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AYLESBURY ASTRONOMICAL SOCIETY

What's Up?! APRIL 2010

Aylesbury Astronomical Society Newsletter Issue No. 504

NOTICE – Your committee still needs you!

Our Annual General Meeting is on Monday, 3rd May 2010 - all committee positions are up for election. Our chair, Peter Gillespy, is to stand down after a number of years service for which we are grateful. If you feel you could lead the AAS into the future, please consider standing for this key position.

In addition, the society also requires someone to take on the role of website editor. Please consider standing for this role to help keep communication going for existing and potential new members.

We need new members, please try to find a friend to ask to a future meeting. Personal invitation is perhaps the best recruitment.

The editor is grateful for contributions to *your* newsletter. Articles, your own observations, photos etc can go in the newsletter.

PLEASE SEND YOUR CONTRIBUTIONS TO THE EDITOR BY THE NEXT COPY DATE: 19th APRIL 2010

NEXT MEETING: Monday 3rd May 2010 at 7:30 pm

Scout Hut, 50 Oakfield Road, Aylesbury HP20 1LL: AGM as above plus various speakers to be announced.

OBSERVING: Sorry, no official star parties this month

The Meade telescope has not been well recently and so is being sent away for a check up. It is hoped that it will be better by May.

ANNUAL TRIP: Herschel Museum in Bath (early September)

The society annual trip will be to the Herschel Museum in Bath. The Herschel Museum of Astronomy is dedicated to the many achievements of the Herschels, who were distinguished astronomers as well as talented musicians. It was from this house, using a telescope of his own design that William discovered Uranus in 1781. A special exhibition at the Herschel Museum of Astronomy this year celebrates the amazing work of William Herschel and his sister Caroline during their years living in Bath making extraordinary telescopes and setting new standards in observation. In addition to the general access to the museum, there will be presentation by one of the museum's experts specifically for our Society (details to be confirmed).

This trip will take place on a Saturday in early September, date to be confirmed. If you are interested and would like more information, please contact a member of the committee. For more information specific to the Herschel Museum, see <http://www.bath-preservation-trust.org.uk/?id=8>

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WHAT ARE YOU LOOKING AT?

Moon: 6th last quarter; 14th, new moon; 21st, first quarter; 28th full moon.

The moon will be close to: Mercury 15th; Venus and Pleiades, 16th; and Mars 21st and 22nd; Saturn, 25th and 26th.

Mercury will be visible in the western evening sky just after sunset near the beginning of the month quite close to Venus. A thin crescent moon will be close by on the 15th. After this, it will disappear into the evening twilight.

Venus is really bright (magnitude -3.9) in the western evening sky just after sunset. Venus passes close to Pleiades and the Moon on the 16th.

Mars is now receding rapidly and now past its best. Mars is visible in Cancer (magnitude +0.1) during the middle of April and approaching Leo.

Jupiter is too close to the sun to be seen.

Saturn is now at its best visible in Virgo fairly high in the sky. The rings are now tilted slightly towards us – worth viewing even with a modest telescope.

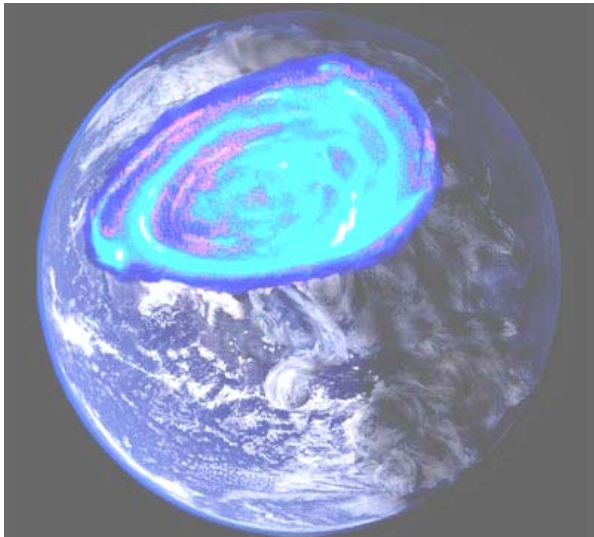
Uranus is not visible this month.

Neptune is not visible this month.

Vesta is a group of some of the largest asteroids which can be seen with binoculars or a small telescope in the constellation of Leo.

Stars: Leo low in the southern sky is the place to look with Hydra very low in the south. Cephus in the north will be at its lowest point. The winter constellations of Orion and Taurus as now setting in the western sky. The orange giant Arcturus and the blue giant Spica are very bright in Bootes and Virgo respectively in the east. Galaxies M81 and M82 are bright and overhead.

ASTRONOMY A to Z: A-B is for Aurora Borealis



Aurora are caused by particles from the solar wind spiralling along lines of the

Earth's magnetic field exciting nitrogen and oxygen atoms in the atmosphere.

Oxygen emissions can be green to brownish red and nitrogen emissions can be red or blue depending on the amount of excitation.

The Earth's magnetic field, which help to shields us from the Sun's deadly rays, emerged from the planet's core even earlier than we previously thought. Researchers have discovered an ancient magnetic field frozen into rocks in South Africa. While this field, 3.45 billion years ago, was not yet strong enough to shelter life on Earth, new findings also suggest that the young planet was significantly wetter than today.

John Tarduno and his team at the University of Rochester (US) detected the field in a sample of volcanic rocks collected in the Barberton Greenstone Belt. When these rocks solidified, a number of tiny magnetic inclusions – trapped inside the molten rock – aligned themselves with Earth's magnetic field. In this way, the volcanic rocks acted like recording devices, capturing the strength and configuration of the ancient field.

Using their new SQUID magnetometer, the researchers were able to confirm that the 3.5 billion year old silicate crystals had recorded a magnetic field originating from Earth's core. Prior to this the oldest record of Earth's magnetic field is 3.2 billion years detected in a separate outcrop of volcanic rocks in South Africa.

Earth's magnetic field is generated by the swishing of molten iron deep in the planet's outer core – the coriolis force helps to create a convection pattern in this zone, leading to a geodynamo. Today the field extends out into the magnetosphere, which stretches to 60 000 km, or 10.7 Earth radii, on the sunward side of Earth and much further on the other side. The magnetosphere terminates at the magnetopause, which represents a "stand-off" between Earth's magnetic field and high-energy winds from the Sun – life on Earth depends on this.

The findings suggest that Earth's field was significantly weaker 3.5 billion years ago than today. Also an established solar model infers that, at the same time, the Sun was shedding material at a rate of about 100 times the average observed today. Combined, these two factors mean that the magnetopause was half as close to Earth as it is today.

Tarduno says that these conditions would have stripped away vast quantities of water vapour before the water cycle became stabilized. For this reason, he concludes that the very young planet, prior to the onset of a magnetic field, would have contained more water than previously thought, and significantly more than it does today.

(This research appears in Science.)

Pub quiz note: The southern lights are known as the Aurora Australis.