The Messenger

Mexborough & Swinton Astronomical Society

October 2014

## Our Sun's Lost Sibling

By Brian Ventrudo

Like most stars in the Milky Way, our Sun was born in a cluster of hundreds of new stars in a cloud of glowing gas and dust like the Orion Nebula, then settled down with its siblings in an open star cluster like the Pleiades. Over the next few hundred million years, as it made its way around the Milky Way, this new cluster of stars was slowly pulled apart by passing dust clouds and tidal forces. Some of the family members may have travelled together for another billion years as a stellar association or a moving group. But like human siblings, they were eventually separated once and for all by the vicissitudes of the outside world.

After 5 billion years, the Sun has made some twenty full turns around the Milky Way, so you might expect that all of its siblings have been dispersed and blended into the galaxy, never to be identified. But astronomers are a clever lot, and a group led by Ivan Ramirez at the University of Texas will publish a new study in June 2014 that identifies the star HD 162826 as a long-lost sibling of our Sun. It's about 15% more massive than our Sun, and it lies about 100 light years away in the constellation Hercules. You can see it easily for yourself with binoculars or a small telescope.
How is it possible to identify a star that formed from the same gas and dust as the Sun more than 5 billion years ago?

The simple answer is chemistry and motion. The astronomers compared the detailed optical spectrum of 30 candidate stars to look for a family resemblance in terms of chemical composition. A solar sibling with a similar mass to our Sun should have the same elements in its atmosphere because it formed from the same cloud of gas and dust. The spectrum of HD 162826 and the Sun match closely.

The team also measured the historical motion of HD 162826. It seems the star mingled with our Sun at a distance of just 30 light years about 4 billion years ago, exactly as expected for stars loosely bound in an open cluster.

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(http://oneminuteastronomer.com/articles/page/5/#sthash.ovLaJrPQ.dpuf)

## The Thoughts of Chairman Les



You will know and understand by now that your committee don't rest too much!!Since the previous publication of
The Messenger we have been looking at three places to safe guard ourselves in case of an urgent move should it be required.
We, the committee, are not the only ones that are very busy we have members doing their own thing for the benefit of the society. There are two people in particular who are working very hard too by meeting the requests from primary schools to help them understand astronomy a little better as the subject of astronomy is in their curriculum. Cub groups are sending lots of requests for help with their 'Astronomy Badge' and their requests have all been met with some serious responses from these society members. This kind of work from within the society falls under our heading of Public Outreach and spreads astronomy and particularly MSAS throughout the area. Our PVE's at the observatory are going well too and these come under our heading of 'Public Access' which also spreads the word about our society. The observatory is being used a lot for the PVE's and by the 'Imaging Group' who meets a couple of times a week and will be coming very busy now that the equinox has gone and the nights get darker in the coming winter months. I think we all need to keep our eyes peeled for the society 'Image Competition' come the New Year.
I wish you clear skies

Les Marsden FRAS
*Chairman*



**The Adult Movie Section of MSAS in operation**

# History of the Leonid Meteor Shower

In medieval times, shooting stars were believed to be an atmospheric phenomenon, like the weather. The Oxford English Diction has the following to say - mid-16th century (denoting any atmospheric phenomenon): from modern Latin *meteorum*, from Greek *meteōron*, neuter (used as a noun) of *meteōros* 'lofty'. We know that the science of studying the weather is called "meteorology. “So prior to the C16th, a "meteor" could be a rainbow or a "sun dog" or any other type of halo effect, in addition to shooting stars. For centuries, meteor showers were believed to be evil portents, along with eclipses, comets, auroras and just about anything else that was unusual in the sky.

The most famous Leonids shower was on the night of November 12, 1833. On this night, a storm of Leonid meteors was seen all over eastern North America. Some modern estimates place this event at 100,000 meteors per hour, almost 30 per second! (Other contemporary estimates were of 240,000 meteors over a time of nine hours Denison Olmstead, a physics professor from Yale University, who observed the 1833 meteors, noticed that all the meteors appeared to radiate from the same place in Leo. Other scientists determined that this point in Leo was the same general direction toward which the Earth was moving on this date. This led to the conclusion that these meteors were caused by the passage of the Earth through a ring of dust and debris in space.

In 1866, 33 years later, two astronomers named Tempel and Tuttle discovered a comet in orbit around the Sun. It was calculated that this comet had an orbit such that it would revolve around the Sun once every 33 years. And then the next November, another spectacular meteor shower was observed radiating from Leo.

From these observations, it was concluded that the November meteor shower was actually the result of the Earth's passing through the tail of Comet Tempel-Tuttle. It was concluded that the meteors of November, 1799 were also caused by the same comet. Reviewing old records, a pattern emerged of notable meteor showers occurring in November, every 33 years or so.

In this way, the Leonids were identified as the first regular, predictable meteor shower. Since that time, many other regular meteor showers have been identified and associated with the orbits of other comets.

Nowadays, astronomers are certain that meteor showers are the result of the passage of the Earth's In the case of the Leonids; the annual showers are every weak most years, maybe 10 meteors per hour. And every 33 years, the Leonids tend to explode in a veritable storm of exceptionally bright shooting stars. The next “Peak” is predicted to be 2033, though a minor peak with a ZHR of 250 is predicted for 2022, though most showers up to that date will only have a ZHR around 10 to 15.

## Fundraising

As a member of our wonderful society I am sure that you would wish to help with fundraising. If you do not already know there is an easy way if you shop on line.

**Shopping on Amazon**

To shop on Amazon and raise money for our society every time you do just go on to our website at www.msas.org.uk

Near to the bottom of the home page you can see a blue coloured box saying AMAZON.co.uk. Click in the box and it will take you to AMAZON. You can now log in and shop as you normally would. Nothing else to do. AMAZON will donate 5% of your spending to MSAS.

**Shopping with Easyfundraising.**

To shop with easyfundraising and raise money for our society you must first register to support Mexborough & Swinton Astronomical Society.

Click on this link http://www.easyfundraising.org.uk/causes/masas/?u=5IAVMM and it will take you to the easyfundraising website. Click on the green box SUPPORT US NOW you need to register before you can use the site.

Once you have registered you can shop to your heart's content and raise money for MSAS at the same time. The difference with this site is that you must log in via easyfundraising each time you want to shop. From easyfundraising you can chose many different online retailers, each of which will donate a percentage to our society. Give it a try it's easy!

REMEMBER if you want AMAZON go via our website as we get more that way.

*Steve Taylor*

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**Sergei adjusted his eyepiece and compared sizes of the craters Alexander and Bogdan – Simples!**

## What's out there now?

Space Probes not in Earth or Lunar Orbit (or surface) as of October 1st 2014

| | | |
|---|---|---|
| **Mercury** | **Messenger** | Launched 4th August 2004, arrival 18th March 2011. |
| **Venus** | **Akatsuki** | Launched May 20th 2010. Failed Venus orbit Dec 2010 will re-try Venus orbit Nov 2015! |
| **Venus** | **Venus Express** | Launched: 9 November 2005 arrival: 11 April 2006 |
| **Mars** | **Mangalyaan** | Launched 5th Nov 2013, Arrival 24TH Sep 2014 |
| **Mars** | **Mars Odyssey** | Launched April 7th 2001, Arrival Oct 24th 2001<br>*It currently holds the record for the longest-surviving continually active spacecraft in orbit around a planet other than Earth* |
| **Mars** | **Mars Express** | Launched 2nd June 2003, Arrival 25th Dec 2003<br>*Joint mission with the failed Beagle Lander* |
| **Mars** | **MAVEN** | Launched Nov 18th 2013, Arrival Sep 23rd 2014 |
| **Mars** | **Opportunity** | Launched July 7th 2003, Arrival Jan 25th 2004<br>Record holder for distance travelled "off-World" |
| **Mars** | **Mars Reconnaissance Orbiter** | Launched Aug 12th 2005, Arrival March 10th 2006.<br>Now used primarily as a telecommunications relay for other Martian missions. |
| **Mars** | **Curiosity** | Launched Nov 26th 2011, Arrival Aug 6th 2012<br>Largest Rover operating "Off-World" |
| **Ceres** | **Dawn** | Launched Sep 27th 2007<br>Arrival (Vesta), July 16th 2011<br>Departure (Vesta) Sep 5th 2012<br>Will arrive at Ceres April 2015 |
| **Jupiter** | **Juno** | Launched August 5th 2011, Arrival July 2016 |
| **Saturn** | **Cassini** | Launched Oct 15th 1997, Arrival July 1st 2004<br>*Huygens lander sent to Titan* |
| **Pluto** | **New Horizons** | Launched Jan 19th 2006, Arrival July 2015 |
| **Comet 67P** | **Rosetta** | Launched March 2nd 2004, Arrival 6th August 2014<br>*Lander Philae is expected to land on comet Nov 2014* |
| **Solar System** | **WIND** | Launched Nov 1st 1994<br>Solar wind plasma studies – may last until 2060 |
| **Solar System** | **SOHO** | Launched Dec 2nd 1995<br>Solar Studies – discovered 2,700 comets!, Mission extended to 2016 |
| **Solar System** | **ACE** | Launched Aug 25th 1997<br>Solar Storm warnings – will be active until 2024 |
| **Solar System** | **STEREO A & B** | Launched Oct 26th 2006, stereo scopic imaging of solar events. Mission to last until 2023? |
| **Solar System** | | |
| **Interstellar** | **Voyager 1** | Launched Sep 5th 1977<br>Will still operate until at least 2020 |
| **Interstellar** | **Voyager 2** | Launched Aug 20th 1977<br>Expected to operate until 2025 |

## October Night Sky

*Mike Hall*

**Diary**

| | |
|---|---|
| **1st** | **Moon 1st Quarter** |
| 5th | 21.00 Neptune 5deg. South of Moon |
| 6th | 10.00Moon at perigee |
| 7th | **Draconids** meteor shower |
| | Uranus in opposition (*) |
| **8th** | **Full Moon** reaches opposition, visible all night |
| 9th | Asteroid (37) Fides at opposition (mag +9.8) |
| **15th** | **Moon 3rd\Quarter** |
| 16th | 21.00 Mercury inferior conjunctions |
| 18th | 04.00 Jupiter 5deg. North of Moon |
| | 06.00 Moon at apogee |
| 18th-21st | Conjunction between comet C/2013 A1\Siding Spring and Mars |
| 19th | Comet C/2013 (A1) within 132 000km of Mars |
| 21st | **Orionids** meteor shower peaks, before dawn |
| 22nd | Mercury visible in early morning twilight |
| 23rd | **New Moon** |
| 25th | Waxing crescent Moon occults Saturn |
| | Venus in superior conjunction |
| 30th | Waxing crescent Moon occults Beta Capricorn |
| **31st** | **Moon 1st Quarter** |

**Planets**

| | |
|---|---|
| Mercury | Early morning twilight, in the East, from 22nd |
| Venus | Morning object in Virgo but difficult viewing |
| Mars | Starts the month close to Antares, ends close to 'Teapot' asterism<br>Low in the South East after sunset |
| Jupiter | Moving from Cancer into Leo; seeing improves through the month<br>Culminates just before sunrise at the end of the month |
| Saturn | In Leo; poor visibility this month, occulted on 25th |
| Neptune | Good viewing in Aquarius<br>Culminates in darkness, sets at 02.00 at the end of the month |
| Uranus (*) | Reaches opposition on 7th, visible all night (mag +5.9), near southern border of Pisces; moving south westward through Pisces through the month |

**Galactic Goodies**

**Double Cluster**

**NGC 884 and NGC 869** on the border between Cassiopeia and Perseus, approx. third of distance between X Perseus and delta Cassiopeae.

**Cepheus**

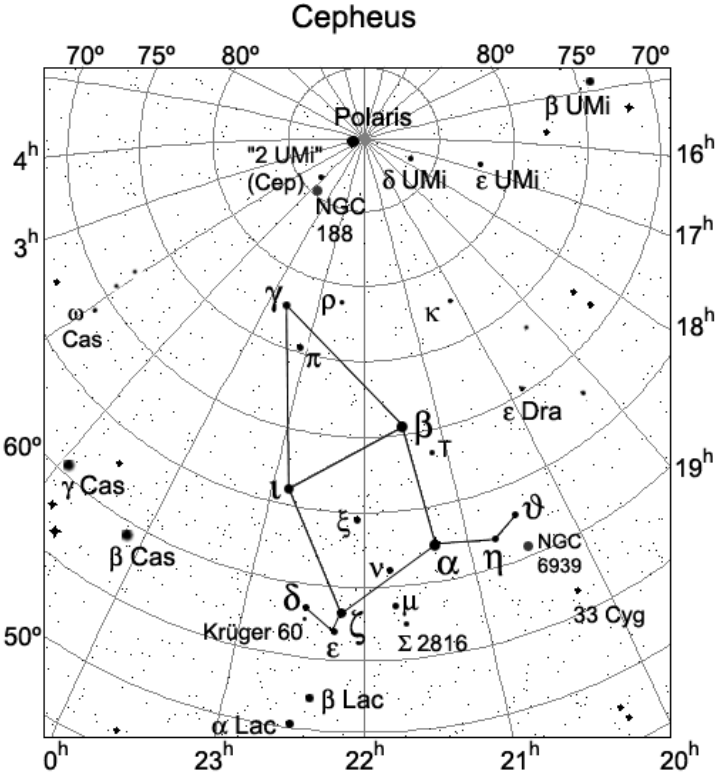
**The** Cepheus constellation is famous for the variable stars which serve as a yardstick for measuring the distance to other stars.

**Alpha Cephei 'Alderamin' –** right bottom corner, mag. +2.44; hydrogen dwarf

**Beta Cephei 'Alfirk' –** mag. +3.16 to +3.27, binary system with a separation of 13.6 deg. Should be visible with small telescope.

**Delta Cephei,** varying magnitude +3.5 - +4.3, class F5 supergiant

About a dozen NGC objects lie in and around the constellation Cepheus.



# Programme for September & October 2014

| Date | Time | Location | Subject & Speaker |
|---|---|---|---|
| Thu Oct 2nd | 19:45 | Club Room | **Phil's History of Astronomy**<br>*Phil Muffett* |
| Fri Oct 3rd | 19:45 | Observatory | **PVE**<br>*Les Marsden* |
| Sat Oct 4th | 18:00 | RSPB Old Moor | **Stargazing @ RSPB**<br>*Les Marsden* |
| Wed Oct 8th | 19:45 | Club Room | **Executive Meeting** |
| Thu Oct 9th | 19:45 | Club Room | **Robotic Telescopes**<br>*Dr John Baruch* |
| Thu Oct 16th | 19:45 | Club Room | **Light & Spectra**<br>*Francis Hickenbottom* |
| Thu Oct 23rd | 19:45 | Club Room | **TBC**<br>*Andrew Kirton-Vaughan* |
| Thu Oct 30th | 19:45 | Club Room | **Comets**<br>*Roy Gunson* |
| Thu Nov 6th | 19:45 | Club Room | **A Guide to Pixinsight**<br>*Harry Page* |
| Wed Nov 12th | 19:45 | Club Room | **Executive Meeting** |
| Thu Nov 13th | 19:45 | Club Room | **Constellation Corner**<br>*Michael Waterfield* |
| Thu Nov 20th | 19:45 | Club Room | **Night Scenes of 2015**<br>*Paul Money* |
| Thu Nov 27th | 19:45 | Club Room | **Winter Sky**<br>*Mike Hall* |
| Fri Nov 28th | 19:45 | Observatory | **PVE**<br>*Les Marsden* |
| Sat Nov 29th | 18:00 | Wentworth Castle | **Public Outreach**<br>*Les Marsden* |

Astrophotography Section meet virtually every Tuesday
Observatory at 19:30 - (See Alan Birch/Mike Scollan for details)

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**TBC** – Subject to be confirmed
**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
**RSPB Old Moor** is at Manvers Way, Wath-Upon-Dearne, S73 0YF
**Thyrbergh Country Park**, Doncaster Rd, Thrybergh, S65 4NU
**PVE** – Public Viewing Event

*Mexborough & Swinton Astronomical Society is Registered Charity N$^{o}$ 1064103 in England & Wales*

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