CELEBRATING 40 YEARS 1978 - 2018

The Messenger

Mexborough & Swinton Astronomical Society

April 2019

The Great Twins



In the Babylonian star catalogues, the constellation we now know as Gemini was called “the Great Twins.” or “the Great Companions.” In Babylonian astronomy, the Great Companions were called: Meshlamtaea, or “the one who has arisen from the underworld;” and Lugalirra, or “the mighty king”. These deities are associated with Nergal, the King of the Underworld and the God of War and Pestilence. Now, before you judge the God of Plagues too harshly, you’ll want to take a look at his mythos.

Nergal was the son of Enlil, a major god of both creation and destruction, and Ninlil, a goddess of agriculture and healing. As the story goes, Enlil was banished to the underworld for seducing Ninlil, who followed her consort to the lands of the dead where she bore his children – Nergal among them.

Both of his parents were relatively benevolent deities, an association with the Land of the Dead does not a malevolent deity make.

Despite being associated with death, war, and pestilence, Nergal came to be associated with these negative traits in the first place because he was linked to Shamash, the God of the Sun – specifically, the midday and midsummer sun: the hottest and deadliest phases of Shamash. Unlike in European climates where high summer is considered lush and vibrant, this would have been seen as a time of death and drought.

The Sun-God Shamash was a God of Law and Justice. He was also known to deliver people from the grip of demons. As an aspect of Shamash, Nergal must have certainly shared at least some of these attributes. In fact, both Shamash and Nergal were often depicted as lions, or having the head of lions.

In the Babylonian star maps, the Great Companions are depicted as warriors dressed for battle and brandishing weapons – very much unlike their modern depictions. The two warriors were seen as guardians of the underworld.

Since the approaching summer was the season of death and pestilence, the ancients saw the veil between the lands of the living and dead as being dangerously thin. Thus, it would have been up to the two guardians to prevent demons from escaping during the coming Summer Solstice, when they could wreak havoc during an already precarious time.

There is evidence that little figurines of these deities were buried at doors to function as guardians. In the first millennium they are described as "guard-gods who tear out the heart and compress the kidneys". According to the same text, Lugalirra is associated with the right side, whereas Meslamtaea is associated with the left.

Guy Ronson

Mike Hall's April 2019 Skynopsis



Diary (all times GMT)

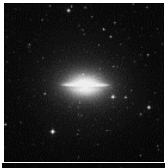
1st	Sunrise 05.36 Sunset 18.35
5th	New Moon
8th	Sunrise 05.20, Sunset 18.44
9th	20.00 Mars 7° North-West of the Moon
10th	01.00 Minor planet (2) Pallas at opposition; 17.00 Jupiter stationary
12th	Moon at First Quarter
15th	Sunrise 05.05, Sunset 18.56
16th	20.00 Mars 6°. North of Aldebaran
19th	Full Moon
22nd	Sunrise 04.50, Sunset 19.07, Lyrid meteor shower peaks; 23.00 Uranus in conjunction with the Sun
23rd	03.00 Jupiter 4.7°. East of Moon; Lyrid meteor shower peaks
25th	03.00 Saturn 5.8°. East of Moon
26th	Moon at Last Quarter; Pluto 4°. West of Moon
29th	Sunrise 04.36, Sunset 19.19

Galactic Goodies:

Meteors — April 22/23 Lyrid meteor shower; waning gibbous Moon will block out most of the faintest meteors but some of the brighter ones should be visible

Planets — Mars: - observable in the evenings, but will get lower as the Sub sets
Jupiter and Saturn, both visible after midnight

Messier Objects — In April M94, a spiral galaxy in Canes Venatici will be well placed for observation. It will reach its highest point in the sky at around midnight Rotherham time. At magnitude 8.2, M94 is quite faint, and certainly not visible to the naked eye, but can be viewed through a pair of binoculars or small telescope.



Also, in April, the sombrero galaxy, M104, will be well placed for observation from the Rotherham area, it will be visible between half past eleven and half past two in the morning. It will reach its highest point in the sky at around 1am some 24° above due south horizon.



The whirlpool galaxy M51is also will be well placed for observation. It will reach its highest point in the sky at around midnight local time and for Hoober Observatory will be visible all night. Magnitude 8.4 – a good target for a small telescope

Other things to look out for are M81 Bodes, M82 Cigar and M101 Pinwheel all in Ursae Major; M101 Sombrero in Virgo; M5 and M16 Eagle in Serpens; M17 Swan in Sagittarius; M13 in Hercules, M3 in Canes Venatici;

From the Final Frontier

As part of NASA's long-term planning for Mars exploration and establishing a scientific colony, the drinks giant 'Budweiser' has been contracted to design and develop brewing facilities. 'Space Tango', the payload development company, are building and testing a hop growing module.
Professor P A Newt reports that early investigations indicate that it will be possible to grow hops in the Martian soil and that water can be supplied from the ice fields of Pavonis Mons. Initial results from ISS Earth Orbit trials indicate that the barley will grow up to 15-25 cm. Barley is not only used to produce beer but can also be used to produce foods that are very beneficial to human health. Experiments in Earth Orbit have also demonstrated that a high intake of hops in a low gravity environment can lead to a condition where the carbonated bubbles are pushed to the bottom of the astronaut's stomach, causing 'Dry Burps'; causing the bubbles making their way back through the body. This was an Apollo briefer.

Mike Hall

The Duke's on the Moon



In 1972, as Charles Duke was training to visit the moon with Apollo 16, he regretted spending so much time away from his wife and sons. "So just to get the kids excited about what dad was going to do, I said, 'Would y'all like to go to the moon with me?'" he told Business Insider. "We can take a picture of the family and so the whole family can go to the moon."
"I talked with Dotty and the boys about it and they were delighted about having a picture of the Duke family on the Moon," he wrote in his autobiography, Moonwalker. "So, one day, Ludy Benjamin, a NASA photographer and good friend, came over to our house in Lago and took a picture of the four of us. On the back of the picture I wrote, 'This is the family of astronaut Charles Duke of planet Earth, who landed on the moon on the twentieth of April 1972.' Then we all signed it and put our thumbprints on the back."

On April 23 Duke and John Young went exploring with the lunar rover in the Descartes Highlands, and he dropped the photo, wrapped in plastic, onto the surface and photographed it with his Hasselblad camera. He left it there. "After 43 years, the temperature of the moon every month goes up to 400 degrees [Fahrenheit] in our landing area, and at night it drops almost absolute zero," he said in 2015. "Shrink wrap doesn't turn out too well in those temperatures. It looked OK when I dropped it, but I never looked at it again and I would imagine it's all faded out by now."

Anagram Time

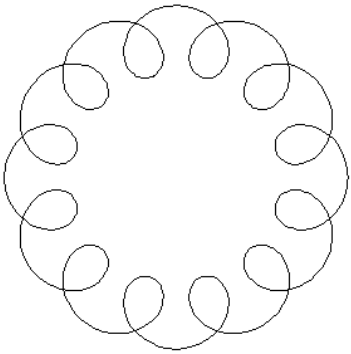
Can you identify these famous scientists and astronomers from the anagrams?

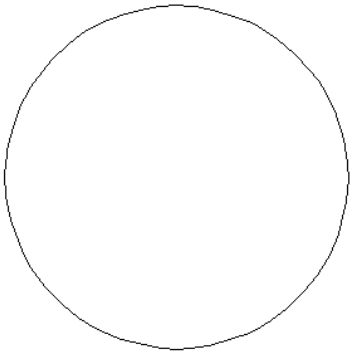
Peculiar Concussion
Janes plonk here
Corby heath
Twain oceans

Holy Defer
Illegal Al Logie
Cheeper author
Leachers chlorine

Dubbin wheel
Aberdeen ramrods drawn
Stout voter
Atomic Porker

Moondance





What is the shape of the moon's path around the sun? The moon orbits the earth, and the earth orbits the sun, so many of us imagine it looks something like the image on the left, a looping motion in which the moon periodically slides "backward" during its progress around the larger body.
But it's not! The shape is closer to a 13-gon with rounded corners; there are no loops. Helmer Aslaksen, a mathematician at the National University of Singapore, writes, "I like to visualize this as follows. Imagine you're driving on a circular race track. You overtake a car on the right, and immediately slow down and go into the left lane. When the other car passes you, you speed up and overtake on the right again. You will then be making circles around the other car, but when seen from above, both of you are driving forward all the time and your path will be convex."

Commons licence from Futility Closet 2005-2019

Upgrade that Astro Camera Now

A new generation of cameras especially for astro photography are being brought out on Monday 1st April using Pyralid Loofa technology. Researchers at the Soja Tike academy in Nuevo Rico have been developing a new generation of vacuum tubes which under low voltage conditions outperform silicon micro chip detectors by a factor of many. Due to the improved resolution using direct beam electron photography, photographs are now no longer limited by pixel size and resolutions of surface features on the moon taken with a modest 14-inch Celebron telescope have been down to a scale of feet if not inches. The new astro camera comes with its own lead-acid battery pack, and guiding assembly that is made from the finest Scottish aluminium. The first of the cameras marketed under the trade name "Interocetor", should available on line and from local suppliers soon. The signal from the camera can be sent via electromagnetic radiation to a mobile phone screen attached to the complimentary "Cyber Hook-up"



Malham Weekend 22nd – 24th March





As part of the 40th Anniversary MSAS headed north to the Malham Tarn Field Study Centre, Malham, North Yorkshire for a weekend. The site sits about one mile north of the famous Malham Cove in the middle of the North York Moors National Park and boasts some of the best dark skies in our region.

A group of thirteen members, partners and friends led by our chairman, Les Marsden, arrived at the site on the afternoon of the 22nd March after negotiating the narrow lanes in and around the Malham countryside. This was not helped by a poorly sign posted diversion that took us some five miles across the moors on single tracked roads. After safely arriving and installing ourselves our meticulous planning was undone by wall to wall cloud, as it turned out the weather refused to cooperate and remained overcast all weekend. However, thanks to Roy Gunson, our resident quiz master, the party spent the evening competing in a marathon pub quiz. Judith D'Silva's team won out mainly due to the use of a ringer. Members stayed up late discussing astronomy and the society and enjoying a few drinks. On leaving the common room at High Stables keen observers caught a quick view of Castor and Pollux before the clouds quickly closed in again.



The weather on Saturday continued in the same way but members took advantage of the centre's library computer facilities and took part in an imaging workshop using AutoStakkert, Deep Sky Stacker and Registax. In the morning members practiced on data provided by Roy Gunson and Paul D'Silva whilst in the afternoon members applied techniques to their own data, helping each other and making suggestions when problems arose. Other members took advantage of the beautiful area around the tarn, exploring the woodland and water's edge. In the afternoon Phil Muffett led a bird watching safari bagging over 30 bird types as well as roe deer and other animals.

After dinner Roy provided a version of the 'Pop Master' quiz, this time won by a team led by Paul D'Silva, also using a couple of ringers, before Jan Stallard chose the evening film 'Destination Moon', a 1950's classic. Thanks Jan!

Although the weather was cloudy over the entire weekend everyone who took part reported that they had enjoyed themselves. Many thanks to the team at Malham Tarn FSC for going the extra mile by ensuring that the external lighting was minimised, yes one of our party did complain about the lack of external lighting! The centre remains an excellent location for observing with much to do if the weather is poor. The accommodation is simple and comfortable set in beautiful countryside. I look forward to our next visit.

Paul D'Silva

Émilie du Châtelet

Gabrielle Émilie Le Tonnelier de Breteuil, later to become the Marquise du Châtelet was born on the 17th December 1706. Her father was Louis Nicolas le Tonnelier de Breteuil, a minor noble of the French Court. At the time of Émilie's birth, her father held the position of the Principal Secretary and Introducer of Ambassadors to King Louis XIV. He held a weekly salon on Thursdays, to which well-respected writers and scientists were invited.

Émilie's father Louis-Nicolas, recognizing her early intelligence, arranged for Fontenelle to visit and talk about astronomy with her when she was a young child.

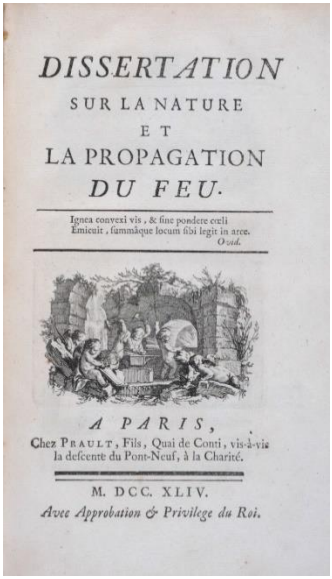
Such encouragement would have been seen as unusual for parents of a young girl, women in fact were mainly trained in "household" duties or for the wealthy were trained in the concept of household management. Science and Mathematics were male dominant activities, and women were not encouraged to dabble in such things.

When she was small, her father arranged training for her in physical activities such as fencing and riding, and as she grew older, he brought tutors to the house for her. By the age of twelve she was fluent in Latin, Italian, Greek and German; she was later to publish translations into French of Greek and Latin plays and philosophy. She received education in mathematics, literature, and science.

Apparently as a teenager, short of money for books, she used her mathematical skills to devise highly successful strategies for gambling.

On 12 June 1725, she married the Marquis Florent-Claude du Chastellet-Lomont. Her marriage conferred the title of Marquise du Chastellet. Like many marriages among the nobility, theirs was arranged. As a wedding gift, the husband was made governor of Semur-en-Auxois in Burgundy by his father; the recently married couple moved there at the end of September 1725. Émilie was eighteen at the time, her husband thirty-four. They would have three children. Two died in infancy. After the birth of the third child, Émilie, considered her marital responsibilities fulfilled and reached an agreement with her husband to live separate lives while still maintaining one household.

So, in 1733, aged 26, Émilie resumed her mathematical studies. Initially, she was tutored in algebra and calculus by Moreau de Maupertuis, a member of the Academy of Sciences; although mathematics was not his forte. However, by 1735 Émilie had turned for her mathematical training to Alexis Clairaut, a mathematical prodigy known best for Clairaut's equation and Clairaut's theorem. Émilie resourcefully sought some of France's best tutors and scholars to mentor her in mathematics. At this time Émilie began an affair with Voltaire (François-Marie Aroue), who came to stay for long periods at her home. Sharing a passion for science, Voltaire and Émilie collaborated scientifically. They set up a laboratory in Émilie's home. In a healthy competition, they both entered the 1738 Paris Academy prize contest on the nature of fire, since Émilie disagreed with Voltaire's essay. Her paper entitled "*Dissertation sur la nature et la propagation du feu*", based upon her research into the science of fire, predicted what is today known as infrared radiation and the nature of light. Her paper was published and she thus became the first woman to have a scientific paper published by the Academy. To judge from Voltaire's letters to friends and their commentaries on each other's work, they lived together with great mutual liking and respect. As a literary rather than scientific person, Voltaire implicitly acknowledged her contributions to his 1738 "*Elements of the Philosophy of Newton*", where the chapters on optics show strong similarities with her own "*Essai sur l'optique*".


DISSERTATION
SUR LA NATURE
ET
LA PROPAGATION
DU FEU.
Ignea convexi vis, & sine pondere cœli
Emicuit, summâque locum sibi legit in arce.
Ovid.
A PARIS,
Chez PRAULT, Fils, Quai de Conti, vis-à-vis la descente du Pont-Neuf, à la Charité.
M. DCC. XLIV.
Avec Approbation & Privilege du Roi.

On one occasion at the Café Gradot, a place where men frequently gathered for intellectual discussion, she was politely ejected when she attempted to join one of her teachers.

Undeterred, she simply had some men's clothing made for herself and strolled back in.
Her book "*Institutions de Physique*" ("*Lessons in Physics*") was published in 1740; it was presented as a review of new ideas in science and philosophy to be studied by her 13-year-old son, but it incorporated and sought to reconcile complex ideas from the leading thinkers of the time. The book and subsequent debate contributed to her becoming a member of the Academy of Sciences of the Institute of Bologna in 1746. Women who published scientific thought and ideas – no matter how accurate and innovative – were looked on by some disdain. Even Caroline Herschel, later in this century, only managed to publish and be recognised for her work by writing apologetic letters in a meek manner, and only was initially recognised because of being published by her more famous brother.
Émilie Du Châtelet contribution was the hypothesis of the conservation of total energy, as distinct from momentum. In doing so, she became the first person in history to elucidate the concept of energy as such, and to quantify its relationship to mass and velocity based on her own empirical studies. Inspired by the theories of Gottfried Leibniz, she repeated and publicized an experiment in which balls were dropped from different heights into a sheet of soft clay. Each ball's kinetic energy - as indicated by the quantity of material displaced - was shown to be proportional to the square of the velocity.
In 1749, just prior to her death, she completed the work regarded as her outstanding achievement: her translation into French, with her commentary, of Newton's "*Philosophiae Naturalis Principia Mathematica*" (often referred to as simply the Principia), including her derivation of the notion of conservation of energy from its principles of mechanics. Published ten years after her death, today Émilie's translation of the Principia is still the standard translation of the work into French. Indeed, her translation and commentary of the Principia also contributed to the completion of the scientific revolution in France and to its acceptance in Europe.
She lost the considerable sum for the time of 84,000 francs—some of it borrowed—in one evening at the table at the Court of Fontainebleau, to card cheats. To raise the money to pay back her debts she devised an ingenious financing arrangement similar to modern derivatives, whereby she paid tax collectors a fairly low sum for the right to their future earnings (they were allowed to keep a portion of the taxes they collected for the King), and promised to pay the court gamblers part of these future earnings.
In her first independent work, the preface to her translation of the Fable of the Bees, du Châtelet argues strongly for women's education, particularly a strong secondary education as was available for young men in the French colleges. By denying women a good education, she argues, society prevents women from becoming eminent in the arts and sciences.
A main-belt minor planet and a crater on Venus have been named in her honour



Diary

Date	Time	Location	Subject / Event	
Thu April 4th	**19:45**	**Club Room**	**The Backyard Worlds**	*Peter Jalowiczor*
Wed Apr 10th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu April 11th	**19:45**	**Club Room**	**TBA**	*Prof Sean Paling*
Thu April 18th	**19:45**	**Club Room**	**Astro News**	*Various*
Thu April 25th	**19:45**	**Club Room**	**Solar Activity 1129 - 2019**	*Mick Nicholls*
Thu May 2nd	**19:45**	**Club Room**	**TBA**	*Jost Migenda*
Wed May 8th	**20:00**	**Club Room**	**Executive Committee Meeting**	
Thu May 9th	**19:45**	**Club Room**	**Cygnus**	*Roy Gunson*
Thu May 16th	**19:45**	**Club Room**	**Meeting**	
Thu May 23rd	**19:45**	**Club Room**	**Meeting**	
Thu May 30th	**19:45**	**Club Room**	**TBA**	*Paul D'Silva*
Fri June 14th	**19:45**	**Club Room**	**An Englishman, Frenchman and a Spectroscope**	*Alan Chapman*

(Details correct to time of publication)
PVE – Public Viewing Event – Bookable Only

TBA – To be announced – (otherwise – We don't know!)

Web site: http://msas.org.uk
Old Moor RSPB – Manvers Way, Barnsley, S73 0YF
Clifton Park - 40 Doncaster Rd, Rotherham S65 2BH
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
Masonic Hall - Swinton Masonic Hall, 63 Station St, Swinton, Mexborough S64 8PZ
Mexborough & Swinton Astronomical Society is Registered Charity Nº 1064103 in England & Wales

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



Club members wait for inspiration during the "how to process your data" session at the recent weekend away at Malham Tarn