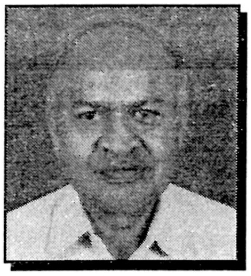
Prof. Mr. Jayant V. Narlikar



Prof. Narlikar is a well known scientist and mathamatician who has specialised in astronomy and astrophyscis. He has received several prizes and accolades including M. P. Birla award, Bhatnagar award, Smith's Prize and Adams Prize and has been instrumental in TIFR accuring international standing. He was decorated with Padmabhushan in 1965 at the young age of 26, and Padmavibhushan thereafter. He is now Emeritus Professor at IUCAA. (Inter University Centre Astronomy and Astrophysics)

Inspiration and Thrill in Science

Jayant V. Narlikar

December 17, 1997. The scene is set at Pune's Bal Gandharva Theatre but not on the stage. Outside the theatre, a large crowd has gathered, wanting to get in. But it can't
because the theatre is packed inside. Is it because Maharashtra' s favourite pesonality,

P .L. Deshpande speaking today? Or is it the maestro Bhimsen Joshi at his musical best? Both the guesses are wrong. The crowds are for the lecture by Roger Pemose, the Oxford based scientist talking about 'Science and the Mind'. Not a 'pop'-topic by any means and certainly one that requires serious thought and non-trivial mathematical concepts. Among other issues Professor Pemose asks: Can computers take over the functions of the human mind ?

A lot of Pemose's fame had preceded him. The Pune public is known for responding well to educational and cultural programmes. But the organizers of the talk were certainly not prepared for the huge crowds it attracted. In the end they had to arrange another show of the video recording to pacify those who could not get in. Even that was very well attended two days later.

Inspiring personalities

The Pemose episode demonstrated once again that even scientific pursuits, usually considered suitable for the ivory tower, can excite the

popular mind. For science is a reflection of human endeavour to understand and unravel the mysteries of nature, and there are situations when one does not have to be a scientist, to appreciate an intellectual advance. Which is why, even though it was claimed at one time that no more than three persons really understood the theory of relativity, thousands turned up to greet Albert Einstein whenever he visited a place for delivering a lecture. That was in the early part of this century in an era far from being dominated by the media as it is at present. Without taking away any credit from its extraordinary author, the phenomenal success of 'A Brief History of Time' is probably more indicative of the aggressive role of the media today.

But, leaving aside the media and how they popularize a scientific work, one can ask, whether individual scientists with extraordinary creativity can serve as inspiring role models to other scientists or to students aspiring to be scientists. For, after all, don't we often emphasize that science is objective and that in the long run, it is the facts, not personalities that matter? Don't incidents like the Pemose episode just described only bring out the idolatry of mobs? Why should a practising or an aspiring scientist feel inspired by a Newton or an Einstein, or a Ramanujan, rather than by their work? In short, is there any compromise with his objectivity if a scientist confesses to be inspired by such personalities?

I think not. For human beings are not machines, as Pemose was trying to emphasize. Even though engaged in the objective pursuit of science their mind is driven by intuition, perception and subjective assessment of facts. Success in their research even on a modest scale, can create moments of thrill and against this background, personalilties who have contributed to path-breaking findings can be sources of inspiration.

Link with history

When I went to Cambridge as a student, I had the opportunity of attending a lecture course on quantum mechanics delivered by Professor P .A.M. Dirac. Dirac was one of the early pioneers of quantum theory, who, in the 1920s along with Erwin Schrodinger and Werner Heisenberg gave a formal structure to that theory. It was Dirac's work on the motion of an electron that led to the prediction and discovery of the positron, the first anti-particle, in the 1930s. Dirac received a Nobel prize for his seminal work on quantum mechanics.

To have the first course on

quantum mechanics delivered by a teacher of such credentials can leave a lasting impact on the student, as it did on me. Through him the student could establish a direct link with the origin of not just a new branch of physics, but with an entirely new way of looking at physics. For, quantum theory is regarded as one of the two revolutions brought about in the 20th century, the other one being the theory of relativity.

Inspiration can come not just from persons but from inanimate objects too, objects that link up with the history of the subject. When you go to the fort of Sinhgarh near Pune you can see the steep rock up which Tanaji and his Maratha warriors climbed in order to take the fort by surprise and to win it for their leader Shivaji. You can't help being inspired by linking to that glorious page from Maratha history.

Science has its historical objects too, like the apparatus used by Michael Faraday, the equipment of Rutherford or Madame Curie ...exhibits displayed with honour in science museums or laboratoties where these scientists worked. Even the replica of the telescope made by Galileo takes you back to those pioneering days of the early seventeenth century when astronomy was breaking out of the limits imposed by human eyes.

Not subjects of worship...

This attitude of 'feeling inspired' or 'looking up to' should not be confused with worship of idols! Worship assumes divinity and demands uncritical devotion, alien to science and the scientific attitude. Take Isaac Newton, for example. I feel inspired by Newton because of his tremendous contribution to the subjects of physics and mathematics. Why is Newton inspiring ? Because he created the whole infrastructure out of practically nothing. His genius in generating new ideas and cleverness in executing them are phenomenal.

Nobel Laureate S. Chandrasekhar's last work was on evaluating Newton's monumental book the Principia, in which there are several propositions on the problems of motion, gravitation and other topics. Chandrasekhar paid tributes to Newton by recounting his following experience. He solved many of those Newtonian problems by the modem techniques and then compared his solutions with those obtained by Newton, only to find that the latter were far superior.

This does not of course mean that Newton was a superman, above making any mistakes. His dabbling in alchemy are well known. His

tuition was faulty on the nature of light. His opposition to the wave theory of light combined with his personal prestige prevented progress in the understanding of light. He was a loner, without any close friends and he was not an easy person to get on with. His controversies with Hooke and Leibnitz did not exactly reflect pleasantly on his personality .Thus today's scientist can be well aware of these negative aspects and still find Newton an inspiring personality. And, this attitude is not one of worship.

Some years ago I had got saplings descended from the historic apple tree in Newton's garden planted in the grounds of IUCAA (Inter-University Centre for Astronomy and Astrophysics) at Pune. The trees needed to be specially cared for, since Pune is not a natural habitat for an apple tree. Thanks to efforts by experts the trees are doing well and one of them also delivers apples! Recall that the legend says that an apple falling from his tree inspired Newton to think of the law of gravitation. One may not believe in the legend, although the existence of the tree is undisputed. Newton's biographies record his sitting under the tree while contemplating on science or talking to others about it. To me its descendent at IUCAA is a symbol that links us with history, with Newton and his law of gravitation. It brings some thrill and inspiration. Neither the tree, nor Isaac Newton himself were meant to be items of worship in this enterprise.