

many of the ablest pure-science undergraduates, research in their field is the principal ambition, whereas many of the ablest engineering undergraduates aim to practise engineering as soon as possible. Thus whereas in science one can expect to fill a research studentship with the highest level of graduate, this cannot be taken for granted in engineering.

The weakness of the connection between defence and civil research and development is particularly noticeable in Britain, as the recent POST report made clear. One would hope that at

least a beginning can be made on bridging this gap.

The forthcoming White Paper will address questions of organization. It is important that the bureaucracy should be aware of the needs of the working researchers. In particular, those disbursing funds must visit the laboratories where the work is actually being done.

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## Basic science

[*Curr. Sci.*, 1992, 63, 505]

I think the basic science issue is faced not only in India but even in the UK where Thatcherian led to focus on commercial applications rather than fundamental research.

The idea of a cess may be a good strategy. In the meanwhile, as an intermediate stage, I would like to suggest that—

(i) We can follow the strategy of the Asian tigers which in the area like electronics have focused on niche markets and started from the manufacturing and are going to the fundamental research area.

(ii) We should also actively look for strategic alliances with developed R&D laboratories abroad, so that funding does not become a constraint for providing challenging opportunities for our young Indian scientists in exciting areas of theoretical science.

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It is well known that we in India spend very little money on basic research, compared to other countries. While we have had some spectacular successes in the fields of atomic energy, defence related products, space research etc., we are still way behind the developed countries in all other spheres. Numerous

studies have been conducted in supporting scientific activities in academic institutions, industry and elsewhere. However, we have not made much headway in putting the results of scientific experiments in day-to-day use.

One of the important reasons for the insignificant position that Indian scientists and researchers today find themselves in is the atmosphere and culture of 'controls' imposed by the Government on various activities of the industry. With the recent liberalization measures, I am quite hopeful that the competition from superior technologies to be procured from abroad will goad our scientists as well as industrialists into paying greater attention to basic and applied research and deriving their benefits.

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1. There is a general feeling among the faculty that research is not necessary for the promotion of their careers.

2. There is no mechanism for encouraging research careers in medical sciences. The clinical faculty is heavily occupied with patient care and the preclinical faculty with ever-increasing teaching load.

Creation of a permanent research cadre would certainly be a positive step for the total commitment of research. However, it should not discourage the teaching faculty from involving in research which is very very essential for

the development of the faculty and the department.

3. There is no clear signal from the Government that it wishes to encourage research. For the past several years there has not been creation of new posts in the basic sciences departments. You are aware that the new specialities and clinical disciplines are born out of basic science research. Basic sciences need adequate support and heavy funding and without the nurture of basic research we cannot expect the new and sound technologies to develop in this country. Even the World Health Organization fellowships etc. have been earmarked for clinical disciplines and more for training in modern research techniques. There is tremendous advance in basic technology and the young faculty needs exposure to the new technology which is being developed at very fast pace. We have to create an environment, to encourage creative scientific activity, it has to be promoted to create improvement and competitiveness otherwise the gap between the developed and developing countries will widen and in future we will not be able to cope with the advanced technology in advanced countries.

The basic sciences departments are not given adequate funds for the purchase of research equipment. The Institute budget is so meagre that it is not possible to meet the day-to-day requirement for teaching undergraduates. This is not part of research activity. The number of journals subscribed to by the library is decreasing every year for want of funds. It has become worse in the recent years which is again affecting the researchers.

4. The competitiveness and improvement in overall quality of work will come only when there is some scientific policy. The Government policy makers should not expect new technology to develop without making a commitment to nurture the scientific activity.

For this one needs to spell out clearly objective goals of research plan, chalk out a plan and provide resources to support it.

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