Comment

CURRENT STATUS OF SCIENCE AND TECHNOLOGY

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It is estimated that more than Rs. 4,000 crores have already been spent on the development of science in this country since independence, At present, there are over 900 research and development institutions in the country with more than 26 lacs scientific workers constituting the third largest pool of scientific and technical manpower in the world although fhe "effective" scientific manpower is reported to be hardly 60,000.[1]

At the time of partition of India in 1947, the country had a poor base in Technology but the situation was not so dismal in basic sciences. Even with marginal support for science the country had a number of brilliant scientists. The Universities at Calcutta, Madras and Bombay and Tata Institute of Science and Raman Research Institute at Bangalore were established centres of research in India. Only in tne last two decades, some semblance of research activity has taken roots in basic sciences in our University system at large. However, still many University departments are playing the role of dignified postgraduate teaching colleges and scientific research is considered to be an extra-curricular activity.

Research has got impetus in recent years due to liberal funding by national agencies like UGC, CSIR, DAE and DST. Unfortunately, the financial support from state governments to basic research in the University system is almost nil. When this querry was put to a former Secretary of Education, Punjab by Professor Abdul Salam, Nobel Laureate at a University Convocation in 1981, his candid reply was, "We have no money to supply even black boards in our primary schools, how can we fund University research projects"

Despite all these problems, there has been a spurt in research activity all around. There is no denying the fact that in India aimless research is common and first rate research is a rare phenomenon. According to Prof. Devender Lal, former Director of the Physical Research Laboratory, Ahmedabad "Science in India is not in all that good shape as it is made out to be. It is third rate science and fourth rate technology." The scenario is far from satisfactory.

Pandit Nehru, as the first Prime Minister of India had a sense of the manifest destiny of this country and this had to be buttressed by science and technology, Nehru was advised by Professor PMS Blackett, British Nobel Laureate and a great friend of India, that basic science was not needed in a country like Indla, that only technology was needed. He had his famous phrase, "There is a world supermarket of technology, go and buy in it.[2]" Nehru followed this advice and set up a chain of National (CSIR) Laboratories in applied sciences and technology without setting up corresponding great scientific departments in basic sciences. This policy, at the face value, looked glamorous but it failed to pay dividends in the long run. While our national laboratories have failed to develop a strong base in indigenous technology, this policy has certainly impeded the growth of basic sciences and made our

University system miserable. After 40 years of independence, Indian science has not been able to make much of an impact as the country largely depends on foreign know-how.

Today, technology is not generated the way technology was developed in the late 18th or early 19th century, by trial and error. Science must precede technology. Unless you are very good at science you will never be good in technology. In developing countries, the slogan should be 'Science transfer must precede technology.' At the present juncture, we need to create an interface between science and technology in the University system. Starting well planned M.Sc. Courses in Applied Science is a step in the right direction. One is tempted to quote the example of Punjab Agricultural University, Ludhiana. The green revolution in Punjab is because of liberal funding by Punjab Govt and the special structure of this University with three distinct wings: teaching, research and extension. Why are not other Universities adopt the same pattern ? A formal nexus between national laboratories and the Universities should also be promoted.

Another area which needs to be promoted on priority basis is the inter-disciplinary research in the Universities. University Scientists are in the habit of working in isolatian and ultimetely they end up as 'ivory tower scholars' without bothering about the needs of the society which is funding their research activity. We have not been able to create critical mass of researchers to promote chain reaction. It will be interesting to recall that many theoretical physicists helped to create new disciplines/areas of research in Bioiogy. Schrodinger created quantum bioiogy and Walter Gillbert, a Ph.D. student of Professor Abdul Salam from Cambridge, won Nobel Prize in 1980 for deciphering the genetic code. This is equally true in many other areas of science and technology. Even modern linguistics owes much of its advance to researches in Electronics and Neuro-physics. Our own experience in inter-disciplinary research in earth sciences over the last decade has established that there is much scope for development and new openings for young scholars outside the University system.

It should not be forgotton that 'technology' is a catchy slogan for most of our planners and administrators. Our scientists, in order to get quick recognition help them willy-nilly The talk of Super-Computers, cleaning of Ganga and garland canal projects should be viewed in this perspective. Take as an example the field of energy. Our planners think that by spending vast sums of money the energy problem will be solved by the technologists. Unfortunately, so far as the long term solution is concerned, this is not true. Energy problem will not be solved by a technology based on 18th century laws of thermodynamics but by the quantum laws finding new applications in surface physics and materials science.

Lastly, to promote a culture of science and technology we must create an awareness in masses through media, by setting up centres for promotion of science and science forums in Schools, Colleges and Universities.

References :

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