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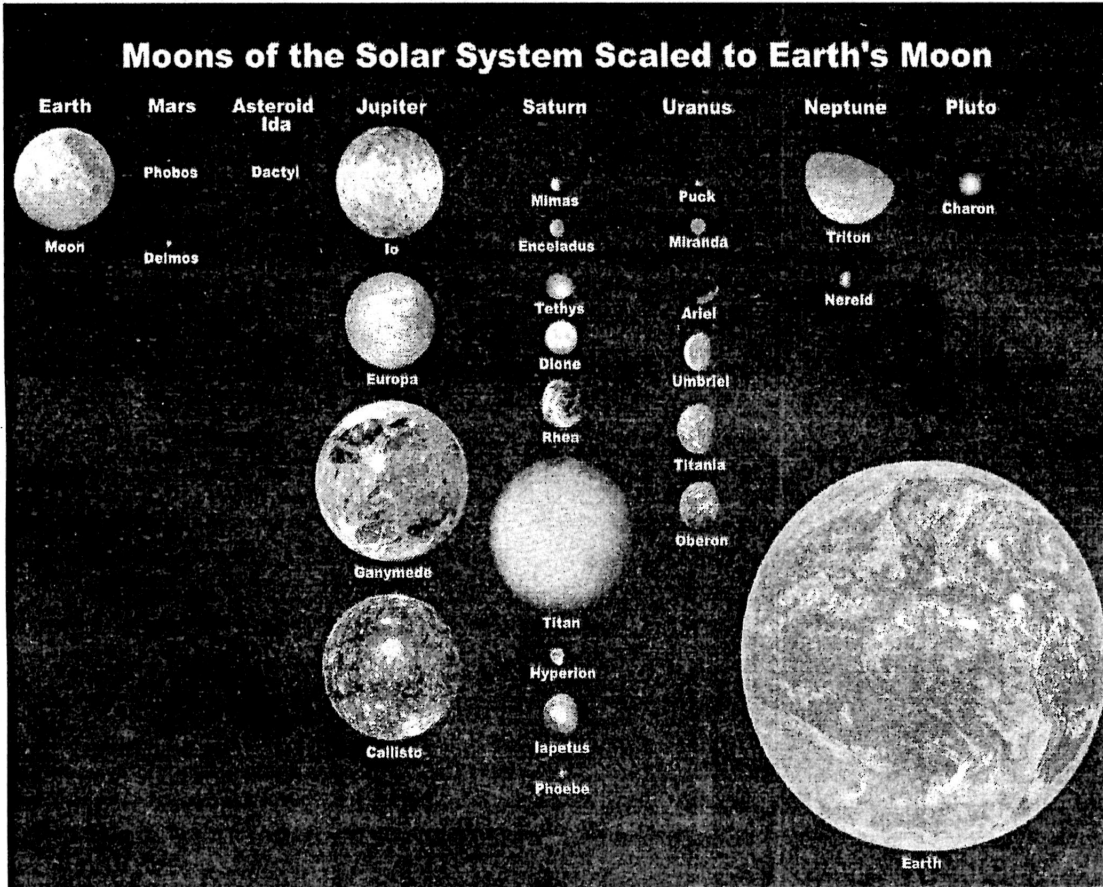
Much of our literature would have suffered and poets would have been at a loss if Earth did not have a Moon going around it. From the point of view of astronomy, our Moon has two peculiar features: It is locked in orbit such that its orbital period around Earth is almost the same as its period of rotation about its own axis; this implies that as it goes around the Earth, we see effectively one half of it from Earth with the other half remaining almost permanently invisible. (It turns out that such a locking up is a general phenomena arising from dynamics; there are many other



special

bodies in solar system which exhibit similar feature.) More interestingly, to an observer on the Earth, it subtends an angle of about half a degree in the sky which happens to be approximately the same as the angle subtended by the Sun. But for this, total solar eclipses would not have been such remarkable visual treats and – curiously enough – no other ‘moon’ in solar system shares this property.

While we may feel privileged to have a moon, it is by no means a unique feature. As of October 2008, there are 172 known moons – that is, natural satellites rotating around planets – in the solar system. Of these, 166 moons orbit the six plan-



ets – Earth, Mars, Jupiter, Saturn, Uranus and Neptune – while the other six moons orbit the dwarf planets of solar system, Pluto, Haumea (named after a Hawaiian goddess)

and Eris. Interestingly enough, Mercury, Venus as well as two more dwarf planets, Ceres and Make-make have no known moons and Earth very well might not

have had one.

The distribution of moons in the solar system as well as their properties vary significantly. While the moons definitely have to be much

smaller than the planets they orbit, two of the moons in the solar system (Ganymede, which orbits around Jupiter, and Titan, which orbits around Saturn) are even larger than Mercury. The largest moon – Ganymede – is about 80% the size of Mars. The nearest planet to us which has moons is Mars. The two moons of Mars, named Phobos and Deimos (meaning ‘panic’ and ‘terror,’ which are befitting companions to the Lord of War) are pretty much shapeless and likely to be captured asteroids. Going further, we have Jupiter and Saturn with lion’s share of moons i.e. 63 and 60 respectively. Four of the 63 moons of Jupiter are called the Galilean moons and were first studied by Galileo. He could establish by direct observation that these are celestial objects which do not orbit around Earth but orbits around another celestial body. This came as a shock to the establishment who, at that time, firmly believed that Earth is the centre of the universe and everything revolves around it. Interestingly enough, astronomers still have not named 13 of these moons of Jupiter. Of the 60 moons of Saturn, one is Titan which not only has a dense atmosphere but even a liquid surface. Finally, Pluto’s companion, Charon (which is almost half the size of Pluto), has the largest proportion in size compared to the primary body.

**(Next Week:
Observatories in India)**

Astrophysicist Jayant Narlikar and theoretical physicist Thanu Padmanabhan will contribute to DNA’s special series through 2009, designated the International Year of Astronomy.