The golden era of Indian science

There has been a lot of recent interest to find out what inspired the early doyens of Indian science in the pre-independence period to reach such great heights. About the golden era of Indian science, S. K. Bhattacharyya (*Curr. Sci.*, 2000, **78**, 1279) recently commented that 'most of our eminent scientists were taught by European teachers or found their mentors in them'. I think this statement is unfounded and I have not found anything supporting this statement in the biography or writings of any of our pioneers. It is a fact that C. V. Raman did not attend the M Sc classes of Madras University (his European professors were only kind enough to allow that). After getting the Nobel Prize, Raman very eloquently expressed his views on the importance of foreign education in the civic reception given to him at Calcutta. He said: 'I never had any training in foreign laboratories or Universities. I believe myself that this was a fortunate circumstance, for it is my firm conviction that the highest scientific inspiration is that which comes from within oneself. In saying this, I do not for a moment suggest that we have nothing to learn from Europe or America, but surely it is better that we learn to accomplish whatever we can within our borders.'

Our pioneers made global impact by both borrowing and contributing to the global knowledge. In order to become a global leader, it is necessary to have courage and confidence to do completely new things, which have not been done before by anybody, both within or outside the country. Our ancestors had these two qualities, in plenty. The kind of statements made by Bhattacharyya might convey a wrong message that India will not succeed unless we imitate the West. Though chauvinism is definitely bad, I believe nationalistic pride is a good source of self-confidence and sometimes one gets more competitive when the nationalistic ego is hurt. In the pre-independence period, there was a synergistic relation between the freedom movement and creative activities (by our scientists as well as other artists). About the source of their own idealism and inspiration to do great science, S. Chandrasekhar once remarked, 'It was part of the national movement to assert oneself. India was a subject country but in the sciences, we could show the West in their own realm that we are equal to them'. In his article, entitled 'Asuthosh and our Education System', S. N. Bose described how the prevailing freedom movement inspired him and his very eminent classmates. In Presidency College S. N. Bose, Saha, J. C. Ghosh and others were taught and inspired by J. C. Bose and P. C. Ray and there was no European Professor as inspiring as them.

One should remember that none of the Indian scientific institutions established in the pre-independence period (e.g. IACS, IISc, Science College of Calcutta University, etc.) received funds from the British government. They were funded entirely by Indians. The British government declined Asutosh's request to fund the Science College and did not even attend the foundation ceremony. Four days after the foundation of Science College, Asutosh was removed as VC of Calcutta University. But by virtue of his position as president of the board of trustees, he could appoint Raman, Saha, Bose and others at the Science College. The lack of support from the foreign government, the sacrifice of the Indian donors, the missionary zeal of our institute builders (Mahendralal or Asutosh) and the prevailing Swadeshi movement, generated a kind of nationalistic spirit which is absent today.

It is however, incorrect to think that all the contemporary Indian scientists are unworthy successors of Ramanujan, Bose, Raman, and others. But it is distressing that still many of us suffer from lack of self-respect, sad craze of imitating others and take pride in works done outside the country (foreign collaboration!). In all countries, the leaders do not follow anybody else. They pursue only their own ideas, i.e. 'which comes from within oneself'. Though there is no easy prescription for becoming a world leader in science, we will probably do a little better if we can instill self-confidence among ourselves and among our students.

KANKAN BHATTACHARYYA

Department of Physical Chemistry,
Indian Association for the Cultivation of Science,
Jadavpur,
Calcutta 700 032, India
e-mail: pckb@mahendra.iacs.res.in

Science and technology in India and brain drain: Unanswered questions

This is in response to the articles 'Science and technology in India and brain drain – Some suggestions' (*Curr. Sci.*, 2000, **78**, 12) and 'Expertise crisis in insect taxonomy: need for introspection' (*Curr. Sci.*, 2000, **79**, 10). In the former article, the authors made some suggestions to improve the standard of the Ph D degree and expressed their discontent towards the Ph D holders pursuing research in basic fields of biology. In the latter article T. N. Ananthakrishnan offered some suggestions to improve the quality of research in basic fields, especially in taxonomy. The expertise crisis is not only in insect taxonomy but also in some other fields like crustacean taxonomy. We suffered a lot for identification of freshwater prawns and isopod parasites. Indians who worked in crustacean biology between 1970 and 1980s solely depended on The Netherlands carcinologist L. B. Holthuis, who made classic contribution to crustacean

taxonomy. Now at about the age of 80 as an emeritus professor, he continues to extend his help. As indicated in the science and technology article, the job opportunities are also low for specializing in basic sciences. Self-financing colleges that offer glamour courses like Microbiology, Biochemistry and Biotechnology employ such candidates. It is disheartening to note that the Ph D degree holders have to appear for a written test and an interview for a paltry salary of Rs 3000–6000 per month. Further, students who opted for classical subjects for their Ph D work find difficulty in getting research fellowships from agencies like CSIR in the form of SRF since taxonomy is not a frontier area. With the advent of choice-based exam system, life science students even at under graduate level keep away from basic subjects. Regarding the selection of the candidates for Ph D degrees, the authors of the first mentioned article, suggested a National Level Entry. But those who clear NET/GATE always wish to join premier institutions like IISc and CCMB, since this invariably paves the way for post-doctoral position abroad. If so, what about the fate of other branches of biological sciences? Recent implementation of UGC withdrawing the exemption of Ph D degree holders from the eligibility for lectureship is a mortal blow to research scholars. If the implementation continues, such research scholars in universities and other research centers will be constrained to concentrate on these tests rather than their research. In addition to NET/GATE, institutions like CCMB have their own entrance tests for selection of candidates to Ph D program. Often these persons who have cleared NET/GATE, do not succeed in such tests while those who have not cleared NET are able to pass such tests. The selection of a candidate purely depends upon the candidate's interest and research supervisor's satisfaction about the candidate's qualification. I can give a number of examples of many non-stipendiary research scholars who shine better than persons who entered in research through NET/GATE.

P. MARIAPPAN

Department of Animal Science,
Bharathidasan University,
Tiruchirapalli 620 024, India
e-mail: maris7@rediffmail.com

Brain drain: Crocodile tears galore

Apropos to the correspondence 'Science and Technology in India and brain drain – Some suggestions' by S. Seshadri *et al.*, in *Current Science*, 2000, **78**, 1407, while all the points mentioned by the authors are genuine and relevant, there is at least one major glaring point that has been left out – that of the inordinate delays (which sometimes goes into several months together, or even years) in release of grants by the funding agencies, which inadvertently affects the release of stipends/salaries to the research staff working under several projects funded by various government organizations throughout the country.

The instances of non-release of grants/stipends have become so frequent that, it would appear as if research is meant only for those who happen to come from reasonably well-to-do families, who can afford to sustain themselves during the long periods of work without stipends. Imagine the plight of those who hail from poor families and have to solely depend on their monthly stipends for their bread and butter, when their stipends are withheld for months together.

From the point of view of the Universities and their respective departments which are running the sanctioned projects, the concerned authorities/investigators do not make much noise about this. Ultimately, it is the research staff that suffers and as a result dwindles in its numbers, with many opting out.

While the points that are being elaborated here might seem less important to the point of triviality to some, let me highlight that, this very point is a major reason that creates a strong aversion for research amongst the youngsters.

Once a fresher goes through the turmoil/mental trauma of not even getting the basic emoluments that he/she is entitled to, realization dawns and is followed by disillusionment. While on the one hand, researchers have to meet deadlines in giving results, the spectre of working without income has been giving the most nightmarish experiences to many young researchers. Words spread thick and fast and the experiences of a few young researchers are serving as eye openers for others – the disinterest/disinclination/aversion for doing research in India is intensifying by the day amongst the younger generations.

It might be nice and romantic for someone in the higher echelons of scientific community to sit in the comfortable, cosy relaxed confines of scientific hierarchy to give hollow comments on 'doing science for the sake of science', or 'money is not everything' or discuss brain drain over cups of tea/coffee; at the most, these would amount to mundane lip service to an issue that deserves a far more serious introspection. The ground reality is alarming and no one seems to be bothered/perturbed.

Young researchers also see/find their counterparts in other fields (except research) earning incomes that are more than just substantial; the pressures they come to terms with, when they do not get even their 'relatively' meagre stipends/salaries on time, only act as the final straws on the camel's back.

If funding agencies do not have intentions of releasing grants that have been sanctioned to Universities, on time, then why sanction a project in the first place? It would be interesting to know how the authorities sanctioning projects/University administrators/departmental faculty members would react, if their 'Fifth Pay Commission revised' salaries are withheld for just one month.

Given these circumstances, what is wrong in youngsters with an interest and aptitude for research, deciding to pursue professions other than research