Science Reporter

Science beyond Boundaries

The Editorial of the December issue entitled Historic Landing on a Comet was very informative.

The European Space Agency has achieved yet another milestone in the history of space exploration. The Rosetta Comet Orbiter became viral on the print as well as social media-receiving an overwhelming positive response from the public. This mission is special for the challenges that it had conquered. I discuss some of them here:

- Rosetta is the first mission designated primarily to orbit a comet till perihelion.
- Rosetta was the first spacecraft to fly close to Jupiter's orbit using solar cells as its prime power source.
- It is the first spacecraft to orbit a comet's nucleus.
- Rosetta is the first spacecraft to monitor the changes, both physical and chemical, whilst the Comet Churyumov-Gerasimenko closes to the Sun.

After traversing the challenging distance of about 6.4 billion kilometer for about 10 years in the Solar System, the mission has also bestowed us with several sparkling results:

- The oscillation of the magnetic field of Churyumov-Gerasimenko, was discovered to be around 40-50 milihertz.
- On 10 December 2014, the scientists at the ESA declared that the chemical composition of water vapour molecules on the comet was drastically different from that of the water found on our own planet. It was also stated that, the ratio of deuterium to hydrogen was three times in comparison to the water of the Earth. This meant that, terrestrial water had no relation with short-period comets such as 67P. In other words, such comets are unlikely to bring water to the Earth.

We await more exciting and revolutionary mysteries to be cracked by Rosetta, which would in turn help us to discern several other unknown facts of the observable universe!

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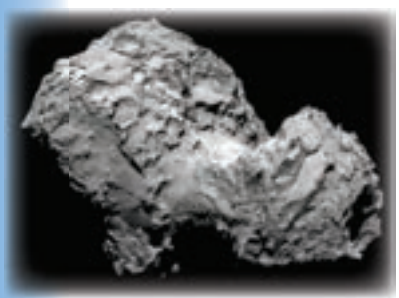

Comet Churyumov-Gerasimenko (67P) as photographed by Rosetta

Hijacking Self

Amygdala: A Beast of Tame (December 2014) was a good topic to understand our emotional behaviour. After reading this, I realized why people go through amygdala hijack. Recently, many times I have also suffered from such hijacks. This article is very useful for everyone in daily life, at home, at work, in student life, or even in society.

Anil Kumar
H.I.P.E.R., Nadaun (H.P)

What's in a Name?

Your December Editorial, Historic Landing on a Comet, highlighted the Rosetta mission and the soft-landing by its Philae probe. It is a tribute to human ingenuity and endeavour that the comet Churyumov-Gerasimenko was intercepted with pin-point accuracy by the fragile spaceship at a distance of over 6 billion kilometers from earth. It is to be seen whether ISRO, which has recently acquired several feathers in its cap, will like to replicate this feat. Most probably it will not be bothered.

However, my mind was riveted on a seemingly innocuous matter i.e. how Rosetta mission and Philae lander got its name? A quick Google search revealed that the first one got its name from Rosetta stone, an igneous rock bearing a trilingual inscription, and the second one to an obelisk having bilingual inscription. The two in tandem were used to decipher Egyptian hieroglyphics. All the three, Rosetta, Philae and the comet have a common 'stony' connection.

In the January 2015 issue (The Golden Mathematics of Life by Sujatha T. Parvathy), it is interesting to note that Fibonacci numbers provide the solution to the problem of multiplication of a hypothetical population of rabbits. It is mentioned that at the end of four months there will be only five pairs of rabbits. With passing months the numbers will increase rapidly. After one year there will be 144 pairs, 50,000 after two years and 15,000,000 at the end of three years. In thirty years there will be more rabbits than subatomic particles in the universe.

This principle of population growth works well for humans. Thomas Malthus in 1799 pointed to this problem in An Essay on Population. Later, Sir Charles Darwin, not the famous biologist but his physicist grandson wrote, "…. If the present rate of increase continued for a thousand years there would be standing room on the land surface of the earth but not room for everybody to lie down".

Dr. S.K. Gurtu, Jaipur

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