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The different views of Saturn

part-9

THE UNIVERSE YOURS TO DISCOVER

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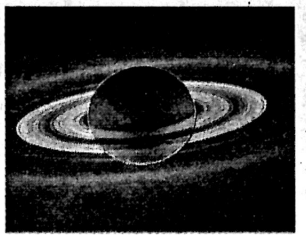
DNA special

Of all planets Saturn is the most spectacular. Even those looking through an astronomical telescope for the first time don't want to miss Saturn with its rings. The planet was indeed unusual in the sense that it seemed to be the only planet surrounded by rings. Over the years that uniqueness is lost: rings have now been discovered around all giant planets like Uranus and Jupiter.

So what do you see when the telescope is trained at Saturn? The answer depends on when you are looking. For, views of Saturn change as it goes round the Sun. Visualise the picture in which Saturn's orbit is much larger than the Earth's and sometimes you find yourself on the same side of the Sun as Saturn. And sometimes you are on the opposite side: as on March 9 this year when the Earth and Saturn will be aligned across the Sun. This phenomenon is



called 'opposition'. The exact time of opposition for Saturn is 08. 54 hours Indian Standard Time. However, to actually observe Saturn in the sky you will have to wait till the evening. That evening, you should see Saturn rising rising in the East just as the Sun sets in the West.

Such an event occurs once in about 378 days. But more interesting is of course how you see the rings around it. For, the plane in which these rings exist is inclined to the orbit of Saturn as well as the Earth. So depending on how you are placed vis-à-vis Saturn, you will see the rings differently. Sometimes you are observing from close to the plane of the rings in which case you see them projected into a thin line. Or, rather, you will find it difficult to see that line! Also, the planet looks much dimmer. You are lucky if you see Saturn when its rings are seen more face-on. Then the planet also is much brighter.

In the year 2002-3 Saturn's southern hemisphere was facing us and the rings were wide open. Since then they became narrower with Saturn itself looking dimmer at each opposition. In September 2009 the planet will be much closer to the Sun and the rings will appear edge-on. If you are patient, eight years later, in October 2017, they will again be face-on. At that time Saturn's northern hemisphere would be facing our way.

It is worth remembering that Saturn's orbit is not circular but elliptical. So its distance from the Sun varies as it completes one round in approximately twenty nine and a half years. At its nearest from the Sun the planet is around 1200 million kilometres from the Earth in opposition while at its farthest from the Sun its distance from the Earth is around 1650 kilometres in opposition. Of course, because it is lit up by the Sun, a planet tends to look at its brightest when it is nearest to the Sun and to us. In the case of Saturn, its brightness also depends on the tilt of the rings to us. Saturn was recently at its brightest in the year 2003 and today it is half as bright. To see it at its brightest again you have to wait till the year 2031.

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