

# Sky's never the limit



*While comets are seen as signs of death and catastrophe, a group of astronomers search for them in the hope of conquering death, says L SUBRAMANI*

**L**ike all 20-somethings, Amar has his own obsessions for which sky is not the limit. In fact, what grips him is something literally out of the world: the comets. In the company of a 10-inch telescope, the 22-year-old scours the sky looking for a hitherto undiscovered tailed object in the heavens.

Embers of hope stay brighter in Amar's heart, though long hours of observation in the last two years haven't lead him to newer comets. In fact, all the nine comets Amar had viewed are already familiar to astronomers around the world.

"Most of the comets found in recent times have been by amateur astronomers," he points out, holding the long tube aloft. "Of course, it has taken them years of sleepless nights and hard work."

And, Amar knows well that the hard struggle of stumbling over a comet is not for nothing. It is quite literally leaving a mark; it means immortality and a fame that would never fade away for years to come.

"That's why we remember Hale-Bopp and Halley now," he says, pointing to the fact that newly discovered comets take the name of the discoverer.

Amar isn't alone in this hard search. In fact, he is part of a tiny group of youngsters who are constantly peering through the telescope hoping to find newer comets. Most of them have a valid reason too. "Though there are several comets discovered around the world, none of them are by Indians in India," Amar mentions with palpable disappointment.

Immortality apart, these comet enthusiasts are aware that sighting even a single one is a scientific feat that will win wider acknowledgements in the astronomy community and space-scientists across the globe, who are tireless in their observation of the celestial objects. "Even to spot-known comets, one needs to know



(Top) Hale Bopp in the night sky. (Above) Amateur astronomers at Kavalur observatory.

the various regions of the sky thoroughly through hours of observation," explains Pavan, another passionate comet observer.

"But spotting newer comets would require more than familiarity. The astronomer needs to be more precise in picking the area he/she would observe and that sort of accuracy comes almost by instinct."

## Past the eye

In fact, on October 2, Amar and Pavan, along with a small group of fellow amateurs, were intensely observing the region around Saturn, but their search missed the sight of a comet that was travelling close by. David H Levy, a veteran who has 22 comets in his name, added one more that day, as he clearly spotted the comet skirting through Saturn.

"That's how close it can be," says Rakesh Nath, who was also part of the team involved in the observation session on October 2. "It needed a bit more intense and patient observation, but the fact that we could go as close as that is heartening in itself."

Despite rich astronomical traditions from the era of the great Aryabhata (499 A D), India has just one comet named after her citizen: 'Bappu-Bok-Newkirk Comet', after the country's famous astronomer in the post-Independence era, Vainu Bappu, who discovered the comet in 1949 along with two other colleagues in Harvard. 'Kavalur', the observatory

in Velore which Bappu helped to establish in the 1970s, is even treated like a shrine by some of the comet-crazy like Pavan.

"We have visited the place many times and it gives us a chance to reflect on Bappu's accomplishments and certainly keeps our passion for astronomy alive," Pavan says.

But Vishnu Reddy, who knows the rigours of observation very well, says discovering comets need Siyaphean patience more than fire in the belly. "Everyone says he or she is a comet observer," remarks one of the amateur astronomers from India, who is currently pursuing his research in planetary science at University of North Dakota in the US.

## Not everybody's forte

"However, there are only a few who can brave the elements and physical strain to do at least 20 to 30 hours of observation a month. Despite the fun behind observing comets, because of their dynamism and constantly changing positions everyday, their varying levels of visibility is a serious challenge for astronomers," he adds.

Visibility of these objects, which are marked with a tail of ice and debris, depends on their proximity to earth. Their orbits are thought to be constantly changing, as they are 'perturbed' by their proximity to a major planet. "If the comet is bright, you can see with naked eyes, but for

spotting the not-so-bright ones you need sophisticated instruments like image catchers. The fact that it is not available in India is hurting the cause of the tiny numbers who are seriously into observing comets," Vishnu says. However, he also admits that lack of superior equipments could be an excuse, because there are instances where astronomers have used a pair of binoculars to spot comets.

The fact that India hasn't contributed to the count of comet for 57 years is frustrating for astronomers like Vishnu. In fact, Jyotirvidya Parisanstha (JVP), the Pune-based organisation of amateur astronomers, even had a reward for the discoverer of a new comet and has conducted workshops from time to time, to encourage youngsters into astronomical activities like comet hunting.

Mayank Raichura (20), an amateur astronomer from Rajkot, says in initiatives such as JVP's are certainly encouraging. "In my own case, I was attracted towards comets after attending Vishnu Reddy's workshop. Such constant interactions with the experts would certainly keep us motivated," he says.

As the bunch of comet hunters carry on with their search, their confidence and hard work combined with determination and patience seems like the best formula to succeed in the search for immortal fame. However, how soon would they break India's barrenness in comet count is the more immediate question that confronts them.

## Capturing new horizons

Discovery of newer comets are ratified by International Astronomical Union's Minor Planet Centre in the US. It all begins with the astronomer who believes he has stumbled over an object that looks like a comet alerting the MPC about the region where it is found and the direction in which it is moving.

The Centre then places details of the object in its 'confirmation webpage', asking other astronomers to look at the region and confirm if the object can be found. If the object is found by them, more observations are done to determine its rough orbit and the MPC double checks it with the list of comets already discovered. If the object doesn't match any of them, a new number and name is given to it, confirming the discovery of a newer comet.