

In this issue

Chandrasekhar unlimited

Beginning on page 284 is N. Mukunda's scholarly review of the book *Truth and Beauty: Aesthetics and Motivations in Science* by S. Chandrasekhar. (The review is reprinted here from the *Journal of Genetics*.) Chandrasekhar is often described as 'the most distinguished astrophysicist of his time'. One lecture in this remarkable volume is of special interest to us as it was first published in this journal (*Curr. Sci.*, 54, 1-9, 1985). The then president of the Indian Academy of Sciences invited Chandrasekhar, a founder fellow of the Academy, to deliver the inaugural lecture at its golden jubilee celebrations. (Chandrasekhar was just 23 years old when the Indian Academy of Sciences was founded in 1934.) We flatter ourselves in thinking that he wrote this lecture, 'The pursuit of science: its motivations', just for this occasion. However, we know that behind this composition was a lifetime of thought based on his personal experience. He once said: 'I work for my own personal satisfaction on things generally outside of the scientific mainstream. Usually my work becomes appreciated only after some length of time.'

Chandrasekhar came with his wife Lalitha to India in late October 1984 to deliver this lecture. A symposium on 'Supernova and its remnants' was taking place at the Raman Research Institute as a prelude to the golden jubilee celebrations. On 31 October Indira Gandhi was assassinated. In view of this national tragedy, it was considered impossible to hold the celebrations, which were to begin on 7 November. Chandrasekhar was told that the Indian Academy of Sciences did not have sufficient funds to pay for his fare in February 1985 when the celebrations were rescheduled to take place, and that his lecture would still be the inaugural lecture but would have to be read by someone. But he most graciously offered to come back on his own. Incidentally, Lalitha and he presented a copy of the bust of Ramanujan to the Academy (which Richard Askey and he had arranged to be made by the reputed sculptor Paul Granlund). All this indicated the regard and affection he holds for the Academy.

To many of us who pursue science, the last paragraph of this lecture is of some interest:

The pursuit of science has often been compared to the scaling of mountains,

high and not so high. But who amongst us can hope, even in imagination, to scale the Everest and reach its summit when the sky is blue and the air is still, and in the stillness of the air survey the entire Himalayan range in the dazzling white of the snow stretching to infinity? None of us can hope for a comparable vision of nature and of the universe around us. But there is nothing mean or lowly in standing in the valley below and awaiting the sun to rise over Kinchinjunga.

Yes, he has great humility when he approaches nature: 'I think one could say that a certain modesty towards understanding nature is a precondition to the continued pursuit of science.' But those who are familiar with the picture he presented to the public—a gaunt aloofness that almost suggests a streak of arrogance—would never believe this. Nor would they know what a great raconteur he is; what 'fun' he radiated, keeping his private audiences rolling with laughter, himself also enjoying every story told to him. That is why we reproduce along with Mukunda's article a rare but exceptional photograph of Chandrasekhar taken by G. Srinivasan of the Raman Research Institute. It shows a face that the public has rarely seen.

The persuasiveness of a pursuit

Philip Morrison is one of the sharpest scientific intellects of recent times. He is a great friend of India and comes often here and delivers many lectures to vast audiences on various topics. His lectures are conversational, almost informal chats with his audiences. To him, it is often more important to convey the spirit of science rather than science itself. His lectures, therefore, sometimes seem to go off at a tangent. Often these detours are as important as the topic itself. In one such didactic detour he says: 'The method of science is not authority but evidence, evidence from experience, evidence from argument, evidence from mathematics. . . . Not simply Bohr thought this, and Einstein thought this. I have nothing against them, these are great men. . . we must study them but weigh their sayings.'

Beginning on page 253 is a transcript of a tape recording of a lecture given by Phil Morrison at the National Physical Laboratory, New Delhi, on the search for intelligent life beyond our planet. He asks the question, 'In this vast universe are we alone as self-

conscious beings, or have we counterparts, . . . somewhere else among the stars?' He considers the question as of such manifest intrinsic interest that one does not have to justify it. Step by step, by fascinating and cogent arguments, he convinces us that we may not be alone—indeed, we cannot be alone! He tells us of the report in October 1988 of the 'probable' discovery of planets around distant stars. He then gives us an account of the logical methods by which a search for our counterparts in the universe can be made—how messages can be sent by radio into the vast reaches of the universe, how they can be received. He talks of the invention of 'silicon engines' by J. Linscot at Stanford, of a receiver capable of tuning 20 million channels, all at a time, each carefully read and printed out. If there is in any channel anything other than random noise it will tell us. He also tells us of the work of the electronics genius and the writer of one of the greatest books in electronics, Paul Horowitz, who uses an 8-million-channel detector on an old-fashioned parabolic antenna dish which had been abandoned at Harvard, which now automatically receives and warns whenever there is an unusual reception. Phil Morrison feels and almost convinces us that all this is truly worthwhile.

Lessons in science management

In Britain, brain drain has attained such acute proportions that many British scientists believe that, unless remedial action is taken immediately, British science and British industry will slide further and continue to lose their competitive edge. Britain, with 'many big brains on small salaries' is happy hunting-ground for American industries, universities and research laboratories for recruiting scientists and engineers, says an American. All this, unfortunately, is too familiar knowledge to us in India: how the developed nations have consistently attracted away the best talents from India and other developing countries. S. Arunachalam writes (page 243) about the steps that Britain has taken to tackle this problem and suggests that we in India do something in this matter. Arunachalam also provides the example of information packaging in Britain and says India will have to produce a major thrust in this area to join the ranks of the scientifically advanced nations.