



TRANSIT

The April 2010 Newsletter of



NEXT MEETING

9 April 2010, 7.15 pm for a 7.30 pm start

Wynyard Woodland Park Planetarium

Heavenly bodies with magnetic personalities

Rod Hine *Bradford A.S.*



Contents

p.2	Editorial	
p.2	Letters	<i>Michael Roe; John Crowther; Ray Worthy</i>
		<i>Observation reports & planning</i>
p.4	Skylights – April 2010	<i>Rob Peeling</i>
p.8	An expedition to the North Pole: Report 4, 22 March 2010	<i>Alex Menarry</i>
p.10	Deep-sky observing at Square Corner	<i>Rob Peeling</i>
p.12	Sunspots are back!	<i>Rob Peeling</i>
p.13	Backyard astronomical sketching	<i>Andy Fleming</i>
p.15	Attempting to image Mars at opposition	<i>Ed Restall</i>
p.17	Me too!	<i>Rod Cuff</i>
p.18	Asteroid 4 Vesta	<i>Keith Johnson</i>
		<i>CaDAS news</i>
p.18	Spreading the word	
p.19	Moonfish eyepieces	
		<i>The Transit Quiz</i>
p.19	Answers to March's quiz	
p.20	Quiz for April	

Editorial

Rod Cuff



This month's *Transit* is, I think, a very special issue. Apart from letters, the quiz and brief news items, everything else reflects actual, out-in-the-dark observing activity by one or more of our members. Moreover, I didn't have room for everything that would fit under that label, and also have had to hold over other good, non-observing articles. Apologies to those contributors missing out this time, but it's the kind of problem I like to have!

April can be one of the best months of the year for observing. It will be warmer than it's been for many months (surely!), it's one of the best times of the year for looking at [galaxies](#), and at the moment four major planets are in the sky together (Mercury, Venus, Mars and Saturn), with Saturn the jewel for some months to come. I look forward to a deluge of observation articles ...

Many thanks again to all contributors. The copy deadline for the next issue is **Friday 23 April**.

Rod Cuff, info@cadastro.org.uk, 1 Farndale Drive, Guisborough TS14 8JD (01287 638154)

Letters

Can anybody help?

From Michael Roe



I need help! The problem is this. Over the past few years, I've been searching for asteroids in our Society's collection of [Palomar Sky Survey](#) photographs taken with the [48-inch Schmidt telescope](#). A 40-minute exposure reveals a tell-tale short line, whereas the associated 10-minute exposure shows only a faint 'star' in virtually the same position; if there is no such 'star' on the latter photograph, then the line or streak is a fault on the original glass plate.

So I'm good at finding these minute asteroid trails with a powerful lens, but although I've drawn the star fields with trails and measured the positions and times, I can't identify the asteroids! I've tried the [SkyMap Pro](#) program, but the asteroid positions for the 1950s are useless – with Ed Restall's help I found that one possible asteroid on the photograph was 30° from its SkyMap Pro position!

Now, I'm not the best person at dealing with computers, I'm afraid; so can any more expert computer user help me?

December 2008's *Sky and Telescope* had an article 'Data mining for astro-gold' on p. 97, mentioning a web-based resource available through the Minor Planet Centre (MPC) at <http://scully.cfa.harvard.edu/~cgi/CheckMP>. The article says that you simply compare your object's position against the MP Checker to see if you have a match.

Here are the positions and times of two asteroids, both using epoch 1950.0 RA and Dec. I would be grateful if anyone could help.

00:13 UT, 25 October 1955	–	RA 3h 23m 40s, Dec +16° 38'
00:59 UT, 10 March 1956	–	RA 12h 20m 00s, Dec +6° 36'



Timely skills

From John Crowther



Neil commented favourably on my reply to his essay in February's *Transit*. In return, I have some thoughts relevant to those cockneys (?) who couldn't work out where south was although the setting sun was shining on them.

People seem to be relying too much on present-day technology, so that simple skills are being forgotten.

Older people will remember stories from [The Arabian Nights](#) being read to them. Ali Baba watched the treasure cave being opened when the words 'Open sesame' were spoken. Now we just approach the doors in our shopping centres and they open unaided.

But we still need our memories to remember PINs. The 'magic' door of the bank opens, but taking our money out is not as simple as it once was – and no, I don't use a hole in the wall.

As we know, computers can make mistakes if incorrect information is put into them. A few years ago, satnavs were diverting drivers from the M5 to a ford across a river in Somerset. The ford was too deep for the cars, and a farmer was regularly pulling them out with his tractor. I bet that satnav make wasn't too popular with those drivers.

If a person could have travelled into the future from the 1950s, they'd see people walking along talking to themselves, with a hunched-up shoulder nipping a small box up to one ear.

If the same person went back into the past, they'd perhaps see an officer from Queen Elizabeth I's navy. When asked for the time and directions, he'd use his portable sundial – but only if the sun was shining. On a clear night he'd be able to fix his latitude and the time from an [astrolabe](#).

And he'd definitely know what those two cockneys didn't know: the positions in which the sun rises and sets throughout the year.



To all my friends in CADAS

From Ray Worthy



I write this because, amongst your number, there might be someone who can offer ideas. Let me explain.

For most of my life I have had the use of only one eye. I lost the sight of my left eye when I was three, because of a severe bout of measles. Two summers ago, the optic nerve of my good right eye suffered an embolism and the blood supply was cut off. The result was that I was left with a largish blind area close to the central part of my vision, located down to between three o'clock and six o'clock. Overall, I see everything through a whitish mist. Crossing a road with traffic is quite a challenge. I cannot read, nor am I allowed to drive. When I look at the crescent Moon, I see a jumble of at least three of them in a cluster.

My telescopes were farmed out to deserving youngsters. This last Christmas, one of my telescopes was returned to my home because my seven-year-old grandson had heard about it and wanted to see the craters on the Moon. His father, my son Jonathan, set up the scope on a tripod and pointed it out of my office window, focusing on a church tower a mile distant. When they had finished, I casually bent down to see what my eye could make out. Imagine my absolute astonishment when I found I could see through it as though nothing had ever happened to my eye. I could read the time on the church clock and see seagulls circling the tower. To say I was flabbergasted would be an understatement.

I was looking through a 15–60x terrestrial bird-watching scope with an upright image.

What I required was something less magnifying and with a wide field of view. I bought a small monocular, an 8x20. With this, I can easily read a car number plate at 50 yards. Amazing! But I still cannot read normally (I touch-type and use special software on the computer). Even a power as low as 8x still causes a wobble. The trouble is that there is no commercial reason to make a monocular with less power and a wider field of view.

A film-producer friend in America suggests that I see what I can do with a single-lens reflex system from a camera. Has any of you any bright ideas?

OBSERVATION REPORTS AND PLANNING

[Skylights – April 2010](#)

Rob Peeling

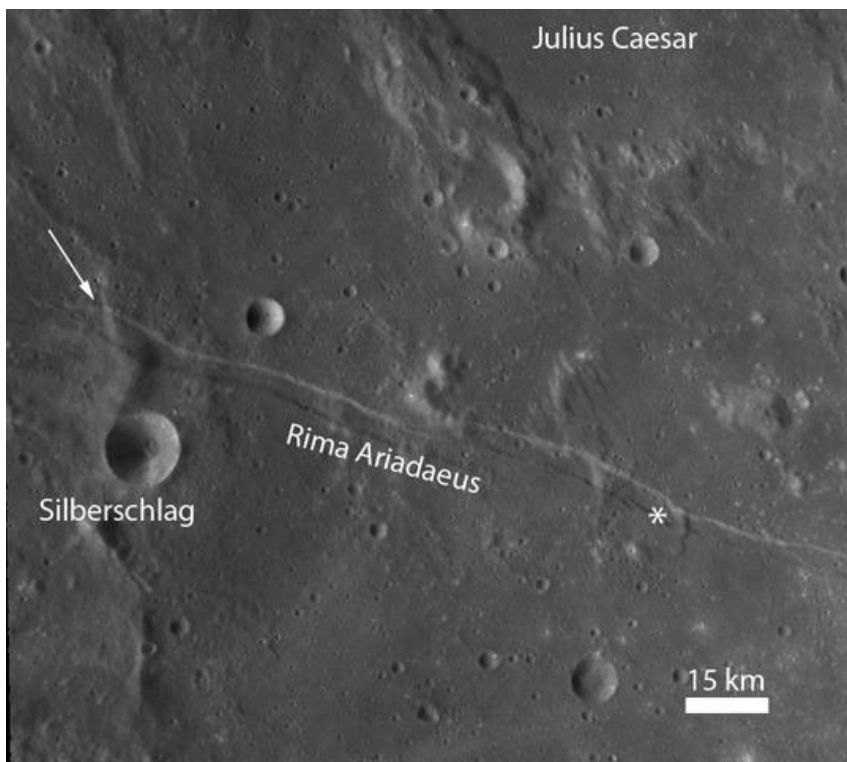
[The Moon](#)



6 Apr	14 Apr	21 Apr	28 Apr
Last Quarter	New Moon	First Quarter	Full Moon

There are number of photogenic close approaches between the Moon and various planets this month – see below.

If it's clear on the evening of 21 April, then try to find Rima Ariadaeus. The [rille](#) strikes 230 km



westwards towards the terminator from the edge of Mare Tranquillitatis. With medium power it should show as an almost straight dark line across the lunar surface. At the western end of Rima Ariadaeus, Rima Hyginus takes the baton to run further west into the darkness. Can you see the abrupt change in direction where the crater Hyginus punches into this rille?

[The Sun](#)

[Sunspots](#) are definitely making a comeback after the surprisingly long periods with a completely blank solar disk last year. I have had good views of sunspot groups recently (see page 11).

However, please don't attempt to observe them unless you know [how to do so safely](#) and have the correct equipment. Always check your solar filters with a bright halogen light before trusting your precious eyesight to them.

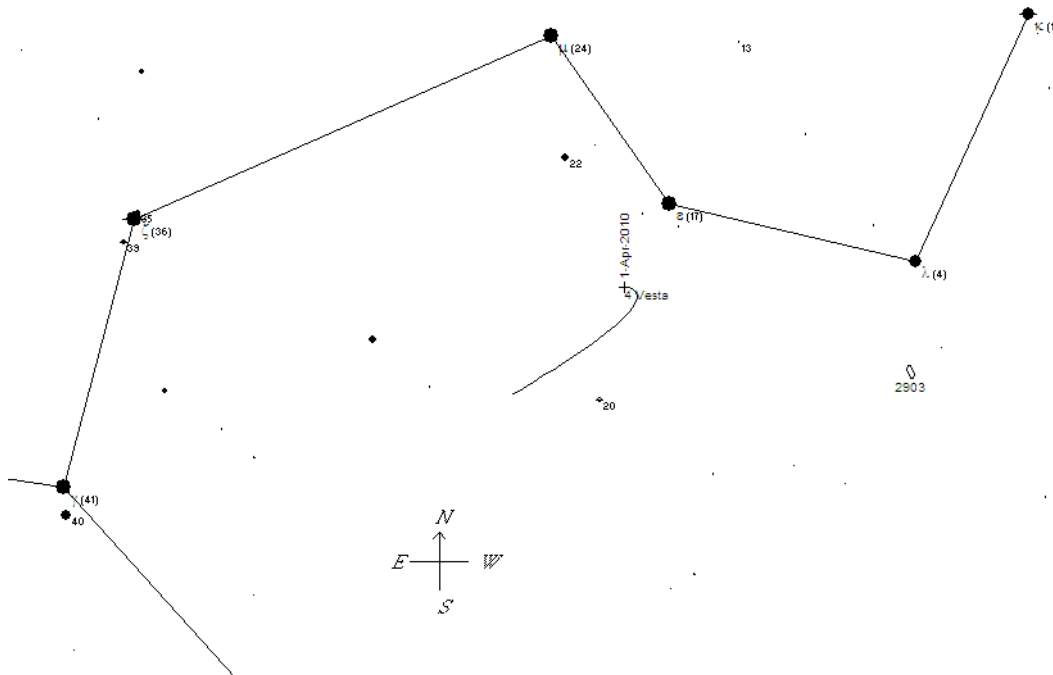
Planets & asteroids

Mars is dropping behind the Earth as we orbit the Sun, and Saturn takes over as the prime interest in April. However, with low power and binoculars Mars still has at least one sweetie left in the jar. On 16 April Mars is at its closest to the large, bright open cluster **M44, the Beehive**, and both will look well together in binoculars. They will be close together in the sky between the 12th and 21st. If you can manage to look on several days during the period, it should be easy to notice Mars' steady movement eastwards relative to M44 as the planet drops behind the Earth.

Saturn will be well positioned to enjoy throughout April, lying in Virgo below (to the south) of the bright star Denebola marking the tail of Leo. Last month I said a good total for spotting **Saturn's moons** is four in a single observation, with five as something to aim for. On 13 March I managed to pass the target with six moons in one go. I would be delighted to hear of someone else matching or, better still, beating that count!

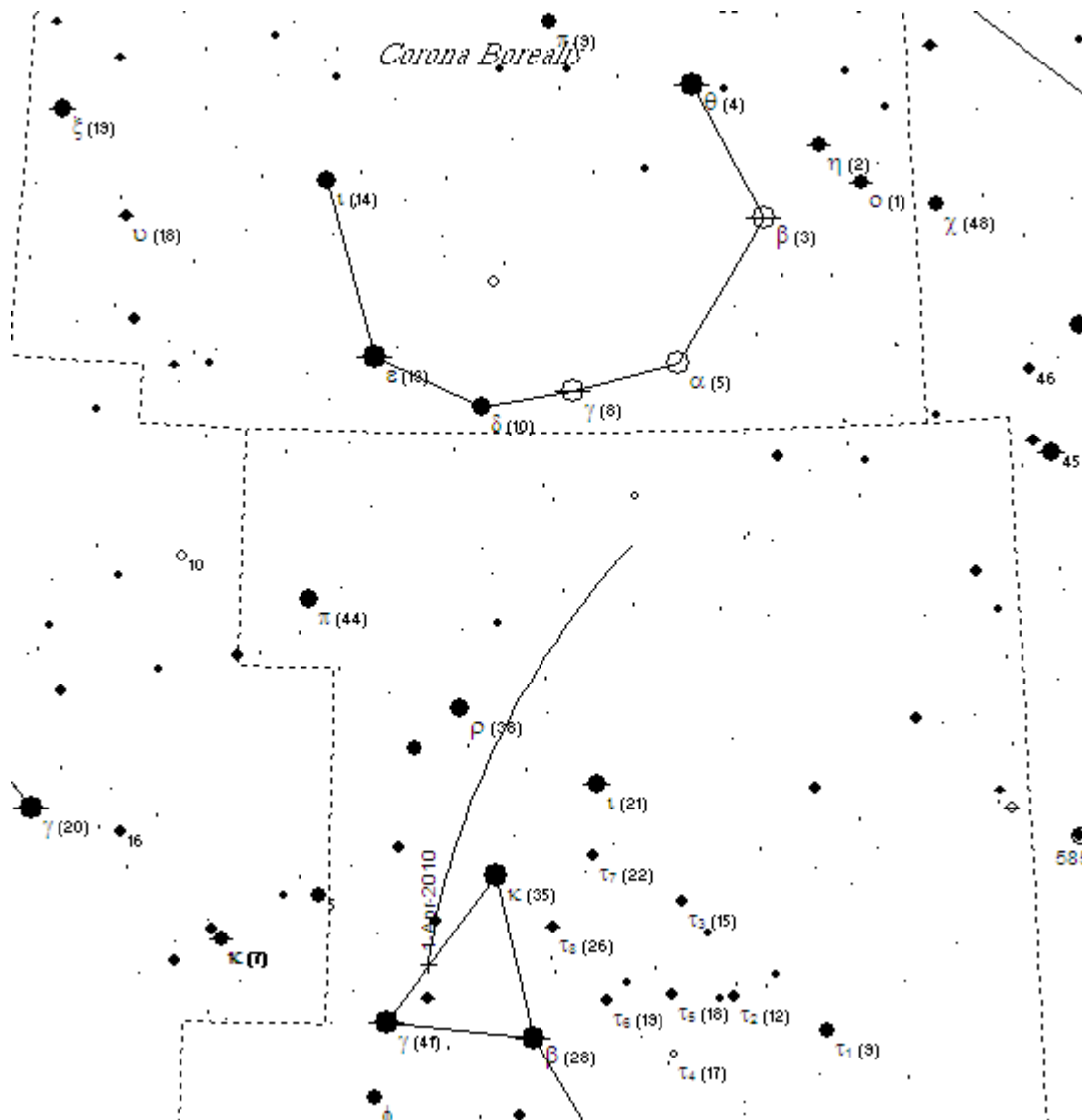
On 3 April look out for **Mercury** and **Venus** close together in the west just after sunset. Bright Venus will be obvious low in the sky, with Mercury appearing to the naked eye as a star close by to the right. At a similar time on the 15th, a very thin crescent Moon, Mercury and Venus will be found strung out in a line across the sky, with Mercury lying about a quarter of the way from the Moon to Venus. On 24 April you may be able to capture Venus together with the **Pleiades** – though I expect binoculars will be required to pick out the Seven Sisters in the twilight sky.

The asteroid **4 Vesta** spends the whole of April inside the Sickle asterism of Leo. At the start of the month it is fairly close to ϵ (epsilon) Leonis but around the 6th it reaches standstill in its retrograde loop. After this, Vesta starts moving prograde (eastwards again) towards γ (gamma) Leonis as Earth speeds away (the same as for Mars). Vesta looks like a 7th-magnitude star and is readily visible with binoculars or a finder scope. (See Keith's article on page 17.)



Track of 4 Vesta during April 2010 (stars to mag. 7)

If you want a tougher nut to crack, try finding [2 Pallas](#) in Serpens during April. Look for the obvious constellation of Corona Borealis to the north-east (up and left) of the bright star Arcturus. 2 Pallas will be in the portion of Serpens immediately below Corona Borealis. This is a tougher target, looking just like a 9th-magnitude star. It will need a telescope to find it.



Track of 2 Pallas during April 2010 (stars to mag. 8)

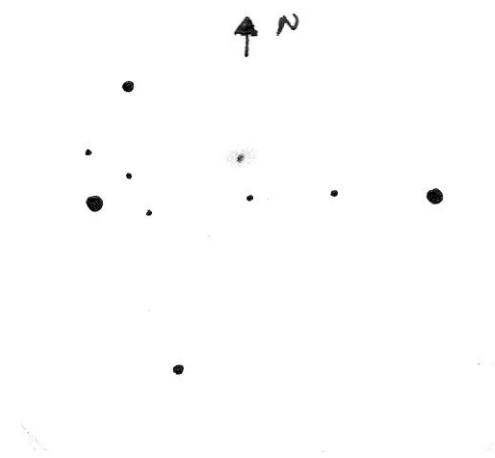
Meteors

The [Virginids](#) shower, derived from Comet Thatcher, provides a few meteors per hour from [several radiants in Virgo](#), mostly through the first half of the month. There isn't really a clear maximum. On 22 April the [Lyrids](#) peak at up to 20 per hour. The [radiant is in Lyra](#) (naturally!).

Deep sky

Ed has tracked down one of the North Pole Expedition galaxies in Camelopardalis, [NGC 2655](#). This is quite bright and therefore locatable even through moderate light pollution. It is a great target for anyone with a GoTo telescope. For Luddites like myself, it requires a long and careful star hop with a good planetarium program or atlas (I used [SkyAtlas 2000.0](#)). First find your way

to [M81](#) in Ursa Major, and then work your way north from there. Fortunately the galaxy lies between a couple of 7th-magnitude stars, which helps a lot. NGC 2655 is a [lenticular galaxy](#), which is intermediate between an elliptical and a spiral type of galaxy. You should be able to separate a compact core from the surrounding nebulosity.



NGC 2655 using 12" f/5 Dobsonian with 15mm lens (20 March 2010)

Another nice galaxy to try for is [NGC 4631](#), nicknamed [the Whale](#), in Canes Venatici. It is indeed a huge galaxy, and bright (for a galaxy, at any rate). It is also fairly straightforward to locate. Use [Melotte 111](#), the Coma Berenices open star cluster, as a starting point – this is an easy naked-eye object. The stars in the cluster appear to indicate a direction northwards; follow this to a wide pair of 6th-magnitude stars and scan south-eastwards with a low-power lens and you should catch your whale. There is no obvious core to this sprawl of stars but there is a fairly well-defined bright band along the middle of its length.



NGC 4631 [Adam Block](#), [Mt. Lemmon SkyCenter](#), [U. Arizona](#)



An expedition to the North Pole

A continuing CaDAS project (started in the International Year of Astronomy 2009)
to collect observations, sketches, images and *any* kind of information about
any object with a J2000 declination ≥ 70 degrees.

Send your reports, lists, or whatever to Rod, Alex or Rob (contact info for all three is at www.cadas-astro.org.uk/contacts.html) or, if you prefer, bring them along to a CaDAS meeting.

Report 4, 22 March 2010

Alex Menarry



Is it really more than three months since I last wrote about touring the north sky, looking for Rob's Recommended Objects? Yes, lots of cloudy nights, then arctic conditions and lots of snow made me review why we decide to be English eyeball astronomers at all. There must be a reason, of which someone may be able to remind me. However, March came to the rescue and there have been at least four good viewing nights to mid-March so far, even with March 10–17 clouded out.

After a lot of problems with poor slewing accuracy of my EQ5/GoToStar system (no better than $\pm 1^\circ$) and worrying whether it was my incompetence in setting up properly, the reason became clear – mechanical play in the worm drives. It simply hadn't occurred to me to look at this aspect of the problem, since the head is almost brand new. Luckily, Jürgen has the skill and knowledge to adjust the clearances and, of course, the kindness to spend his time helping me out. (It couldn't be done on a Monday, his night for cleaning the budgies' cage.) The subject for an article is forming in my mind...

There are no excuses any more, now that I can zero in on a target and expect it to be in the 25mm eyepiece field of view. You will deduce that I don't have the skills (yet!) to find things for myself in the C8. Binoculars I can handle OK, but I just can't get the hang of everything moving the wrong way in a telescope when I'm trying to star-hop.

The first assault on The North Pole in earnest was the **double-star list**. With a GoTo system, you can whizz around the sky finding objects in quick succession, and I am beginning to see why the double-star enthusiasts become so absorbed and involved. (See Mike Gregory's two articles on his May 2009 observations in July and August 2009 *Transits*.) I had no idea how satisfying and wonderful it is to see these really beautiful objects. Photographs are no substitute. One positive aspect is that you can be fairly certain when you have seen a double or multiple – it's in roughly the right place and has the right magnitudes, separation and colours of stars. I get a real bang out of eye-balling them! Maybe even as good as with globular clusters; the jury is out on that one.

Out of the original list of doubles, I have three to go back to for confirmation and three yet to see – they are in Cepheus and behind the house just now. However, as I implied in my "Norton and

the North” article last month, the whole idea behind The North Pole Expedition is kicking in for me, leading to other places. I’ve spent many a happy hour with *The Cambridge Double Star Atlas*,¹ Bob Argyle’s [Observing and Measuring Visual Double Stars](#), the [Washington Double Star Catalogue](#), the [Struve Catalogue](#) (Σ or STF) and the [SIMBAD](#) database online. I’m sure there’s a lot more to discover along the way. These references are leading me to compile some additional targets to suggest to our North Pole Leader.

To adapt Mae West: so many wonderful objects, so little time. I’ve made some progress on the **deep-sky list** – not easy, as Rob says, with massive understatement – and minor progress with the **eclipsing binaries and variables**. I now must include the North Pole **asterisms** (January *Transit*). At least they are binocular objects, which is where I served my time. Problems to think about are arising in rapid succession, all possible subjects for future articles by me or maybe by someone more knowledgeable. One is the detail of setting up an equatorial mount; there are deep thoughts to put in order there. Then there is the problem of the separation of doubles and how they look/should look in the eyepiece, raising questions of telescope resolution and eyepiece fields of view – all good stuff. A related problem is the limiting magnitude it is possible to see in urban, badly polluted situations, which puts limits on the objects one can attempt.²

To say nothing about being organised. Now, I thought I was pretty good at making an observing plan, jotting down notes and keeping track of what had happened during an observing session. However, I’m finding I’m not as good as I thought I was; there are some improvements required in this department.³ Maybe it’s a good thing it’s not clear every night – I couldn’t keep up!

And finally ... are you watching Brian Cox’s [Wonders of the Solar System](#)? Sunday nights on BBC2, repeated on Tuesdays and no doubt to be repeated again in the future. Wonderful pictures and very well presented, in my opinion.



Deep-sky observing at Square Corner

Rob Peeling

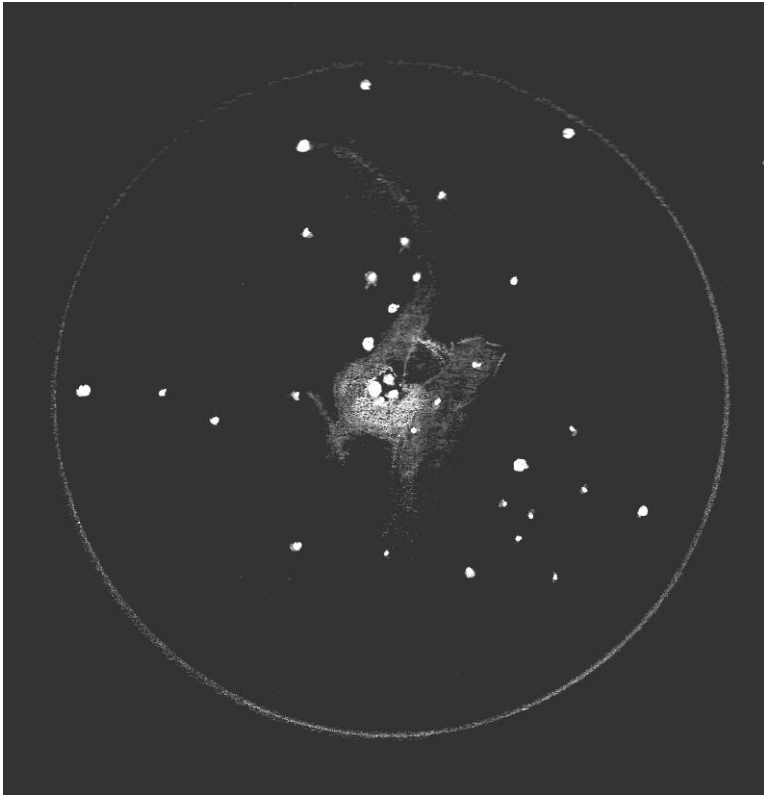
On Sunday, 6 March, Mike Smith, Ed Restall and I met up at Square Corner on the North York Moors above Osmotherley. We wanted to get well away from the light pollution of Teesside to track down a good assortment of deep-sky objects. We were rewarded by a perfect night with no clouds and no moon until well after midnight, and saw some wonderful sights.

M42, the Great Orion Nebula, looked almost 3D in the telescope, with a very subtle green glow. We could see a great arm of glowing gas sweeping away to the east and south, together with **NGC 1980** surrounding the triple star ι (iota) Orionis, and further south the small nebula **NGC 1999**. Moving north, **M43** was bright and we could also see smaller clouds around other

¹ [Reviewed in July 2009’s *Transit*. – Ed.]

² [I’ve recently found a free downloadable program, [Limiting Stellar Magnitude](#), that gives good guidance on this for your particular scope, personal circumstances and sky conditions, with graphs to show how tweaking various aspects of those things can alter what you may be able to see. I noticed an apparent inconsistency in that the results claim that you can see fainter objects as you get older (wouldn’t that be nice ...) and the author is currently following that up with the creator of the original complex algorithm. – Ed.]

³ [Darren Bushnell’s observing forms may help – see Andy’s observing notes starting on page 9. – Ed.]



M42, 31/01/2010 20:18UT.

12" f/5 Dobsonian with 15mm eyepiece and no filter.

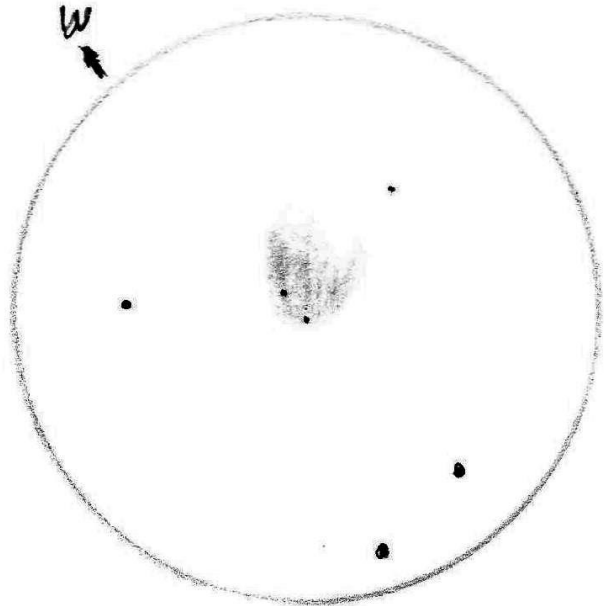
Nearly full moon rising.

M43 not visible although lying in the field of view.

young stars ([NGC 1977, 75 & 73 – the Running Man Nebula⁴](#)). Further north still we were able to see [NGC 2024, the Flame Nebula](#), which immediately follows the star Alnitak and the tiny nebula [NGC 2023](#) a bit to the south. North again brought us to the reflection nebula [M78](#). I can't recall ever seeing M78 so clearly. It was a large, fan-shaped object with two stars like eyes in a ghost. Usually it seems to me to be a dirty smear closely surrounding the two stars.

M78 10/03/2010 20:57UT.

12" f/5 Dobsonian with 15mm eyepiece and CLS filter.



⁴ [See Keith's photo of this on page 4 of February's Transit. – Ed.]

We noticed the shadow cast over **Saturn** by its rings, and off to the west were the largest two of Saturn's moons, Titan and Rhea. **Mars** showed the ice cap and a couple of dark markings. We also tracked down **4 Vesta** in the sickle of Leo.

In 1845 Lord Rosse observed **M51, the Whirlpool Galaxy**, with his 6-foot telescope in Ireland (the biggest in the world at the time) and [discovered its spiral structure](#). Our view of the same galaxy on Sunday night with only a 12" telescope seemed almost as dramatic as we looked at the bright core of the galaxy and the blotchy circle of light surrounding it.

We also had a wonderful view of **M81, the Cigar Galaxy**, in the constellation of the Great Bear. We could clearly see two dark gaps in the glow from the galaxy caused by clouds of dusty gas.

Yet another highlight was one of my favourites, **Markarian's Chain**. On this occasion we started as usual for me with **M84** and **M86** and were delighted to find four other galaxies in the field of view at the same time.

Back in January I talked about what I jokingly call astronomical 'stamp collecting'. This evening had been the 'stamp collecting' session to crown them all. It took me a while the following evening to compile a list of most of the objects we looked at. The final tally was 17 nebulae of various sorts, 23 clusters & asterisms, 23 galaxies and 5 objects within the solar system.

The only downside? Ed had to lend me a ball of string to tie down my car boot because the lock had frozen solid.

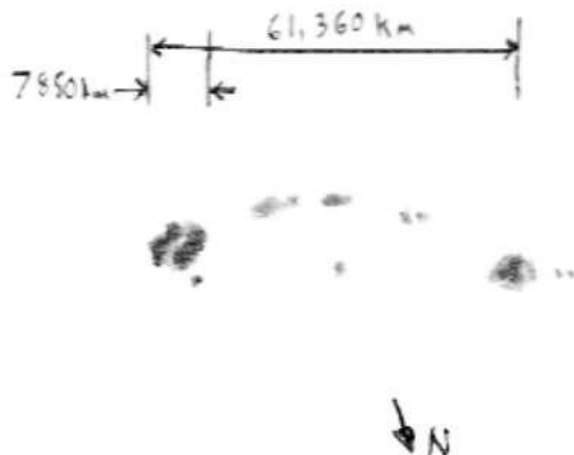
Thanks, Mike and Ed, for joining me for a memorable observing session.



Sunspots are back!

Rob Peeling

At last we are getting some sunspots to look at. I sketched sunspot group 1049 (below) on 20 February 2010 using a 150mm f/5 Newtonian with a Baader solar film filter. I used a 4x Imagemate with 25mm and 10mm Plössl lenses. I also measured the dimensions of the group with the 4x Imagemate together with my 12.5mm Celestron Microguide astrometric eyepiece.



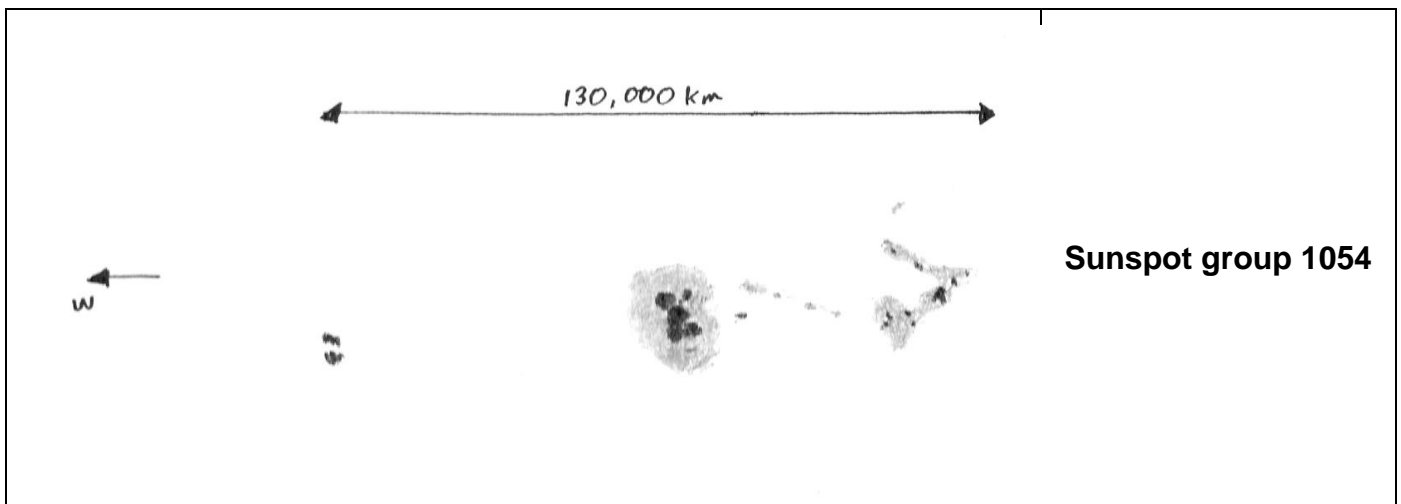
The separation between the two largest groups of spots was 86" and the large spots were about 11" in diameter.

The diameter of the solar disk on 19 February 2010 was 32' 31" = 1951" and the solar radius is 695,980 km.

The spots are therefore ~7900 km in diameter and 61,400 km apart. For comparison, the Earth's diameter is 12,756 km.

On 13 March 2010 I was able to repeat the exercise with sunspot group 1054, which was broken into three parts. To the west was a small double spot, then a large spot with a very clear penumbra, and finally a complicated multiple grouping. I used 25mm, 10mm and 6.3mm Plössl lenses and a Baader solar film filter. With the 4x Imagemate and astrometric eyepiece:

- the overall length (east–west) of the group was 180" or 129,550 km;
- the western pair of spots were 7" (5400 km) east–west and 15" (10,800 km) north–south;
- the middle group was 37" (27,000 km) east–west over the penumbra and about 45" (32,400 km) north–south;
- the third group was about 45" (32,400 km) long and 30–37" (21,600–27,000 km) north–south.



Backyard astronomical sketching

Andy Fleming



It seems to be a natural progression... you start with naked-eye observing, then move on to binoculars, then to visual observations with a telescope, and finally you progress to sketching. For the past few years I've been perfectly content just to assemble my telescope in the back garden and enjoy a tour of objects of interest in the night sky. It was just plain, simple, relaxing, no-strings-attached observing.

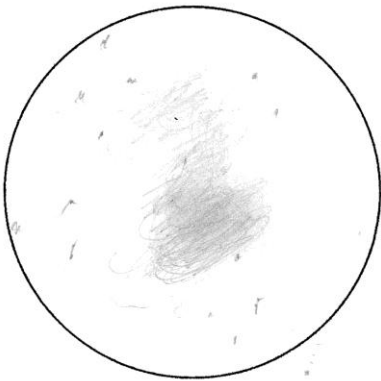
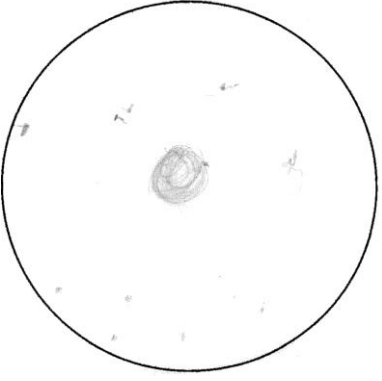
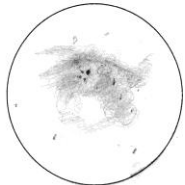
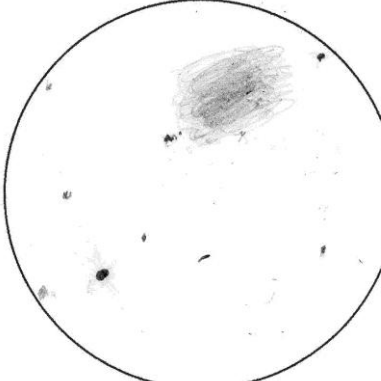
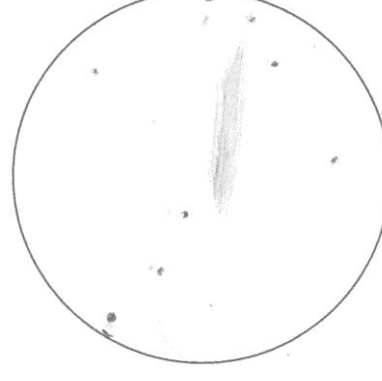
However, along came Rob's superb sketches, and some of us just viewed them in awe. There was no way I for one could attempt artistry such as this! Reading some of Rob's articles on sketching and the hints and tips in [Observing the Deep Sky](#) (Darren Bushnall, Crowood Press, 2005) finally inspired me to act... and what a great feeling it is to have something to show at the end of an observing session!

Let me state from the outset that I'm no artist... I tend to draw along straight lines! However, I hope you enjoy my sketches, and that they inspire you to try sketching yourself. In addition to having something to show for your observing session, drawing the objects requires far greater

attention to detail in the view through the eyepiece. Another benefit is that you're far more likely to recognise the object in future observation sessions, as what you see through the eyepiece is, of course, frequently very different from what is shown in photographic images.

Sketching takes some getting used to at first – it isn't easy learning to manage a telescope, star charts, clipboard, paper, pencil and dim red-light torch! But if I can do it, anyone can! It's perhaps also a good idea to begin with some distinct and easy objects, depending on what's visible, such as the **Cigar Galaxy (M82)**, the **Orion Nebula (M42)** and the **Ring Nebula (M57)**. Also remember that you don't have to spend your entire observing session sketching – make sure you leave plenty of time just for relaxing stargazing.

As a beginner, I have also found it useful to produce and print some standard sketching forms, including a circle for the telescope's field of view and labels and fields for such things as object name, Messier number, equipment used, and date and time of observation. This ensures that your drawings are fully labelled, so that in future, when you use different equipment or are observing from elsewhere, you can account for differences in the views. Again, for this I thoroughly recommend the 'Deep Sky Report' specimen form in Darren Bushnell's book as the basis for your recordings.

 <p>M27 Dumbbell Nebula 27 October 2008</p>	 <p>M57 Ring Nebula 27 October 2008</p>	<p style="text-align: center;">DEEP SKY REPORT</p> <p>Observer's Name: <u>Andy Fleming</u> Messier No. <u>42</u></p> <p>OBJECT: NGC <u>1976</u> Other: Name: <u>ORION NEBULA</u></p> <p>R.A. <u>5h 14m 31s</u> Dec: <u>5° 26' 38"</u> Class: <u>EMISSION NEBULA</u></p> <p>Magnitude: <u>4.00</u> Angular Dimensions: <u>+1° 6' 00"</u></p> <hr/>  <p>Field of View: Magnification: <u>x80</u></p> <p>Viewed from: <u>Walsley</u> Date: <u>4/3/10</u> Start/finish times: <u>22:10:00</u></p> <p>Instrument: <u>Nebula</u> Aperture (cms): <u>70</u> F/Ratio: Filters:</p> <p>Seeing: <u>Good</u> Transparency: Weather Conditions: <u>Thin high Cirrus cloud</u></p> <p>DESCRIPTION:</p> <p><u>M42 Great Nebula in Orion</u></p>
 <p>M81 4 March 2010</p>	 <p>M82 4 March 2010</p>	

Ultimately, the effort is well worthwhile – you'll have learned far more about the objects you observe, and will have the satisfaction of showing your drawings to family members, friends or members of the Society. Why not scan them into your computer and make negatives of your sketches, so that the monochrome drawings are no longer reversed out? You can then publish them on your website or Facebook profile for all to see!⁵

Now then, I must talk to the wife about an artist's pencil set!!



Attempting to image Mars at opposition

Ed Restall



Having watched Keith Johnson image planets time and time again from his home in Chilton, with amazing results from a less than encouraging environment, I thought it might be worth having a shot at Mars this January as it approached opposition, imaging from the equally inauspicious surroundings of my back yard in Norton.

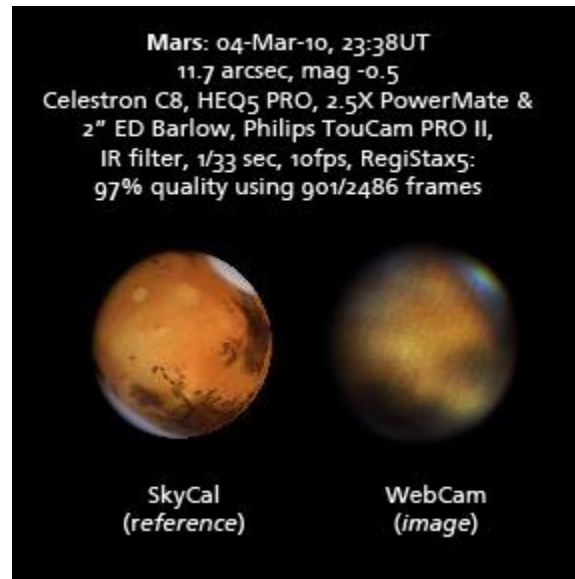
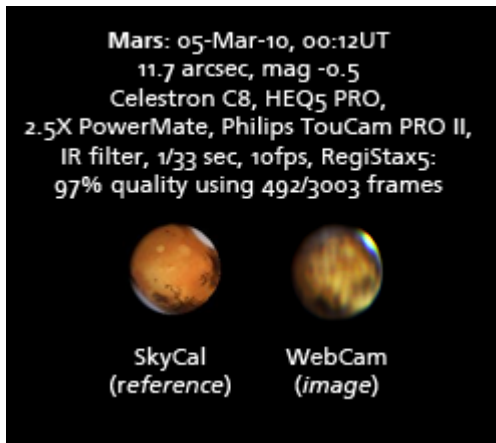
Opposition came and went without an adequately clear night, in what has been an atrocious winter for observing. At this point I should note that Mars didn't clear the houses obscuring my view of the southern horizon until very late, so clear evenings were of no use to me, just clear nights!

After a couple of unsuccessful evenings in February trying to get images through hazy cloud, my first reasonable evening to capture an AVI was the night of 4/5 March, and from early on it was apparent that the seeing wasn't too good. Around midnight high thin cirrus cloud started to appear in patches of the sky and the ominous threat of thicker cloud was on the horizon, so I quickly set about shooting a number of five-minute AVIs at 10 fps using a 2.5x Powermate (f/25 with my Celestron C8 at prime focus) and using the same Powermate in conjunction with a 2x ED Barlow lens (f/50).

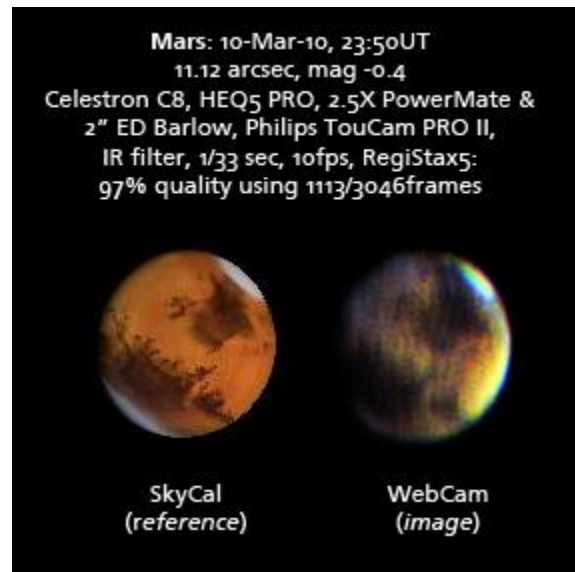
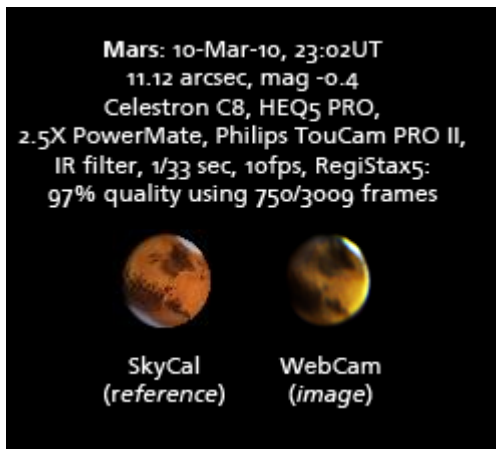
It's worth re-iterating at this stage that Keith's advice on collimation and focus contained in his *Transit* articles on planetary imaging is excellent. I find I get more accurate collimation with my webcam attached to the scope, and viewing on a laptop screen, rather than through an eyepiece (particularly on a cold night). Precise focus was achieved using a nearby star and my manual Crayford focuser rather than trying to obtain focus on the planetary disk (the Crayford avoids image movement problems associated with an SCT's primary mirror focus adjustment and allows for much finer control).

The results are shown on the next page, with details of the equipment used, stacking parameters using Registax 5 and a comparison reference image from [Calsky](#). A false luminance layer was added in Adobe Photoshop with an optimal mix of red, green and blue channels in order to enhance the contrast of the surface detail and produce an LRGB image. It is immediately apparent that the seeing was not great and bears out the maxim that imaging at f/50 is a forlorn hope when conditions are less than optimal.

⁵ [As well as sending them in for publication in *Transit!* – Ed.]



The next opportunity I had to image Mars was the night of 10/11 March when the planet was well past its best, with its diameter down to 11.2 arcsec at nearly 126 million km distance and shining at mag 0.4. Compare this to opposition, when it was at mag -1.3 , with a diameter of 14.1 arcsec and at a distance of around 99.3 million km. As you can see from the results below (again LRGB), the conditions were considerably better than on 4/5 March, with significantly more detail apparent at f/50 than on the previous occasion. However, the results are less than brilliant, even if they do show that you can pick out a fair amount of detail on the planetary disk.



The few subsequent clear evenings have revealed nothing better, with the planet receding fast. I suspect that ultimately there is a limit to how good an image I will be able to get of any planet on a winter night/evening from my back yard, as the heating from the houses in very close proximity to me will always distort the viewing conditions; but I will persevere.

By the way, to anyone thinking of planetary imaging with a webcam but without an [IR filter](#), let me save you a bit of time and effort ... don't bother! I tried that setup with Mars as an experiment, and it's pretty much a waste of time if you want to make out any detail whatsoever.

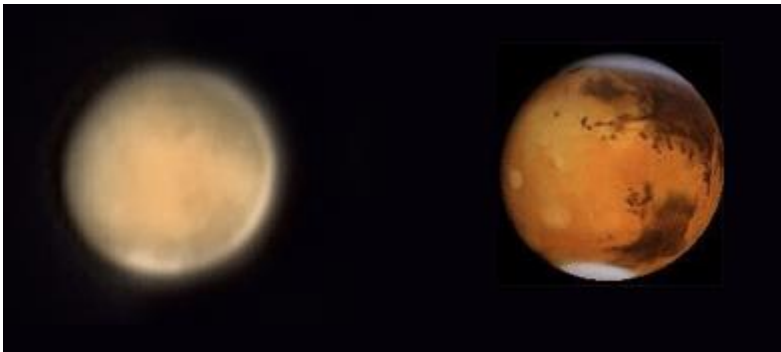
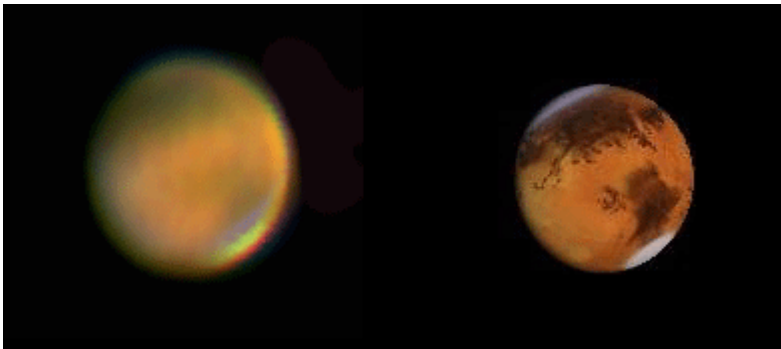
Me too!

Rod Cuff

With Mars rapidly diminishing in apparent size throughout the month, March provided the last reasonable opportunity to image the planet through a webcam for another two years. As Ed says in his article above, there were few nights when the local seeing was good enough to make the effort worthwhile, but I was able to capture images early in the month from my back garden in Guisborough

The kit was much the same as Ed's, except that I was using an 8" Meade LX90. I stayed with a 2.5x Powermate, despite also having a 2x Barlow that in theory I could have included in the optical train in series; but at the time I didn't have a Crayford focuser (which has been one of March's purchases!), and found it impossible in practice to get the planet on the laptop screen and focused using both focal-length extenders. Subsequent processing was in Registax 5 and Photoshop, though without the sophistication of an added luminance layer, something I must talk to Ed about!

The results from the two best evenings are shown below, with time-matching Calsky reference images on the right for comparison.

	<p>1 March 2010, 20:50 UT. 10 fps @ 1/33 sec. ~3000 frames, reduced with Registax 5 to ~800 using a 97% quality threshold. Mars subtended 12.0 arcsec.</p>
	<p>10 March 2010, 23:04 UT. 5 fps @ 1/33 sec. ~2100 frames, reduced to ~720 with a 97% quality threshold. Mars subtended 11.4 arcsec.</p>

Asteroid 4 Vesta

Keith Johnson



In early March, while I was checking out asteroid ephemerides in SkyMap Pro, I noticed that asteroid [4 Vesta](#) would be positioned inside the sickle of Leo. At magnitude 6.4 it would be an easy target for my Mintron camera.

As the weather conditions were looking favourable from the evening of Saturday 6 March into Sunday 7th, I decided to capture Vesta's tell-tale movement against the background stars.

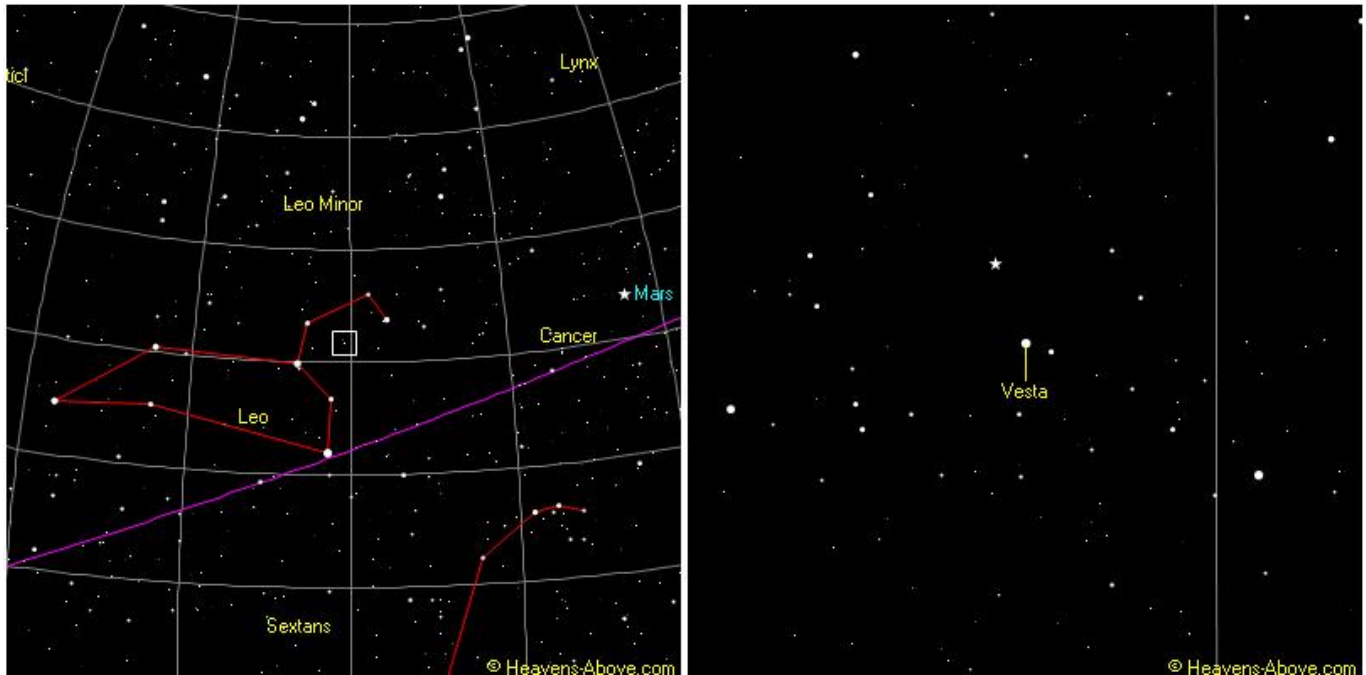
I took four separate frames showing the path of Vesta, each having the asteroid dead centre in the frame. [Here's the result of stacking them with Registax to show Vesta's movement against the stars:⁶]



⁶ [By moving rapidly between the four frames on a computer monitor, it's easy to see the relative movement, but that doesn't transfer well to the printed page. So I've taken the liberty of stacking them into a single picture and cleaning it up in Photoshop – any violence to Keith's original data is entirely my fault. – Ed.]

I'm creating a small movie clip that I can send to any interested member. Contact me at watcheroftheskies@talktalk.net.

Here's a chart from Heavens Above illustrating Vesta's position at the time:



The original images were captured on 7 March 2010 at 00:34:15, 01:03:59, 01:34:27 and 02:13:16 UT.

Equipment used:

- Williams Optics ZS66 refractor
- EQ6 Pro mount
- Mintron 12V1-EX video camera.

Each of the four 30-second AVIs was captured at 10 frames per second, with subsequent aligning and stacking carried out in Registax 5.

CaDAS NEWS

[Spreading the word](#)

CaDAS's 'outreach' grew significantly in March, mainly because of two factors. One was the settled establishment of [our Facebook page](#), which is averaging about two announcements a day (usually from one of the administrators – Ed Restall, Rob Peeling and myself – but also sometimes from other CaDAS members). Typically, such an announcement has a comment on something interesting in the sky that evening, or some development elsewhere on the web.

There's also a special section for North Pole Expedition activities, including now Rob's lists of suggested targets (variable & multiple stars, asterisms, galaxies and clusters).

One such announcement heralded a [new blog](#) by our very own Andy Fleming – and excellent it is too, well worth anyone's time. It sets out to cover "news, views and podcasts from and about astronomy, astrophysics and cosmology". And it's Andy who's been the other factor in getting us better known. He's CaDAS's Media Officer, sending press releases and informal communications to local newspapers, where items have lately been appearing in print and on newspaper websites (e.g., the [Gazette](#) and [Sunderland Echo](#)). Andy says:

I always send press releases about the meetings to both BBC local radio stations, Radio Hartlepool, and all local and regional daily and evening newspapers. In addition our meetings will also be listed shortly in [Astronomy Now](#) (starting with Jack's presidential address).

If anyone has any suggestions for listings, please let me know, and I will add them to the mailshot.



Moonfish eyepieces

If you weren't at March's meeting, you might like to know about a real bargain offer that was made there, and which is still open. Dani Corredor of Moonfish (see *Transit*, January 2010, for much more about Dani, his company and his links with CaDAS) has very generously donated to us two of his excellent 2" eyepieces (there's a link to them [here](#)). Your committee decided that the fairest thing was to make them available for sale to CaDAS members (of at least a year's standing) at £50 each. If you would like to buy one, contact our secretary Alex Menarry (general-secretary@cad-as-astro.org.uk) either by email or by grabbing him at this month's meeting. If more than two people want to buy them, we'll draw lots for it.

Ed Restall says:

I've used these eyepieces time & again at public observing sessions and on my own equipment and can vouch for their clarity and excellent contrast. They're fantastic 2" barrel, 30mm focal length, ultra-wide field of view (80° apparent FoV), long eye relief, 5-element, fully coated eyepieces. They retail for 99 Euros and Dani has been sold out for well over a year, but the two we have to sell are slight seconds – not that you'd notice anything, but Dani is a perfectionist and any slight imperfections he sells as seconds. These, I believe, had to have some of the anodising in the barrel touched up with paint.

THE TRANSIT QUIZ

Answers to March's quiz

I invited you to work out what various astronomical mnemonics were all about.

1. [All The Great Constellations Live Very Long Since Stars Can't Alter Physics](#). The clue is in the fourth word: this is about the constellations of the **Zodiac**: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, Pisces.
2. ["Oh, Be A Fine Girl, Kiss Me."](#) ["Right Now?"](#) ["Sure."](#) I expect you got this one: **stellar spectral classes**, working from hottest to coolest: O, B, A, F, G, K, M, R, N, S. The last three are more recent additions to the original Harvard list; and Neil points out that

'sometimes the sequence begins with "Class W", for Wolf-Rayet stars. There have now been yet another two classes added at the other end, L and T, for ultra-low-mass red dwarfs. I guess someone will have to think up two more words to add to the sentence. Perhaps "Lovely – thanks!" [Wikipedia](#) is good on spectral classes.

3. *Sir Can Rig A VCR, Pa!* The **brightest stars** in the sky: Sirius in Canis Major, Canopus in Carina, Rigil Kent (Alpha Centauri) in Centaurus, Arcturus in Boötes, Vega in Lyra, Capella in Auriga, Rigel in Orion, Procyon in Canis Minor, Achernar in Eridanus.
4. *My ingenious astronomy student remembers an easy light mnemonic.* I suggested counting the letters; if you did, you'd have come up with 299,792,458, the **speed of light** in a vacuum in km/sec.
5. *Met Dr. Thip.* All the **moons of Saturn** known before the twentieth century, working outwards: Mimas, Enceladus, Tethys, Dione, Rhea, Titan, Hyperion, Iapetus, Phoebe (Phoebe just makes it, having been found in 1899!).
6. *I Easily Get Confused.* The **Galilean moons of Jupiter**, again working outwards: Io, Europa, Ganymede, Callisto.
7. *Mispronunciations Afflict Uranus Too Often.* Those **moons of Uranus** that we knew about before we started sending probes out there: Miranda, Ariel, Umbriel, Titania, Oberon.

April's quiz

What are the 'alpha' stars of these constellations?

- | | | |
|--------------|-------------|-------------|
| 1. Andromeda | 2. Aquarius | 3. Aquila |
| 4. Aries | 5. Cygnus | 6. Hercules |

(Harder!) What constellations have these as their 'beta' stars?

- | | | |
|--------------------|--------------|-------------|
| 7. Chaph | 8. Scheat | 9. Graffias |
| 10. Zubenelchemale | 11. Denebola | 12. Kocab |

