TRANSIT

The March 2013 Newsletter of

NEXT TWO MEETINGS at Wynyard Planetarium

Friday 8 March 2013, *7.15 for 7.30 pm*

Twinkle, twinkle little star …
Dr Johanna Jarvis,
Astronomy Tuition (www.jfjarvis.co.uk)

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Friday 12 April 2013

Presidential address (*topic TBA*)
Jack Youdale, FRAS

Content

Editorial

Rod Cuff

Back to the borin' ol' *Transit* design this month – I hope you got a pleasant shock when opening Andy Fleming's excellent guest issue last month. Full of great stuff – Andy is a very talented guy, and I'm very glad to have him as an occasional guest editor. Many thanks, Andy, for all that you're doing for public outreach in astronomy and for CaDAS.

The reason Andy was handling February's issue was that I was having an excellent two weeks' holiday in South Africa. From wildlife, history, culture and landscape perspectives it was fascinating, and I hope we'll get back there again to see much more of that large country. Astronomically, though, there wasn't much on – for some reason, the SALT telescope people didn't invite me to give a talk as an honoured representative of CaDAS, and no one thought to bring a 20" Dob on the trip. More to the sad point, though, the hotels in which we stayed kept so many lights on that the glory of the Southern Hemisphere sky was rarely apparent. The odd glimpse of the Southern Cross and the Magellanic Clouds, and that was about it. Our one night camping in the nocturnal blackness of the bush was accompanied initially by cloud, and then at 1 a.m. by a torrential and noisy electrical storm right overhead – exhilarating when you're in a tent …. Maybe I should feel grateful for the (very) occasional clear skies of Guisborough.

This issue marks a sad transition, also with a South African twist to it. Rob Peeling, who for years has produced a whole string of informative and encouraging Skylights articles covering what's on in the night sky each month has finally had to call it a day on that front. As old hands will remember, Rob and his family moved two years ago to Berkshire, but he continued to be generous in his writing for us. However, he now travels so much (often to South Africa) that he can no longer commit to continuing with Skylights, though he holds out tantalising hope of writing the occasional article on astronomy for *Transit* at some stage. CaDAS owes him a huge debt – very many thanks, Rob, and I hope you still get the occasional chance just to sit under a dark African sky and enjoy looking up.

If you would like to contribute to CaDAS by writing a monthly column about the night sky, I would be delighted to hear from you. In default of that, and/or in the meantime, I recommend visiting any of several excellent websites that will inform you of what's best to see in the month ahead. I've listed a few in the regular Skylights slot on page 3, and will adapt the links each month, along with any other links that you or I find that are worth adding to the list.

I'm always on the lookout for interesting and different astronomy pages on the internet. My favourite in the past two months is the excellent 'Interactive Messier Catalog' at www.greenhawkobservatory.com. Which sites would *you* like to tell other CaDAS members about?

By the way – a warm welcome to new members Stephen Brown and Keith Howard!

Best wishes -- Rod

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Letter

Asteroid 2012 DA14 scrapes by

from Carole Haswell

[*I'd asked for any observations or images of this close and fast-moving asteroid, but most of us were clouded out. However, I did hear from one of our Honorary Members, Dr Carole Haswell, Senior Lecturer in the Department of Physics and Astronomy at the Open University. Let's all go to the Med … — Ed.]*

One of my postgrad students, Jakub Bochinski, successfully caught it and took some CCD frames with PIRATE, our remotely operated telescope on Mallorca.

Best wishes – Carole

OBSERVATION REPORTS AND PLANNING

Skylights – March 2013

Here are some suggestions for websites that will highlight some of the best of what you can see (clouds permitting!) in the night sky in the coming month. They're in no particular order, though my personal favourites are the Jodrell Bank and SPA sites.

- **Andromeda Child** (from our own Andy Fleming):

  http://tinyurl.com/CaDAS2013Mar-1

- Where to look for **Comet C/2011 L4 PANSTARRS**:

  www.astro-sharp.com/2013/03/01/how-to-see-comet-panstarrs

- **Orion Telescopes**:

  http://tinyurl.com/CaDAS2013Mar-2

- **Jodrell Bank Centre for Astrophysics** – includes focuses on objects in Gemini, Leo, Virgo and Ursa Major; transit times for Jupiter's Great Red Spot; and how to find out when you can see the International Space Station:

  www.jb.man.ac.uk/astronomy/nightsky

- **Society for Popular Astronomy** (SPA) – includes a list of lunar occultations and a full ephemeris for Comet C/2011 L4 PANSTARRS:

  http://tinyurl.com/CaDAS2013Mar-3

Another Jupiter for the season's portfolio

Keith Johnson

Here's my capture of Jupiter carried out on 17 February 2013 at approximately 20:40 U.T. – the seeing wasn't too bad.

Hardware

Skywatcher EQ6 Pro. Mount

C9.25" Schmidt–Cassegrain telescope (SCT)

Imaging Source DFK 21AU618.AS USB II colour camera

Astro-Engineering 4× ImageMate

Software

Telescope computerised control (via SkyMap Pro 9)

Lucam Recorder 'Professional' (image acquisition)

Autostakkert II (image alignment and stacking)

WinJUPOS (de-rotation of images)

Registax v6 (wavelets, curves and histogram-stretch functions carried out)

Process

Three 90-second AVIs captured at 30 frames/second, then aligned and stacked in Autostakkert.

All three images were then transferred to Registax, where a slight wavelet (sharpening) was applied to each.

They were then transferred to WinJUPOS to be de-rotated, which is necessary because of the fast rotation of the planet.

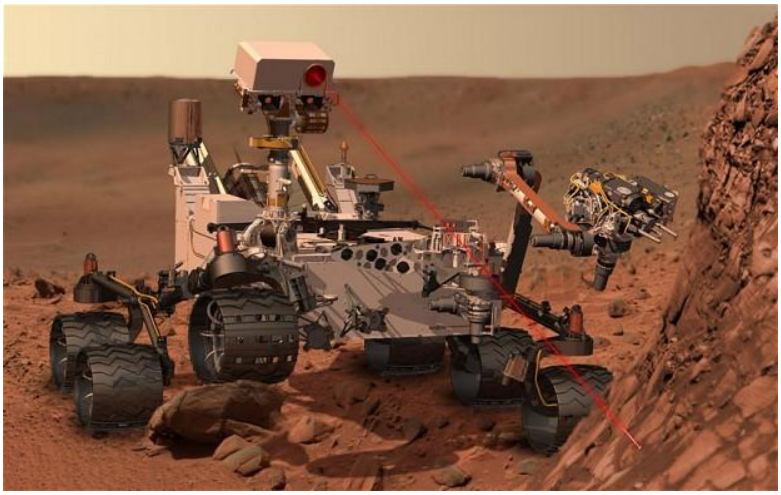
Finally, the resulting image was transferred back to Registax for a final slight adjustment with the wavelet feature.

Curiosity makes the radio star

Andy Fleming

[*Andy is a regular DJ and spreader of astronomical goodies on Radio Hartlepool, as anyone who read February's* Transit *will know. Transcripts of any of his short talks and/or blogs may turn up in these pages at any time – here's a short one! — Ed.]*

Currently investigating the Martian surface, Curiosity is NASA's latest rover to explore the surface of the Red Planet. It's part of their Mars Exploration Program, a long-term effort of robotic exploration of the planet. Curiosity was designed to assess whether Mars ever had an environment able to support small life-forms called microbes. In other words, its mission is to determine the planet's habitability.



To help in this task, the rover carries the biggest, most advanced suite of instruments for scientific studies ever sent to the Martian surface. The record of the planet's climate and geology is essentially written in its rocks and soil – in their formation, structure and chemical composition. Curiosity's on-board laboratory is currently analysing samples of these rocks and soils, and also the local geologic setting, in order to detect the chemical building blocks of life on Mars. These include complex organic chemicals that contain carbon, perhaps even amino acids. From such studies Curiosity is assessing what the Martian environment was like in the past.

The rover is able to roll over obstacles up to 75 centimetres in height and on average can travel about 30 meters per hour, depending on available power levels and steepness of the terrain. Curiosity uses a radioisotope power system that generates electricity from the heat of plutonium's radioactive decay. This power source gives the mission a lifespan of nearly two years, much more than the previous highly successful Mars rovers, Spirit and Opportunity, which relied on solar panels, always vulnerable to Martian dust storms.

Chelyabinsk Oblast, eat your heart out …

Pat Duggan

[The recent daylight meteor over Chelyabinsk Oblast in Russia certainly provided some spectacular videos. If only dashboard cameras had been around in the 1790s … – Ed.]

In 1786 a small shop opened in Osmotherley. Unlike fly-by-night emporia such as Woolworth's and Jessop's, Thompson's shop had stayed open ever since … but recently had to close. I was rummaging through its considerable (and considerably dusty) collection of Stuff when I came across an old book, *History & Directory of Yorkshire, Vol ii: North and East Ridings*, which included these two entries:

> WITERNWICK in the wap of Holderness….population 370 etc. etc.
>
> ***Wold Cottage***, in the parish of Thwing, and wap of Dickering; 8 miles W. NW. of Bridlington.
>
> A very extraordinary phenomenon was observed here, on the 13th of December, 1795; in order to commemorate which, Mr Topham has erected an obelisk, with this inscription:--
>
> *'Here on this spot, December 13th 1795, fell from the atmosphere AN EXTRAORDINARY STONE, in breadth 28 inches, in height 36 inches and whose weight was 56 pounds: this column, in memory of it, was erected by Edward Topham 1799.'*
>
> The stone, while it resembles in composition those which have fallen in various parts of the world, has no counterpart or resemblance in the natural stones of the country. In its fall which was witnessed by two persons, it excavated a place to the depth of 12 inches in the earth and 7 inches into the chalk rock, making in all a depth of 19 inches from the surface. This stone was subsequently deposited in the museum of Mr Sowerby.

Can anyone give a pointer to who might know who 'Mr Sowerby' was and what happened to his museum collection? It would be good to track it down and see what it looked like. More than that – it sounds as though this stone might have quite an interesting composition. Any idea of the most likely constituents?

I know there is an obelisk in the churchyard at Rudston, but no one knows what that was erected for. I don't think it is the same one that is described above.

> STOCKTON-ON-THE-FOREST, in the wap of Bulmer, a part in the liberty of St Peter's; 4 miles NE of York.
>
> On the 13th January 1792 a meteorous appearance was observed on the forest, near this village (by several persons of credit and respectability), resembling a large army, in separate divisions, some in black and others in white uniforms; one of these divisions formed a line that appeared near a mile in extent, in the midst of which appeared a number of fir trees, which seemed to move along with the line. These

aerial troops moved in different directions, and sometimes with amazing rapidity. (See a similar account in Clark's *Survey of the Lakes*, page 56.)

A meteorous phenomenon of the same kind was seen in Heywra Park near Harrogate, on Sunday, June 28th 1812 between seven and eight o'clock in the evening, by Anthony Jackson, aged 43 years, and Martin Turner, a young man, the son of a farmer in the neighbourhood both looking after their cattle. They were suddenly surprised to see, at some distance, what appeared to be to them a large body of armed men, in white military uniforms; in the centre of which was a person of a commanding aspect, dressed in scarlet. After performing various evolutions, the whole body began to move forward, in perfect order, towards the summit of a hill, passing the spectators at the distance of about 100 yards. No sooner had this first body, which extended four deep, over an enclosure of 30 acres, attained the hill, than a second body, far more numerous than the former, dressed in a dark coloured uniform, appeared, and marched after the first, to the top of the hill, where they both joined and, marching down the opposite side of the hill, disappeared; when a column of thick smoke appeared over the plain. The time from the first appearance of this strange phenomenon to the clearing up of the smoke, the spectators suppose was little more than five minutes.

As an afterthought, the book follows the above insert with a (mis)quote, from Shakespeare's *Julius Caesar*: 'When these prodigies do so conjointly meet, let not a man say they are natural; for, I believe, they are portentous things, unto the climate that they point upon.'

'Oh, you mean Old Copper-knickers!'

John Crowther

How long do folk memories last? 'Copper-knickers' is a nickname (!) that pokes fun at Copernicus. It may originate from the time when not everyone believed Copernicus' theory that the Sun was at the centre of the (then-known) universe.

The telescope had yet to be invented, so it was not known that Venus and Mercury show Moon-like phases, facts that would have supported the Copernican model of the Solar System.

I was talking about astronomy to an elderly lady earlier this year, when she spoke the words in this article's title. I knew she was an active Roman Catholic who was not sympathetic towards the leaders of the Reformation, and that she hadn't thought up the nickname herself. Far from it: the 'Father of astronomy' was derided at the time as 'Copper-knickers' by a section of our society, and his writings put on the prohibited list by its leaders.

Later than Copernicus by about a century came a rhyme that my mother used to sing:

Twenty-ninth of May,
Royal Oak Day.
If you don't give us a holiday,
We'll all run away.

It referred to the fugitive King Charles II, who hid in an oak tree in 1651 to escape from Cromwell's troops after the Battle of Worcester.

Perhaps sadly, such folk memories are fading. Not many young people can tell us the significance of Pancake Tuesday or why we eat hot-cross buns or Easter eggs, even though both items can be found on sale not long after Christmas. And when did you last see children decorating hard-boiled eggs and rolling them down hills … ?

Moving to another planet

or

Leaping from one spark to the next

Ken Stewart

Just recently, Prof. Stephen Hawking said that we must start thinking seriously about continuing the human race into the universe by occupying another planet. Being a fan of travel, I shouted, 'Yippee!' and leapt up off my chair to pack a case. But I stopped short at the bottom of the stairs, and thought, 'Hang on a minute, what are we going in and where do I get on?'. We have nothing on the drawing board yet. Yes, there are some ideas on the means of propulsion, for example a thermonuclear rapid-pulse engine, but that is just the beginning.

When I was a young lad, some wise guy (who had usually been sitting thinking for a couple of weeks) would jump up off his chair with his pipe in his mouth, run into the garden and lock himself in the garden shed. Ten years later he would reappear with the idea of putting castors on the bottom of bedposts to make the thing easy to move, and everyone who heard about it would shout 'Wow!' and dash off to the furniture shop to buy this latest step-up in technology.

Now let's get back to where we are now. Technology is moving rapidly – so much so, that we cannot keep up with it. I bought a Nikon D5000 camera three years ago; since then there has been a D5100, and recently a D5200. Yes, you've guessed it, mine has only scrap value. The carrot they are dangling in front of us is pixels; you must have more pixels in order to produce a better picture than the guy with fewer pixels than you have. Anyway, the point is that it does not take long for things to develop.

So it may not be long after all before we have this warp-speed Universe Express. Now, before we jump on board with our luggage, think about the traffic problems in *this* country. Every ten yards there are diversion signs, and if you fail to update your satnav every two hours you could end up anywhere. Do you think it is going to be easier in space? Not likely!

Fasten your seat belts, we are off! Warp 10 with an astronaut at the wheel, travelling at umpteen miles per sec. Then – calamity! We've dropped into a wormhole. The astronaut didn't update his 'uninav' before we set off! Not only that, but there is more trouble ahead. In 1962 John Wheeler said there are forces around these wormholes that can cause them to disappear instantly. So, all of a sudden the Universe Maintenance squad come dashing up at the speed of light and whisk us away, with the wormhole, to put us somewhere else!

So there we are, half an hour and two light years from base, and that is just the beginning of the journey. Do you still want to go? Not me, Stephen, count me out. When you get the route sorted, I might think about it.

Meanwhile, I'm staying where I am because I am too old anyway.

Ah well, back to sleep.

THE TRANSIT QUIZ

Answers to February's 'Where in the Universe' challenge

Andy provided some stunning photographs for you to identify. Here's what they showed.

1. Neptune's largest moon, **Triton.**
2. The **Large Magellanic Cloud**.
3. The **Trifid Nebula** (M20 / NGC 6514).
4. One of Jupiter's four Galilean moons, **Callisto**.
5. The **Pinwheel Galaxy** (M101).

March's quiz

OK, now where was I? Ah yes – the letter 'C'. Every answer to the descriptions below starts with that letter. They're in very rough order of difficulty.

1. An optical arrangement in a reflecting telescope in which light is reflected by a secondary mirror to a focus behind the primary mirror.
2. The layer in the Sun's atmosphere between the photosphere and the corona.
3. The 'giraffe' constellation.
4. The brightest cosmic radio source in the sky.
5. The maximum mass of a white dwarf (about 1.44 solar masses).
6. A glassy, roughly spherical blob found within some meteorites.
7. A large nebula illuminated by the star Xi Persei whose shape resembles a certain area on Earth.
8. A planetary nebula in the constellation Draco, named for its oval shape and greenish colour.
9. The originator of the O, B, A, F ... etc spectral classification of stars.
10. The first person to observe a solar flare.