

*Letter to Editor***Poor State of Science Education and Research in the Country**

I congratulate Lakhota for the timely and excellent Editorial in the December 2015 issue of the *Proceedings of the Indian National Science Academy*. Education both at the school level and higher education, including research for Ph.D. degree has nowadays become a flourishing business. At the school level, contents of books are pumped in students. At the level of Ph.D., the editorial rightly pointed out that most of the scholars work like technicians. When the standard of education falls steeply, it is hard to revive it, unless some autocratic measures are taken.

The word innovation is lost, save and except some residual quality of exceptional students. The word “Translational research” advocated by the Government is a useless term without innovation in basic research. It is a distant hope that industries will put forward fund for research in universities and institutions, mainly because most of the Indian industries lack faith in outcome of the research. Original fundamental research conducted in the universities and institutions is of paramount importance for economic development of the country. Applied research is translation of results obtained by fundamental/innovative research. Should we borrow the fruits of basic research done in developed countries to carry out translational research? That would be a disaster.

In an editorial written in 1958 in *Science and Culture*, B C Guha elaborated his views on the then adopted scientific policy resolution and emphasized “Unless the Government is bold enough in adopting reforms, which will enable scientists and technologists to pull their weight in the rapid economic development of the country, the scientific policy resolution will remain a resolution and will not sufficiently sub serve the interests of the nation”.

He further pointed out “In implementing the resolution, Government would have to pay attention to science teaching in schools, colleges and universities. Schools are, by and large, ill-equipped and ill-staffed for science teaching. It is there that the foundation should be laid. If proper salary scales are not provided for school teachers and money is lacking for experiments and demonstrations, it is idle to expect a radical improvement in the situation regarding scientific personnel. Besides, it is at the school stage that special efforts should be made to spot the most creative minds and give them special opportunities for development by way of high-class merit scholarships, special arrangements for teaching and accommodation, etc. What applied to schools, applies also to colleges and universities. Special opportunities should be given for the development of the most original and vigorous minds among the students. The science departments of the colleges and universities should have annual adequate block grants, so that the teachers engaged in research may concentrate on their work without worrying about research expenses and without begging for funds from sundry organizations. Nothing is more depressing than this constant anxiety for funds for research”. It is unfortunate that even more than fifty years after Guha suggested the remedial measures, very little seems to have been done. Although some reforms have permitted scientists in different national laboratories to do good research, the universities, colleges and particularly the schools are generally still ill-equipped and ill-staffed for science teaching. In the name of progress during this period, we have increased the number of schools and colleges and university departments with increased intake of number of students. The progress, however, is mostly quantitative rather than qualitative. The backbone of science education is the practical training. Yet, most of the colleges and universities have ill equipped laboratories. The young faculties are overloaded with

classes, without seed money and time to carry out good research.

Universities, besides being the seat of teaching, are also the backbone of fundamental research. As Szent-Györgyi, Nobel laureate and the discoverer of vitamin C stated “It is bad not to do research, but it is worse to do bad research”. Teaching and research enrich each other. We must find ways and means to create a distinct atmosphere for high quality research in universities. Although creative mind is rare, but I believe that at least ten percent of the teachers have motivation. Only a motivated teacher can be a source of inspiration to the students. Those should be identified and given proper facilities.

As stated by the great educationist J B Conant, “There is only one approved method of assisting

advancement of pure science and that is, picking men of genius, backing them heavily and leaving them to direct themselves. Even small groups around gifted men would be able to deliver the goods better than high investment-intensive large institutions”.

I B Chatterjee

Dept. Biotechnology & Dr. B C Guha Ctr for
Genetic Engineering and Biotechnology
Calcutta University
35, Ballygunge Circular Road
Kolkata 700 019
e-mail: ibchatterjee123@gmail.com