NEWSLETTER

September - November 2014 Issue 168

Bob Biss, Ian Davies and Theresa Cooper taking a break during the rocket workshop at the Dyffryn Space and Astronomy Day 2014.

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Editorial John Richards

A new season beckons. Our 40th!! It seems like only yesterday that a 'boyish' Dave Powell and Dr. Bob Owens started an 'out of London' meeting venue for the British Astronomical Association. Since then,the Cardiff Astronomical Society has grown to almost 500 members,and is one of the largest, and most well respected, astronomical societies in the country. Once again Dave has produced a great programme for us, and there's a preview of the beginning of it on page 26.

You may notice a slightly different tone is this editorial. This is because after 18 years of editing the newsletter (his first issue was 95), Ian Davies has decided to step down as publications officer. As well as making the newsletter what it is today,he was also involved in many other aspects of the society, from the regular outreach events, to his tireless work with the observatory and also the web site. I would also like to thank him personally for the time he spent with me, handing over the newsletter.

Wishing you dark skies - John

Contact Details

Have you changed your email address or other contact details recently? If so,you could be missing out on receiving important society information. Please keep us up to date with any changes. Send your revised details to either our Membership Secretary (membership.secretary@cardiff-astronomical-society.co.uk) or Secretary (secretary@cardiff-astronomical-society.co.uk).

Publication Dates

The CAS newsletter is published at the first society meeting of September, December, March & June. The deadline for submissions is 4 weeks before the publication date, & is the 7th November for issue 169.

Visit CAS on the web @

Cymdeithas Seryddol Caerdydd Home Page

http://www.cardiff-astronomical-society.co.uk
General enquiries email info@cardiff-astronomical-society.co.uk
As a CAS member you can use the Members' Area of the web site. You will need your password to access this area. If you don't know your password it is your surname followed by your membership number.

CAS is now on twitter, to follow us, follow **CardiffAS**

CAS on facebook at http://www.facebook.com/CardiffAS

Society notices

Web Site

It has been decided to make changes to the CAS website. In order to improve, and simplify things we have decided to start again.

So we intend to build a brand new website under the guidance of Mark Major. The existing website will run alongside the new one for a while before being closed down. Naturally, we will try and minimise any inconvience caused.

Observatory fund

We have now discontinued the "observatory telescope fund". We would like to thank all those who showed interest, and offered donations.

Come to the observatory and have a look at the new 11" state of the art Celestron that sits proudly on its pillar. You will be amazed how easy it is to use. We also have some eyepieces, and intend to purchase a couple more using some of the remaining money still in the kitty.

New Equipment

For all you budding "astrophotographers" in the society, we now have a piece of kit that will allow you to take pictures using the 8" Meade. So no excuses, come and have a go. We would love to see you.

40 year celebration events

Next year, 2015, as you are all aware, is our 40th anniversary. We are planning some events, including a one day festival of astronomy to be held on Saturday 18th April in the National Museum of Wales. Various trade stands will be open, and we're hoping the portable planetarium will also be open and we will have just one talk in the Readon Smith Theatre. "To see the beginning of time" This is not to be missed. The speaker is Andy Lound, need I say more!

Our junior rep, Kayleigh, is looking to organise a trip suitable for juniors and the not so young. So, **calling all juniors**, where should it be? Suggestions to "Visit the Space Station", while fun, are slightly beyond the budget of the society. Mind you with what she has achieved recently who knows!!

We are also arranging a special dinner, and want as many members of the society as possible to share this anniversary. It's **not** just for the committee, it's for everyone who has made this anniversary possible. More details will be provided as they become available.

A message from the Secretary

Dave Powell

I am sure even before you read these words, it's plain to see there have been changes made. Ian Davies, who for many years produced the newsletters, has resigned. I would like to take this opportunity to thank Ian for all his stirling efforts over the years.

The fact that you're reading this means the baton has been passed and we've produced another issue. So, all I can hope you say is: “I suppose its better than nothing”.

Can you believe next year the society is 40 years old? Plans are advanced to hold special events, and I have completed the programme of speakers right up to December 2015. But we can't think of everything, so please don’t allow this landmark to go by without your input. Tell us how you would like to see the event marked.

With all the talk about our big anniversary year just round the corner it may come as a surprise to some of you that way back in 1975 we had to communicate by telephone, that was attached to a cable, which went through a hole in the side of your house, up a big pole, and along some wires. We also wrote letters as well. (Note to myself, perhaps we should have a little bit of history in every edition.)

Its fun to look back and see what we were doing way back in the beginning. So I had a look at Newsletter no 1 issued October 1975.

Some early meetings it appeared I could not get enough speakers so we had to do our own. For example one night C Lang gave a talk on “Constellations” followed by S Godfrey on “The Universe”. In December we had a “Christmas Quiz” and a talk by R Lane on “Black Holes”. Our first editorial appealed for members to offer to give the society a talk. Like I say, some things never change.

We were very lucky to have two bright objects in the summer skies of 1975.

Comet Kobayashi-Berger-Milon 1975h was well placed high

overhead in the Drago-Ursa Major region, just visible to the naked eye and easily viewed in binoculars. Then on August 29th a Japanese observer reported Nova Cygni, and boy was this something to behold. It rivalled at its best first magnitude Deneb. When will the next big one happen?

We hear a lot about Space rocket and space ships, so how far back do they go? Well, I collect first day stamp covers and recently came across some covers and postcards issued in Romania in 1990 to honour Conrad Haas (1509-1579).The drawings are fascinating. They clearly show what can only be interpreted as rockets. In a manuscript he talks about multi-staging, spacecraft, delta fins,and liquid fuel. No I don't have the dates wrong, he lived 1509-1579.!!!!!

How did you get interested in Astronomy? Who are your astronomical idols? One thing I'm keen to see more of are **Members' stories**. Can you write a short article for the newsletter? Remember, the more space you take up, the less space for me to fill.

So to start the ball rolling, (and to fill up some newsletter space), on page 16 is my story, as told to the friends of Dyffryn.

Light Pollution: a 20th century problem with a 21st century solution?

Bob Mizon

Ever since Swan and Edison independently learned in the 1870s how to produce light from durable filament bulbs, we have taken it for granted that light is our friend at night, and the provision of public lighting is certainly a great boon to humankind. But are we now, 140 years after Swan and Edison's invention, having too much of a good thing? Local councils all over the UK are presently switching off lights after midnight, saving millions of pounds and reporting little measurable effect on crime and accident rates; though in Essex, where a switch-off scheme has been going on in some areas for two years now, the crime rate is reported as having fallen. We are increasingly told that we have to save energy, and be more aware

of our impact upon the environment, and all one has to do is to look at any lit urban area (or even some rural areas) from a distance at night to realise that a lot of the energy we waste is in the form of light, thrown sideways and upwards instead of actually lighting only the area to be illuminated. The halo above these areas is our money and energy being wasted. Most electrical devices do “just what it says on the tin”, but the majority of lamps are inefficiently designed and throw their emissions where they are not needed. Add to this the tendency for lights to be left on at night when not required (and newspaper articles showing brightly lit office blocks in the wee hours are often seen nowadays), and the extent of the problem can be appreciated. Light pollution and light nuisance are twentieth-century phenomena, and have an increasingly high profile in the environmental debate as we enter the twenty-first. The growth of towns, rural urbanisation, the twenty-four hour lifestyle, fear of crime: all these have led to the rapid expansion of *uncontrolled* exterior lighting, costing us all money, and more. It has been estimated* that Europe alone wastes £1.5 *billion* annually lighting up the undersides of clouds.

Three types of light-related problems have arisen:

Glare is the most safety-related aspect of light pollution, and is the typical result of the ubiquitous 500W home ‘security’ lamp, usually angled outwards in the vain hope that its excessive dazzle may deter burglars (it usually does not).

An example of skyglow in Cardiff

Skyglow is caused by wasted light escaping upwards from poorly aimed and unshielded fittings,and scattered by atmospheric aerosols into the familiar glow hanging above every town (and many villages!) in the UK. Skyglow

has stolen the stars from more than 90% of Britons, according to a 1990 survey by the British Astronomical Association (BAA).

Light trespass, the spilling of light into neighbouring premises where it often causes distress, is currently a matter of great debate among environmentalists, administrators, and retailers of the offending lamps. Even thick curtains may not give relief. Light is classed as a potential pollutant, like noise and fumes, under the Clean Neighbourhoods Act 2005, and Environmental Health Officers have powers to deal with light-nuisance under the Act, but many seem strangely reluctant to pursue complaints. Victims sometimes resort to expensive litigation. Planning laws and advertising regulations may also be invoked against intrusive lighting, especially from commercial premises, skybeams and lasers shone into the sky. Illogically, transport hubs such as bus stations and docks are exempt from the legislation, and can pollute at will. Bodies such as the Campaign to Protect Rural England (CPRE) and the BAA have taken the lead in urging the government to ‘get lighting right’, but the night sky is still without protection in law. It seems perverse that, if you dump rubbish in a field, you can be fined thousands of pounds and even go to prison; if you drop litter in the streets, foul beaches or cause spillage into rivers or the sea, dire penalties await you; but you can despoil the night sky, and veil its beauty with wasted light, with impunity.

Solutions? NOT rocket science. Simply aim lights properly, with appropriate shielding, and use appropriate wattages (500W is half as bright as Britain’s brightest lighthouse, the Longstone).

Humans are not the only species whose lives are disrupted by spilled light. Nocturnal insects, birds, fish, reptiles and mammals have no curtains to pull. Millions of our fellow creatures on this planet are disturbed, and even die, because we do not aim lights properly or use reasonable wattages.

In these energy-conscious days, wasting light should no longer be considered normal or acceptable. Directing it where it needs to go, and using the right amount, are easy things to do.

The twentieth-century problem of light pollution awaits a twenty-

first-century solution, and all those concerned with preserving the environment should be contributing to that solution.

Bob Mizon is co-ordinator of the BAA Campaign for Dark Skies (www.dark-skies.org), and author of *Light Pollution: Responses and Remedies* (Springer, 2001, ISBN 1-85233-497-5).

Spacefest VI – A Trip of a lifetime

John Richards

They say “You should NEVER meet your heroes”. Well, at Spacefest VI held at the Pasadena convention centre in early May 2014, I met many of the people who are heroes to me, and perhaps also heroes to a great many members of the society.

What is Spacefest?

Spacefest is an annual event that brings together former astronauts, planetary and space scientists, astronomers and specialists from missions as diverse as Apollo, Curiousity, Dawn, New Horizons and more under one roof. For its 6th event, it was held at the Pasadena convention centre from May 8th – 11th.

You had to be careful to attend the right event though. Literally, 50 feet across the pavement, the SpaceOps 2014 international conference on Space Operations was being held. There can't have been many times in my life when I might have gatecrashed the WRONG space conference. Fred Haise did though!! :-)

Part of the joy of attending these events are the 'splinter trips' organised by an inidividual within the group to a place of significance for them and hopefully others in the group. For me, these 'splinter trips' butressed spacefest VI, and were an amazing start and end to the proceedings.

On the Wednesday prior to Spacefest's offical start, around 25 spacefesters' were invited to the NASA Jet Propulsion Laboratory (JPL). The trip was organised by author Jay Gallentine (whose

books include *Ambassadors from Earth, and Touching Infinity: Pathfinders of the Solar System').* There we were given exclusive access to NASA labs, saw the NASA Deep Space Network (DSN) in action and sat in the same room where NASA engineers witnessed the landing of the Curiousity rover during its '7 minutes of terror' descent.

Part of the NASA Deep Space Network (DSN) in action

It was a TRULY magical visit, and if I had one, would certainly be one item ticked off my 'Bucket list'.

NASA scientists working in the lab

Spacefest started in earnest on Thursday evening, so Thursday morning was thankfully, a 'rest period'. And our little band of intrepid space pioneers from around the world (3 from the UK, and

one from Australia) needed it. After visiting The Grand Canyon, Area 51, Death Valley (a Welshman goes to the dryest hottest place on the planet and yes, it rains!!) and NASA JPL in the space of 4 days, the rest was richly deserved. While we were resting, other trips were organised to Griffith Observatory while some ventured to see the Space Shuttle Endeavour at the California Science Museum.

The spacefest kick-off event was the Apollo panel, hosted by Carolyn Porco and Andrew Chaikin. In previous spacefests,the panels have proved hugely popular, and the Apollo panel is by far the most popular (standing room only at spacefest V). This year the event was held in the ornate surroundings of the Pasadena Civic Auditorium. Built in 1931 it is considered to be one of the most revered performance halls in the US, and has held Emmy Awards cereomies in the past.

Jim McDivitt, Rusty Schweickart, Bruce McCandless and Fred Haise

Andy, as many people are aware, wrote what is considered to be **THE** definitive history of the Apollo program in the book “A man on the Moon”.

Carolyn, is a world renowned planetary scientist known for her work in the exploration of the outer solar system.

As he knows, has worked with, and admires the members of the panel, Andy was the main questioner, and asked them about

Dick Gordon, Alan Bean, Ed Mitchell and Jack Lousma

The Apollo panel consisted of:

Jim McDivitt	Gemini 4 and Apollo 9 and became Manager of Lunar Landing Operations in May 1969.
Rusty Sweickart	Apollo 9 astronaut and recently involved in the B612 Foundation, a project to map the Solar System, protecting the Earth from large meteor impacts.
Bruce McCandless	CAPCOM (Capsule communications) during the Apollo 11 mission, and flew twice during the Space Shuttle Program (STS-41-B, STS-31).
Fred Haise	Lunar module Pilot aboard the ill-fated Apollo 13 and Space Shuttle approach and landing test commander
Richard Gordon	Gemini 11 and Apollo 12
Alan Bean	Apollo 12 and Skylab
Edgar Mitchell	Apollo 14
Jack Lousma	Skylab and Shuttle astronaut

their experiences of being an astronaut, their intense training, their recollections of the Moon Landings and the effect it had on them, as well as questions about risk and fear. The panel were in fine form and regaled us with stories of the Apollo era.

Having Jim on the panel was especially interesting, as he was able to provide an administrative/funding insight on the Apollo project. Jim stated, that while the budget was tight, there was normally $50 million knocking around for contingencies, should it be needed!!

Andy, asked the astronauts about NASA and its attitude to risk. While, all are now former astronauts, they felt that NASA had become risk adverse, and some feared this may start to impact on future missions they undertake.

Bruce and Fred share a joke

As you would expect of people who trained, lived very closely together, and in some cases whose lives depended on each other, there was a genuine empathy and warmth between many of the astronauts and during the 2 hour panel there were many comical moments and plenty of laughs shared.

At the end of the panel, audience members asked about the astronauts thoughts about STEM, outreach, inspiring the next generation and Rusty's work on the need for a comprehensive sky survey to detect large asteroids approaching the Earth.

Afterwards, Carolyn Porco regaled us with her latest investigations of Saturn and its moons (she and her team estimate there are more than 90 jets of all sizes near Enceladus's south pole, spraying water vapour, icy particles and organic compounds into space), her work to capture an image of the Earth from the Cassini probe (aka the "Pale blue dot' photo) during 2013, and other highlights from her career working with the Voyager imaging team, and her latest work on the forthcoming New Horizons mission to Pluto.

The event kicked off properly on the Friday morning and consists of a number of paid for and free talks. The free talks are usually given by authors talking about their latest work, and is normally followed by a book signing that allows an extended opportunity to chat and ask questions. There were talks about the new NASA SLS system, Heather Smith spoke about her book detailing the early flights of the space shuttle, and there were talks on the X-15 and authors of the Outward Odyssey discussed their project to chronicle man's early push into space.

At the same time, the free talks are going on, there is also a series of paid lectures. These cover all aspects of spaceflight missions and astronomy. Talks this year included a fascinating insight into the work being done by Rusty Schweickart and the B612 foundation. This is a foundation that aims to detect and deflect an asteroid capable of destroying anything from a city to a civilisation.

Family of new Russian rockets under development Copyright RussianSpaceWeb.com

Also, other highlights included a brilliant eye opener into the work of the Russian Space Agency by Anatoly Zak. It's not usual to hear so much in-depth information concerning the Russian space program and Anatoly's lecture was an informative and unexpected pleasure.

Among other interesting talks were ones on New Horizons, and a great talk on collecting meteors in the Arctic and what this can teach us about the early Solar System. The paid talks are attended by a veritable who's-who of astronomical and spaceflight glitterati. Emily Lakdawella, Nick Howes (a friend of this society), David Levy, Geoff Notkin, Rusty Schweickart, Jani Radebaugh and many others provided fascinating insights into the work they are doing to advance our knowledge of the Solar System and the Universe.

While all this is going on the main hall has a bustling collection of dealer booths, selling everything from books, DVD, spacecraft replicas, actual space flown items, jewellery, space themed clothing and much more. While perusing the stalls, you can also view the stunning collection of space art., Every year Spacefest organises a space art show where over a dozen of the world's most gifted artists show their stunning works. This years collection included works from Don Davis, (who worked on the first cosmos series), Alan Bean (Apollo 12), Michael Collins (Apollo 11) and Lucy West and I have to say that their work is truly inspirational. From space launches and beautiful vistas of places yet ventured,to stunning paintings you would swear were Hubble photos, these images were a privilege to witness.

Finally, in the main hall are the astronauts. From Gemini astronaut Dick Gordon to Shuttle astronauts Jerry Ross, and myriad Apollo/Soyuz astronauts in between including Buzz Aldrin,Dave Scott, Jack Lousma, Gene Cernan, Fred Haise, Alan Bean, Ed

Mitchell and Bruce McCandless. Also NASA nurse Dee O'Hara and Apollo EECOM Sy Liebergot were on hand to provide valuable insights. I feel I need to make special mention of Vance Brand at this point. One of our party (we are known as the **Brit Army and Friends at Spacefest VI** on facebook)found out it was Vance's birthday during Spacefest. So we dutifully got him a card, and all signed it. One of the group is an artist, so did some drawings, and we threw in some ESA goodies as well as a present. After lunch, around 30 of us corralled around this stall, and SANG (yes sang) Happy Birthday to him... I have NEVER seen an astronaut blush before. A few minutes later, Vance, Fred Haise and Jerry Ross all appeared in the Brit Army photo. A magical time was had by all.

Group shot with Jerry Ross, Fred Haise and Vance Brand

The astronauts come across as ordinary people who did extraordinary jobs. They have no airs or graces, are very easy to talk to and simply a delight to be around.

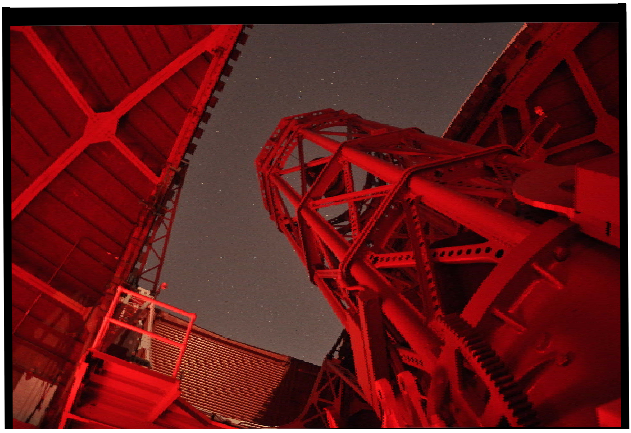
If all that wasn't enough, Spacefest also has a number of astronaut themed movies on display and this year was no exception. **'The Wonder of it all'** offers the Apollo astronauts an opportunity to talk about their missions and the effects it has had on them. **'The last man on the Moon'** which received its first showing at Spacefest, is about Gene Cernan, his life and the legacy. Both are brilliant movies, and if you get the chance you should certainly see them.

If you need some rest bite during the proceedings, Spacefest also holds lunches, banquets and breakfasts where you can grab a bite to eat, regain your energy, sit down with the astronauts and speakers and just chat.

If you have a free extra dollars left, you can have your picture taken with the astronauts from the conference. There are a limited number of these every year, and mine holds pride of place in my living room....

Sunday is **PANELS day**. This is where luminaries from a particular field let us know what they're working on, and the audience can ask questions. The Voyager reunion panel was the highlight for me, with recollections of the mission from Charley Kohlhase, Suzanne Dodd and Ed Stone. Other great panels included the comet and Mars Curiousity panels (with Bobak Ferdowsi (the NASA Mohawk guy) .

And then Spacefest ended!!! But our space faring wasn't QUITE over yet. Later that afternoon, in a trip I organised, 15 other spacefesters and I went to **USE** the 60 inch telescope on Mount Wilson. The device is the largest telescope in the world that can be used by the public (though we found out during the tour that they are equipping the 100 inch scope for the same task) The visit was slightly "touch and go" during Sunday, due to the high winds on the mountain. As we drew upto the observatory we still didn't know if we would get to use the scope. After a brilliant tour of the Mount Wilson museum, the 100 inch, and solar observatories, and as the sun set we were finally given the "**GO**" to observe. To stand under the dome where astronomers you normally only read about worked, is a TRUE privilege. The movement of the dome



30 second exposure of 60 inch Mount Wilson telescope, looking skywards

was exquisite and the sights we saw, while not perfect, due to the weather were TRULY breathtaking. The Moon looked close enough to touch (or land on perhaps), even with averted vision, and we also saw Saturn, Jupiter, Mars, several globular clusters, and nebulae, and a surprising array of double stars. It was 5 hours truly spent in heaven.

Bruce McCandless and I @ Spacefest VI

Should you meet your heroes? I think I will let the reader make up their own mind.....

Spacefest VII has been provisionally scheduled for June 2016, to be held again in Tuscon. For more details visit, http://www.spacefest.info/

My Story

Dave Powell

Cast your minds back to the early 1960s. In fact 1963 was the year my secondary modern school decided they could do no more for me, and I was told to go out and find a job. In those days this wasn't a problem, and I soon found work in the offices of James Howells. I got paid just enough money to give my mother something towards the housekeeping (that was a shock I can tell you). Up until then I had no idea how my mother paid for everything and just assumed she owned a magic purse. With my remainder of my pay, I started to buy 45rpm records. I soon became an expert in the music of The *Beatles* and *The Rolling Stones*, and would play them, and many others to death on my Dansette record player. This was indeed a great time to be a young man; the swinging sixties.

However one year earlier I did receive a big shock when my grandfather William Henry Powell died, aged 80. Grandad was a great influence on me, even as a small boy in short trousers, I can

remember him teaching me to read and write, explaining the meaning of words, and telling me all sorts of stories from around the world. He lived in the next street and had two rooms in the house full of books, from floor to ceiling. My dad suggested I choose a book as a keepsake. What me? A book? Are you kidding me, I mean who reads books? I avoided the task for about a week, then my father got heavy and advised me Grandad's library was being split up, with some books going to Aberystwyth University, amongst other places. Apparently Granddad was a poet, a writer, journalist, and regular contributor to the letter pages of various newspapers. In fact some readers may remember his pen name; Malfew Seklew.

So to keep the peace I looked at all the books. Well, I say 'looked' . I was looking for a specific book. It had to be small, have as few pages as possible, and not smell musty. Not easy, but I was desperate, so after about an hour I found what I was looking for. A5, not more than 100 pages, some B/W photos, (that don't need reading). Yippee, this will do nicely. I told dad I had a book, but didn't tell him the book was now as far under my bed as I could throw it.

Fast forward, 1963. The doctor told me I had something called a sore throat, should stay home for a week and take antibiotics. So I did. After two days, realising I would live, and having played all my records to death, I was bored. Remember, there was no daytime TV or internet in those days. I had even thought about buying a newspaper, but resisted the temptation. Then, in desperation, I remembered the book. Wiping off the dust, fluff, and crumbs that had accumulated since its acquisition, I opened it up and began to read. It was a book on Astronomy. I read it in one day, and when my father came home from work I proudly announced: "Tomorrow, I will join the local library". Looking back, I could have waited until Dad finished his tea and saved him the coughing fit that followed.

The next day I informed the startled lady librarian that I wanted everything she had on Astronomy. She could see I was now an earnest fellow as I flicked my long hair out of my eyes, ready for the task. After filling in the membership forms, and being issued with my

passport to the Universe, she showed me to the one shelf, groaning under the weight of six books, all by some chap called Patrick Moore. Never heard of him! Still, returning to the desk I learnt my first lesson of the day. Your passport only allows you to take two books at a time, so would I kindly be a good fellow and put the others back where I'd found them.

Within two months I had exhausted our local library, much to the relief of the poor lady behind the desk. I took the advice of Patrick and began to teach myself the night sky, and joined the British Astronomical Association, based in London.

During this time someone told me about an Astronomical Observatory in Penylan, and I also enrolled in a night school course. My interest was growing. My father was working for The National Museum of Wales, where he held the title of “Keeper of Vanology”. He told me that a friend of his, Dr Bob Owens, assistant keeper of Geology at the museum, was also a keen astronomer, and that we should meet up.

Now for the bit you have all been waiting for. The BAA advertised their out of London weekend meeting would be held in Dyffryn Gardens in 1975. I booked my place and dad said Bob would be attending, and that's where we met. At last I had someone I could talk to about astronomy that did not roll his or her eyes.

Most of the 30/40 delegates were from Bristol and Swansea and kept banging on about their astronomical societies and observatories. This annoyed me so much that on the journey home I asked Bob, "How do you start an astronomical society?”

"Don’t know” came the reply. "You could advertise in the local paper”.

"Right I will. Where will we meet?"

"Penylan observatory would be a good place", suggested Bob.

"Right, I will write a letter to the paper and organise it".

"Hang on, shouldn't you ask permission of Penylan before you do!!!", said Bob.

Bob and Dave (left of picture) in 1977 at herstmonceux

As the reader will deduce, Bob was the brains of the outfit.

So I wrote the letter, permission was granted, and a meeting arranged. About 30 members of the public turned up. These unsuspecting people elected some of us to form a committee. Bob as Editor, me as Secretary. Our society was born!!!

Several weeks later I wrote to everyone who was at that first meeting, informing them our first meeting 'proper' would be at the Penylan observatory. I also placed a further advert in the South Wales Echo. About 30/40 people attended, but in the main they were an entirely different group to the ones who'd elected us. How can this be? I never really got to the bottom of that.

So the current society was born at Dyffryn Gardens. But there's more. The Penylan Observatory had a large Victorian telescope donated by Franklen G. Evans esq, J.P., F.R.A.S., F.R. Met.Soc; a member of a well known Cardiff family. So how did he get it? Originally it belonged to the Rev. W Conybeare Bruce, a rector, in none other than St Nicholas. So you see, Dyffryn Gardens, and the village of St Nicholas has a lot more to do with the stars than you may once have thought.

What was the book called I hear you cry? I can't remember. I lent it to a friend, who promptly moved house, and never saw it again.

How did **YOU** get interested in astronomy? We'd love to know. Send your ideas to either the Secretary or the Editor (email addresses are on page 2 of this issue) and your story could appear in a future edition of the newsletter.

Predicting Armageddon

Martin Griffiths

Since the beginning of our modern times it has been known that the Earth is subjected to a rain of cosmic debris. Nearly all of it is fine dust or objects that mostly burn up in the atmosphere and are of little consequence to our environment. Occasionally, larger objects survive to be found on the ground and are known as meteorites. Sometimes a meteorite causes damage, penetrates a roof or strikes a car, but such events are newsworthy only because of their unusual nature.

What is disturbing about this rain of cosmic debris is that this material has no large-size cut-off, and unlike terrestrial hazards the implications of a collision with a large object from space may have extreme consequences for our planet. Very rarely, an asteroid more than a mile in diameter strikes the earth with serious global consequences that could well threaten the future of civilization.

More rarely a cosmic projectile five to ten miles across strikes with consequences so terrible that most species are threatened with extinction. It is plausible that a larger object, perhaps 25 miles across or larger will strike the Earth during our Sun's lifetime which could virtually sterilize the planet.

This discovery has recently generated a programme called *Spacewatch* which attempts to give prior warning of any asteroid or comet that could come within striking distance of the Earth. The destruction envisioned by an impact of such an object has brought a new undertone to the word Armageddon. This cosmic catastrophe is bigger than biblical proportions and differs from all other natural hazards in two ways:

1. The potential consequences of a major impact exceed any other known natural or man-made hazard (including nuclear war).

2. The probability of a major impact occurring in a politically relevant timescale (say, during our lifetimes) is extremely low, but not outside the bounds of possibility

The impact hazard is, therefore, a terrifying prospect that remains the ultimate high-consequence, low-probability hazard. Predicting Armageddon is more than producing an array of facts and figures, but involves concerns relating to recent impacts.

Dash Cam view of Chelyabinsk meteor fragment in 2013

The first impact of note was in Siberia in June 1908, at a place known as Tunguska; the second was in Brazil in 1930. Thankfully, both areas are depopulated and not a single human was killed, but the consequences could have been very different if these impactors had demolished a city or town. In 1966 an object exploded in an airburst over the frozen Canadian north with a destructive force of 25 kilotons but caused no damage on the ground. In 1992 a similar incident occurred in the south Pacific with an airburst measuring 30 kilotons.

Now that the threat is out in the open, greater attention is being paid to astronomical projects which seek these threats from space, and alongside them, more balanced views of startling media reports such as the one proclaiming a forthcoming "near-miss" of Earth by a

mile-wide asteroid which generated front-page news recently. Astronomers dare not appear to be like “The boy who cried wolf” by playing on fears whenever an object passes close-by. To do so would mean a loss of credibility when they might someday have to forecast a real threat.

What could be done about it? We could attempt to deflect the object from its interception with the Earth. This could be done with a high yield nuclear weapon, or deploy a solar sail on the surface of such a body. This may move the object from its course if the systems were delivered in plenty of time but at present, there exists no rocket capable of lifting them into deep space, and one is unlikely to be developed soon due to the cost factor in the face of such a low risk event.

The alternative approach to this threat would involve destroying the object completely. Depending on the object’s size, several warheads may be able to accomplish this goal. The problem of delivery has yet to be overcome, and few scientists are worried enough to provide solutions. In addition, some see the nuclear problem as a bigger threat than destruction by natural means, as the possibility of nuclear accidents or deliberate misuse loom over mankind in the short term. However, would the costs of self-preservation be too much to ask?

Astronomers downplay the threat of such events. We have a 1 in 20,000 chance of such an impact happening within our lifetime, and as our technological capability to deal with such threats grows, so do our chances of avoiding this kind of apocalypse. The current debate about protecting the Earth from such impacts is just the latest chapter in the long history of our planet.

In short, the most sensible thing to do about these potentially destructive asteroids is try not to think about them.

August Star Party

Dave Powell

Last night the sky obligingly cleared and by the time I arrived at Dyffryn, people were already viewing Saturn. At this time of night, during August and before 9pm it was still very light, but that didn't dampen the enthusiasm of those attending. Any lingering doubts that our brand new C11 would not provide the "WOW" factor disappeared the moment we saw this planet.

Next to hove into view was Mars, but it was so low we could not get the observatory scope on it. Still no matter. As the constellations came into view we did sky talks pointing out objects of interest and answering various questions about our hobby. When I could think of nothing more to say I joined the guys in the observatory to see how the C11 was coping.

In quick succession we asked it to view various deep sky objects, including M57 Planetary Nebula, M15 Globular Cluster, M31 Galaxy and Neptune. The ease with which the C11 slewed to each object without fuss, and with great accuracy, was a joy to behold. In the past whenever someone suggested looking at an object we would break out in a cold sweat as it took forever, and even then final adjustments had to be done by hand and eye alone. Not any more. The focus is smooth and sharp.

One of the undoubted highlights of the evening was Theresa viewing the planet Neptune for the first time ever and bouncing around the observatory with excitement. Finding Comet Jacques proved elusive. On Sunday I located it from my back garden, a faint but obvious object in Perseus. On Monday using the same 15X70 binoculars no such luck. Last night at the observatory, using the same binoculars, I could see it from outside the observatory but when I moved inside do you think I could get a fix on its position to allow us to move the telescope? No.

The telescope needs another couple of eyepieces to give it more power and I hope by September's party night we'll have them ready, because the C11 can handle it.

My thanks to Bob Biss ,Bob Love, Bob Sutton,Chris Hughes,Claude Vallee and Theresa Cooper for making it a night to remember, for all the right reasons.

Star parties are normally held once a month at Dyffryn Gardens. See the almanac for more details.

1975 was a different place!!

They say "The past is a different country". Cast your mind back to 1975, and as Dave has alluded to already, it was a VERY different place. The internet, such as it was, connected mainly American academic institutions, and US military bases together, telephones were connected to the wall, and lots of people still didn't have colour televisions, and if you wanted to change the channel, you had to get up and do it manually!!!!

As a bit of fun, see you many questions you can get right in our 1975 QUIZORAMA!!!! Some of the questions are astronomical in nature, others are not. Answers to the questions, are provided on page 32

1. What was the price of a gallon of petrol in 1975?

A £2 (equivalent to 44p a litre)

B £0.73 (equivalent to 16.3p a litre)

C £0.45 (equivalent to 10p a litre)

D £1.50 (equivalent to 33.3p a litre)

2. What officially ended in July 1975?

A The Apollo Space Program

B The Government of Ted Heath

C Filming for the first Star Wars film (A New Hope)

D Sense!!

3. Who shares their 40th anniversary with the Cardiff Astronomical society?

A NASA

B Roscosmos

C The European Space Agency

D China National Space Administration

4. What was the cost of a pint of milk and a loaf of bread in 1975?

A 2p/14p

B 6p/20p

C 20p/50p

D 5p/25p

5. What space related TV program started in 1975?

A Horizon

B Doctor Who

C The Sky at Night

D Space 1999

6. Who did Neil deGrasse Tyson write a letter to in 1975, asking to meet?

A Carl Sagan

B Neil Armstrong

C Sir Patrick Moore

D Albert Einstein

answers appear on page 32 of the newsletter.

Up-coming CAS Public Events

Date	Time	Event	Venue
4th Oct.	10:00am to 4:00pm	Telescope Workshop	National Museum of Wales Cardiff
18th Oct.	7:00pm to 9:00pm	Stargazing from a Dark Site	Brecon Beacons National Park Visitor Centre
12th Nov.	7:00pm to 9:00pm	Star Gazers Evening	Dyffryn Gardens
29th Nov.	7:00pm to 9:00pm	Stargazing from a Dark Site	Cwmcarn Forest Drive and Visitor Centre

CAS Lectures September To November

Date	Title	Lecturer
4th Sept.	Images of the Universe Vol 2	Paul Money, Horncastle, Lincolnshire.
18th Sept.	The Jacobean Space Programme	Allan Chapman, Oxford University.
2nd Oct.	The Debate- "Wales was the best place to be an astronomer in 500AD"	Jon Davies and Mike Edmunds, Cardiff University.
16th Oct.	Variable Stars - How and Why they Vary	Gary Poyner, Birmingham.
30th Oct.	The Chelyabinsk Meteorite	Elizabeth Pearson, Bristol.
13th Nov.	Studying the Atmospheres of Extra-Solar Planets	Prof Matt Griffin, Cardiff University.
27th Nov.	Observing Galaxy Clusters	Owen Brazell, Oxford.

Observing Sessions

Date	Day	Time	Venue
5th or 6th Sept.	Fri or Sat	20:30 - 24:00 BST	Dyffryn Gardens
19th or 20th Sept.	Fri or Sat	20:00 - 24:00 BST	Mountain View Ranch
3rd Oct.	Fri	20:00 - 24:00 BST	Dyffryn Gardens
24th or 25th Oct.	Fri or Sat	20:00 - 24:00 BST	Mountain View Ranch
14th or 15th Nov.	Fri or Sat	20:00 - 24:00 GMT	Dyffryn Gardens
21st or 22nd Nov.	Fri or Sat	20:00 - 24:00 GMT	Mountain View Ranch

NOTE Where two dates are given we will attempt to hold the session on the first date, weather permitting, otherwise we will try again on the subsequent date. All dates are subject to weather conditions. For confirmation of any session please check on the CAS Web site or the CAS Observing line 07817 723 883 for more information.

Almanac Compiled by John Richards

Sun Rise/Set & Twilight

Date	Astronomical Twilight Begins	Sun Rise	Sun Set	Astronomical Twilight Ends
01st September	03:15	05:25	18:59	21:10
08th September	03:31	05:36	18:44	20:49
15th September	03:46	05:47	18:28	20:29
22nd September	04:00	05:58	18:11	20:10
29th September	04:13	06:10	17:55	19:53
6th October	04:25	06:21	17:39	19:36
13th October	04:37	06:33	17:24	19:20
20th October	04:48	06:45	17:09	19:06
27th October	04:59	06:57	16:55	18:53
3rd November	05:10	07:10	16:42	18:42
10th November	05:21	07:22	16:31	18:32
17th November	05:30	07:34	16:21	18:24
24th November	05:40	07:45	16:13	18:19

Meteor Showers

Date	Meteor Shower	RA	DEC	ZHR
9th September	Piscids	0h36m	7°	10
21st September	Piscids	0h24m	0°	5
14th October	Piscids	1h44m	14°	??
23rd October	Orionids	6h24m	15°	25
4th November	Taurids	3h44m	14°	8
18th November	Leonids	10h08m	22°	10

Observers Club Meetings

Date	Day	Time	Venue
26th September	Fri	20:00 - 22:00 BST	Black Cock Inn
31st October	Fri	20:00 - 22:00 GMT	Black Cock Inn
28th November	Fri	20:00 - 22:00 GMT	Black Cock Inn

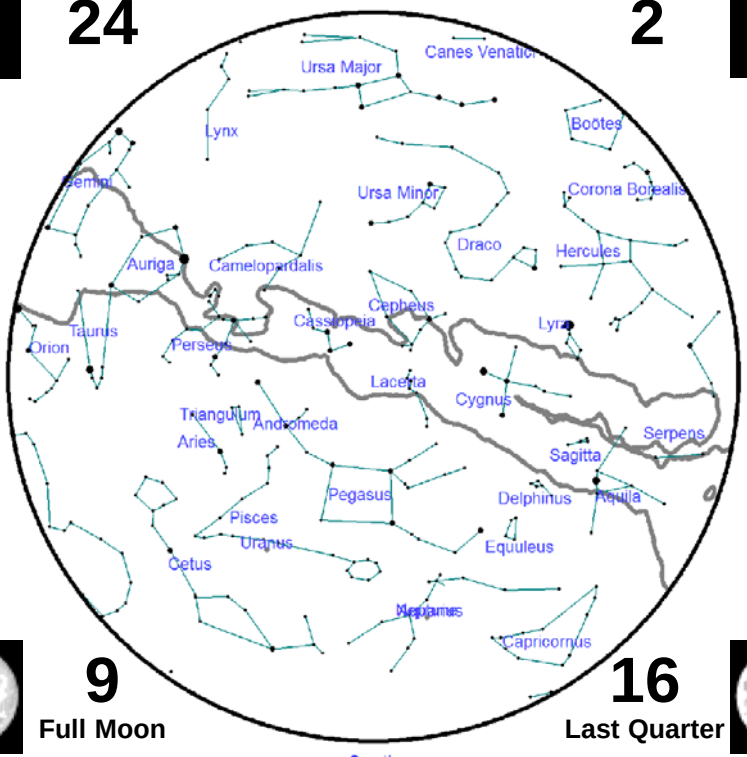
Dave's Star Parties

Date	Day	Time	Venue
23rd September	Tuesday	20:00 to 22:00	Dyffryn Gardens/Observatory
21st October	Tuesday	20:00 to 22:00	Dyffryn Gardens/Observatory
17th November	Monday	20:00 to 22:00	Dyffryn Gardens/Observatory
23rd December	Tuesday	20:00 to 22:00	Dyffryn Gardens/Observatory

Almanac September

New MOON
24

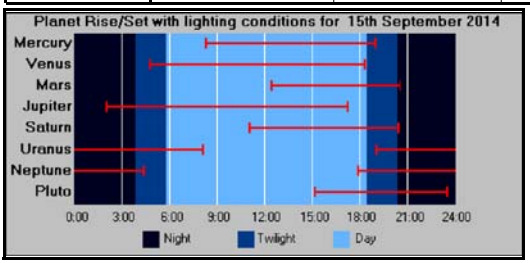
First Quarter
2



9
Full Moon

16
Last Quarter

	Constellation	R.A	Dec	Rises	Sets	Mag.
Mercury	Virgo	13h01m44s	-08°34'35"	08:16	18:55	+0.0
Venus	Leo	10h53m50s	+08°30'27"	04:42	18:14	-3.9
Mars	Scorpius	15h53m02s	21°42'20"	12:23	20:30	+0.7
Jupiter	Cancer	09h02m21s	+17°23'14"	02:01	17:12	-1.8
Saturn	Libra	15h08m43s	-15°30'50"	11:01	20:24	+0.5
Uranus	Pisces	00h57m50s	+05°25'11"	19:00	08:04	+5.7
Neptune	Aquarius	22h38m50s	-09°20'30"	17:56	04:30	+8.0
Pluto (Dwarf)	Sagittarius	19h03m28s	20°31'17"	15:25	23:48	+14.2



Planet Events

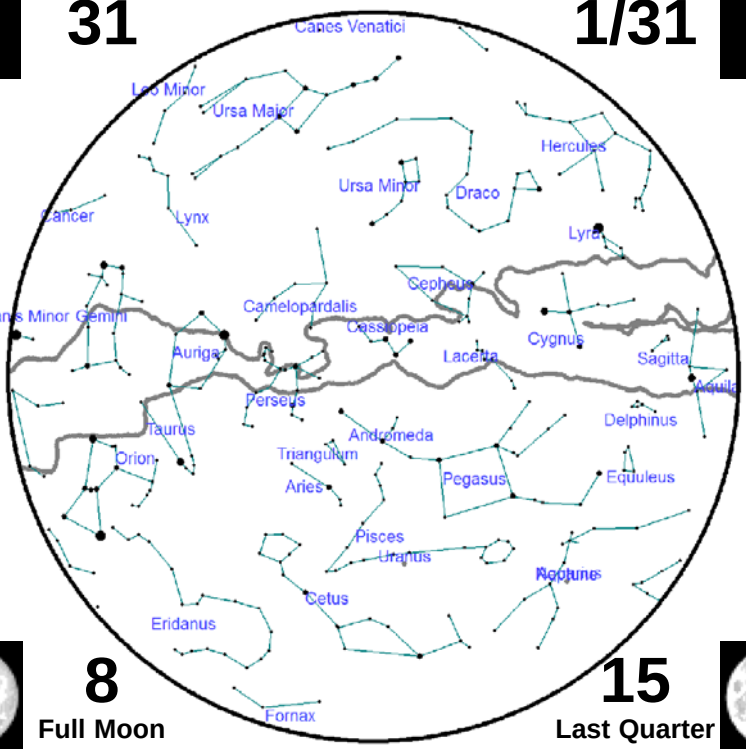
5th Venus at Perhelion (0.72 A.U.)

The data presented here is for the 15th September, positional data is at 00:00 GMT/UT

Almanac October

New MOON
31

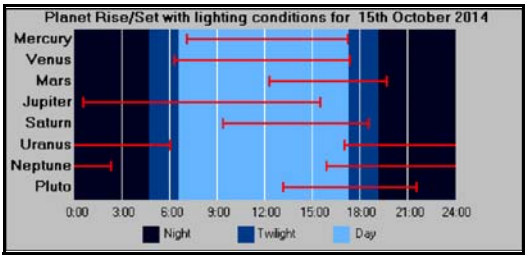
First Quarter
1/31



8
Full Moon

15
Last Quarter

	Constellation	R.A	Dec	Rises	Sets	Mag.
Mercury	Virgo	13h32m06s	-11°50'39"	07:06	17:10	+4.3
Venus	Virgo	13h11m39s	-06°14'18"	06:16	17:19	-3.9
Mars	Ophiuchus	17h23m12s	-24°41'23"	12:15	19:41	+0.9
Jupiter	Leo	09h23m13s	15°55'04"	00:33	15:26	-2.0
Saturn	Libra	15h20m12s	-16°21'07"	09:19	18:32	+0.5
Uranus	Pisces	00h53m28s	+04°57'50"	17:00	05:59	+5.7
Neptune	Aquarius	22h38m58s	-09°19'41"	15:58	02:32	+8.0
Pluto (Dwarf)	Sagittarius	19h03m33s	-20°31'12"	13:27	21:50	+14.2



Planet Events

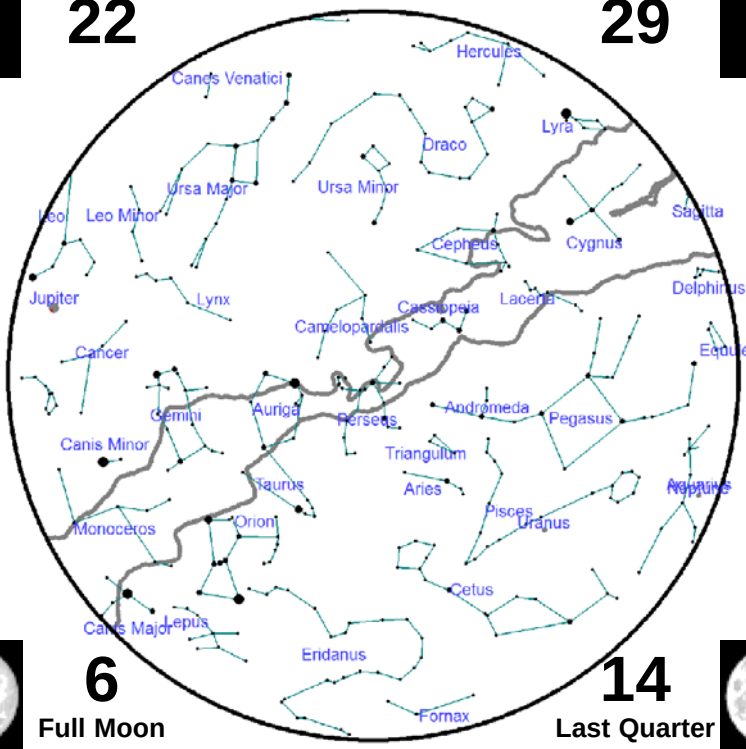
7th Uranus at Opposition.
16th Mercury at Inferior Conjunction.
25th Mercury at Perihelion (0.31 A.U.).
25th Venus at Superior Conjunction.

The data presented here is for the 15th October, positional data is at 00:00 GMT/UT

Almanac November

New MOON
22

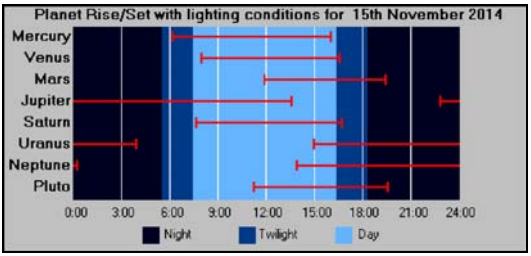
First Quarter
29



6
Full Moon

14
Last Quarter

	Constellation	R.A	Dec	Rises	Sets	Mag.
Mercury	Libra	14h29m22s	-13°08'01"	06:08	15:58	-0.8
Venus	Libra	15h42m13s	-19°21'47"	07:57	16:34	-3.9
Mars	Sagittarius	19h04m19s	-24°05'01"	11:50	19:25	+1.0
Jupiter	Leo	09h37m16s	+14°53'57"	22:47	13:33	-2.1
Saturn	Libra	15h34m36s	-17°16'19"	07:37	16:39	+0.6
Uranus	Pisces	00h49m23s	+04°32'48"	14:56	03:51	+5.7
Neptune	Aquarius	22h39m07s	-09°18'52"	13:56	00:31	+8.0
Pluto (Dwarf)	Sagittarius	19h03m37s	-20°31'08"	11:25	19:48	+14.2



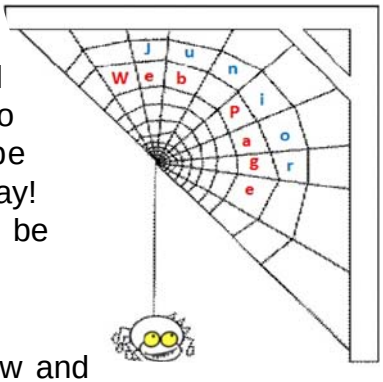
Planet Events

18th Saturn at Conjunction.

The data presented here is for the 15th November, positional data is at 00:00 GMT/UT

Web site

Greetings Earthlings!



Next year the society will be 40 years old and to celebrate we will be creating a new website, yay! and guess what, we will be adding a junior section!

Fill in the questions below and bring it with you to the next talk and pop it in the suggestion box. If you run out of space for your answers then please use extra paper. The more ideas the better!

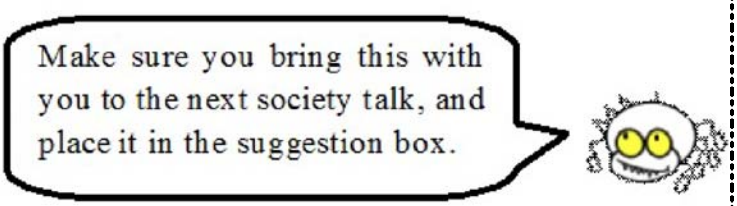
So, get your thinking caps on. I'm looking forward to reading your suggestions.

Kayleigh - Junior Rep.

1. What features do you like on the current website and would you like to see them on the new website?

2. What features would you prefer not to see on the new website?

3. What would you like to see on the junior pages?



Answers to the QuizoRama

1. B, 2. A, 3. C, 4. B, 5. D 6. A