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ARMAGH PLANETARIUM

ASTRONOTES

Incorporating **FRIENDS' NEWSLETTER**

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Houston, we've had a problem!

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Into Cyberspace

By Colin Johnston, Science Communicator

Here at Armagh Planetarium we've decided that this interweb thingie isn't just a passing fad but might be here to stay. So if it is, we may as well embrace it. Accordingly, we have launched our own Twitter feed and blog. The blog will be updated a couple of times a week at least and offer insights into what is happening here in Armagh and in the rest of the Universe, you can read it at: <http://armaghplanetarium.blogspot.com/>

Our Twitter feed will send subscribers nuggets of astronomical goodness several times a day. There will be links to breaking space news, titbits on local events and cool stuff scoured from the most distant depths of the world wide web. I'm sure you will find it useful. You can join us at: www.twitter.com/armaghplanet.



Don't forget that there is a lot to see and do at our main site www.armaghplanet.com and do check out our educational videos at: www.teachertube.com!

Measuring the Void (part 2)

By Mary Bulman, Education Support Officer

Outside our Solar System, astronomers use even greater units than the Astronomical Unit I explained in the previous issue, namely the Light Year and parsec. Both are used for deep space measurements, the parsec being favoured by astronomers and the Light Year used more in popular astronomy.

The distance that light travels in a year is huge, about 9.5 trillion km, and this distance is what is known as a Light Year. It is used to measure distances outside our Solar System, for example distances to stars, galaxies and nebulae. In order to grasp the vastness of this number it is useful to relate it to time. It is common to relate time and distance. We do it without thinking. How often have you said to someone that a place is only 10 minutes walk away or that it will take half an hour by car to get to a certain destination? So let's apply this idea to the light year.

Light travels the distance from the Moon to the

Earth, 380 000 km (236 000 miles), in roughly 1.25 seconds. It would take a car travelling at 100 km per hour 6 months to do this journey. Light travels from the Sun to the Earth, 150 million km (93 million miles), in just over 8 minutes. It takes 5 hours for light to reach Pluto from the Sun. On the edge of the Solar System the spacecraft Voyager 1, which left Earth in 1977, and is now 17 billion km (10.6 billion miles) away, is a mere 16 light hours from Earth. It has taken it 33 years to get that far.

“Light travels from the Sun to the Earth in 8 mins”

Now when we come to the nearest star, Alpha Centauri, it takes light from it over 4 years to reach us. Alpha Centauri is in fact 4.3 light years away from Earth. If we were able to fly a commercial aeroplane at a constant speed of 800 km/h (500 mph) to Alpha Centauri (4.3 light years distant) it would take about 5.8 million years to reach its destination (hopefully there was a nice

meal and good inflight movie).

When we look at Andromeda, our nearest major galaxy, we are seeing it as it was 2.5 million years ago as it has taken that length of time for its light to reach us.

Though the idea/methodology had already been widely used, the term parsec was first used in 1913 and was the proposal of one Herbert Hall Turner. The word is derived from **parallax** and arc of a **second**. An understanding of parsec requires an understanding of its constituent words.

Hold your copy of astronotes in front of you with one hand. Note the background as a frame of reference. Cover each eye in turn while still looking at your astronotes and you will notice that your magazine seems to change position in relation to the background. This shift is what is known as parallax. It happens because your eyes are about 6 cm (2 ins) apart, so by blinking you are shifting your viewpoint 6 cm (2 ins). This length is the baseline.

This shift also appears to happen with stars but it's not much use covering one eye then the other and looking at the stars. The observations have to be recorded on a much larger scale. For stellar parallax observations are taken from the Earth six month apart. The distance between the two points will be 2 AU or 300 million km (93 000 miles). This is used as a baseline measurement.

April Night Sky

By Mary Bulman, Education Support Officer

Welcome to my guide to the April night sky. For newcomers to this delightful and most interesting pursuit a little word of advice. Stargazing is a cold endeavour at this time of year so wrap up well and take with you a hot drink. Non-alcoholic of course, if you are travelling to do your stargazing, but there is no reason why you shouldn't partake of a little hot toddy if you are in your back garden. The night sky is constantly changing. If you take a hot drink and a deckchair out to settle down and watch the sky for a few hours

Astronomers measure the sky as we would a circle. It is divided into 360 degrees. Each degree is further divided into 60 minutes and each minute in turn is divided into 60 seconds. Hence an arc of a second is 1/3600 of a degree.

A parsec then is the distance at which an object appears to move one arc of a second when the observations are noted at 2 AU's apart. This distance is calculated using trigonometry. (see diagram)

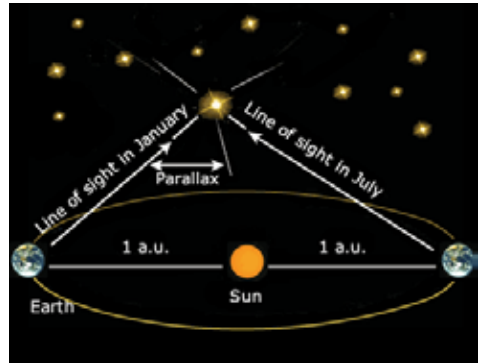


Image Credit: ESA

Measurement of stellar parallax is shown in this diagram. The idea is simple but it took millennia to develop the precision instruments needed.

In summary 1 parsec is equal to 3.26 Light Years or 206 000 AU. 1 AU is 8 light minutes which is 150 million km (93 million miles). This helps us to put into perspective how far away the stars and other sky objects are.

you can see in only two hours, the stars that were near the eastern horizon rise high overhead, while other constellations will set in the west.

April is Global Astronomy Month (GAM 2010). There are a few anniversaries of note this month also. The 11 April 1970 saw the launch of the ill-fated Apollo 13 space craft. Sinead will tell you more about this in her article. On a more successful note, 25 April 1990 marked the beginning of a new era of fantastic space images with the deployment of the Hubble Space Telescope. Twenty years of Hubble have altered our under-

standing of many aspects of the universe. Unconnected but also worth a mention is Easter. Easter Sunday this year is on 4 April and is generally taken as the first Sunday after the first Full Moon following the Spring Equinox, which is on 20 March. We have a full moon on the 30 March. The computation is a little more complex than this but it's a useful rule of thumb.

Image Credit: NASA, Hubble Space Telescope



Poetry in Motion. The Hubble Space Telescope confirms Tennyson's view of The Pleiades which 'glitter like a swarm of fireflies'.

Now what are the planets up to this month? In the west Venus and Mercury travel in tandem for a few days at the beginning of the month but by the 10th they part company. Venus soars higher in the sky and continues to be visible in the evening sky, not setting until 22.00 at the end of April. Mercury is also visible just after sunset for most of April low in the sky in the WNW.

“...the constellation Orion is called Julpan and is seen as a canoe”

Mars continues to grace our night sky and is to be found in Cancer. It is still brighter than any of the nearby stars although it declines in brightness from a magnitude of 0.2 to 0.8. Saturn can be seen in the constellation of Virgo in the southern night sky. For those among you who are early risers or who suffer from insomnia, you

can see Jupiter briefly just before sunrise at the end of the month.

Many people are familiar with Greek and Roman myths about the major constellations and stars but I am going to tell you a few stories from the Australian Aboriginal people. Our readers in the southern hemisphere share many constellations with us including Orion the Hunter. I think the hunter Orion is the most beautiful pattern in the night sky so I will be sad to see Orion leaving our night sky by the end of April. He will be dipping below the western horizon just after sunset, leaving our skies until next winter, the Pleiades, also known Seven Sisters, having gone ahead of him. In the southern hemisphere, Orion appears to be standing on its head. Although some Australian Aboriginals also saw it as a hunter I am going to tell you about a story from Arnhem Land which is in the Northern Territory. Here the constellation of Orion is called Julpan and is seen as a canoe.

“The Pleiades were a group of maidens known as the Artunyi who were swallowed up by a giant serpent, Akurra”

The story goes that three brothers went fishing, but weren't able to catch anything but kingfish. It was forbidden under their law to eat this fish. However, one of the brothers broke the rule and ate one. The sun saw this happen and got so angry that she blew them and their canoe up into the sky – where you can see them still. What we know as Orion's belt represents the three brothers. The Orion Nebula above them (remember we are talking about the southern hemisphere) is the forbidden fish; and the bright stars Betelgeuse and Rigel are the bow and stern of the canoe. This is an example of astronomical legends underpinning the ethical and social codes that the people were expected to live by.

Other stories result from a more practical need. The story goes that Marpeankurric, an old woman, was in the bush looking for food for her starving people. As it had not rained for a long, long time the rivers and billabongs had all dried

up. The usual bush tucker was nowhere to be seen. She lifted up logs but could find no lizards or snakes. Nor were there grass seeds or fruit to eat. After walking for many hours she saw a wood ant's nest.



Image Credit: Artwork and story by Barbara Merritt, Yarnall Art, Geraldton WA

Its a well known story in the Aboriginal world – the Seven Sisters and the Hunter. The hunter who is in the Orion is chasing the seven sisters and one of them which is sick is the one the Hunter is wanting. The sick sister is the one star on its own a little bit away from the rest. (sic)

So desperate was she that she went to it and opened it up with her digging stick. In the nest she saw thousands of larvae. She put one in her mouth and ate it. The larvae were delicious! She collected all that she could and hurried back to her people. The larvae of the wood ant saved the people. It soon became their favourite food. When Marpeankurric died she went up into the sky and became a star.

The star is Arcturus, the fourth brightest star in the sky. Every time Aboriginals of the Mallee Country see her they know it is time to look for their favourite food, the larvae of the wood ant, first found by this clever woman. To find Arcturus use the handle of the Plough which is high in the sky at this time of year. Now continue the arc which it forms down the sky until you come to a bright orange star. You are looking at Arcturus, which is the lowest star in the constellation of Bootes the Herdsman.

While some celestial stories are very different to our western versions others sound strangely familiar. The Pleiades in some Aboriginal stories are seen as seven beautiful sisters fleeing the unwelcome advances of a hunter or warrior. See Barbara Merritt's story where Aboriginal art and astronomy were brought together so beautifully. I received a very different story courtesy of Paul Curnow who runs courses on Aboriginal Astronomy at Adelaide Planetarium. To the Aboriginals of the Flinders Ranges of South Australia The Pleiades were a group of maidens known as the Artunyi who were swallowed up by a giant serpent, Akurra. When the serpent died in a flood his body floated to the top of the water and as the water rose so did the dead serpent. Eventually the water got so high it touched the sky and the body of the serpent burst open and the maidens were flung into the sky where they

“The larvae of the wood ant soon became their favourite food.”

can be seen to this day.

The Moon is the most visible object in the night sky. One Aboriginal story explaining the phases of the Moon goes as follows. The Moon was once a young slim man (the waxing crescent Moon), but grew fat and lazy (the full Moon). When he broke the law he was attacked by his people, resulting in his death (the new Moon). After remaining dead for three days, he rose again to repeat the cycle, and continues doing so till this day. The Kuwema people in the Northern Territory say that he grows fat at each Full Moon by devouring the spirits of those who disobey the tribal laws. A bit gory but different!

I hope you have enjoyed reading my guide to the night sky as much as I have enjoyed researching and writing it.

Moon Phases, April 2010

| | |
|----------------|---------------|
| Tues 6th April | Last Quarter |
| Wed 14th April | NEW MOON |
| Wed 21st April | First Quarter |
| Wed 28th April | FULL MOON |

Houston, We've Had a Problem!

By Sinead McNicholl, Education Support Officer

This month marks the 40th Anniversary of NASA's third attempt to land on the Moon dubbed the "Successful Failure". Onboard the mission were three astronauts, Commander Jim Lovell (b 1928), Command Module Pilot (CMP) John "Jack" Swigert (1931-82) and Lunar Module Pilot Fred Haise (b1933). The launch was scheduled for the 13th minute of the 13th hour (CST) on April 11 1970 while the lunar landing was planned for April 13 1970 and the name of that mission was Apollo 13. It looks like no-one at NASA suffered from Triskaidekaphobia; the fear of the number 13! Not even Lovell was deterred as he began his post-flight press conference with the words, "I am not a superstitious person..."

"Apollo 13 was to be a routine flight"

NASA had already successfully landed two Apollo missions to the Moon. Apollo 13 was to be a routine flight to learn more about the lunar surface, in particular the Fra Mauro area. As people were already accustomed to lunar missions, it launched without the publicity and interest of the earlier expeditions. However what was to be a standard exercise quickly turned into a race for survival about 322 000 km (200 000 miles) from the Earth, capturing the world's attention. The Apollo 13 story was also made into a Hollywood blockbuster starring Tom Hanks, something not even Apollo 11, the Moon landing mission, can boast of!

So what actually happened? Well, preparations had been going well until three days before the launch when CMO Ken Mattingly was exposed to German measles, and as he had no immunity had to be replaced by Jack Swigert. The launch itself though went to plan and for two days

operations were normal. Things were running so smoothly that at 46 hours and 43 minutes into the mission Joe Kerwin, the CapCom (Capsule-Communicator) on duty, said, "The spacecraft is in real good shape as far as we are concerned.



Image Credit: NASA

This is the damage caused to the Service Module due to the rupture of the oxygen tank.

We're bored to tears down here". It was the last time anyone would declare boredom as disaster was to strike on the morning of April 13 (there's that number again!) when Swigert performed a stir of the oxygen tanks. At 55 hours and 55 minutes into the flight a loud bang was heard and a tremor ran through the spacecraft, then came the famous quote from Swigert to Mission Control which has gone down in history "Houston, we've had a problem".

An oxygen tank in the Service Module (SM) had ruptured which deprived the spacecraft of most of its electrical power (the oxygen was used to generate power in fuel cells). If this wasn't alarming enough, when Lovell looked out the window thirteen minutes after the explosion he saw gases escaping not only from the tank that had exploded, but also from a second oxygen tank. He reported to Houston, "We are venting something out ... into space". It now became clear that Apollo 13 was not destined to land on the Moon as Mission Control now focused on how to get the astronauts back to Earth safely.



Image Credit: NASA

The Odyssey on the deck of U.S.S Iwo Jima after its watery rescue.

It was decided that the Command Module (CM) called 'Odyssey' would be shut down to save power for re-entry so 'Aquarius', the Lunar Module (LM), would be used to house the astronauts. As the power had been shut down the astronauts had to deal with the cold cabin temperature. Also the LM had been designed to accommodate two men over two days, it would now be used to its limit, three men over four days. This led to problems with the crew's carbon dioxide output. A simple solution would have been to bring in extra filters from the command module, but they had square fittings whereas the LM filters were round. In what would become part of "NASA's Finest Hour" engineers at Houston developed a solution so that the square cartridges could be connected to round filters using just the cover of a flight manual, a plastic bag, duct tape and a couple of spacesuit hoses. They instructed the

astronauts how to assemble the device which they nicknamed "The Mailbox", thus lowering the carbon dioxide levels to a more acceptable level.

"The LM had only been designed to fit two men over two days"

Attention then turned to the re-entry procedure. As Apollo 13 could not just turn around to face the Earth, the only option was to go around the Moon and employ a sling-shot effect using the Moon's gravity to throw the spacecraft back towards home. This was completed successfully, but their troubles were not over as the angle of entry had to be altered. Coming into the Earth's atmosphere at too shallow an angle would bounce the spacecraft back into space, like a pebble skimming across a lake. Coming in too steep would result in the craft burning up on re-entry. The angle had to be between 5.5 and 7.5 degrees, no room for error, and it would have to be done manually. The engine burn was a success correcting the angle to 6.49 degrees.

With the world holding its breath Apollo 13 plunged into Earth's upper atmosphere on 17 April 1970. For four minutes there was silence due to the radio communication blackout. Many at Mission Control began to fear the worst until Swigert came over the radio to confirm that they had made it through. Splash-down occurred at 1:07PM (EST) and forty-five minutes later the crew were aboard the recovery ship USS Iwo Jima.

"The Apollo 13 story has gone down as the greatest challenge ever faced by NASA."

The three Apollo 13 astronauts were greeted as heroes. Jim Lovell, the only man to have flown to the Moon twice and never land on it, understandably never went into space again. Jack Swigert also left NASA and was elected to the US Congress, but sadly died in 1982 before

being sworn in. Fred Haise, on the other hand, was not put off by the experience and planned to venture into space again. In 1977, he was commander of five testing flights for the space shuttle Enterprise. Alas he never had the chance to fly it into space.



Image Credit: NASA

The Crew of Apollo 13 home safe and sound.

The Apollo 13 story has gone down as the greatest challenge ever faced by NASA. An investigation revealed that there had been damage to the internal wiring of the tank due to high temperatures. When the motor began to stir the oxygen tanks, the wire short circuited and ignited resulting in an explosion. It is also interesting to note that the crew's lives may have been saved by the same malfunction that caused the damage and forced the decision to abort the mission.

The Lunar Module was still attached with all its components intact, had the tank ruptured after the Moon landing or during the return to Earth after the Lunar Module had been jettisoned then the crew would not have survived. It was indeed the mission that was the "successful failure"!

Where have all the Martians gone? (Final part)

By Colin Johnston, Science Communicator

In the previous part of this series I described how serious scientists have made careful, in depth and hugely expensive studies of Martian rocks and soil to determine if micro-organisms lurk within. The result has been confusion, with most saying "no" to there being biology in the stones but some saying "yes". However there are others outside the scientific community who say that all you need to find life on Mars is a comfy chair, a computer and an internet link. From the comfort of your own home (or bedroom in your mum's house) you can scrutinise images of Mars and the evidence of life will be as plain as the nose on your face. And what life! Giant trees, giant worms, herds of animals, gorillas, sasquatches, fossils of dinosaurs and dragons have all been reported by amateurs. Then there are the ruined cities and monuments...

The first-reported and best known Martian "anomaly" is the Face on the plains of Cydonia. Remember the NASA Viking landers? Their motherships stayed in orbit around Mars taking

images that were great quality for the 1970s. On 25 July 1976, Viking 1 photographed a mesa about 2 km (1.2 miles) long. There are many such structures in the surrounding area (some resemble islands eroded by ancient, and now gone, waters) but this one stood out so much

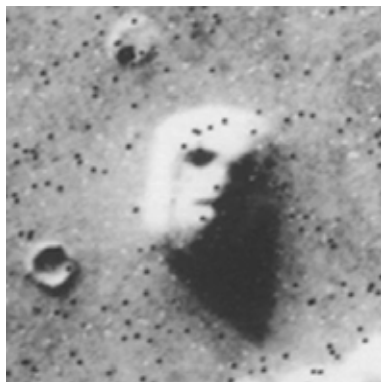


Image Credit: NASA

The Face that Launched a thousand ill-advised speculations. The dots (including the 'nostril') are missing pixels, not actual surface features.

that it was mentioned in a NASA press release. In the photos a huge humanoid face wearing a headdress appeared to be blankly staring in to the bleak Martian sky.

Despite the press release, the Face was more or less ignored but over the years knowledge of it gradually permeated public consciousness (I first heard of in Omni Magazine back in the days when it was good). Amateur observers claimed it was an artificial monument, soon other structures, the “City”, the “Fortress” and the “D&M Pyramid” were found within 10km of the face. The vast majority of the scientific community ignored these claims and so were accused of being too stuck in their ways to consider the possibility or of being part of a Dan Brownesque conspiracy to suppress the evidence. A couple of books appeared on these landforms but it took the internet to really spread them around. Eventually the Face guest-starred in a first season episode of “The X-Files” and the disappointing movie “Mission to Mars” (2000). Inspired, others searched archives of images to find their own artifacts and organisms, finding giant glass worms and trees.

“the Martian Face guest-starred in the X-Files”

Sadly all of these are bogus. Yes, the Face exists but when higher resolution images of it were made (notably by ESA’s Mars Express, a probe that will appear again in this story) it could be seen to be an entirely natural crumbling heap of rubble. Needless to say, supporters of the artificial monument theory decried the new images, declaring them fake (while some claimed it was still a face, but an alien face)! None of the other alleged alien relics on Mars are regarded as anything but natural features by people who know what they are talking about.

I will try to be fair here, it is easy to look at some images of the Martian surface and to convince yourself that it is a chilly version of Arizona, but it is an alien world and there are landscapes formed by processes that do not exist on Earth. Hence there are things to be seen on Mars which do not have an analogue on our planet. One example are the ‘trees’ reported by some,

these are almost certainly channels cut in the surface by sublimating carbon dioxide ice revealing darker material underneath. The technology which creates the images confuses some also. Space probe images on the internet are usually compressed as JPEGs, a process which adds rectangular blocks of pixels visible when the image is over-enlarged. These are innocently reported as cultivated fields or city blocks. Regrettably too, some of the people who look at images of Mars and see sphinxes and puma’s faces appear to be, to use a technical term, nuts (for example we are talking about people who hear messages addressed to them in dialogue from ‘The West Wing’ and men who tell the world that their child has been carried off in a balloon, yes, that very loon used to promote these theories on his website). I would love there to be relics of large scale alien engineering on Mars (and so would NASA, as it would guarantee a massive increase in their budget) but sadly there aren’t.

In the 1990s there was renewed robotic exploration of Mars, with six missions from NASA and one each from Russia and Japan. All of these failed though technical problems (or an embarrassing failure to convert metric to Imperial units in one case), apart from the Mars Global Surveyor and Mars Pathfinder but these were hugely successful and inspired further missions. Six more missions followed in the first decade of the 21st century (what about Beagle 2? Well, after it successfully landed it was trashed by a Deception...) These missions included the fantastic

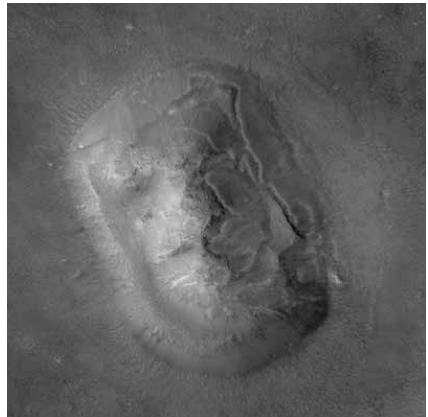
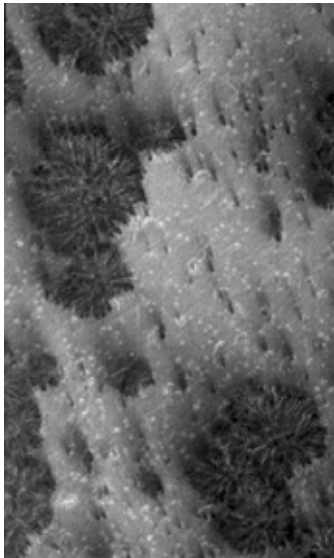


Image Credit: ESA

Not such a pretty face Mars Express showed it to be a natural feature

Image Credit: Main Space Science Systems/NASA



Forests of Mars These darker areas do look like vegetation in this Mars Global Surveyor image.

Mars Exploration Rovers Spirit and Opportunity, the Mars Reconnaissance Orbiter and Mars Express. These missions have revealed more of the planet's history.

About 4 billion years ago Earth had a dense mainly carbon dioxide atmosphere, surface water and a molten core which generated a strong magnetic field. At that time Mars had all of these too, if life ever started on Mars, this was its big chance! Over the æons conditions on the two planets diverged. The magnetic field of Mars dwindled to nothing, leaving magnetised rocks as sole evidence of its existence. Loss of the magnetic field meant any Martian analogues of the van Allen Belts disappeared too, so the solar wind was free to blast the planet's upper atmosphere, stripping away atoms (a process which continues to this day). The Martian atmosphere thinned and the shrinking seas became increasingly salty and acidic. Eventually liquid water could no longer exist on the surface (it is still plentiful as ice under the surface). If Martian life had ever appeared it became extinct...or hid underground.

I have encountered several American space enthusiasts who have never heard of the Mars

Express mission, which must say something about ESA's publicity machine. In 2004 that worthy spacecraft detected the gas methane in the Martian atmosphere. "Oh hum" I hear you say, but this was really, really startling. Methane molecules are torn to pieces by UV light, and lacking an ozone layer, Mars receives rather a lot of this from the Sun. Hence something on Mars is continuously adding thousands of tonnes of methane to the atmosphere every year to steadily replace it. Buried near the bottom, ESA's press release offered the possibility the methane had a biological origin (organisms on Earth produce copious quantities of this gas, memorably demonstrated in Mel Brook's 'Blazing Saddles').

In other words, ESA was saying: THERE COULD BE LIFE ON MARS!!! Nobody noticed. By 2009 NASA had confirmed these observations (with Earth-based instruments) and announced the discovery of methane on Mars to the world in a press conference complete with marching bands and dancing girls (I made up the last bit). To be fair NASA had found two other interesting facts, the methane is released only from certain areas of the planet, areas that show evidence of ancient ground ice or flowing water, and the gaseous emissions are seasonal, occurring only in the warmer seasons. Food for thought, eh?

There are possible inorganic processes that could create methane but one had expected them to be happening on Mars. We really need to go to Mars to drill and dig to seek out any Martians where ever they may be hiding, NASA's MAVEN, ESA and NASA's ExoMars missions for launch in 2016 and '18 are all good starts but we really need to send human explorers there (are you listening President Obama?)

"We really need to explore Mars"

When I started this Martian odyssey I promised an answer to the age-old question of whether our neighbour is host to life. Based on what we now know of the planet's history, the odd Viking experimental results and the anomalous methane emissions, in my opinion, it is a definite "maybe"!

The Universe in London?

By Neil Cullen, Administration Officer

European AstroFest 2010, the largest gathering of amateur astronomers in Europe, took place on 5-6 February at the Kensington Conference and Events Centre, West London. The two day conference and trade exhibition, organised by Astronomy Now magazine, attracted thousands of participants and featured speakers from across the astronomical world.

Topping the bill at this year's event was Dr Jill Tarter of the SETI Institute. Tarter, the inspiration behind the main character in Carl Sagan's novel 'Contact', is a leading researcher in the Search for Extraterrestrial Intelligence (SETI) and she gave talks on both days to celebrate the 50th anniversary of SETI. Also in attendance was Professor Richard Crowther, Head of International Relations at the British National Space Centre and a European Space Agency consultant. Professor Crowther's lecture was on the dangers of the 35 million pieces of space junk orbiting above our heads and efforts to minimise both the very real risks they pose to satellites, the space station and space shuttle, and to the lives of astronauts. Dr Jim Wild of Lancaster University talked about another threat from space: solar storms that could disable the high-tech electronic infrastructure that modern society relies on.

A highlight of the conference was the appearance by Sir Patrick Moore and his friend Dr Brian May, who reminisced about their shared love of astronomy.

As well as the distinguished astronomers in attendance, Armagh Planetarium staff Neil Cullen and Eamon Rafferty were also present. Armagh Planetarium has had a stand at Astrofest since its conception over fifteen years ago. Our stand was in one of the most prominent positions right at the entrance to the main conference hall where all the different lectures take place, this meant that all the visitors had to queue at our stand before entering each conference session, as a result we had a lot of interested astronomers browsing our vast array of astronomical

products and books. We always have a large selection of items on display and for sale from the Planetarium including books, globes, posters, DVD's, software and calendars. Every year there seems to be a different best seller and we would usually have some new products to showcase each year we have attended. This year the astronomy software was one of our biggest sellers.



Image Credit: Neil Cullen, Armagh Planetarium

Most of the visitors to the exhibition have a keen interest in astronomy as opposed to being professional astronomers and therefore it is very informal and many friendships have been struck up over the years. From Armagh Planetarium's perspective it is good to meet in person the people who order goods from us, it also gives us new ideas and suggestions for new products and what our largest customer base, amateur astronomers, would like to see us selling in the future.

One other aspect of attending is that visitors to our stand expressed an interest in visiting the planetarium if on holiday in Ireland, and some visitors to our stand have expressed how amazed they were by our shows when they had visited us before.

For more information on Astrofest, which is organized by Astronomy Now magazine, check out their website www.astronomynow.com. You can also check out our website www.astrosales.biz to see some of the exciting products we had on sale at Astrofest.

Image of the Month



Image Credit: NASA

The 32nd Shuttle mission to the International Space Station, STS130, was launched on 8 February 2010. In this mission, the space shuttle Endeavour, was to deliver a third connection module to the space station, known as the Tranquility node.

This node was built by ESA and the Italian Space Agency and contains additional life support systems which recycle waste and generate oxygen. It also contains another toilet.

Tranquility will mostly be used for exercise, storage and robotics.

As the shuttle approached for its docking on 9 February, one of the Expedition 22 crew members on board the ISS took this photo of the silhouette of the space shuttle Endeavour in this very unique setting over Earth's colourful horizon.

(Caption by Tracy McConnell, Education Support Officer)



www.armaghplanet.com

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Tel: 02837 523689 Email: cj@armaghplanet.com

Editor: Colin Johnston
Assistant Editor:
T McConnell
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