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MISCELLASTRONOMY

Dark-sky Island SARK

The small Channel Island of Sark (2 sq.miles, 600 inhab.) has been declared the first 'dark sky island' in the world, as announced by the *International Dark Sky Association*. It was not very difficult to obtain this title, as there are no street lights and no cars on the island.

Betelgeuse in the tabloids

Betelgeuse in the constellation of Orion is the tenth brightest star in the sky. This massive star is in the final stages of its life. When all its H has been turned into He, it will explode into a real big and bright supernova, visible in the day sky.

This prospect is so spectacular that it even reached the tabloid press, where we were warned in the beginning of this year that this super explosion could happen any day now, turning night into day, with a second sun in the sky. As a matter of fact, it may not happen for a million years, and the star will not be as bright as the Sun, but as the full Moon.

Space Junk

Since man and his instruments have gone up into space, a tremendous lot of junk, from tiny nuts and bolts to big abandoned satellites is orbiting the Earth. The US Air Force know some 22,000 objects in orbit, and there are thousands more, too small to be spotted. They are flying around at a speed of about 17,000 mph and are therefore very dangerous.

They can all cause fatal collisions with space walkers and spacecraft with men on board, or destroy satellites used for communication, scientific research, espionage etc.

It has now been announced that scientists in the US have developed a small spacecraft which, they say, could clear the sky of the worst debris in 7 years. It is called the *Electrodynamic Debris Eliminator* (or EDDE) – the space binman!

Astronomical animals

In the early days of Space Flight animals were used for tests carried out before the first humans went into space, such as the Russian dog *Laika* in 1957 and the American chimp *Ham* in 1961. *Laika* died during flight, but *Ham* returned safely to Earth and then retired to the National Zoo in Washington for life as a celebrity. But now there's a new role for animals: they won't be going to fly again, but they can present possibilities to be used during long-lasting human spaceflight. A study has revealed that big black bears in Alaska hibernate for some 7 months, when their temperature and heart beat are low and when they don't eat or drink nor produce any waste. When they wake up in spring they are in as good as the same physical condition as before. Scientists are now trying to understand what exactly happens in their bodies, and to find out if humans could undergo something similar. That would be a great development for future long lasting space flight, for instance to Mars.

French landing strip for UFO's

The little town of Arès in SW France (just over 5,000 inhabitants) has an official landing strip for UFO's. It was opened in 1976 after a vote by councillors on a warm summer evening (probably after several glasses of good French wine).

A triangular seafront esplanade was set aside for the landing of UFO's, and there's a marble slab with a text welcoming 'all travellers from the Universe'. The councillors also passed a bylaw stating that aliens would not have to pay local taxes and that they are entitled to participate in the local *jeu-de-boules* tournaments.

Now, 35 years later, still no UFO's have landed, but the authorities certainly do not regret their decision, as every year some 20,000 UFO-minded tourists visit Arès. So they certainly want to go on with it, and it has now been decided to install some red and white runway lights and a windsock, so that aliens can land in the best conditions.

The Flat Earth Society

The *International Flat Earth Society* publish a Newsletter. Some headlines:

- Australia is not *down-under*
- Galileo was a liar
- Gravity does not exist

NEWS

The longest day – the highest Sun

Three days ago was the *summer solstice*, or the longest day. The Sun rose at about 4.40 am and set at 9.20 pm, that is over 16.5 hours. It is, of course, also the day with the highest altitude of the Sun. Highest altitude for any place on Earth = 90 degrees minus the place's latitude + 23.5 degrees. We live at approx. 51 ° N, so the Sun rose at noon to $90 - 51 = 39$, + 23.5 = 62.5°. (Lowest in December: $90 - 51 - 23.5 = 15.5^\circ$. Difference is always 47°). It can all be explained by the angle between the Earth's axis and the ecliptic.

Endeavour

The shuttle *Endeavour* landed safely in Florida on 1st June, after its last flight, the last but one shuttle flight. After a 2.5 weeks delayed launch – on 16th May – everything went smoothly during a 16-day mission (= 248 orbits). The spacecraft delivered the famous *Alpha Magnetic Spectrometer* – which will study the smallest particles in space - together with supplies for the crew and spare parts for the Space Station. Four extensive space walks were made to carry out repairs and improvements on the outside of the Space Station.

As the shuttle era is nearing its end, more than the usual attention is being given to these last flights. So, for instance, we got an extensive description of *Endeavour's* flight back to Earth. After the Shuttle had separated from the SS, it fired its rockets for 2.5 minutes to slow down by about 200 mph, in order to drop out of orbit for an hour long glide back to Florida. After a half-hour free fall, *Endeavour* plunged into the atmosphere at an altitude of about 76 miles or 120 km. After a few minutes the spacecraft experienced temperatures of over 1,650 degrees C. It then approached Florida high over the Gulf of Mexico. At about 50,000 ft altitude (or 15,000 m) commander Kelly took over manual control and guided the shuttle to the well-lit runway (it was about half past two in the night). It touched down at a speed of more than 200 miles or 300 km/h, then deployed a large red- and-white braking parachute after which the shuttle came to a stop exactly at the runway's centreline.

It was the end of the spacecraft's 25th flight. During its active life it was 299 days in space, making almost 5,000 orbits around Earth. It will now be decommissioned and prepared for museum display – in Los Angeles.

Antimatter

At the CERN *Large Hadron Collider* scientists have succeeded to trap 309 antihydrogen atoms and study them for about 16 minutes. This gave them the first glimpse of *antimatter*. Already since around 1930 scientists have postulated the idea of antimatter. According to the laws of physics equal amounts of matter and antimatter must have been formed during the Big Bang, but so far nobody has ever observed any antimatter. That appears to be changing now.

Atlantis

On 8th July the shuttle *Atlantis* will be launched for what is really to be the last shuttle flight. This time there will be no shuttle on standby if anything goes wrong, and therefore there will be a crew of 4 instead of 7. If they would not be able to return to Earth on board the *Atlantis*, they will be able to return eventually by a *Soyuz* spacecraft.

Spending cuts in the USA

The UK is not the only country suffering from spending cuts. The same happens in the USA, and, quite understandably, the very expensive world of astronomy and spaceflight also has to contribute. So recently we heard the news that big cuts are hitting the *Search for Extra-Terrestrial Intelligence (SETI)*.

The end of last year marked the 50th anniversary of SETI – without any result so far. An array of 42 radio antennae in California, built to survey billions of stars in the Milky Way for signals that might come from distant alien civilisations was started in 2007, but now has been mothballed for the foreseeable future.

