

certain levels of matter and the universe. But when we get down to the levels in which we actually live out our lives: our relationships to other human beings; our aspirations, politics (micro and macro), personal choices and moral dilemmas, at these levels from a 'human' perspective, science has no precise answers. Science can at best offer open-mindedness and willingness to consider facts. While we

as scientists strive to make this world a better place to live, it is perhaps good to remind ourselves of Mathew Arnold's famous *Hymn of Empedocles*.

*That we must feign a bliss
Of doubtful future date
And while we dream on this
Lose all our present state,*

*And relegate to worlds yet distant our
repose?*

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Decline of Indian science

It has become fashionable to lament the declining quality of Indian science as reflected in certain scientometric studies. One of the causes allegedly responsible for this decline is the spurt in engineering education which is seen to be draining away talent from science. *Current Science* too has suggested that the IITs must 'consider emphasizing postgraduate education and research and to lower the rising barriers between science and engineering¹'. If this kind of argument is taken to its logical conclusion, then the only way to 'save' science is to curtail opportunities in engineering, cause disaffection in that part of the society that is hungry for engineering education and then hope and pray that some frustrated elements will break ranks and join the science stream. This 'dog-in-the-manger' attitude is reflective of the intellectual bankruptcy of our leaders in science.

Engineering is no more a 'professional' course. Those who graduate in engineering rarely pursue a career in their chosen discipline and as noted in *Current Science*¹ drift to finance, management, information technology and elsewhere, where employment opportunities abound at any given point of time. The engineering course is popular because it confers a certain employability on those who pursue it. In this sense, it is very much a 'vocational' course. In these days when the traditional vocational institutions such as the Polytechnics and the ITIs (Industrial Training Institutes) are closing down for lack of human input, the IITs and engineering colleges are stepping in to fill the vacuum. The prolifera-

tion of engineering colleges has in fact provided spectacular opportunities for the educational and social advancement of the lower middle and poorer classes in both urban and rural areas – a very heart-warming development by any measure. This is also in keeping with our age-old policy of making vocational education available to all. Real professions such as those in science, arts or humanities, depending as they do solely on government largesse, can scarcely contribute to social advancement on such a scale.

Failure of leadership is one cause of decline of Indian Science. Growth of science is critically dependent on each generation of scientists mentoring an entire new generation. The senior scientists in India (especially those in the age group 55 years and above) have completely failed on this front. This is no doubt an old problem. Talking of Saha, Bose and Raman (S, B & R), Chandra says, 'Those who made significant contributions were constantly aware of those successes. They wanted to be regarded as unique individuals, and therefore they turned around and discouraged younger people or attributed all kinds of motives to their contemporaries²'. Soon after independence, a whole generation of scientists got exposed to the western world. They acquired their early (doctoral/post-doctoral) training abroad and worked in eminent universities or with eminent associates and returned to India with this borrowed glory to occupy important positions here. What S, B & R had done on the national scene in an earlier time, these petty tyrants have done more recently within

their respective spheres of influence – be it a department, an university or a national institution. The added misfortune was that they were not even good scientists. 'Mentoring' was not a word they knew even remotely.

While most of us can recall a kindly school or college teacher who encouraged us to study, how many of us can recall receiving any sort of encouragement in the early years of our career?

Failure of policy is another cause of decline of Indian science. Our science policy seems to be built on two equations.

Good science = Good papers = Modern instruments = More Funds = A few centres of 'first rate science'. (1)

Talent search among our 1 billion population = Raman/Ramanujan = Nobel prize = Good science. (2)

The limitation of such a policy are too obvious to require further elaboration here.

1. Balaram, P., *Curr. Sci.*, 2003, **84**, 613.

2. Wali, K. C., *Chandra*, Viking Penguin India, New Delhi, 1990, p. 248.

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