



TRANSIT

The February 2010 Newsletter of



NEXT MEETING

12 February 2010, 7.15 pm for a 7.30 pm start
Wynyard Woodland Park Planetarium

**Annual General Meeting and
Members' Night**

Speakers so far: Michael Roe, John Crowther

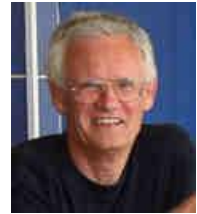
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Editorial

Rod Cuff

The first thing to say is: CaDAS has its AGM on Members' Night, Friday 12 February. Come one, come all and have your say / stand for office / shower the committee with tenners or whatever, but do please come! The agenda is in this issue, on page 15.



Also in this issue, in addition to Rob's Skylights, are three very different observation reports relevant to our 'Expedition to the North Pole' theme – contributions to this theme are always very welcome. The other main focus this month (unlikely though you may think it sounds) is Ghana – what's the link with a CaDAS member? See pages 9–13 ...

Many thanks again to all contributors to this issue. If you haven't sent in something for a while (if ever), why not resolve to do so next month? What you've seen lately, a book or website review, a report on a non-CaDAS astromeeting, discussion of any astronomical topic that interests you, how you use your computer to further your astronomical interests (Galaxy Zoo, Universe Today, APOD, predictions of Jovian satellite events, BAA sections ...) – other members would welcome the variety, I'm sure. The copy deadline for the next issue is **Friday 26 February**.

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

Letter to the editor

Neil Haggath

Now there's a rarity – John Crowther and I actually agreeing on something! Hee hee (see John's piece in the January issue, which responds to my *Mankind's Pinnacle* essay). However, I have to comment on one point.



John rightly says that we shouldn't criticise the 'ignorance' of people who simply don't share our interests – though there are plenty who do the opposite, and ridicule us *because* of our interests and intellectual pursuits! (I used to work with a guy who took that to extremes; in his view, *every* hobby or interest in which he personally wasn't interested was either stupid, pointless, a waste of time and/or money, or any combination thereof.)

But that isn't what I was doing in my essay. I wasn't commenting on those who simply don't share *our specific* interests or knowledge, but on those – depressingly numerous in today's society – who have absolutely zero interest in, or knowledge of, *anything* remotely intellectual: the kind who truly think there is nothing more to life than boozing with their mates, and football and/or soap operas on the telly. The kind who don't even know such fundamental facts as whether the Earth orbits the Sun or vice versa (see my letter to the editor in the November issue), but who could give you chapter and verse about who's having an affair with whom in *Eastenders*, and every trivial detail of the lives of all those so-called 'celebrities'.

For an illustration of today's overall education standards, just take a look at the comments fora of any ISP news page. At least half of the comments are written in barely intelligible, near-illiterate gibberish, with appalling spelling and non-existent grammar. A priceless example was recently to be found in Derby; at the entrance to the car park of a working men's club, a sign announced NO UNORTHERISED PARKING. I kid you not!

John also mentioned those ignoramuses in society who could be described as pre-Copernican – due not to any bizarre beliefs, but to sheer ignorance. The same kind of ignorance applies to all manner of fundamental knowledge. What follows is a true story, and illustrates the point.

I once went to an open-air boxing show in the grounds of Cardiff Castle on a July evening. The castle has two gates, north and south. Each ticket said 'Enter by North Gate' or '... South Gate', depending on where your seat was.

At 6 p.m., I was standing outside the South Gate, waiting for it to be opened, when two blokes came along, looking at their tickets in puzzlement. One asked the other, "Is this the Norf or the Souf Gate?"; his mate didn't know either. Because there wasn't actually a sign next to it saying 'South Gate', they couldn't figure it out. I didn't say anything, but I thought, "B****y hell – it's 6 o'clock in the evening, and there's the Sun..."

Now, I find it very hard to believe that anyone could possibly not *know* that the Sun rises in the east and sets in the west (though, given that survey result, I'm no longer so sure!), but it seems that many people think of something like that as just 'a fact' that they learned at school and to which they've never given another thought. They lack the common sense to realise that such a 'fact' can possibly have a practical application in life, for determining directions (I've often done that on bike rides, if I've taken a wrong turn and briefly lost my bearings).

Or perhaps they are incapable of actually applying the process of simple logic to deduce an unknown fact from known ones: in this case, "It's 6 p.m., and there's the Sun, so that's west. If west is to my left, then I'm facing north."

Here in the UK, someone recently began an internet campaign to encourage youngsters to take an interest in science. He set up a website on which he asked scientists and science writers to write short essays on 'Why is Science Important?'. To me, the most appalling thought of all is that it's actually *necessary* to ask such a question!

OBSERVATION REPORTS AND PLANNING

[Skylights – February 2010](#)

Rob Peeling

[The Moon](#)



2 Feb	14 Feb	22 Feb	28 Feb
Last Quarter	New Moon	First Quarter	Full Moon

On the 20th the Moon **occults** the double star ϵ (epsilon) Arietis at about 11pm. This is an unusual event worth looking out for because the star should blink out in a couple of steps. During the next evening, the Moon will pass in front of part of the Pleiades, occulting some of the stars in the south of the cluster. This time the stars should just blink straight out, making a good comparison with ϵ Arietis the previous night.

Planets

Mars is in Cancer near to M44 and close enough to enjoy them both in the same binocular field of view. It's now past opposition and so the disk is starting to shrink, but there's still plenty of time to look for surface details. Here is my sketch of Mars from 18 January.



Saturn is starting to appear at a civilised time in western Virgo. On the 27th the Moon will be below Regulus, with Saturn lying to the east and Mars lying at a similar distance to the west. The rings will still be pretty thin in appearance after last year's equinox, but this arrangement provides an opportunity to look out for the shadow of the rings across the planet. It may also be possible to see the shadow of the planet across the rings as they pass behind.

Venus and **Jupiter** are half a degree apart and just a little above the western horizon at sunset (between 17:10 and 17:15) on the 16th beneath a very thin crescent moon.

Deep sky

Enjoy the splendours of Orion for the last time this month. Starting from the **Orion Nebula, M42**, look for the bay in the cloud with the **Trapezium** at the bottom. This is the 'fish's mouth'. Can you detect bars crossing the mouth? It may well require a nebula filter and averted vision. Then look for **M43, De Mairan's Nebula**, just to the north of the 'mouth' area. One night recently I was surprised to find that I could see more of M43 *without* a filter. This makes sense if much of this nebula's light is reflected starlight and not emissions from glowing gas.



If you have a filter, then keep moving north (towards Orion's belt) by no more than one field width and see if you can see any **nebulosity** around the next bright stars (including **45 Ori**) that you come to. This is the region of **NGC 1977, the Running Man Nebula**. Visual observers won't see the shape of the running man but it should show up in images (*Keith Johnson's very good image of this area is on the left*).

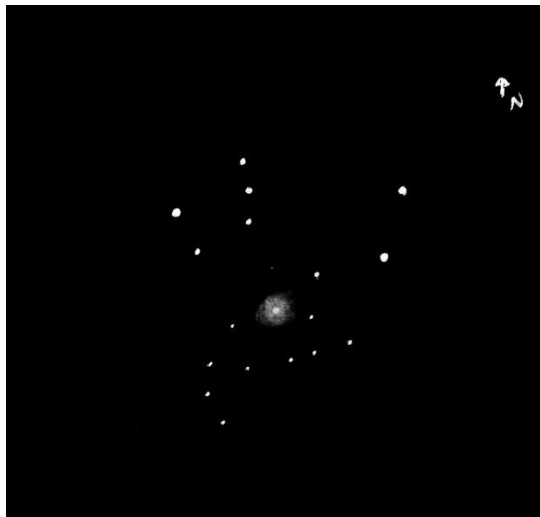
Just a little further north again is the open cluster **NGC1981**. This is nice, wide and bright. Now switch back to M42 and fit a low-power lens and a nebula filter if you have one. Start from the Trapezium and follow the line of three stars to the south-east (including **θ_1 Orionis**) and look for a huge sweeping spur of **glowing gas**

running initially east and then almost due south towards **ι (iota) Orionis**, the next bright star. If you have a filter, then see if you can see the patch of nebulosity around it. Finally, fit a high-power lens and take a closer look at ι Orionis. You'll probably be able to see that it's a double

star, but look again and you'll find a third star a little further out, making iota a triple star.

Auriga is high in the sky now and contains many objects other than the well-known **M36**, **M37** and **M38**. I will only suggest two of them for now. The first is an open cluster, **NGC 1907**. This is close by and to the south of its much larger neighbour, M38. Find M38 and then look (about a field width) to the south with a low-power lens, and NGC 1907 should be an obvious concentration of stars.

My other suggestion is the bright nebula and cluster, **NGC 1931**. West of M38 is the 'Leaping Minnow' asterism of two separate groups of bright stars. Look for the brightest star in the eastern minnow, which is ϵ Aurigae. From here move out to the south-east towards a wide pair of stars that should be visible in the finder. There is another single star to the



18 Jan 2010 20:34UT. Sketch with 12" f/5 Dobsonian, 15mm lens and CLS filter. Bright nebula and cluster NGC 1931 in Auriga.

northwest and a brighter one at a similar spacing further north-west. If you search about halfway along the line from the southern member of the pair towards the first star to the north-west, hopefully you will find NGC 1931. You're most likely to notice the nebula first as a star surrounded by faint fuzz – a bit like a planetary nebula (see my drawing on the left). The other cluster is fairly dim but still easily seen when you look closer slightly south of the nebulosity.

I highlighted ϵ Aur exactly a year ago in these notes. The long eclipse of this star is now at maximum. ϵ Aur is the northern member of the obvious **triangular asterism called the Haedi or Kids**, which lies close to the southwest of bright Capella. You should be able to see by naked eye that ϵ and ζ will be closely matched and η is the brightest of the Kids. This state of affairs will continue for the rest of this year. Eventually ϵ Aur will brighten again in 2011 as it comes out of eclipse, and will in time return to being

the brightest of the trio. Expect to see discussion of what exactly is doing the eclipsing in the astronomical press later this year. The world of astronomy is hoping to settle that question this year, otherwise it's another 27 years to the next eclipse!

Talking of stellar eclipses: the eclipsing variable **Algol** (β Persei) is at minimum on 13 February at the convenient time of around 8 p.m. There's more about Algol at <http://stars.astro.illinois.edu/sow/algol.html>.



An expedition to the North Pole

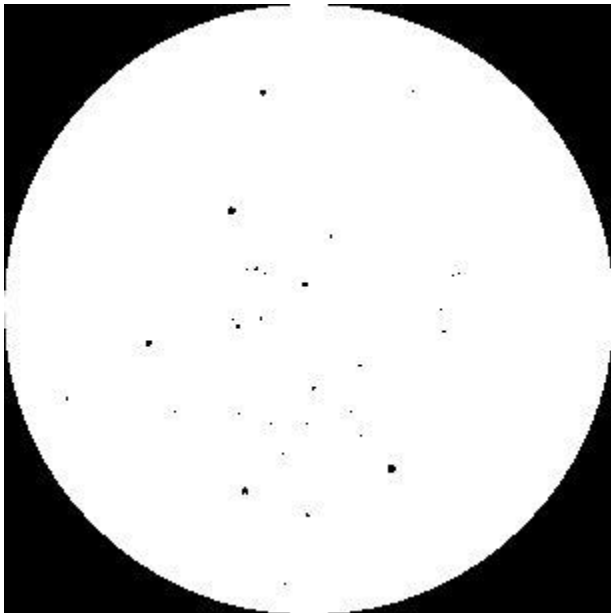
A CaDAS project to celebrate the International Year of Astronomy 2009 by collecting observations, sketches, images and *any* kind of information about any object with a J2000 declination ≥ 70 degrees.

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.

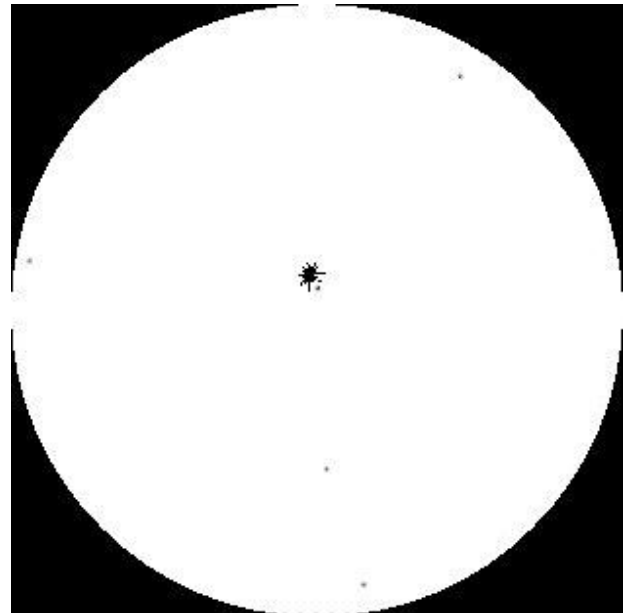
Sketches in the Polaris region

Here are two sketches I made of parts of the Expedition's area of interest, using a 12" Meade Lightbridge Dobsonian telescope. Further details appear under each sketch.

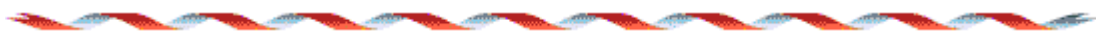
Michael Roe



The star cluster **NGC 188**, about 5° from the North Pole, in the constellation of Cepheus. Magnification $\times 38$ at 01:10 UT, 16/11/2009.



Polaris (α Ursae Minoris – the Pole Star), showing its faint binary companion. Magnification $\times 157$ at 23:55 UT, 10/11/2009.



RZ Cassiopeiae

A few years ago, the distance-learning course I was doing with the University of Central Lancashire required an observing project. You know, your actual looking at the sky and writing about it all. One of my great fascinations in astronomy is binary stars. Just the concept of two – or more – massive objects circling around one

Alex Menarry

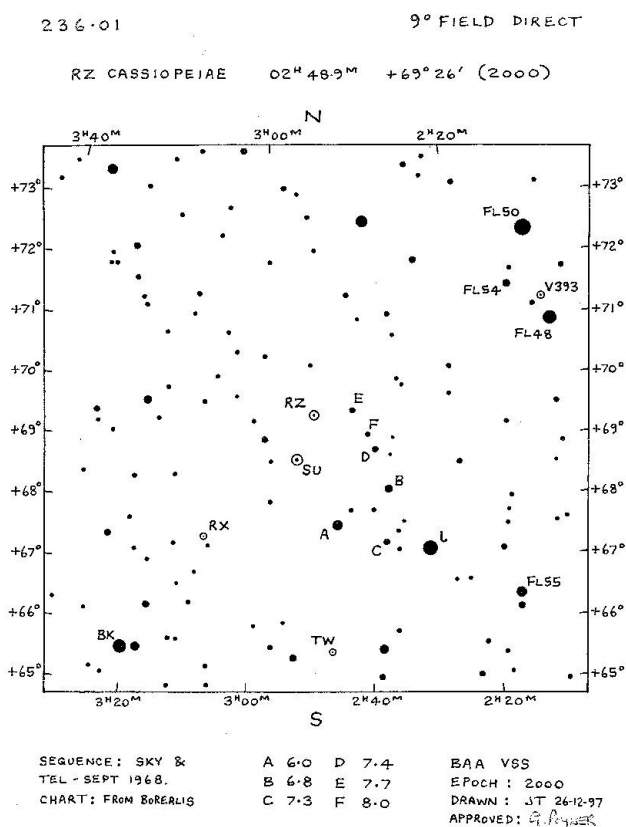


another, or actually around their common centre of gravity, I find amazing. Extend that idea to these two stars having a period of rotation of a few days or hours and I start to sweat.

Given the stimulus of the course I was doing, I decided to combine observation with binary stars plus naked-eye magnitude estimation and go for eclipsing binaries (EBs), the ones where the plane of the orbit is in our line of sight. In these cases, since the stars pass behind one another, we see a dip in the light output, and plotting the magnitudes over a few hours gives a characteristic light curve. How Goodricke ever arrived at the concept of eclipsing binaries to explain all this has always elicited my admiration. Not having a means of measuring the magnitude variation, I was restricted to binoculars and the eyeball. Luckily, the BAAVSS (British Astronomical Association Variable Star Section) provides charts for the positions of some important eclipsing binaries and approximate predictions of when the eclipse occurs.

As I didn't have the foggiest idea which EBs would be suitable, I consulted the BAAVSS Eclipsing Binary programme and picked out a few of the brighter examples. The famous ones,

the type-examples of different types, are β Perseii (Algol, the Demon Star), β Lyrae (or W Serpentis) and W Ursae Majoris. Raking through the BAAVSS list also indicated that RZ Cas, λ Tau, AR Aur and U Cep might be worth a try. The next step was to download the charts from the BAAVSS website. These give the detailed positions and magnitudes over a 5–10° field around the star. They are also the 'right way up' and suitable for use with binoculars. Here on the left is the chart for RZ Cas.



Another essential was the BAAVSS booklet on how to estimate magnitudes by eye. The experts at this sort of observation have trained their eyes to be able to distinguish differences of a tenth of a magnitude. Some are able to see the differences between the stars in asterisms such as those in Ursa Major or Cygnus and quote them to 0.1 mags. The booklet describes how to learn how to do this sort of thing. I opted to learn how to use two broad methods. One is to place the variable being observed in a 'seesaw' position between two stars of known

magnitude, from the chart. You may judge that the variable is, say two-thirds of the way between comparison stars A and B. This is then written A(1)V(2)B. If you judge that it was exactly half-way, it would be A(1)V(1)B, and so on. The other way is to judge how many tenths of a magnitude the variable is above or below the comparison star. If it looks exactly equal, you write =A. If you reckon it is two-tenths brighter than A, you would write A+2. Note that, having learned that the magnitude scale is back to front, you now have to ignore that and write it as plus! This then has to be back-corrected when calculating the deduced magnitude.

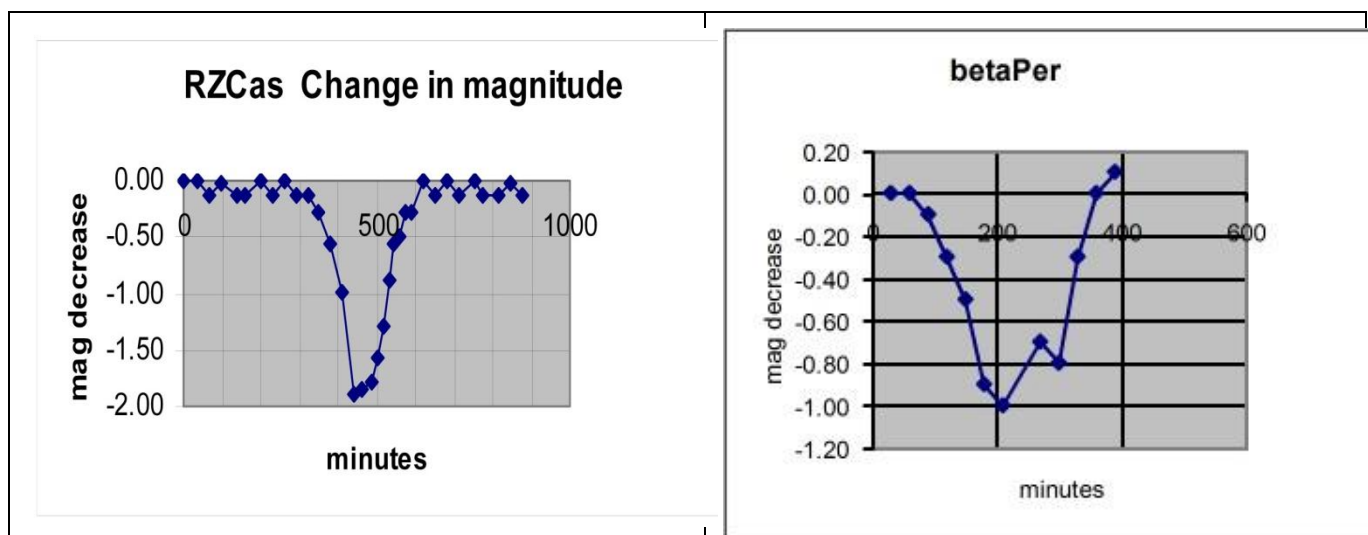
Astronomy is a queer science.

I thought this would be impossible to learn in less than about 25 years of hard practice, but in fact it's not as bad as it seems. After a few nights practising on known magnitude differences,

the skill begins to develop. The key is that the estimates are differences from known magnitudes and the comparison stars are very near to the magnitudes of the variable. Hence the errors of observation are much less than you would imagine. After a few weeks' practice, it appeared that my accuracy was in the range ± 0.1 – 0.3 of a magnitude and I was quite pleased with this. However, add to this the problems of moonlight, haze, the Purkinjee Effect (problems the human eye has with colour differences) and the errors multiply.

RZ Cas and Algol quickly became favourites to observe as they passed through their minima in magnitude, when the duller star passes in front of the brighter one. It is quite exciting to watch an eclipse. The predicted minima are given accurate only to about half an hour, in order to avoid wishful thinking leading to a observed reduction in magnitude that is not really there! So, when it becomes clear that the variable really is reducing in brightness compared with the stars around it, the heart begins to quicken. When the minimum is reached and the brightness increases again, you feel like cheering. Honestly! I was ever so relieved that RZ Cas and Algol really did come back to life again.

On the left below is my graph for a typical RZ Cas observation. As you can see, the wobbles in the graph and the departures from a smooth curve indicate the accuracy I achieved. And on the right is my shot at Algol.



Much later, I discovered the Krakow eclipsing-binary website for the 'elements' and Bob Nelson's DOS programme to plug them into, for predicting the minima of hundreds of eclipsing binaries. So now I can do my own predictions to see if an eclipse is coming up and plan an observing night. If you fancy a go, just let me know and I'll send you the address of the website and the programme .

It may be that the CaDAS Expedition to the North Pole will inspire me to start measuring magnitudes again (as I hope it will). Then the thing to do is have a go at Mira variables and eruptive variables and all the other exciting stuff in the BAAVSS Binocular programme. For the normal variables, you don't have to stay up all night; a quick one-off observation for a few favourite or important stars takes only a couple of hours at the most.

Remember, we amateurs really can make a difference, providing lots of observations for the professionals to use. If you fancy doing some science with your observations and maybe

contributing to the BAAVSS database, this is a way of doing it. No doubt younger eyes and brains than mine will make a better shot at it and a quicker and more accurate one, too. If you have a digital or CCD camera, you can even eliminate the human factor and measure the magnitude changes to much better than a tenth of a magnitude – even a hundredth. Amateurs are now observing the dip in the magnitude of a star produced by orbiting planets – honestly!

[At a declination of 69° 38' 33", RZ Cas is strictly speaking just outside the Expedition's remit, but what's a third of degree among friends? – Ed.]



Images of Mars near opposition

Keith Johnson



Here, 'hot off the press' are my recent poor attempts at Mars, which was at opposition on 29 January (but only 14.1" across). I imaged it the next night.

Seeing was poor and improved gradually, only to deteriorate over the coming hours. I set up the mount and telescope at around 7.30 pm and was still imaging at around midnight. This was possible only because of the way I have my setup – basically I'm indoors nice and warm controlling the telescope and capturing the images. If I'd been outside, I'd probably only have managed 30 minutes!

Both images were captured using a Celestron C9.25" and ToUCam Pro 2 webcam with an IRB (infra-red blocking) filter attached.



Using a 2.5x Tele Vue Powermate



Using a 2" 2x Barlow lens from Moonfish and 2.5x Powermate combined

GENERAL ARTICLES

[The latest edition of the excellent new online magazine Practical Astronomy has an article that includes thanks for help to our own Ray Worthy. The editor, Kevin Brown, and the article's authors have agreed that Transit can reproduce the article, which appears below. Ray further

Practical Astronomy
MAGAZINE

agreed to write about his part in all this. Many thanks to all concerned! You can sign up (it's free) to PA at <http://practicalastronomy.com> – Ed.]

Africa Science Project: Building A Planetarium In Ghana

Words/Photos by Jacob and Jane Ashong

The Dream

We had dreamt of creating a Science Centre and Planetarium for many years, but did not have a site or funds.

About three years ago, Dave Weinrich from Minnesota came to Ghana at the time of the solar eclipse, and we were then renting a building with a large space at the back. Despite a lack of funds, Dave committed to helping us create a planetarium if we committed to building it.

Donations Are Received

Following these commitments, through Dave's contacts and efforts, initiating, coordinating and organising, we received some major donations: in particular we received a refurbished Mediaglobe projector from an American planetarium, and Uniview software from Sweden.

Jon Elvert and Carol Gikas of Irene W. Pennington Planetarium, Louisiana, donated the projector. Ken Yager and Elumenati donated a laptop and we were supported by Joel Halvorson of Minnesota Planetarium Society, and Dave Burgess who organised an Astronomy Club donation.

Building Work Begins

Digging of the foundations began on Ghana's Independence Day, March 6th 2008. The floor was concreted and the wall was constructed with concrete blocks.

The dome eventually took shape with metal pipes forming the half-sphere like the segments of an orange. Dave Weinrich arrived in May as the domed roof

was being constructed. Dave showed us how to use the Mediaglobe Projector and the Uniview Software, and organised a 'domecast' with



Block Wall Construction

international participants.

The metal segments were lined with wooden supports to hold sections of hardboard for the interior surface.



Making The Dome

The Race To Complete

We raced to create a watertight cover for the dome before the rainy season and before Dave Weinrich returned to America.



Planetarium Taking Shape

The first cover failed and was later replaced.

The basic structure was completed by June. Interior finishing included creating a smooth surface on the interior of the dome, securing the Mediaglobe to the floor, fixing metal gates to the outside of the two wooden doors, supplying electrical power, installing ventilators, fans and air-conditioning, creating a dim-able interior lighting, a sound system, and lining the lower walls with matting.

Africa Science Project: Building A Planetarium In Ghana (cont.)

Later, reclining foldable chairs were obtained, to replace plastic chairs and wooden benches.

First Visitors And Official Opening

In October 2008, we had our first children's group visit. Soon afterwards, our first volunteer, Laura, arrived from the UK and stayed for six weeks.

Dave came back for the official opening on 22nd January 2009 by The British High Commissioner to Ghana, Dr Nicholas Westcott. Others present were the French Ambassador, the Chief of Nungua Accra and the Director of the British Council in Ghana.



Decorated For The Grand Opening

Volunteers Fran and Pete were with us for six weeks in January and February, when we started having regular visits by classes of school children, ranging from age 4 upwards.

Groups from a Special School enjoyed the shows greatly and other groups have been students, teachers, club members, families, and work groups.

On some days we have had groups of 70 or more and have divided them into two groups, to take turns - one group doing activities in the summer hut where we have poster displays,



*British High Commissioner
With The Local Chief*

with tasks and worksheets to complete, while the other group watches the digital planetarium show.

Grateful Thanks

For their fantastic encouragement long before this building project started, we would like to thank Ray Worthy and Peter Bassett.

For making everything possible, we are forever indebted to Dave Weinrich. We are particularly grateful to Jan Warnstam of SCISS for Uniview



School Children Visit The Planetarium.

software, and to Joanne Young and Mark Zellers of Audiovisual Imagineering, for refurbishing the Mediaglobe projector and to Jon Elvert for securing the donation of the projector.

Thanks are also due to:-

Ken Yager, Carol Gikas, Joel Halvorson, Carter Emmart, Dave Burgess, Nick Barton, Stuart Gold, Laura Youngson, Frances Ling, Peter Sitch, William Tackie, Mike Pupilampu, The staff of Quality Distance Learning (QDL) and family members.

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It's a long way from Hartlepool to Accra ...

Ray Worthy



Once upon a time (are you sitting comfortably?) a nasty fire officer condemned my inflatable dome, as being too much of a fire hazard. This brought the business to a full stop. It was made of PVC and, in order to render the inside completely dark, I draped it with agricultural black polythene. The man was right, of course. In the end, I threw the whole thing on the council tip. Goodness knows what the council workers thought about it.

That PVC dome had been used for six years, and in that time I had gained invaluable knowledge about what an inflatable dome should look like. It was coming up to Christmas when I set about drawing up plans for a new dome made of fire-retardant stuff. Casting around for a factory that would undertake the work, I was immediately made aware of the coming holiday period when the work force would be carousing instead of standing in line to stitch my dome.

At that time, we lived in a large terrace family house, so I converted a spare bedroom into a workshop and sewing room. I built a large work table that practically filled the room and we were in business.

Josie, my wife, was a marvel at the sewing machine. Quite a number of friends and relatives arrived thinking that they were coming to a seasonal party, only to find that they were helping to cut a panel or hold something 'just so' while a particular operation was carried out. By the 12th of the following February, I had shown the new dome to the Fire Brigade, had gained my licence and was attending my first school with the new dome.

By later standards, that first dome was not up to much, but it showed the way and it attracted attention from other potential users. There was even someone who tried to pirate my design and (would you believe it?) lived in Penzance. Gradually, the fabrics improved and I had a continuous order-book for quite a while. Business was flourishing and I was continually trying out new ideas. In this connection, I kept a dome aside as a test bed to see if I could translate these ideas into reality.

Enter Jacob. It was an exciting time and, because I was the very first planetarian to run a business visiting schools, I had bookings all over the place. One such place was Chigwell Public School next to the M11 in London. I remember it well. The boys were not allowed to play tennis on the courts unless an umpire was sitting in the chair. What a contrast with my school in Billingham where the fencing around the courts had a stolen jeep driven through it in the first couple of months.

However, to the point: a group of planetarians came to see me and we had a meeting there. Doctor Jacob Ashong was a biological research scientist working in London University, with enough letters after his name to cover a line of this page. He is a force of nature and he causes things to get done. He was about to retire then, I think, and was trying to set up a foundation to create a science centre in his home country, Ghana. He had his feelers out and had heard about this meeting.

There was one particular man who used to work in the Post Office. His name was, and still is, Peter Bassett. Peter is a real entrepreneur, never afraid to try something new. He had ordered from me a dome that would be the largest inflatable dome in the world at that time. It had a diameter of 7.4 metres, and would accommodate three classes of juniors, their teachers and the operator.

When this dome was finished, Peter came to Hartlepool to see it before collection, and brought Jacob with him. Jacob wanted to buy a dome, but when I heard all the details about the setup in Accra, I offered him my experimental dome and suggested he spend the money elsewhere. Later, I stripped out all the experimental stuff and converted it to a regular dome. My son Christopher lives near London, and when we next travelled south on a visit, I dropped the dome off at Jacob's home near Crystal Palace.

In the spring of 2009, I met Jacob again at the Greenwich Planetarium where the British Association of Planetaria was holding its AGM. I was given a beautiful crystal glass bowl as a lifetime achievement award for the development of the domes. A lovely occasion.

I have a feeling that Jacob is, as ever, seeking publicity for his project, so I'll go along with writing this article. The Ghana planetarium is a very worthwhile project.



Nothing really to alarm us!

John Crowther



Both children and adults enjoy being frightened, as long as they are warm and comfortable in a cinema or at home, tucked up safe in bed perhaps with Mum or Dad reading to them in a suitably scary voice.

Adults also enjoy horror films, either of the Dracula variety or one of the outer-space alien monster types. Extreme horror involves the whole world being threatened – whether it be by the pandemic of a seemingly incurable disease or by a nuclear war or even a planetoid strike.

In the past; people were more naïve, for computer simulations were unknown. Even a radio play could be frightening; long ago, 'Children's Hour' plays sometimes had warnings to parents of nervous children, telling them that the BBC could not be responsible for nightmares. The last episode of the Christmas play *The Box of Delights* carried such a warning, and how many of us listened to 'The Man in Black' or *Journey into Space*? And hiding behind the sofa when the Daleks appeared was yet to come!

In 1938, many people in New Jersey and beyond panicked when a radio version of H.G. Wells' *The War of the Worlds* was set in that state and in real time. People who had switched on after it had started believed that the Martian fighting machines were approaching New York City.

A new film was recently released called *Apocalypse 2012*, which plays on such fears. To me it appears to be 99% fiction and 1% fact. The fact is that the Mayan calendar comes to an end after 5,125 years, supposedly on 21 December 2012, the winter solstice in two years' time. However, the Maya never said that the world is going to end; according to Mayan expert David Stuart of the University of Texas, "They never said anything bad would necessarily happen."

That 'fact' bit comes from a *Daily Express* article of 9 November 2009, which I have if anyone is interested.

More likely, in tune with T.S. Eliot's line, the world will end not with a bang but with a whimper, if we allow climate change to finish us off. So I won't be going along to the cinema to see *Apocalypse 2012*, because I'd be tempted to shout "Rubbish!" at the screen!

REVIEW

Atlas of the Messier Objects

Alex Menarry

*Written by **Ronald Stoyan**. Photographs by a team led by Stefan Binnewies. Astrophysical information by Susanne Frederich. Published by Cambridge University Press in 2008. Translated from the original German edition of 2006 by Klaus-Peter Schroeder.*

Foreword by David H. Levy, himself an author of a well-known book on the Messier objects published in 1998 and other astronomy books

ISBN 978-0-521-89554-5 hardback. About £30 from internet book sites.

This is a large-format book, 10 inches by 12 inches, with stunning photographs, lots of history, astrophysics and observation notes for each object. One criticism – I wish a way had been included for finding an object quickly: say, finger cut-outs as in some dictionaries, or coloured edges to the pages. The superb pictures were all taken using a CCD camera by amateur photographers between 1995 and 2007. Also included are many sketches by the author and by historical figures such as John Herschel.

Plenty of advice on observing the objects is included in the text – an easy/difficult scale, the effects of light pollution, an overall map of the distribution but no detailed maps, by intention. Mention is made of Messier Marathons, data on photography, and reference to a definitive set of NAOA images on the internet.

A short biography of Charles Messier includes photographs of old Paris, with observatories shown in the middle of the city, where Messier went at the age of 21. His main work was discovering comets, in competition with J.E. Bode, Pierre Méchain, Cassini, Caroline Herschel and others. His first catalogue stopped at M45, using objects discovered by many observers, including such legends as Helvelius, Flamsteed, Halley, Huygens and Abbé Lacaille. In those days, observation was purely visual, of course, either by naked eye or with telescopes not exceeding 300mm. Later, the original catalogue was expanded up to M110, which introduced the enduring mystery of M101 and 102. Show-piece deep-sky objects known at the time were omitted by Messier, since the catalogue was drawn up purely to prevent confusion over new comets appearing.

Statistics and categories of objects are:- 6 galactic nebulae, 28 open clusters, 4 planetary nebulae, 29 globular clusters, 40 galaxies and 3 'other objects', which are M40 (an optical pair), M73 (an apparent open cluster of four unconnected stars) and M24 (a concentrated star field in the Milky Way). M8 is really two objects – an open cluster in a nebula – so maybe there should be 111 Messiers? However, the catalogue is Messier's and must remain unchanged as part of the history of astronomy and an inspiration to many amateur astronomers nowadays.

[Respecting the original list is a hobby-horse principle of mine for the Munros, which should have remained as published by Sir Hugh T. Munro, without interference by the SMC!]

Needless to say, the *Atlas of Messier Objects* should be high on the birthday/Christmas present list, even for fanatics who have all the Messier books under the Sun and Moon and have studied every Messier object in great detail. I have spent many fascinating cloudy nights with this lovely book already and will spend many more. Just leafing through the pictures is a pleasure and a fascination; I remain incredulous that globular clusters have survived for so long. Thank you, Mr Editor, for showing me your copy and inspiring me to buy my own.

COMMITTEE NEWS

Annual general meeting

CaDAS Annual General Meeting, 7.30 pm, Friday, 12 February 2010, at the Planetarium

Agenda:

1. Chairman's welcome and opening remarks
2. Apologies for absence
3. Acceptance of the Minutes of the 2009 AGM
4. Chairman's report
5. Secretary's report
6. Treasurer's report and financial statement
7. Election of officers and committee members (*Note 1*):
 - Chairman
 - Treasurer
 - Programme Secretary
 - Information and Communications Secretary
 - General Secretary
 - Two general members
8. Voting on resolutions for proposed changes to the Constitution:
 - a. Section 2 Objectives: Add as an explicit objective, "**to encourage and foster active observing by members and others in the local area**".
 - b. Section 3.3, Information & Communications Secretary: Delete the sentence "**The Information and Communications Secretary shall also act as Curator, controlling the assets (other than the financial assets) of the Society and keep a proper record of their whereabouts.**"
 - c. Section 9, Annual General Meeting: In, "**The Annual General Meeting shall take place at the January Meeting**", replace "**January**" by "**February**".
 - d. Any further resolutions proposed by any member (*Note 2*).
9. Announcement of speakers for Members' Night
10. Chairman's closing remarks and closure of the Annual General Meeting

Note 1: All members of the current committee are standing for re-election, but if you would like to stand for any position, please inform the General Secretary before the meeting if possible, and arrange for a proposer and seconder for your nomination.

Note 2: Any such resolution must be submitted in writing (or by email) in advance to the General Secretary, and should have a formal proposer and a seconder.

THE *TRANSIT* QUIZ

Answers to January's picture quiz

- | | |
|---|------------------------|
| A. Edwin Hubble | F. Nicolaus Copernicus |
| B. Sir Isaac Newton | G. Sir Fred Hoyle |
| C. Lord (Martin) Rees | H. Chris Lintott |
| D. Caroline Herschel | I. Fritz Zwicky |
| E. Subrahmanyan Chandrasekhar, known to everyone as 'Chandra' | |

February's quiz

Here are brief descriptions and dates of some famous astronomers of the 20th century, taken from an appendix to a book I've recently read (and plan to review in the next issue). Who are they? To help you, here are their initials (though not in the order of the questions ...):

WHWB, GG, EPH, FH, JHJ, CHPG, MJR, HNR, MS, SWH

1. The world's best-known astrophysicist today, who has played a key role in exploring the properties of black holes. Among his many major advances is his discovery that black holes can evaporate by emitting radiation. 1942–.
2. English physicist and Astronomer Royal who made essential contributions to the study of the formation of black holes. 1942–.
3. Flamboyant Russian-born American nuclear physicist who initiated modern research on the thermonuclear processes that power stars. 1904–68.
4. Dean of American astronomers and a powerhouse in the American scientific scene during the first half of the twentieth century, 1877–1957.
5. American astronomer who discovered that galaxies are receding at speeds related to their distances from the Earth. 1889–1953.
6. German-born astronomer who came up with the concept of the neutron star in 1933, with Fritz Zwicky. 1893–1960.
7. English astrophysicist who advanced our knowledge of how heavier elements are generated from hydrogen and helium. 1915–2001.
8. Dutch-born American astronomer who deciphered the puzzle of quasars. 1929–.
9. A student of [Sir Arthur] Eddington's at Trinity College, Cambridge, she obtained a PhD in astrophysics at Radcliffe College, and went on to become Harvard's first female professor. 1900–79.
10. English astrophysicist, also famous as a mathematician, theoretical physicist and populariser of science, and Eddington's arch-rival. 1877–1946.