun rises above the Caithness horizon. The one after that on the 20th March 2015, will be one well worth seeing though, with greater than 90% of the Sun being eclipsed in Caithness and a total eclipse being seen in the Faroe Islands!

Related Web Links

http://www.hermit.org/eclipse/why_lunar.html	*Lunar eclipses explained (with diagrams)*
http://www.hermit.org/eclipse/why_solar.html	*Solar eclipses explained (with diagrams)*
http://www.hermit.org/eclipse/2015-03-20/	*Faroe Islands 2015 total eclipse details*
http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2006.html	*Eclipses in 2006*
http://www.universetoday.com/am/publish/iss_solar_eclipse.html?2932006	*Solar Eclipse seen from International Space Station*

Comet 73P/Schwassmann-Wachmann 3

This May sees a favourable flypast of this interesting comet which fragmented during its 1995 circuit around the Sun. The brightest fragment (component C) will pass closest to the Earth (a mere 6.5 million miles!) on the 12th May. How bright comets will be in the night sky is difficult to predict, but this one is expected to be just about visible to the naked eye and if further breakup of the comet occurs it could become quite spectacular.

The brightest fragment will be near Arcturus at the beginning of April and will brighten and move through the constellations of Bootes, Hercules, Lyra, Vulpecula, Pegasus and Pisces during April

Comet Hale-Bopp in 1995

and May. As a result of this motion it will rise later each night meaning that by its brightest in mid May, it will be best placed in the sky for observation from midnight onwards until a few hours before sunrise. Due to the rapidly shortening Caithness nights and the presence of a full moon in mid May the best chance to see it in it's glory may turn out to be the beginning of May.

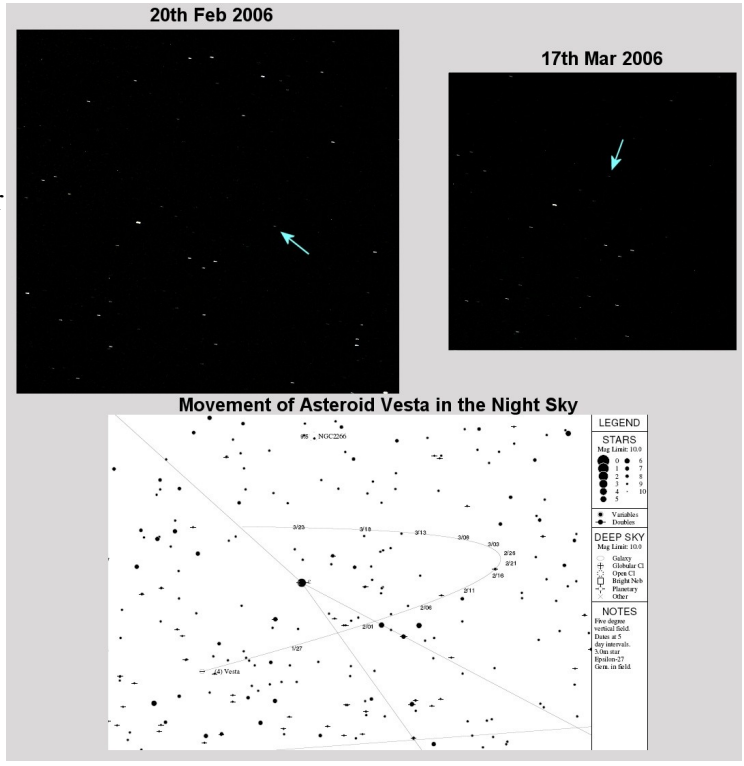
In early June there is the chance of enhanced meteor activity from its dust trail, although by this time Caithness will be seeing very short hours of true darkness.

Related Web Links

http://www.yp-connect.net/~mmatti/_private/comet_73p.htm	*Comet info, incl position in the night sky during April & May*
http://cometography.com/cometinfo.html	*General Comet Info*
http://cometography.com/pcomets/073p.html	*Info on this comet*
http://www.fototime.com/E33252A4996F15C/orig.jpg	*Photo of it in Feb 2006*
http://www.yp-connect.net/~mmatti/_private/comet_photography.htm	*Advice on photography of comets with film cameras*

Vesta – The Brightest Asteroid

In recent months, the asteroid Vesta has been in a good viewing position near the bright star Mebsuta in Gemini (left of centre in both photos). Although not currently visible to the naked eye, it can be seen through binoculars. It's not particularly impressive and just looks like a faint star, but considering it's only 326 miles in diameter and would therefore fit inside the British Isles with room to spare, I don't suppose we can expect much.



For those of you who like a challenge it's worth trying to locate, but you'll have to be quick as it is now gradually dimming as it moves away from us.

It can be positively identified by using a good star map, or by it's change in position from one night to the next in relation to the background stars – see photos opposite taken on clear nights a month apart. The photos, like many I take for the newsletter, are long exposures (up to 16 seconds) using a digital camera on a tripod. In this instance the equivalent of about a 6x zoom was used to home in on the part of sky that was of interest.

Related Web Links

http://www.solarviews.com/eng/vesta.htm	*Asteroid Vesta*
http://www.rasnz.org.nz/MinorP/Vesta.htm	*Detailed star charts showing its location during April & May*

Eta Aquarids

This meteor shower originates from Halley's Comet and should peak around the 5th May. Unfortunately this is not normally one of the more spectacular showers to watch from the UK, but if you're looking skywards (facing SE) on the early hours of the 6th May at a dark site (whilst looking for a comet perhaps?) then you might be treated to the sight of a few meteors.

Astronomy News

Stardust@Home

The Stardust spacecraft recently returned to Earth after flying through the tail of the comet Wild2 in January 2004. It's mission was to collect interstellar dust from the comet in a special gel "catchers mit". It has done this and volunteers are now being sought to help search through images of the gel for these tiny samples of matter from the galaxy.

Visit http://stardustathome.ssl.berkeley.edu/challenge.html to find out more.

Plutos Moons

Recent photos from the Hubble Space Telescope has identified an additional two moons orbiting the planet Pluto.

Visit http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/15/ to find out more.

Read up on other "bodies" orbiting the Sun beyond Pluto and on the debate as to whether Pluto should be downgraded from planet status at http://www.iau.org/STATUS_OF_PLUTO.238.0.html & http://www.gps.caltech.edu/~mbrown/planetlila/

New Earth-like Planet Discovered?

Early this year it was announced that a new extrasolar planet (known by the instantly forgetable "name" OGLE-2005-BLG-390Lb) had been found that was more Earth-like than any found previously. Its discovery by the "microlensing" technique is considered to be groundbreaking in the search for planets that support life and also supports a theory for how our solar system was formed.

http://www.eso.org/outreach/press-rel/pr-2006/pr-03-06.html Press release

http://hubblesite.org/newscenter/newsdesk/archive/releases/2006/06/full/ Astronomers Find Smallest Extrasolar Planet Yet Around Normal Star

Useful Reference Sources

More detailed accounts on what to see each month can be found on many websites and in most astronomy magazines. The ones I commonly use are:

http://www.krysstal.com/sky.html KryssTal Monthly Sky Page
http://www.delscope.demon.co.uk/news/skywatch3DIARY.htm Another detailed diary of events
BBC Sky at Night and Astronomy Now magazines.
Another valuable source I use is the Dorling Kindersley book "Universe - The Definitive Visual Guide". It is both visually stunning and very informative and would be useful to anyone interested in astronomy regardless of the extent of their knowledge of the topic. The content is extensive so many a cloudy night can be spent flicking through the book looking at the photos and planning what to look at on the next clear night.
(http://www.universetoday.com/am/publish/book_review_universe.html?2032006)

Usage of technical terms has been avoided where possible, but some readers may find the explanations of astronomical terms found at the following web sites of use:
http://hubblesite.org/reference_desk/glossary/
http://www.delscope.demon.co.uk/astronomy/glossary.htm

G Mackie, April 2006