Sirius Issues

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TERM ROUNDUP

By Eleanor Czerepara.

First of all I'd like to welcome all new members to the society and of course welcome everyone else back. I hope everyone has enjoyed the summer and is now ready for another year of hard work. Astrosoc has got a hectic schedule of talks lined up for this term and I hope everyone is going to enjoy them. Full details can be found on the website at www.astrosoc.org.uk. A brief round up is given below:

September 29th: Freshers Quiz 2005
October 13th: Talk by Dr. Bill Chaplin of the department's Helioseismology Research Group.
October 19th: OPEN LECTURE: Dr. Mark Burchell, University of Kent - "Meteorites and Life from Space"
October 27th: Andy Salmon - "Venus Exploration"
November 9th: OPEN LECTURE: Jay Tate, SpaceGuardUK
November 16th: OPEN LECTURE: Bill Napier - "Redshift periodicities - problems in the party line"
November 24th: Mike Frost - "The Green Flash"
November 9th: End of term Quiz

FURTURE FUTURE SPACEFLIGHT

By Katie Harris

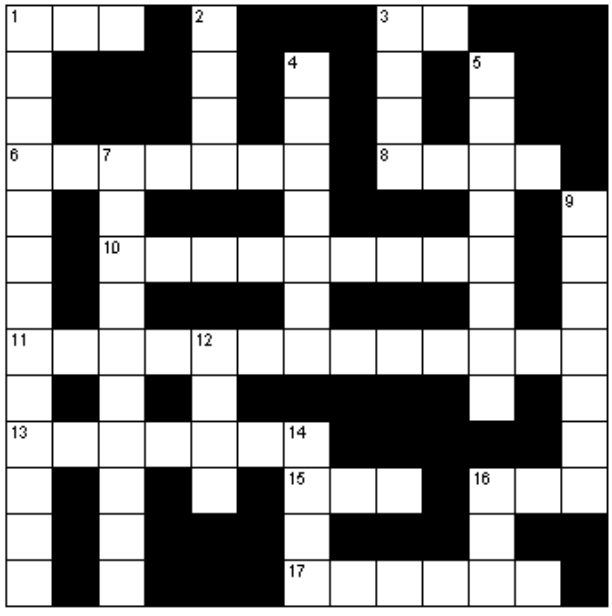
Voyager 1 is the most traveled craft sent into outer space. However, its journey will take over 30 years to complete and that's just to get to the Oort Cloud, the very edge of our solar system. So, if we want to travel any further into space, we're going to have to look at other methods to get us there. There are a few feasible methods being tested today.
Solar Sails: Solar sails are made of lightweight, reflective material, which catches the photons streaming from the sun. The major of advantage of this method is that it does not and is therefore also a lot lighter. However, the initial acceleration is very slow so the sails are only practical on robotic probes as you don't get anywhere fast with them. Of course, the further away from the sun they are, the slower they will accelerate, so they wouldn't be very useful on, for example, a return trip from Mars.
Ion Engines: These engines are electrically charged instead of chemically, and work by ejecting positive ions out of the back of the rocket. The resulting thrust is very small so again, will only be viable on un-manned probes. NASA have already used this propulsion method on Deep Space 1, which was launched in 1998 and sent back pictures from the comet Borrelly in 2001. Though the thrust is small, these engines are quicker than current rockets, reducing mission duration. If ion engines were, for example, chosen for the Rosetta mission in 2011, they would complete the mission and return in about 5 years, compared to the 9 years it would take for chemical rockets to get there, let alone get back.
Nuclear Power: This method is the most feasible, but also the most controversial. These rockets would use fission and could be flying within the next 10 years. Nuclear rockets are lighter as they require less fuel, so can travel quicker. Nevertheless, the main drawback of these engines is the radioactive waste produced. They would only be usable well away from Earth to ensure none of this radioactive waste found its way back to Earth's atmosphere. Manned missions would also be unadvisable for the same reason, unless special shields were invented. Using fusion would produce a lot more energy and would emit less radiation. However, we are currently unable to produce controlled fusion, so this option is not possible, at least, not in the near future.
Antimatter engines: It sounds like something from Star Trek but is actually an option. Antimatter would make the most fuel-efficient engine possible, as all of the particles mass is converted to energy. An amount to size of an aspirin would fuel a craft for hundreds of light-years, and Mars would be only days away. The main problem is that, currently, it requires more energy to produce the antimatter than the

antimatter itself produces. And it is tricky to store, as it annihilates any matter it comes into contact with. It is thought the technology may be available in about 30-40 years.
All in all, the best method seems to be the one we are currently using, chemical rockets. But things are changing. Ion engines are already being used in a limited capacity, and a solar sail test has already been launched (and lost, but we'll ignore that fact!). Nuclear rockets and antimatter engines may be a way off yet but advances in technology happen everyday, so you just never know what is going to happen around the corner.

PLUTO – THE MISFIT?

By Eleanor Czerepara

It was long thought that there were nine planets. However at the end of the 20th century, this was found to be incorrect when more Pluto size planets were found (Sedna and Quaoar). These are a couple of many icy rocks found in what is now known as the Kuiper Belt. So far only a small percentage of the Kuiper Belt has been catalogued, but over 1000 'worlds' have been found.
So, which are the misfits now? Pluto has a class of its own – the ice dwarfs. Since there are so many ice dwarfs, are the major planets the misfits?



Across

1) A close by G2 class star (3)
3) Unit of distance between the Earth and the Sun (2)
6) A bright region near the edge of the Sun (7)
8) Mountain (4)
10) a net like pattern [plural] (9)
11) Produced when a Wolf-Rayet star explodes (5, 3, 5)
13) British Brewer / Astronomer discovered Triton (7)
15) Used by planetary scientists to refer to methane and ammonia as solids in the outer solar system (3)
16) Occurs in a solar flare (1,1,1)
17) 111001100, type of star system (6)

Down

1) A very large object with a small active nucleus (7,6)
2) Smallest organism to have characteristics of life (4)
3) Bound electrons live here (4)
4) Mixture of lunar soil and rock fragments formed by impact or high pressure (7)
5) 'dim light' (8)
7) life producing string, goes well with Jeans (10)
9) The Springfield ..... have extra neutrons [singular] (7)
12) Point in Hercules toward which the Sun appears headed relative to its closest stellar neighbours (4)
14) outer edge of the apparent disk of a celestial body (4)
16) radiation which has a blackbody spectrum at a temperature of 3K. (1,1,1)

Edited by Eleanor Czerepara September 2005