2002

NEXT MEETING
THURSDAY, 16th November 2017

THE ASTRONOMICAL SOCIETY OF HARINGEY
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www.ashastro.co.uk

SOCIETY NEWS

MEETING VENUE
Music and Drama Block, Ashmole School, Southgate, London N14 5RJ.

The day for meetings is usually the third Thursday of each month. The exceptions are August, when we do not hold a meeting, and this now currently applies to the July and December meetings, though that may alter in the future.
However, in case of changes it is always advisable to double-check the dates below.
Doors open - 7.30pm : Main speaker - 8.00pm : Finish - 10.00pm sharp!

For more on this, and general meeting information, also check the website page: www.ashastro.co.uk. Last minute changes will be on the Facebook page

This is a combined September and October issue, as the meetings are very close together

OBSERVING EVENINGS

Regarding any changes to Observing Evening meetings, this is a continuing message to let Observing Officers : Jim Webb, Alister Innes or Kyri Voskou know your mobile phone number. Last minute changes can then be notified via text messaging. The Facebook page will also be used, but we realise not all have (or want!) Facebook access, so it will be secondary to texting. And if you do not have a computer or cell phone, you can be phoned on your landline.

2017

November 16th : Jerry Stone : 'Time and Space'

December : no meeting this month

2018

January 17th : Dr Simon Drake & Dr Andrew Beard : The Skye Meteorite
IMPORTANT – PLEASE TAKE NOTE - This date has moved to the day before the usual Thursday, ie to Wednesday 17th, due to speakers' availability

COVER

Montage of a replica of Harrison's Chronometer, against a 'hole in space' – actually Reflection Nebula NGC 1999 in Orion, taken by the Hubble Space Telescope. Initially thought to be a 'dark nebula', it turns out it actually is a 'hole in space', or rather a hole in the foreground nebula, with, unusually, no stars behind! Although the image was taken in 1999, and published in 2000, this latter conclusion was only proven in 2010, when the Herschel Space Observatory tried to image anything 'in the hole', using different wavelengths – and found there wasn't anything!

Photo montage Mat Irvine/ Hubble image NASA-ESA

SOCIETY NEWS

For up-to-date information, we are using that 'necessary evil' - Facebook. Go to : www.facebook.com/groups/ASHastro/
However although originally you could view 'Public' Facebook pages (which ASHastro is), and read posts, without being a member, it now seems you have to be a member of FB to even read them. So, sorry, you'll have to join - *BUT* this does not mean you need to give away information you don't want to give. Although Facebook doesn't go out of its way to tell you, any individual's home page can be blank (as your Editor's is) it does not have to have any information. Even your birth date need not be correct.
However, once a member, if you want to 'interact' - ie post messages – on the ASH Group you will need to ask to join, and you will get 'signed up' by your Chairman or Editor. The more the merrier!

MEETING ROOM

We currently meet at Ashmole School, Cecil Road, Southgate N14 5RJ, on the first floor of the Music and Drama Block. This is the two-storey building, (left) with the entrance marked with the red arrow. We hope the first floor will be suitable for all, as there isn't a convenient lift. If anyone feels they will have difficulty, please let the Chairman know. Contact details on the back page.

For historical reference the X in the photo was our original meeting room, the original Music Studio. This is now demolished, and the site now has a new building.

MEETING PREVIEW
16th November : Jerry Stone : "Time and Space"

Our measurements of time have largely been derived from our observations of space. In addition, simple astronomical observations and timings can tell us remarkable things about Earth's orbit around the Sun.

Astronomy gave us our day, month and year - though these divisions of time don't last as long as most people think! There are other planets where days and years are very different to those on Earth, so time really does depend on where you are in space.

Take a journey into time and space with Jerry and find out how they are intertwined.

Meanwhile Jerry – left – manages to be in both the west and eastern hemispheres of the Earth at the same time, by standing on the 'official line' passing through the Royal Greenwich Observatory

SPACE NEWS - *compiled by Kyri Voskou*

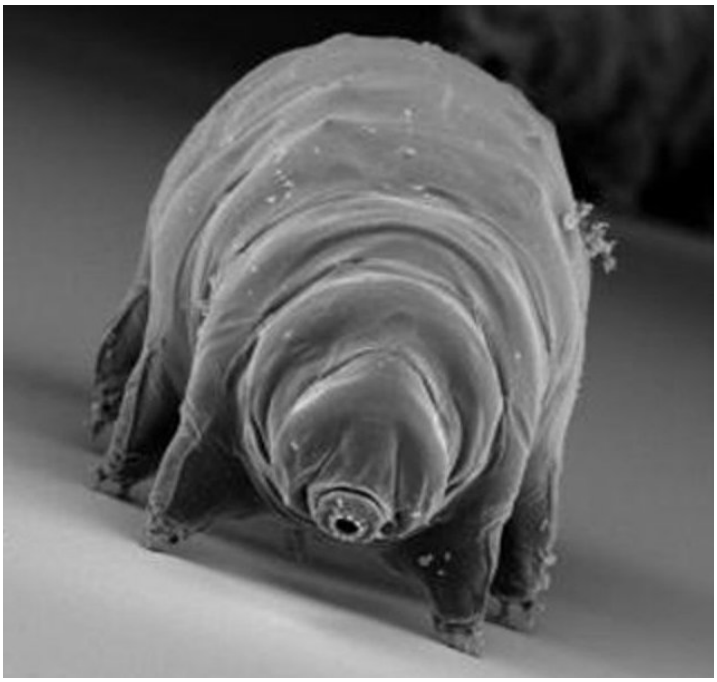
THE ICE-CREAM THAT WON'T MELT

It's every child's dream – the ice-cream that won't drip all over you if you can't eat it quickly enough. It's no longer a dream however because Japanese professor Tomihisa Ota has invented the non-melting ice-cream, and at the Yen equivalent of £3.50 a pop it's gone down a treat in Japan.

Nobody set out to develop the product – it actually came about thanks to a lucky accident at a food development centre. During research on how to utilise sub-standard strawberries a chef found that adding polyphenol (which is a substance found in strawberries) to dairy cream made it solidify.
Ota realised this could come in useful and experimented by mixing a variety of products with cream and polyphenol.

The ice-cream, dubbed *Kanazawa Ice* after the city where it was developed, remains solid at high temperatures because polyphenol prevents the oil and water in the product from separating. This doesn't mean that the ice-cream stays cold but as the product warms up it keeps its shape better, for longer.

MANKIND MIGHT NOT SEE THE SUN DYING - BUT THIS CREATURE WILL



We already know that there's little prospect that mankind will be around when our Sun enters its death throes in about five billion years. The chances are we'll have wiped ourselves out long before then.

However we can take a good guess as to which creature is likely to be the last to see the light of day. A group of scientists led by Oxford University have discovered that the tardigrade, a tiny eight-legged creature just half a millimetre long, is about as indestructible as they come. Tardigrades, also known as water bears, are very hardy. The temperature range that can be survived varies across a number of tardigrade species with the highest at around 350°C and the lowest just a single degree above absolute zero. They can endure enormous

pressure and levels of radiation well beyond that of a human. They can even last 30 years in the vacuum of space with neither food nor water.

Should they find there's no mate available then that's no problem – some species can self-reproduce.

The three events which are considered slate wipers to life on Earth are a major asteroid impact, a supernova and a gamma ray burst. Neither of them was considered a realistic threat to the tardigrade. It is unlikely any asteroid impact would be large enough to wipe them all out and there is little prospect of a supernova or gamma ray burst ever happening close enough to us to see the tardigrades off.

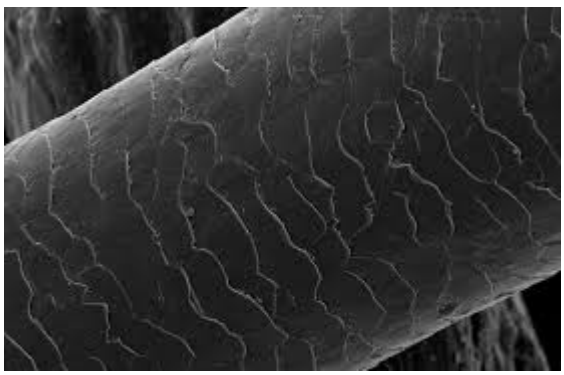
So the half millimetre long tardigrade is almost indestructible

Editor note – if you are familiar with Channel 4 station idents, it has one compiled from electron microscope images - and a tardigrade is the little creature at the end!

NUCLEAR BOMBS AND HAIR CONDITIONER ARE A BAD COMBINATION

It won't be the first thing you think of but if there's a nuclear war tomorrow, make sure you don't condition your hair after washing it. It would appear that the way hair conditioners work would result in your head becoming rather more radioactive than it otherwise would.

This is thanks to the scaly nature of hair – not visible to the naked eye but quite plain if viewed under a microscope. During the rough and tumble of a busy day these scales can open up and be pulled apart. Conditioner treats this problem by pressing the scales back into place and smoothing them out with chemicals including various polymers, oils and silicone compounds. Tiny particles easily stick to these chemicals so if the air is full of radioactive particles then your treated hair will be too.



The residents of Guam in the Pacific Ocean have become highly aware of this unusual fact now that they are under the increasingly unfriendly gaze of North Korea. The attack guidance just issued to residents includes the usual expected advice such as don't look at the flash of a bomb, seek cover and stay indoors. Also included was the unexpected hair-washing advice.

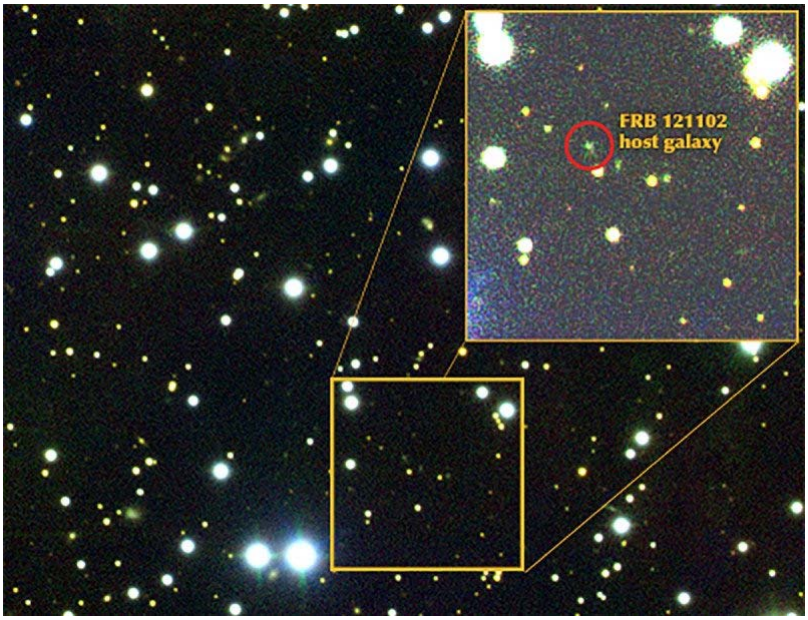
Mind you it's probable that if North Korea does send Guam an unwanted package, the last thing the islanders will be thinking about is their hair…

REPEATED SIGNAL FROM DEEP SPACE IS A MYSTERY

For the first time astronomers have detected a Fast Radio Burst (FRB) which is repeating itself.

Such events were previously thought to be one-off occurrences but not so with FRB121102, which has now been detected on three separate occasions. The original 2012 detection was repeated in 2015 but has been picked up again in the last few weeks.

An FRB consists of pulses of radio waves, each just fractions of a second long and believed to be caused by cataclysmic events like colliding black holes. The source of these events is a dwarf galaxy some 3 billion light years away and of the 30 FRBs discovered to date it remains the only galaxy to have repeated events.
Astronomers have kept a close eye on the galaxy and were rewarded when a radio telescope based in West Virginia came up trumps, registering 15 super-fast pulses at an extremely high frequency.



The latest theory suggests that a particularly energetic neutron star may be the culprit but the mechanics at work remain a mystery.

QUESTION TIME... *Continuing the change in format…*

ALPHA-QUIZ

The answers begin with consecutive letters of the alphabet

Saturn's "ears" _____

Cygnus creature _____

Device used to see stars and planets _____

Third largest planet _____

Electric potential difference _____

H2O _____

Electromagnetic radiation used to see broken bones _____

Energy released by a nuclear explosion _____

Last month's answers:

Eclipse, **F**errous, **G**ravity, **H**arrier, **I**ndigo, **J**ohn, **K**inetic, **L**ava.

CHAIRMAN'S QUARTERS

Does anyone remember Viv Stanshall's Bonzo Dog Doodah Band? They had a hit, back in 1968, with 'I'm the Urban Spaceman' whose finishing line is, "*I'm the Urban Spaceman baby, but here comes the twist – I don't exist!*" Neil Innes, who wrote it, actually got an Ivor Novello award for the song.

So, what has this all got to do with the Big Bang? Well, much in the same nihilistic vein of the last line, physicists at CERN and other major establishments are worried.

It all boils down to matter and anti-matter (or contra-terrene or CT – terms often used by science fiction writers). Matter is what we consist of. Anti-matter, in simple terms, is an energetic mirror-image of matter but with identical physical properties. Electrons have anti-electrons, protons have anti-protons and neutrons have anti-neutrons. The same is true for all the other known sub-atomic particles. As an aside, anti-hydrogen and anti-helium-3 atoms have been synthesized in nuclear establishments and have been kept long enough to study their properties. So what is the issue with anti-matter? If matter and anti-matter make contact, their inverse energy fields annihilate each other and their total mass reverts to pure energy. This indicates an obvious problem with creating and storing anti-matter. The two forms have to be kept apart long enough to be either studied or stored.

Anti-electrons, or positrons, are regularly created in radioactive decays and were the first anti-matter particles observed. These quickly disintegrate, on contact with electrons, and contribute to the energy release by radioactive decay. All other particles have to be synthesized by use of subatomic particle collisions in nuclear labs. Science fiction stories and movies often use matter / anti-matter reactors to generate the vast amounts of energy for getting around the Universe, (most famously with Star Trek's USS Enterprise). As a fuel, antimatter is the most efficient, as all its potential energy is released during the reactions. The problems are making it (or finding it) and storing it – but that is a problem most SF writers tend to avoid (except for, notably, Jack Williamson in his SeeTee, or CT, series of novels).

So why are scientists so worried? Firstly, so far no hints of anti-matter have been found in the observed Universe. One major problem is that anti-hydrogen has exactly the same spectrum as our hydrogen. The only potential indicator could be that any appreciable volumes of anti-matter would annihilate neighbouring areas of matter and show vast releases of gamma and X Rays – but this has not been observed. So the next problem is why is there only 'matter' in the Universe – what happened to the 'anti-matter'?

Herein lies the biggie. During the Big Bang, energy was created (along with time and space). So far so good, but within as very short period of time, a lot of this energy condensed into matter, which, for now, we shall call 'normal-terrene' (NT) and 'contra-terrene' (CT). The obvious result is that if there is more CT than NT, the NT will be destroyed and CT will remain. The opposite is also true which is why we appear to have only NT in our Universe. (Though which is actually NT or actually CT is really a matter of viewpoint, but for convenience we call ours NT, or just 'matter'.)

So what is the problem? In order for either NT or CT to prevail there has to be an asymmetry in their physical properties so that one will prevail over the other. Try as they can, scientists have found no asymmetry whatsoever in the physical or energetic properties of NT and CT! The implication of this is that NT and CT must have been created in equal quantities, so all the matter that was created would have to have been annihilated. Therefore, as the song tells us, "…*we don't exist*". But we do - don't we?

See you next meeting - *assuming we exist…*

Jim

THE NIGHT SKY

THE PLANETS : November - December 2017

MERCURY : Reached superior conjunction on 8th October, and currently back in the evening skies. Reaches greatest elongation east on 24th November.

VENUS : still in the morning skies, bright at magnitude -3.9 and fairly high in the sky, rising two hours before the Sun. Very close – ¼ degree (½ Moon width) – north of Jupiter on 13th November, but this is at 08.20hrs, so the skies will be light as the Sun will have risen. However as both planets are bright, could still be worth a look. **BUT do not use any optical magnification as the Sun is too close.**

EARTH : Winter Solstice - 21st December, 16.29 UT

MARS : Now in the morning skies, magnitude +1.7 in Virgo, increasing to +1.5 as we move into December. Rising around four hours before the Sun, in the east-south-east, but poorly placed for viewing. Waning 26 day-old crescent Moon, close on 15th November. 25 day-old waning crescent Moon close on 13th December, and a squat triangle formed by Mars, Jupiter and the Moon on 14th.

JUPITER : Reached conjunction with the Sun on 26th October, and now in the morning skies at magnitude -1.7, increasing to -1.8 over the next month. Close to Venus on 13th November (see also : **VENUS**) and the three will form a triangle with the Moon on 17th November. 26day-old Moon close on 14th December
For 2018 it will only reach an elevation of some 25 degrees when south and during 2019 - 2020 just 18 degrees.

SATURN : Very low in the southwest at night-fall in Ophiuchus, passing into Sagittarius on 19th November. At magnitude +0.5 with an angular size of 16.5 arc seconds. Only really visible for a short time after Sunset and reaches conjunction with the Sun on 21st December. Reappears in the morning skies in January 2018.

URANUS : In the east mid-evening, in Pisces. Uranus is slightly brighter at magnitude +5.7, but fading to +5.8 during December, so still *just* on the theoretical edge of naked-eye visibility. Was opposition on October 19th. About as well placed for viewing as it gets. Moon close by on 30th November and 27th December.

NEPTUNE : Was at opposition 5th September, magnitude +7.9 in Aquarius. Can be found around 28 degrees altitude in the south, late evening. As with Uranus, well placed for viewing. Moon close (6 degrees – 12 x Moon widths) to the south on 26th November, and 3 degrees, 24th December.

METEORS

Leonids peak on 17th November, and this is a day before New Moon, so the skies should be dark. Not usually a high scoring shower, only around 20 meteors/hour, and one that only last for a few days – 15th though to 20th.

Geminids peaks on 14th December, four days before New Moon, so again the skies should be dark.

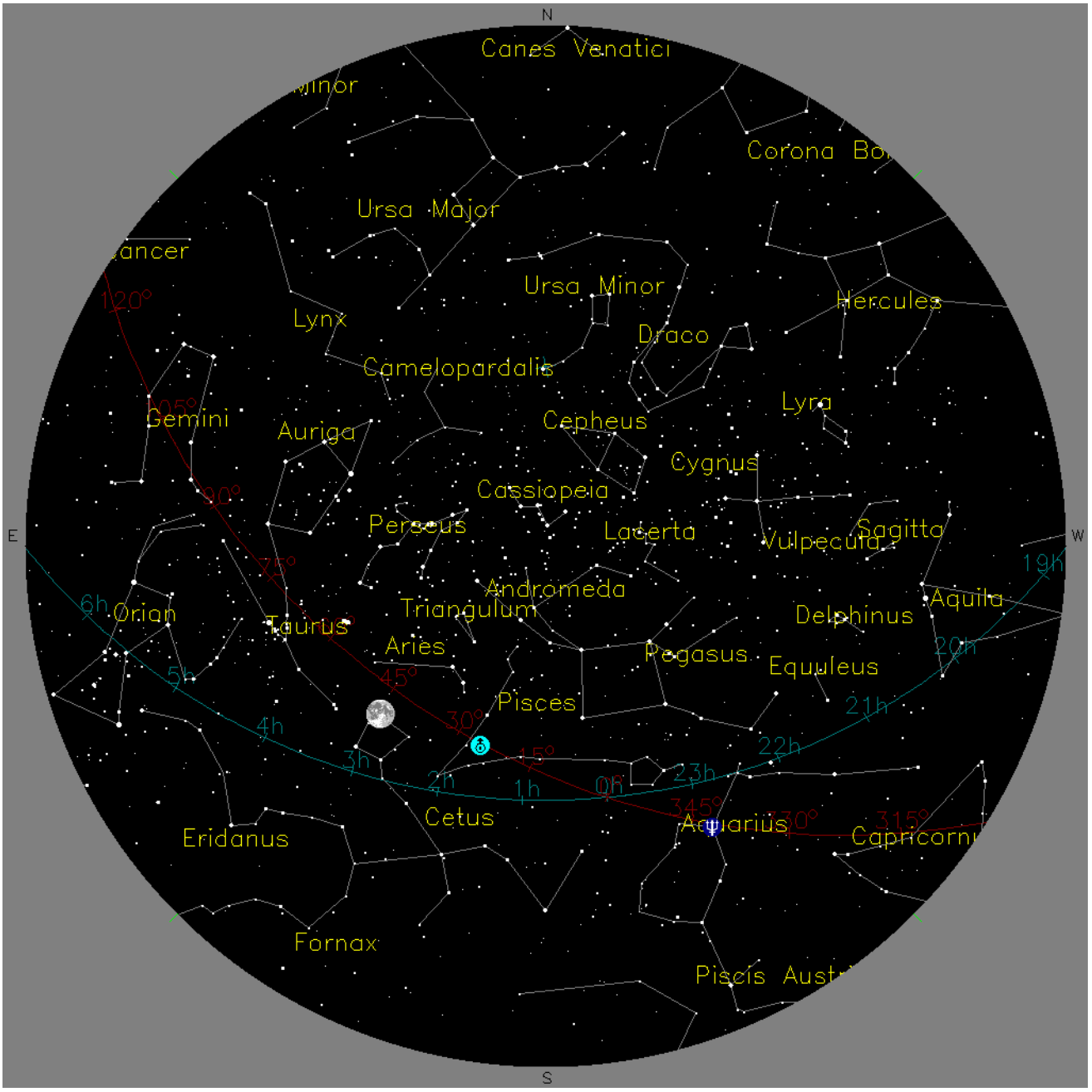
THE MOON

New 18th November First 26th Full 3rd December Last 10th New 18th
New 18th First 26th Full January 2nd 2018 Last 8th New 17th

THE NIGHT SKY : MAP

1st December 2017, 20.00hrs UTC-GMT

Note : the previous day, 30th, the Moon and Uranus will be at their closest



KEY	
MERCURY	SATURN
VENUS	URANUS
MARS	NEPTUNE
JUPITER	PLUTO

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