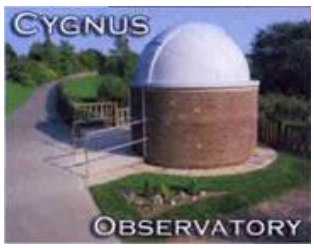
SAS NEWS

Sunderland Astronomical Society



In this issue: Society events + The Darke Side + NASA's *SpacePlace* + Old society controversies with *Old Boots*

Cover Photograph: Rosette Nebula in Monoceros.
Photographer: Keith Johnson. Taken at Derwent Reservoir.
80mm ED, Canon 1000D, 20 x 5 mins @ ISO 1000

March 2012

www.sunderlandastro.com **Registered Charity #1071527**

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Events list

Thursday 8 March: Full Moon
Sunday 11 Mar: 6pm Committee meeting / 7pm workshop meeting
Monday 12th March: Brownies visit to Cygnus observatory, 6 – 8pm.
All help appreciated
Sunday 18 March: Speaker – **David Hughes**,
"David Sinden: Master optician"
Wed 21 – Sun 25 March: Spring **Star Camp** at Kielder Camp site
Thursday 22 March: New Moon

Friday 06 April: Full Moon; Good Friday
Sunday 08 Apr: 6pm Committee meeting / 7pm workshop meeting
Sunday 15 Apr: Speaker – **Professor Sir Arnold Wolfendale**,
former Astronomer Royal
Friday 20/Sat 21 Apr: Dark sky observing opportunity
Sat 21 Apr: New Moon

All Society events
- are free,
- are held in the Washington WWT facilities, and
- evening meetings start at 7:00pm unless otherwise noted.

Please bring a torch and warm clothing to any night-time observing sessions.
All observing sessions are dependent upon favourable weather and may be subject to cancellation.

Editorial

Hello everyone and welcome to the March issue of SAS News. This month's cover picture is a fantastic image of the Rosette Nebula taken by Keith Johnson, out at our usual Derwent Reservoir observing site. It never ceases to amaze me how the imaging technology has moved on in recent years; I have many old astronomy books on my shelves at home containing images such as this, but taken by huge professional observatories on mountaintops. Nowadays amateurs can equal or surpass these results, thanks to the latest generation of digital cameras, home computing power and – importantly – no little dedicated and skill. As the days start to get longer, the Winter stars and sights like the Rosette Nebula are quickly disappearing into the evening twilight, so I hope the next few weeks provide clear dark skies for you to view them for the last times this season. The stars and galaxies of Spring, along with Mars, are rapidly replacing them in the mid-evening sky, providing new challenges for the imagers amongst us.

I would like to make it a feature of future issues of SAS News that the cover image is taken by a member, or at least one of our local astro-crowd. So please send me any images that you are pleased with, and use SAS News to showcase all of your great work.

While the future looks bright, certainly given the turnout at February's lecture evening, it is also instructive to periodically look back at our Society's past. In this issue I am pleased to welcome back one of our more esteemed fellows who wishes to correspond under the name of "Old Boots." Newer members may find this column eventually sheds much light on the Society's connections with benkers, Battenberg, and the short-lived prohibition on facial hair at the beginning of this Century. In its current form, our Society was set up in 1993 but many trace its roots much further back – even, through the teachings of Hermes Trismegistus, to ancient Egypt, Babylon and Atlantis. Enjoy.

– Dave N., Editor.

SAS Yahoo Forum
The Society's Yahoo group provides a forum for members to exchange ideas, ask questions, and a place to post their pics:
http://tech.groups.yahoo.com/group/SunderlandAstronomicalSociety/

The Hidden Power of Sea Salt – Revealed

By Dauna Coulter

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

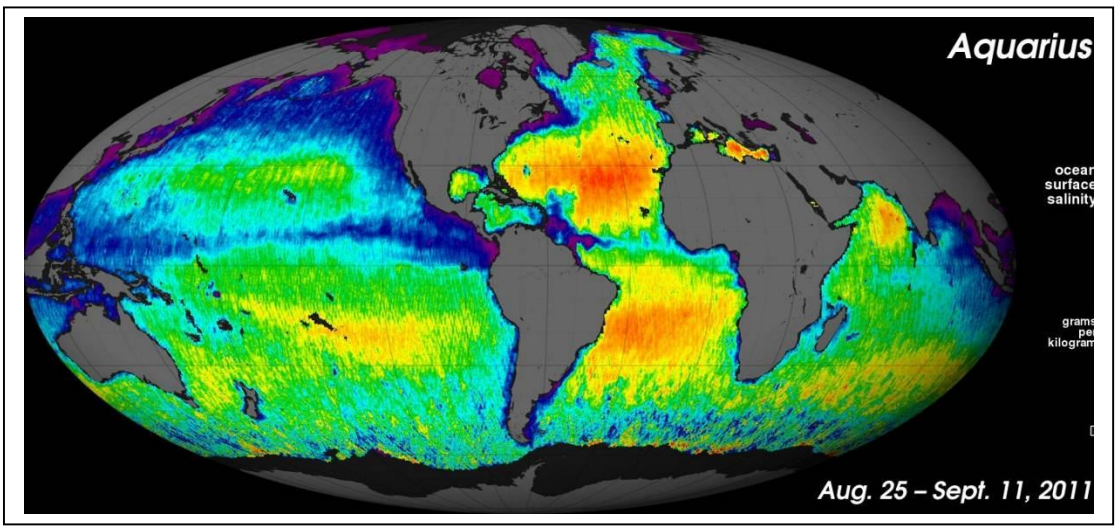
"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results. Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground.

All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.

This article was provided courtesy of the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Above: Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.

THE DARKE SIDE

Society Update with Chairman Graham Darke

Excellent Night at Derwent Reservoir

Saturday 18th February saw a good contingent of some twenty odd members head up to Derwent for an excellent night. There were so many people there when I arrived that I had to make my way to the windy end of the car park. There I found Keith Johnson from Durham AS sheltering his imaging rig nicely to the side of his impressive motor-home. Keith spent the evening taking a number of impressive shots which he has kindly posted to the SAS Facebook page. His shot of the Rosette Nebula is particularly good. I observed this object in my refractor with a 40mm eyepiece and a UHC filter and it wasn't a bad view at all. There was plenty of nebulosity visible particularly to one side of the central cluster. Keith also imaged Comet Garradd which was a fine sight in the telescope at 24x magnification. Quite a large and diffuse comet this one, with no perceivable tail visible at the eyepiece. Keith's pictures did however pick up a tail and anti-tail.

I accidently observed a galaxy in Camelopardalis that I have never seen before. I had meant to go to Hubble's Variable Nebula in Monoceros but couldn't remember its catalogue number. I packed the car quickly and forgot my star atlas! I guessed the number as NGC1961 and knew as the telescope started slewing that it was heading in the wrong direction. When it came to a stop there was an odd shaped misty patch in the view. I knew it wasn't Hubble's Variable Nebula (which is NGC2261 by the way so I was only 300 out!) but I just couldn't make out whether the object in the eyepiece was a nebula, galaxy or faint cluster. All I could say was that it was an odd shape. My money was on it being a nebula. When I got home I looked it up and found that it is an unusual spiral galaxy which is in Arp's Catalogue of peculiar galaxies. It has spiral arms which have been distorted in all different directions which may be caused by a merger.

I also had a great view of M3 in Canes Venatici and the Ghost of Jupiter Nebula through Michael Tweedy's C11 and a nice view of Jupiter through Owen Lowry's 10 inch Dob. John Lynch got some respectable shots with his modified webcam, one of M51 in particular catching the eye. Ken Kirvan captured a number a targets taking a series of short unguided exposures through a Celestron 102mm short refractor. His 15 second exposures of the Orion Nebula with his new Canon EOS 600D were most impressive. It was also pleasing to see plenty of newcomers at Derwent who certainly seemed to be enjoying what was on offer. Just before I left I had a quick look at Saturn through Michael's C11 which rounded the evening off nicely. Make sure you don't miss the next trip up there by registering for free text alerts: See Michael Tweedy to have your number added.

Telescopes for Ethiopia

Most members will now be familiar with the Telescopes for Ethiopia project which is being led by David Hughes. The appeal for broken and unused binoculars has gone very well indeed. The first batch are now on their way to Dave Kidd in Woldia. In addition to binoculars, I am busy grinding an 18.5 inch diameter glass blank with the help of John Nichol, a mirror maker from Stockton. Once ground, polished and figured, I intend to apply for a grant to have the mirror aluminised and shipped out to Ethiopia where it will become the primary mirror of a permanently mounted telescope for a University there. The mirror blank has already made a few appearances at club meetings and I will continue to bring it down as it progresses.

South Hylton Brownies

On Wednesday 8th February I paid a visit to South Hylton Brownies in Sunderland. They had visited the observatory last year on a cloudy night and didn't get to see anything. Seeing that the skies looked promising for that evening, I texted their leader to let her know that I'd be there that night. I set up my telescope in a small garden to the side of the community centre where they meet and it didn't take long before I had an audience of local kids, none of whom seemed to be Brownies! They did enjoy the view of Jupiter however as did the Brownies themselves. One of the Galilean moons emerged from transit while we were observing. I only realised this as having said "you can see 2 bright points of light to the side of Jupiter....they are two of Jupiter's moons" only to be told in response by one of the girls, "I can see 3!" She was right, Io had reappeared.

Brownies at the Observatory 31st January.

Many thanks to all who came along and helped out with Silksworth Brownies. They had a great night despite only half of the group getting to see glimpses of the Moon between the clouds. I've promised to follow up with them to pay them a visit with a telescope at their normal meeting place, as I did recently for South Hylton Brownies.

Brownies at the Observatory 12th March

Our next Brownies visit is Monday 12th March from 6.00pm until 8.00pm. **All help appreciated for that one too.**

February Lecture Meeting

On Sunday 19th February our President and Editor Dave Newton gave an excellent talk entitled "The Sky at Sirius Hour". This talk explored the region of sky around the star Sirius in Canis Major at the time of Sirius transiting the local meridian – 9.00pm on the evening of the

talk. Dave took us through the bright stars making up the asterism of the “Winter Hexagon” which spans a number of prominent winter constellations. We were guided through some now defunct constellations in the region, the most notable being the Mural Quandrant which gave its name to the Quandrantid meteor shower which name has stuck. This area of sky is now commonly known as Bootes the Herdsman. Dave also gave us a run down of the top ten sights in the sky including planets Jupiter and Mars and also a host of deep sky wonders including the Orion Nebula, The Pleiades, The Crab Nebula, M35 in Gemini, The Eskimo Nebula, M38 in Auriga and of course Sirius itself. Although skies didn’t permit observation of the objects in Dave’s talk, on the night, I’m sure there was plenty to inspire attendees to go out and track them down soon.

Winlaton Mill – Saturday 25th February

Once again we held an observing event for the public at Winlaton Mill and for the third year in a row we had clear skies. There was a great turn-out from the membership and the twenty four members of the public who came along thoroughly enjoyed themselves. The thin crescent Moon along with Jupiter and Venus made a fantastic sight in the early evening sky. Several members of the public commented that they were really impressed with the range of equipment on display at the event. Thanks to all who came along.

Stay up to date

Keep up to date with all society developments on the website www.sunderlandastro.com and why not sign up for the news group. Also, check out our Facebook and Twitter pages.

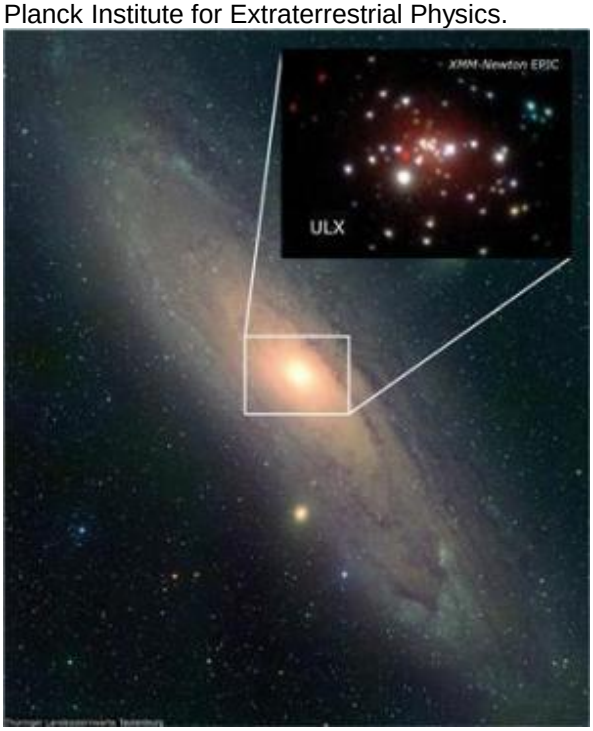
Clear Skies,

First Ultraluminous Source in Andromeda Galaxy Unmasked as 'Normal' Stellar Mass Black Hole

Detailed observations show that the first ultraluminous X-ray source detected in our neighbouring Andromeda galaxy is due to a stellar mass black hole swallowing material at very high rates. An international team of astronomers, including scientists at the Max Planck Institute for Extraterrestrial Physics, have now published their findings in two papers. The emission of the ultraluminous source probably originates from a system similar to X-ray binaries in our galaxy with matter accreting onto a black hole, which is at least 13 times more massive than our Sun. Unlike X-ray binaries in our own Milky Way, however, this source is much less obscured by interstellar gas and dust, allowing detailed investigations also at low X-ray energies.

Ultraluminous X-ray sources (ULX) represent a contentious set of objects, which emit at remarkably high luminosities. They can be found in both the nearby and the distant Universe, where they are seen in the outer regions of galaxies (see note 1). As they are fairly rare, with usually only one or two ULX in one galaxy - if they are present at all – the sparse data available to astronomers gave rise to two competing explanations for their high luminosities: Either a stellar mass black holes (see note 2) is accreting at extreme rates or there is a new sub-species of intermediate mass black holes accreting at lower rates. One of the greatest difficulties in attempting to find the right answer is the large distance to these objects, which makes detailed observations difficult or even impossible.

Two research teams now report on observations of an unusual X-ray transient light source in Andromeda (M31), our nearest big neighbour galaxy at a distance of “only” some two million light-years. Andromeda is monitored on a regular basis by the X-ray satellite observatories Chandra and XMM-Newton as part of an on-going campaign led by scientists at the Max Planck Institute for Extraterrestrial Physics.



First detected in late 2009 by Chandra, the new object was immediately classified as a low luminosity ULX by the MPE researchers, even though initially it was more luminous than the total X-ray luminosity of the Andromeda galaxy. This is therefore not only the first ULX in this spiral galaxy but also the closest ULX ever observed. Follow-up observations with the Swift and HST satellites yielded important complementary data for this remarkable ULX.

“We were very lucky that we caught the ULX early enough to see most of its lightcurve, which showed a very similar behaviour to other X-ray sources from our own galaxy,” explains Wolfgang Pietsch from the Max Planck Institute for Extraterrestrial Physics. The emission decayed exponentially with a characteristic timescale of about one month, which is a common property of stellar mass X-ray binaries. “This means that the ULX in Andromeda likely contains a normal, stellar black hole swallowing material at very high rates.”

Another indication about the physical processes around the black hole comes from the changing shape of the X-ray spectrum as the emission decays. This could mean that the high luminosities involved cause the inner regions to expand outwards into a “photosphere”. Alternatively, we could have a much clearer view to this source compared to other sources in our own galaxy. In either case, this is the first time that a lower luminosity ULX is linked unambiguously to a stellar mass black hole at least 13 times more massive than our Sun.

Ideally, the astronomers would like to replicate these findings by re-observing the source in another outburst. However, if it is indeed analogous to the X-ray binaries in our own Milky Way, astronomers may be in for a long wait: such outbursts occur on the order of decades. On the other hand, as there are so many X-ray binaries in the Andromeda galaxy, another similar outbursting source could be captured any time by the on-going monitoring campaign. While “monitoring” may not sound exciting, the current results show that such programmes are often blessed with discovery and lead to breakthroughs – in particular, if they are augmented with deep and sustained follow-up.

Testing relativity with Supernova 1987A

"Once in a lifetime" barely begins to describe it – astronomers had literally been waiting centuries for such a spectacle. The supernova that blazed forth on 23 February 1987 was the brightest since the one Johannes Kepler spotted in 1604.

The explosion happened just an astronomical stone's throw away, in a satellite galaxy of the Milky Way, which is why it was so bright it could be seen with the naked eye. No supernova so nearby had been seen since the invention of the telescope.

"There was a lot of excitement," recalls Roger Chevalier of the University of Virginia in Charlottesville. "People started to call each other up, saying 'This is it!'"

But even before telescopes detected any brightening, experiments in Japan and the US were hit by neutrinos generated during the star's death. In fact, SN 1987A remains the only supernova to explode close enough for its neutrinos to be detected on Earth.

So does the fact that the explosion's neutrinos arrived faster than its light support the claim made last year that the subatomic particles might break the cosmic speed limit set by Einstein's special theory of relativity? Surprisingly, no.

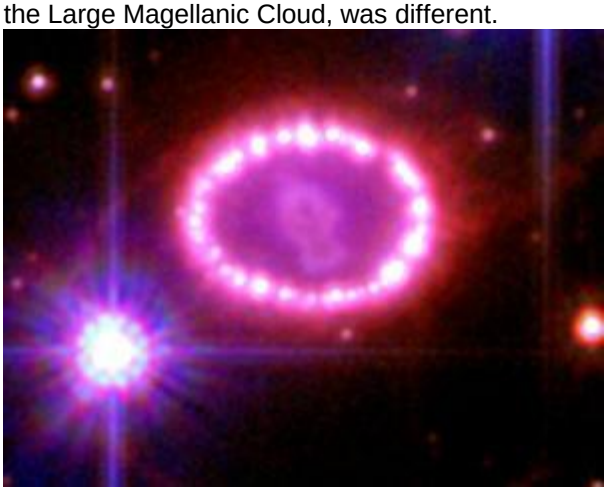
The neutrinos showed up just a few hours before the supernova appeared in telescopes. That slight time difference was expected, since neutrinos hardly interact with normal matter. They could just fly unimpeded through the stellar shrapnel, while the photons were waylaid by the exploding star stuff. Even setting off slower than light, the standoffish neutrinos could have made the trip faster.

If, on the other hand, the supernova's neutrinos had been moving as fast as those reported by researchers on the OPERA experiment last year, they would have arrived at Earth years before the light from the explosion.

That, clearly, was not the case. So perhaps it was the ultimate birthday present for SN 1987A when the OPERA team said on Thursday – the 25th anniversary of the supernova's appearance – that the faster-than-light claim might have been down to an instrumental glitch.

Aside from boosting evidence for relativity, the supernova also shed light on a vexing problem for astronomers: What do stars look like just before they die? Supernovae usually pop off so far away that only their host galaxy can be made out – not individual stars.

SN 1987A, being in a neighbouring galaxy called the Large Magellanic Cloud, was different.



Astronomers scoured archival images taken of the same region of sky and were able to spot a star at exactly the same spot. The only problem was – the star wasn't what they were expecting at all.

Stars expand and cool as they age, so researchers thought they would find a bloated, tepid red giant. Instead they found a much hotter, blue star.

One possible explanation is that about 20,000 years before going supernova, the doomed star merged with a stellar partner. It shed its cool outer layers in the process – forming rings that are still visible today – and transformed into a hot blue star.

Astronomers have recently identified other, more distant supernovae that resemble SN 1987A and were likely also produced by blue stars. Studying their properties could help confirm or rule out the binary merger explanation.

And we're still learning from SN 1987A itself as its expanding debris cloud continues to evolve. Recent observations show that the debris is starting to collide with the main ring of material ejected when the stars merged.

The collision is heating up the expanding supernova debris, making it glow, according to Hubble Space Telescope observations reported last year. By studying this glow, we can learn more about the innards of the star that went supernova, perhaps gaining new insights into its structure and composition.

"It's a rare opportunity," says Chevalier. "Every year we find lots of supernovae, but they're typically at least a factor of 100 farther away. Having something this close by is an extremely special event."

Dark matter and the missing lithium mystery

An underdog dark-matter particle could explain why the universe seems strangely low on lithium. If the idea holds up, it will be a boon in the hunt for dark matter, the stuff needed to account for 80 per cent of the universe's matter.

In the universe's first few fiery minutes, nuclear reactions forged a host of light elements, including helium, deuterium and lithium, in a process called big bang nucleosynthesis. The amounts of these elements present in the early universe, gleaned from ancient stars and primordial gas clouds, match theory, except in one respect: they contain much less of the dominant form of lithium, lithium-7, than expected. There has never been a satisfactory explanation for this.

Now help comes in the shape of hypothetical dark-matter particles called axions. These light particles were dreamed up in the 1970s as part of a theory to explain why the strong nuclear force, unlike the other forces, does not change if a particle is swapped for the antimatter counterpart of its mirror image. Axions are not the dominant theory for dark matter. That accolade goes to weakly interacting massive particles, or WIMPs. But as neither WIMPs nor axions have ever been observed, the jury is still out.

In the latest research, the underdog axions score a point. The rates of nuclear reactions that produced lithium-7 depend partly on the amount of energy that was present in the form of light. As we cannot tell how much light was there directly, we infer it from the cosmic microwave background (CMB), the echo of the big bang that emerged 380,000 years later. This is used to estimate how much lithium should be present: more light skews reaction rates and lowers expected levels of lithium.

Ozgur Erken of the University of Florida in Gainesville and colleagues suggest that something cooled photons between the synthesis of lithium and the emergence of the CMB, causing the photon energy to be underestimated, and inflating the expected amounts of lithium.

Born with very little kinetic energy, axions are a prime suspect. When their cooling power is accounted for, the predicted lithium abundance drops by half, the team calculate. "We're excited that it gives about the right correction," says Pierre Sikivie, Erken's colleague.

Adding in axions also creates a problem, however. Without them, CMB measurements are consistent with about four types of neutrino, close to the three types glimpsed in experiments. But if axions are present, they would skew this measurement and imply about seven neutrino types, Erken's team calculate. This makes Gary Steigman of Ohio State University in Columbus, who was not involved in the study, sceptical of the axion explanation for the lithium-7 anomaly.

An answer should come in 2013 when much better measurements of the CMB are expected from the Planck satellite. Our best chance of glimpsing axions, meanwhile, lies in an upgraded version of an experiment called ADMX, due to start up towards the end of this year. It may also be possible to infer their existence from data from the Large Hadron Collider at CERN near Geneva in Switzerland, where they should boost the production of Higgs bosons.

Telescopes for Ethiopia: An update from David Kidd

The transit of Venus on June 5th/6th 2012 (the actual date depends where you are in the world) is a rare event which will not happen again in the lifetime of anyone alive now. It is easy now to dismiss the transit as a rather unspectacular event of little interest to anyone except die-hard astronomers, but the importance of the transits in the Eighteenth century in the history of astronomy cannot be overestimated. Before the transit of 1769 astronomers knew the scale of the Solar System in terms of the distance from the Earth to the Sun (Astronomical Units) but they had no idea of the actual distances in

miles or kilometres. The transit of 1769 was so important that the British Government sent James Cook on a voyage to the other side of the world to make measurements from Tahiti. The mission took three years (about the same time as a mission to Mars) and cost thirty eight lives, but when Cook returned astronomers were able, by some simple trigonometry, to measure the Solar Parallax and know the true scale of the Solar System.

The actual calculations are described in James Ferguson's wonderful book "Astronomy Explained," which is available as a download on the internet to anyone interested.

Our plan here in Woldia is to observe the transit from here using simple equipment and link with other sites around the World to repeat the eighteenth century calculations. It is simply a matter of timing the first contact of Venus with the rim of the Sun on its way off the disk and comparing the timings with other sites widely spaced in Latitude. We are on Twitter and part of NASA's SunEarth day programme so hopefully we will have plenty of observations to choose from even if it is cloudy here in Woldia.

The 4.5 metre pinhole telescope is our way of observing the transit without expensive equipment. Paradoxically the resolution of the telescope depends on the size of the hole and the focal length, bigger holes and longer focal lengths have better resolution. Our telescope has a 3mm hole and a 4.5 metre focal length which gives a Solar diameter of 4cm. All pinhole telescopes have an optimum focal length for each size of pinhole and for 3mm 4.5 metres gives the best definition. David Sinden, famous for his work at Grubb Parsons, was very interested in the optical properties of pinhole telescopes and sometimes speculated about the optics of a pinhole telescope with a pinhole lens and pinhole eyepiece.

It's not as simple as it seems! Our telescope can easily show large sunspots and given clear skies we should have a good view of the second half of the transit. We will see the transit at sunrise here, so the long focal length is not such a disadvantage as it might have been.

I hope SAS will join our international effort to observe this unique and historic event. Please have a look at our pictures on Flickr and the NASA SunEarth Day site and remember to follow us on Twitter (@byardastronomer) on the day.

Some Old Controversies In Transactions

By "*Old Boots*"

[An old and esteemed correspondent gives, in this article, a new account of the controversies which raged in the earlier numbers of this journal.]

Newcomers to the Society may think that its formation started in the June of 1993, with a small but determined band of astronomers lost in a haze of cigarette smoke and the intoxicating refreshments of beer and spirits in that old retreat, and home to lost scientific souls, The Ivy House.

Original members may recall, should their memory continue to serve them well, the later journals offered by members, viz; the imaginatively titled SAS News, edited by (and since promoted to SAS Space Operations) Jeff Lashley; North East Observer, edited by the covert "Agent November"; and again, the since rejuvenated and long running SAS News, again edited by the long suffering Agent November of the now curiously defunct New Hartley Astrophysical Institute.

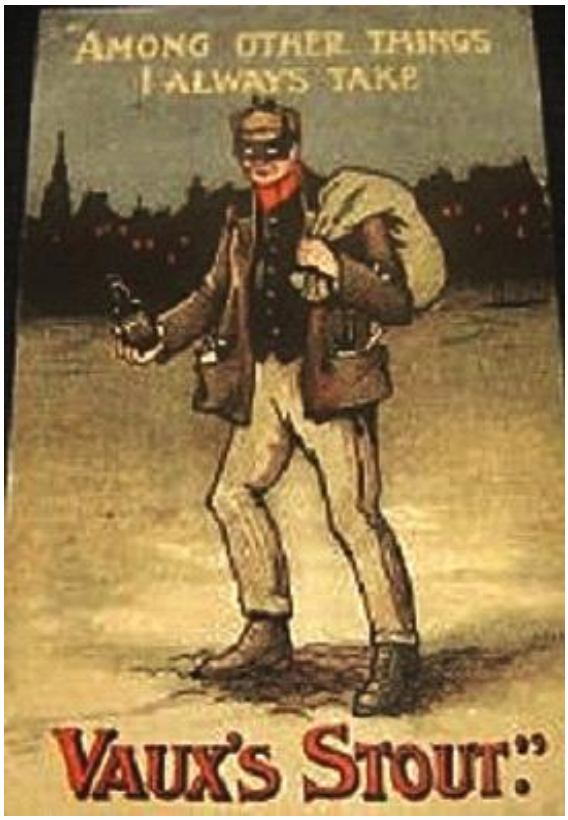
Mine's A Pint

But it is necessary in writing the history of the SAS to start with its formation as a *Philosophical Society* in 1858 and its journal entitled "Transactions Regarding Intelligent Processes in England." This was a period in the Society's history where all manner of sorts were discussed and no one was boundered by astronomy alone. Subjects discussed covered the whole spectrum of science and some may say even pseudo-science.

The minutes of these meetings have been hidden from view for over 150 years. Kept in a green Oxford document wallet where they exist to this day and held in the secure, underground, inert gas vaults of the Hendonian Astrophysical Institute. Now for the first time in recorded history the contents may now be made public. The nom-de-plumes and abbreviations of past Sunderland scientists must be respected however, as most operated covertly with live ammunition and under cover of darkness.

The entertaining part of Transactions - the controversies which raged therein - remind one much of the apostolic blows and knocks of the Hudibrastic saints. And what mighty blows some of them dealt! Until even the patient and long forbearing Editor deemed it necessary to part the combatants. And how strange and curious were some of the occasions which gave rise to such heated arguments. Poor "Velocopedian" was a great sinner, perhaps the chief of sinners in this respect, and all over the silly proposition on which he wagered his cash, that the Earth was flat. But others ran him pretty closely in strength of language, greatly it must be confessed to the intense amusement of the bystanders in the ring who found so much lively reading in Transactions.

The paper offered by Velocopedian re: a flat Earth brings back memories when scorn and ridicule were heaped upon a later paper of his when published concerning table turning, spiritualism, mesmerism and musical instruments of various kinds. The correspondents would sign "A Velocipedestrian," or "A Velocipedestrianisticalistinarian," and on page 45 the jaw cracker, "Aldoborontophornophoscia." Only now may we gain an insight into the activities of the Grand Old Masters of this fine old City.

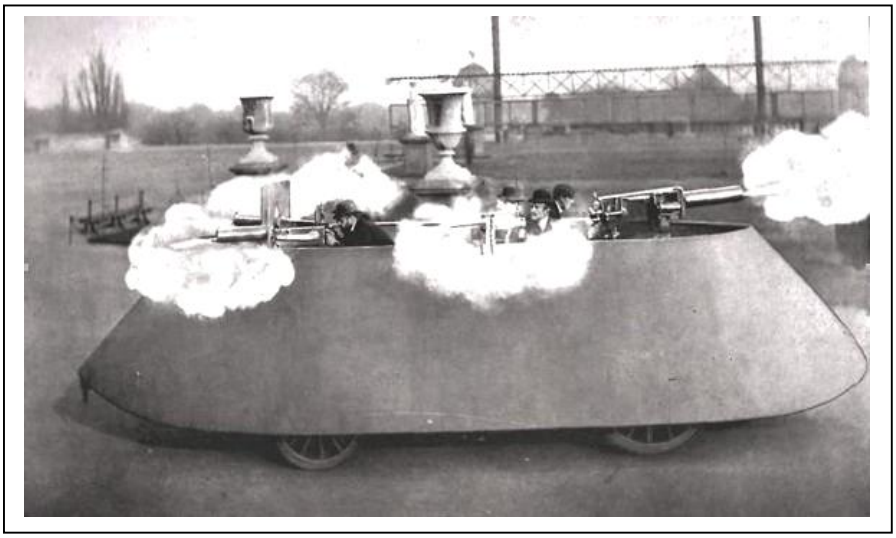


Above: An unidentified Victorian SAS member on nocturnal covert manouvres, leaving the Ivy House which was closed at the time this picture was taken. No SAS member has ever been caught on such manouvres. Note the boots: an essential piece of SAS kit. The demand and supply of strong beer among members has always been a priority. Christchurch and West Hendon House on Ryhope Road can be seen at the left of the picture.

Yesterday, All My Troubles Seemed So Far Away

We may start our journey with Prof. Sir Dandy Wiske, an old East Hendonian whose insatiable appetite for science, truth and intoxication knew no bounds. His interests included astronomy, horo-astrology (the means of telling a person's future by viewing their pocket-watch), collecting berries while tricycling, the flying of kites during electrical storms and ornamental lathe turning (with his new invention, the two-jaw chuck).

In a letter to that popular educator The Sunderland Echo & Shipping Gazette, Sir Dandy requested that all interested parties meet at Ryhope Pumping Station on 1858 November 5. At this initial meeting founder members agreed that regular meetings should be held and Sir Dandy, taking the lead, announced that his new "Transactions" would popularize reading within the Society, and promote future activities in a scientific and lateral way (the latter being a hangover from the way he used to observe



Left: A rare image from 1865 showing SAS members using live ammunition in daylight. They are using the Mark I SAS Armoured Personnel Carrier. Today's Weapon of choice is the Browning .303 Heavy Machine Gun mounted atop a Land Rover Defender.

meteors). However, the founder members were soon barred from using the pumping station facilities:

One member, his pen name being "Lamda", insisted on igniting various types of squibs including rockets, jumping jacks and a new contrivance of squib he called the "Heliocopter". Some of the new members complained about Lamda's activities, but he countenanced,

"Be silent Sirs. It's my baby and my time of year and I shall do as I please." Some indeed wondered if Guido Fawkes himself had risen from the ashes and joined their ranks! Within a short time "Sigma" became as frustrated as the others and proceeded to extinguish Lamda's activities by means of a hose and several buckets of water stating that he was quite heartily sick of the flash-bangs, panic and "hoo-hah."

This was the first and only meeting at the Station as they were accused by employees of taking the water without licence. The wearing of tin hats among members became quite the fashion shortly afterwards.

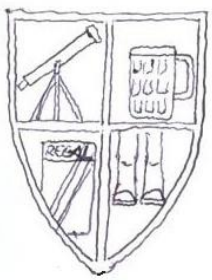
Now I Think They're Here To Stay

The expulsion from the Pumping Station saw meetings being held in member's homes which resulted in multiple distractions and little, if any, reading or writing. It appears that meetings were continuously interrupted by members viewing the contents of the host's library, taking dimensions of bookshelves, dismantling scientific instruments & accessories, debating whether benkers were truly spherical or an oblate spheroid, the promise of real coffee from a new invention, the "percolator", and threats of the most serious kind, viz; the grinding of mirrors and the building of a public observatory. In the years following there would be talk: sometimes rumours, sometimes promises and at other times plain nonsense.

During this period "one-up-man-ship" almost rose to olympic level. At one point "Old Boots" made a comment regarding "connecting tunnels" when the suggestion of two adjoining public observatories was discussed. Although a relative newcomer to the Society, "Hirsute" became enraged at such a suggestion, shouting "Tunnels? Tunnels? I know nothing about tunnels! No-one mentioned tunnels to me!" He calmed down shortly afterwards when Sir Dandy reassured him that the subject was only a 'suggestion' on the part of Old Boots. Nothing concerning members' to-ings and fro-ings would be repeated in early copies of "Dandy's Dabblings" as it came to be known and would leave members looking over their shoulders at all times when to-ing and fro-ing due to a massive sense of plagiarism brought on by idle chit-chat.

Left: "Hirsute" - A natural complainer. Tunnels upset his applecart at an early meeting.

Below: Official crest of the Hendonian Astrophysical Institute



To be continued…

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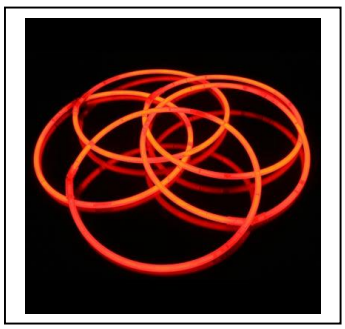

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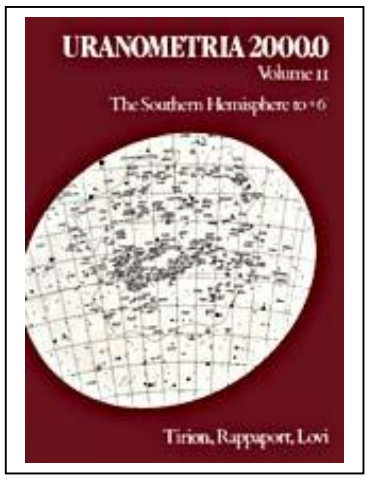

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