LIBRARY NEWS

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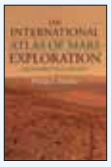
● **Chapman A** 2017 *The Victorian Amateur Astronomer: Independent Astronomical Research in Britain 1820–1920* 2nd edn (Gracewing, Leominster) donated by A Chapman.



● **Stooke P** 2016 *The International Atlas of Mars Exploration: from Spirit to Curiosity: Volume 2: 2004 to 2014* (Cambridge University Press, Cambridge) donated by the BAA.

● **Williams D A, Hartquist T W, Rawlings J M C, Cecchi-Pestellini C & Viti S** 2017 *Dynamical Astrochemistry* (Royal Society of Chemistry, London) donated by D A Williams.

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STEVE spotted over UK skies

AURORA A mysterious auroral form, often misidentified as a proton arc but properly called STEVE, has been seen in UK skies, writes Nathan Case of Aurorawatch.

The purple arc, known as strong thermal emission velocity enhancement (STEVE), was seen from Scotland on the night of 13–14 October 2017. STEVE is sub-auroral and can appear higher in the sky than traditional aurora. Reports describe STEVE as a narrow band of purple light stretching east–west, often seen for about an hour and clearly equatorward of the main auroral oval. Green picket-fence aurora is sometimes seen beneath the arc.

The sightings (see the *Daily Record* http://bit.ly/2HUs7vF) were the first from the UK since STEVE made headlines across the globe early in 2017 (http://nyti.ms/2CoXZZO). STEVE has been seen by aurora chasers for years, without detailed analyses. Recent work by MacDonald *et al.* to be published in *Science Advances* suggests the arc may be linked to sub-auroral ion drifts (SAIDs), though its exact driving formation is unclear. Please report any sightings to the Aurorasaurus citizen science project at **http://aurorasaurus.org**

STEVE over Brora, Sutherland, at 19:30 UTC on 13 October 2017. (Melissa MacDonald)

NASA budget threatens WFIRST

FUNDING The budget proposed for NASA for 2019 provides welcome support for solar system exploration, notably on and around the Moon with steps towards Mars, and proposes a transition to commercial funding for the International Space Station and ending government support in 2025.

However, it also proposes cancelling the Wide Field Infra-Red Space Telescope, and stopping funding for NASA's Office of Education and several Earth observation missions. The proposed budget is now subject to discussion and modification.

The focus on the Moon includes establishing exploration infrastructure in the form of a Lunar Orbital Platform-Gateway, launching the Orion spacecraft (currently in development) in 2020 and sending humans there in 2023.

http://go.nasa.gov/2F9czFU

Iron-rich stars have short-period planets

EXOPLANETS A chemical survey from the Sloan Digital Sky Survey has shown that iron-rich stars tend to have planets with orbital periods of less than eight days.

NASA's Kepler mission has provided a resource of stars that have one or more exoplanets. The SDSS's Apache Point Observatory Galactic Evolution Experiment (APOGEE) collects a spectrum for each star; combining these data with Kepler stars that have exoplanets allowed researchers to discover the link between iron content of stars and their planetary system characteristics.

Although a previous survey using the Chinese telescope LAMOST also found that iron-rich stars tended to have short-period planets, this study found that an orbital period of eight days divided the planets with high and low levels of iron. What is surprising is that it is only a very slight increase in the iron content of the stars that has such a big influence on the orbits of its planets. "The amount of iron matters," said Robert Wilson, a graduate student at the University of Virginia, at the 231st meeting of the American Astronomical Society. "A 25% change in iron makes a big difference, but this is a very subtle change, because iron makes up only 2% of the stellar composition. Even small differences in stellar composition can have profound impacts on planetary systems."

http://www.sdss.org

Experiment tests off-the-shelf computer memory in space

MISSION COSTS ESA's latest CubeSat mission GOMX-4B includes Chimera, an experiment to test the response of off-the-shelf memory components to space conditions.

Space-qualified components are considered more reliable, but cost more than off-the-shelf parts; there is concern that small variations in manufacturing process or raw materials of commercial memory may bring unpredictable responses in space. But if Chimera shows that cheap computer memory is reliable in space, they could be more widely used.

"ESA missions have already used a lot of off-the-shelf parts, across the last two decades," said computer scientist Gianluca Furano. "All the mass memory of currently flying missions is made up of commercial flash devices. And there are some areas where we simply don't have any space-qualified alternative. The problem is that off-the-shelf parts need to undergo a lot of testing in order to be sure they'll meet the necessary performance and reliability, which means their per-unit cost can end up much higher."

http://bit.ly/2Cr4OKG