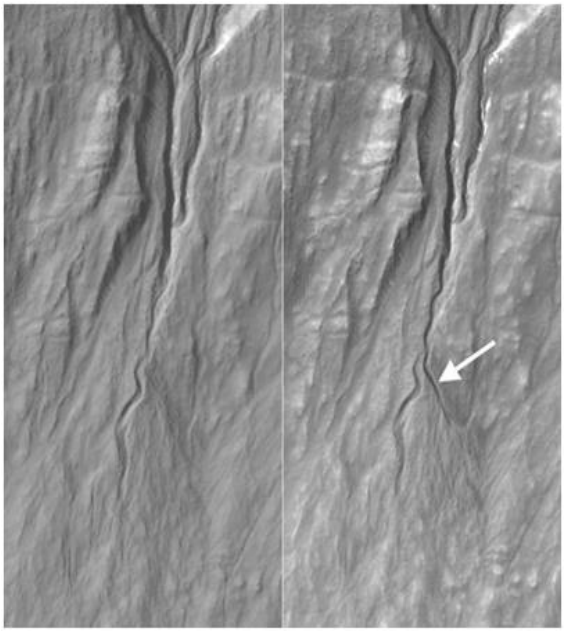
The Messenger

Mexborough & Swinton Astronomical Society

April 2014

A New Gully Channel in Terra Sirenum, Mars



This pair of before (left) and after (right) images from the High Resolution Imaging Science Experiment (HiRISE) camera on NASA's Mars Reconnaissance Orbiter documents the formation of a substantial new channel on a Martian slope between Nov. 5, 2010, and May 25, 2013. The changes visible by comparing the 2010 and 2013 observations at this site formed when material flowing down from the alcove broke out of an older route, eroded a new channel and formed a deposit on the apron. Although this pair of observations does not pin down the season of the event, locations HiRISE has imaged more often demonstrate that this sort of event generally occurs in winter, when liquid water is very unlikely. Despite their resemblance to water-formed ravines on Earth, carbon dioxide may play a key role in the formation of many Martian gullies.

Terra Sirenum is a large region in the southern hemisphere of the planet Mars. It is centered at 39.7°S 150°W and covers 3900 km at its broadest extent. It covers latitudes 10 to 70 South and longitudes 110 to 180 W. Terra Sirenum is an upland area notable for massive cratering including the large Newton Crater. A low area in Terra Sirenum is believed to have once held a lake that eventually drained through Ma'adim Vallis.

Terra refers to any of the relatively light-colored highland areas on the surface of the moon or a planet.

Sirenum comes from Greek mythology and refers to the small rocky islands where the Sirens lived and lured sailors to their deaths.

The Thoughts of Chairman Les



Another year has almost past for our society and our AGM will take place in May. Two of us attended the AGM of SWMC 23rd March and they seem to be holding their own quite well which is good news for us in that our meeting room will be secure for another twelve months at least.

We have been quite busy since the New Year started during January we were asked to hold an exhibition at Rotherham Library Riverside House for a month from 5th to 31st January which went by the heading of 'Astrophotography and Space Artefacts Exhibition January 2014'. During the last week of the exhibition our member Tony Morris gave a first class talk on the subject of astrophotography which was met with great approval by public.

Throughout the month we visited the RSPB for venue visit with our telescopes and provided a standard PVE at the observatory. Throughout the period to date we did more venue visits to Wentworth Castle at Stainborough, Clifton Park Gardens and another visit to the RSPB Wombwell. All the forgoing events were in support of BBC Two's Stargazing Live programme. We provided a further five PVE's at the observatory, two of these were for Grenoside Scouts and Mexborough Cubs. We were pleased to have two guest speakers in February the first being the infamous Paul Money a first class speaker and at the end of the month we welcomed our President Dr Alan Chapman who spoke about Johannes Kepler. Mid March we listened to our guest speaker Dr Steve Barrett telling us how the undertake 'Astrophotography on the Cheap'. I must not forget the ten member speakers throughout the period who covered a multitude of subjects. The society has been running quite smoothly over the past 12 months and its all due to having a first class committee, I as chairman, past my thanks to the committee as a whole, you are doing a fantastic job. I welcome the new recent members to the society and hope that you have many years with us and that your chosen hobby of astronomy goes well for you. Each weekly meeting is always well attended with just less 50% getting to the meetings and enjoying both our guest speakers and member speakers alike. I would like to remind you all that should you like to hear a speaker deal with a subject that you particularly enjoy just let any committee member know and we will do our best to meet your request.

I wish you Clear Skies

Les Marsden FRAS *Chairman*

Trevor Worrall's April Skies

Venus is the lovely morning star, low down in the east. The old moon is close by on the morning of 26 April.

Mars will be at opposition on April 8th, the north pole will be tilted towards us and Mars will a little over 15" of arc with a magnitude of -1.5 (It's brightest in 8 years).

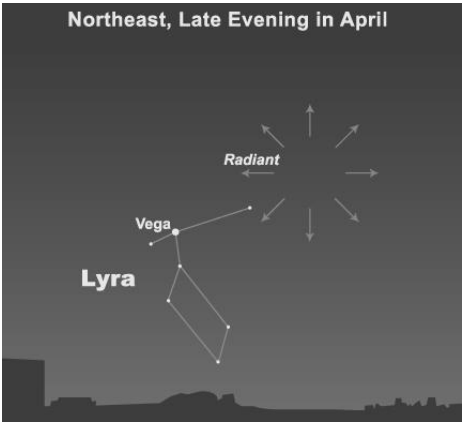
On 15th April the dwarf planet ***Ceres*** comes to opposition; it is nearest Earth on 14 April, 246 million kilometers or 13.7 light minutes away. At its brightest it cannot be seen from Earth with the naked eye, but binoculars should show it, north of the halfway point between the stars Tau Virginis and 84 Virginis. Ceres, named after the goddess of the corn, is the largest object in the asteroid belt between Mars and Jupiter, 975 km in diameter at its equator, contains about a third of the mass of the asteroid belt, and may also contain life. The Dawn probe is due to arrive there in February 2015.

Saturn rises mid-evening in the constellation Libra, and looks well in the sky to the east of Mars. The moon is near Saturn on the night 16/17 April, and occults it as seen from the south Pacific and southern South America.

Moon
Full Moon on April 15th. Total Lunar eclipse takes place, The Eclipse starts at 5:54am for us, unfortunately the Moon sets at 6:03am just 9 minutes later. So we would only start to see the first contact of the penumbra! Sunrise is also at 6:04am.
New Moon on April 29th. There is an annular solar eclipse on the 29th, unfortunately it's only seen in Australia and Antarctica!

Sunrise and Sunset
1st April Sunrise 6:37am, Sunset 7:41pm
30th April Sunrise 5:32am, Sunset 8:33pm

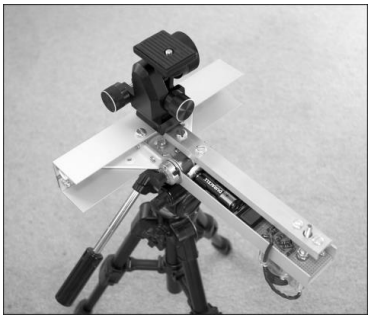
Lyrids Meteor Shower – April 22nd – April 23rd. The Lyrids is an average shower, usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by comet C/1861 G1 Thatcher, which was discovered in 1861. The shower runs annually from April 16-25. It peaks this year on the night of the 22nd and morning of the 23rd. These meteors can sometimes produce bright dust trails that last for several seconds. The second quarter moon will be a slight problem this year, blocking the less bright meteors from view. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Lyra, but can appear anywhere in the sky.



Astrophotography

Dr Steve Barrett, senior lecturer at the Department of Physics, University of Liverpool gave his talk on "***Photographing the night sky without ridiculously expensive equipment***" on Thursday, March 20th.
In the photograph right Steve can be seen holding his home made "Barn door" tracker for DSLR camera's which cost less than £50 to make. Mick Nicholls is holding up associated photographs.







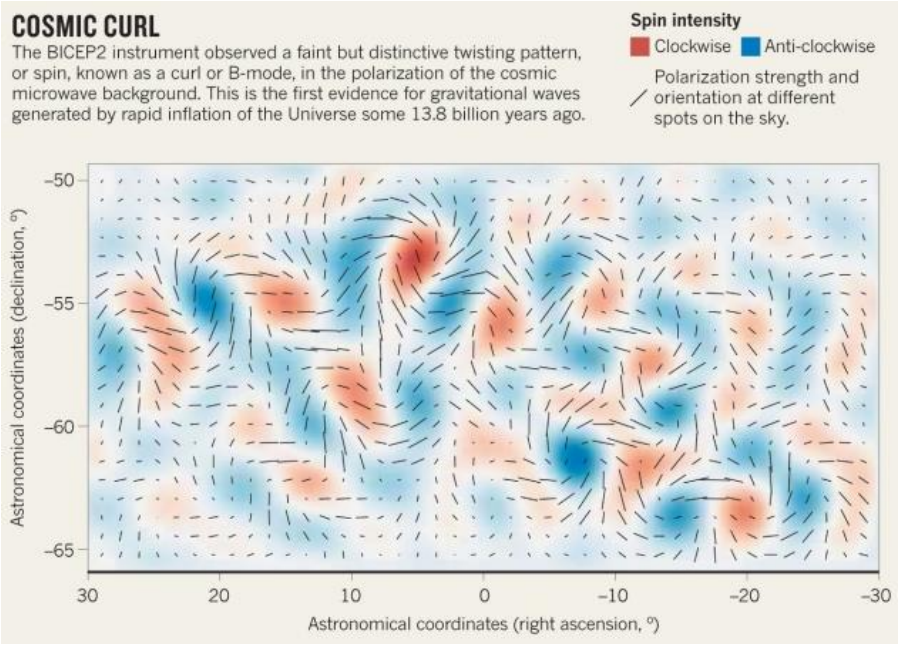
Phil's Brass Collection was Telescoping Out of Control!

Big Bang expansion leaves imprint on the Universe

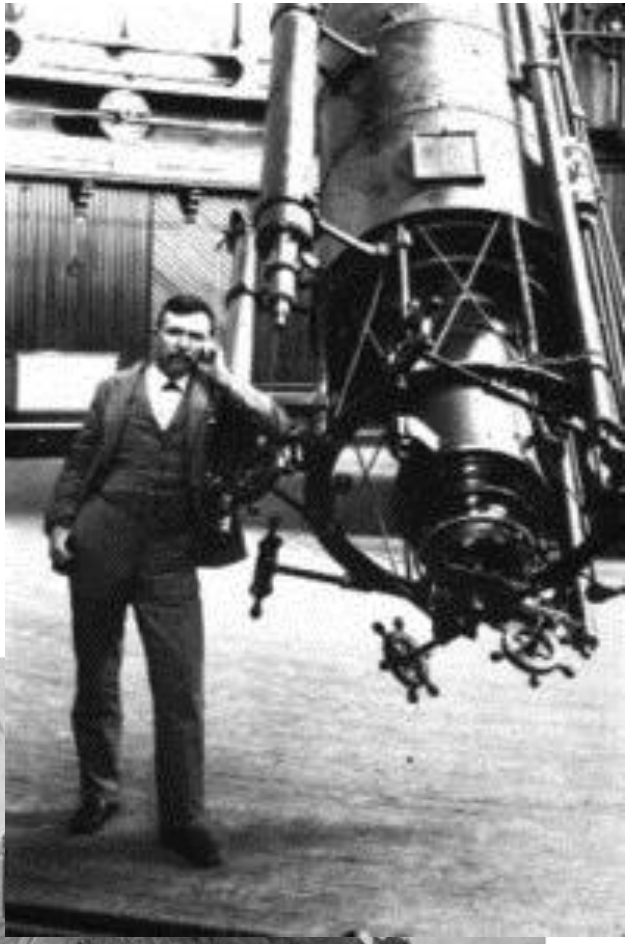
Astronomers have peered back to nearly the dawn of time and found what seems to be the long-sought 'smoking gun' for the theory that the Universe underwent a spurt of wrenching, exponential growth called inflation during the first tiny fraction of a second of its existence.

Waves from the Big Bang: Nature's special on the gravitational-wave revolution
Using a radio telescope at the South Pole, the US-led team has detected the first evidence of primordial gravitational waves, ripples in space that inflation generated 13.8 billion years ago when the Universe first started to expand. The telescope captured a snapshot of the waves as they continued to ripple through the Universe some 380,000 years later, when stars had not yet formed and matter was still scattered across space as a broth of plasma. The image was seen in the cosmic microwave background (CMB), the glow that radiated from that white-hot plasma and that over billions of years of cosmic expansion has cooled to microwave energies.

This polarization map, which is reminiscent of the way iron filings arrange themselves on a surface under the effects of a magnetic field, was found to have particular vortex-like, or curly, patterns known as B modes. The presence of B modes is a tell-tale sign of the passage of gravitational waves generated during inflation, a brief period during which the Universe underwent an exponential expansion, right after its birth. If the findings stand up, they will put the current preferred picture of cosmology on solid foundations, and could have significant implications on fundamental physics as well.

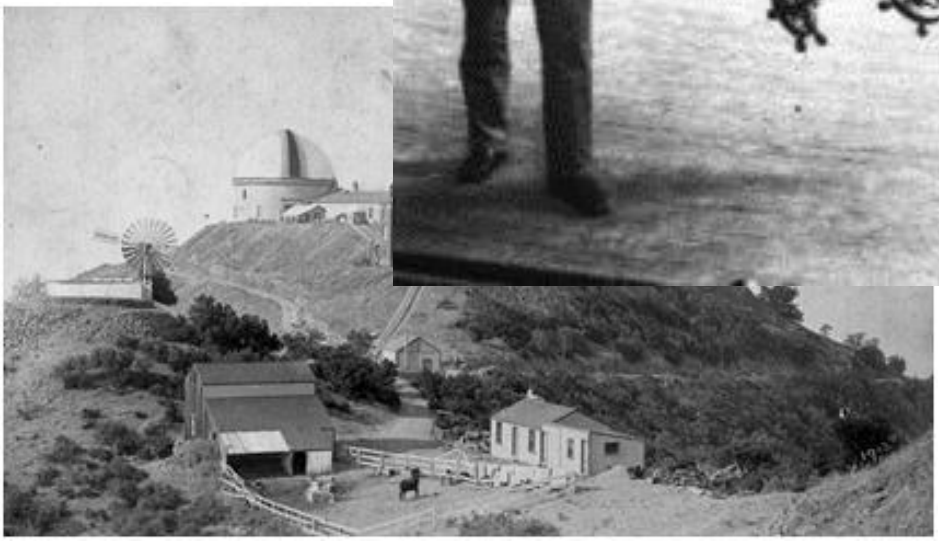


The World's Greatest Self-Taught Astronomer



Is it possible to get everything you want in life? Probably not. But the story of Edward Emerson Barnard shows how skill, good fortune, hard work, and a deep love of what you do can take you much farther than you ever imagined. Born in Tennessee just before the American Civil War, Barnard overcame a hopeless life of abject poverty to become the most prolific and skilled observational astronomer of the past two centuries.

Edward Emerson Barnard was born in Nashville on December 16, 1857. His father died before his birth, and his mother took to selling wax flowers to earn a meager living. Young Barnard endured grinding poverty, war, and disease in his early years. To "soften the sadness" of his life, he often lay on a wagon bed at night and gazed up alone at the night sky. But he had no way to understand what he saw



LICK OBSERVATORY IN ITS EARLIEST DAYS.

At the age of nine, Barnard left school and was put to work at a photography studio. There, in these days before electric light, he walked in a circle all day to turn a set of wheels to align lenses for making photographic prints. He remained at the studio for 17 years, gaining a deep knowledge of optics and photography. He even assembled a small spyglass out of spare parts. On the way home many nights, Barnard looked up at the stars for consolation and diversion from his toil and hopelessness.

While earning a meager living, Barnard once made a loan to a friend. Though he badly needed the money, Barnard was never paid back. Instead, his delinquent friend gave him— purely by chance– a book about astronomy. The book helped Barnard finally learn the names of the stars and planets he had observed– in total ignorance– since childhood.

In time, after saving a few dollars, Barnard acquired a small telescope and took to exploring the night sky. Barnard heard of a contest that awarded $200 to anyone who discovered a new comet. He discovered eight comets in short order and used the money to build a house for himself and his wife. Residents of Nashville called it the "Comet House". In time, a group of wealthy citizens raised money to send Barnard to Vanderbilt University. Though he never finished his studies, Barnard was given the only honorary degree ever awarded by Vanderbilt, and he secured a teaching

In 1888, Barnard quit his teaching post and traveled to Lick Observatory in California. Amid the physical and psychological hardships high on the mountaintop at Lick, Barnard applied his unique expertise to systematically photograph the Milky Way. Astronomical photography was a new art in those days, and Barnard's exposures revealed details in the Milky Way never seen before. He moved in 1895 to Yerkes Observatory at the University of Chicago, where he continued his mapping of the Milky Way. His photos of our galaxy revealed many dark clouds, which some thought were deep holes in space where no stars were found. In time, these clouds were revealed to be dark clouds of gas and dust that blocked out background stars and nebulae.

Barnard also discovered– visually– a fifth moon of Jupiter, Almathea. He made key observations of Mars. And he discovered the second-closest star to Earth, now called Barnard's star.

After seven years at Lick, Barnard moved to the newly built Yerkes Observatory in Wisconsin and remained there until he died in 1923. He remains to this day one of the greatest observational astronomers of modern times

Steve Taylor

Programme for April & May 2014

Date	Time	Location	Subject & Speaker
Thu Apr 3rd	19:45	Club Room	*Mike Scollan*
Thu Apr 10th	19:45	Club Room	**"Back to Basics"** *Paul D'Silva*
Thu Apr 17th	19:45	Club Room	**"A Tapestry of Orbits"** *Bob Christy*
Thu Apr 24th	19:45	Club Room	**"NASA's Maven Mission"** *Phil Muffett*
Thu May 1st	19:45	Club Room	**"Solar Observing"** *Mick Nicholls*
Thu May 8th	19:45	Club Room	**"Kennedy Space Centre"** *Phil Muffett*
Thu May 15th	19:45	Club Room	**"Our Active Sun"** *Prof Philippa Browning*
Thu May 22nd	19:45	Club Room	**"Summer Sky"** *Trevor Worrall*
Thu May 29th	19:45	Club Room	**AGM**

Web site: http://msas.org.uk

Meeting room is at Swinton Working Men's Club, Station Street, Swinton, South Yorkshire, S64 8AU.

Observatory is at Lee Brook Lane, Hoober, S62 7SH

Mexborough & Swinton Astronomical Society is Registered Charity N° 1064103 in England & Wales

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For submissions to The Messenger - Editor: Roy Gunson: royg@gmx.co.uk

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April's Puzzle

Les has two cubes (like dice) on his desk, with a single digit on each face. Every day he arranges both cubes so that the front faces show the number (date) of the current day of the month. What numbers are on both cubes to allow this?

Last Month's Puzzle Answer

Arrange four paper matches on a table as shown at right. They represent a martini glass. A match head goes inside to indicate the olive of a cocktail. The puzzle is to move just two matches so that the glass is re-formed, but the olive—which must stay where it is—winds up outside the glass. At the finish, the glass may be turned to the left or the right, or even be upside down, but it must be exactly the same shape as before.

