Man of uncompromising standards

At the meeting of Nobel Laureates in Lindau (28 June 1994), I was told that Prof. S. Chandrasekhar made a very brief but very perceptive presentation on *Newton and Michelangelo*. Before I could write to him I received a telephone call from him enquiring whether *Current Science* would be interested in publishing this talk. To say that I was pleasantly surprised would be an understatement. I also flattered myself into thinking that the feeble attempts *Current Science* is making to improve itself have not been in vain. Wrote Chandrasekhar (July 11th, 1994):

In accordance with our conversation yesterday, I am enclosing herewith a duplicate of my lecture on 'Newton & Michelangelo'. I am most grateful to you for your agreeing to publish both this lecture and the earlier paper 'On Reading Newton's *Principia* at Age Past Eighty' in the same issue of *Current Science*.

I received a preprint of his 'earlier paper' written for a memorial issue on Professor D. S. Kothari (see *Current Science*, 64, 448). I wrote to him for permission to reproduce it and also:

In your characteristic manner you say about equation (6), 'If the reader does not know this relation, it will be useful for him to refresh his memory of what he must have learnt in school'. I know my readers well, and if a proof is supplied, many may be able to appreciate the beauty of your article.... I sincerely hope you will have no objection to my publishing a proof in the same issue of *Current Science* completely separate from your article.

His reply was:

I am afraid that I must veto your suggestion of supplementing it by a proof of equation (6), for the enlightenment of your readers. You misunderstand my reason for wanting my readers to refresh their memory if they wish to understand Newton; and if they do not, to realize their ignorance of what they should have learnt in school.

If my veto of your suggestion, to include a proof of equation (6) to supplement my article makes you reluctant to publish my article, please do not hesitate to reject the paper from further consideration.

Perhaps I am uncooperative, but may I say that since 1948 (when I sent my Radiative Transfer to press) I have not allowed editorial changes in anything I have written, even to the extent of the elimination or addition of a comma, without my explicit permission.

P.S.: If you decide to go ahead with the publication of my article without any addendum or supplement, then I should like to see proofs.

Later he wrote:

I should like to see the revised proofs. Also I should like to see the proofs of the figures - errors are quite likely.

Still later:

I found the reproduction of the illustration unsatisfactory... I have enclosed new copies, and I hope you will have no difficulty in substituting them for the figures in the proof.

By meticulously maintaining for himself the highest standards, not only in science but in everything he does he has been able to extract high performance from those on whom he has had some influence. These high standards have been his life's beacon light (I dread to think if any serious errors of printing have crept into his articles published on pages 495-499).

We also thought it would be appropriate to reproduce a brief write-up on him by John Horgan (page 500). We feel that this article brings out clearly the two faces of Chandrasekhar, the stern, aloof and difficult to approach person and the kindly charming laughing human being dispensing jokes and anecdotes. In this Chandrasekhar says: 'I don't expect to do science after I finish work on the *Principia*.... Obviously I can go on doing work of a quality that is below my standards, but why do that? So the time must come when I say, "Stop"'.

I know of no scientist who has been so consistently productive of high quality science right from the age of 18 to 84! (which he completes on the 19th of October this year)

One wonders whether he would have survived in India, had he decided to stay back; and whether he would have been able to maintain his incredible standards here.
A proposal for a new university

There were sensational stories that the Non-Resident Indians (NRIs) were planning to establish a new university in India; and that the New Economic Policy of opening up the country had touched even education. There were also such adverse comments that a haven was being created for burnt-out NRI scientists who wished to visit their families in India, etc. I found that not too many had read or seen the so-called Mahajan proposal. I got a copy and was struck by the perceptive statements made in its opening paragraphs regarding the state of our education and science; also the manner in which they were managed. It confirms the truth of the Cassandra-like predictions C. V. Raman made in the early days of independence as to how universities will be desecrated if some of the policies of government were pursued. Strangely, this part of the Mahajan document, which describes the sorry state of affairs, is nothing new and is common knowledge to every working scientist here. However nothing was or could be done because ‘of the scientific community’s inability to work collectively and purposefully towards a common goal’.

The Mahajan proposal is a document which shows genuine concern for our education and science. When I read it, my first reaction was to write up my views in the form of an editorial. But better counsel prevailed. Current Science has now become a medium in which scientists can express their views fearlessly. I, therefore, decided to publish the Mahajan proposal (in a slightly compressed form) (page 503) so that our scientists can read it and form their own views about it. I requested P. N. Srivastava (page 508), who I was told was a strong supporter of this concept of a new science university, and also three other distinguished research scientists P. Bhalaram (page 502), D. Balasubramanian (page 512) and T. V. Ramakrishnan (page 516) (who have been deeply concerned with undergraduate and post-graduate education) to comment on the proposal.

The state of undergraduate education in India has been a matter of much concern to many, because it not only influences the quality of science the country could produce but also the state of the country in general. When I was teaching science courses to undergraduate engineering students at IIT Madras in the early sixties I was very impressed by the quality of the students who came there. Some of us thought that one method of improving science in this country would be to start four or five Institutes of Science in different parts of the country with undergraduate, graduate teaching and research programmes in Mathematical, Physical, Chemical and Life Sciences (a proportion of the curriculum covering the Arts and History). We thought that the procedures for admission and administration of these institutes should be similar to those of IITs. It might have been possible to push through such an idea in the climate that existed in those days. On careful reflection we felt that this was by no means such a good idea for (a) Starting such institutions ‘would have further impoverished and demoralized the University system’; (b) In India any new institution performs deceptively well for the first 10 to 15 years and then decays to the usual banal norms so familiar to us. (This fact has to be remembered if the new Science University is established); (c) Perhaps the most telling argument against setting up these Institutes of Science was – ‘why add four or five more efficient houses to export our scientific talent’.

The Radhakrishnan and Kothari reports had considered many of the problems connected with the reorganization of University education and produced very comprehensive documents with very practical recommendations. Some parts of these must be read and re-read for their philosophical content (and also for their remarkable prose). However, a practical report was produced in the late eighties by a group chaired by V. G. Bhide. Many of us kept our fingers crossed hoping that the report would be accepted and we were greatly pleased when it was. We then prayed that it be implemented. As with all good reports, the government decided to shelve it and it is probably collecting dust somewhere.

The Mahajan proposal must be considered carefully and seriously. Mahajan says, ‘it is not an arrogant Non-Resident Indian solution for the ills of Indian science’. When V. S. Naipaul wrote his The Area of Darkness, most Indians were violently angry but many knew in their heart of hearts that the things he said were essentially true. It was also written by a Non-Resident Indian who was angry with what was happening in the country of his origin – a country for which he possibly cared. Mahajan too has written about what is happening in science. The question to ask: Is his solution correct and is it implementable?

We would like our readers to study the Mahajan proposal and the other articles in this issue and write to us their considered views.

Says Balasubramanian: ‘There is no gainsaying the fact that any new University with a fresh approach and commitment to combine research and undergraduate teaching is welcome. . . . Indeed many points made with respect to the basis of the establishment of New Science University and regarding its operations are welcome and hard to find fault with. He then goes on to point out many of the major deficiencies in the proposal. The report has been described as ‘naive – divorced from ground realities in India’. It has many holes and these have been pointed out in the articles appearing in this issue.

In any case, we are certain that the Mahajan report will stir up the hornet’s nest. As Balaram says, ‘an informal debate – catalysed ironically by the proposed National Science University will prove valuable in setting an agenda for the future – for the time is ripe for a close look at the conduct of education and of science in India’.

S R.