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EDITORIAL

New institutions

Scientific research and higher education in science are inextricably linked. There was a time when research in science was naturally practiced in Universities; a bygone age when the National laboratories and exclusive research institutions were yet to be conceived. The first signs that research could be fostered in an environment where formal classroom teaching was not an essential feature, came with the establishment of the Indian Association for the Cultivation of Science (IACS) in Calcutta by Mahendra Lal Sircar in 1878 and the founding of the Indian Institute of Science (IISc), a brainchild of Jamsetji Tata in 1909. Although during the second half of Raman's tenure at IACS (1907–1933), he also held the Palit Professorship at Calcutta University, the separation of teaching and research was already underway. The IISc was also conceived as a research institution although in his letters of 1896 Jamsetji Tata referred repeatedly to his scheme for a 'University'. Indeed, in its first half a century of existence IISc did not award its own degrees; the 'deemed University' status being given only in 1958. The Tata Institute of Fundamental Research (TIFR) conceived during the Second World War was born as a pure research institution, which even today relegates degree granting functions to associated Universities. At present, these institutions are largely training grounds for research students working towards Ph D degrees, with little involvement of the faculty in undergraduate science or engineering education. The national laboratories of the government agencies, including the laboratories of the Council of Scientific and Industrial Research (CSIR), are institutions dedicated to research with no real mandate to promote education in science. All these institutions seek to recruit Masters degree holders for Ph D programs and to technical positions. Over the last several years the quality of the input at these levels has been declining, a clear indicator of a looming crisis in science education.

The Indian Institutes of Technology (IITs) conceived in the 1950s and largely born in the 1960s were a remarkably successful experiment in higher education. Set up as 'institutes of national import n- joyed a special status which quickly propelled them to the first rank of Indian institutions. Designed to cater to the needs of undergraduate engineering education, the IITs did develop powerful science departments, active in both teaching and research. Modelled after institutes of technology in the West, the IITs attempted to combine first rate research with the demands of high quality undergraduate teaching. As they approach middle age the IITs are distinguished more by the quality of the graduates they produce, than the impact of the research that is accomplished. Juggling the demands of research and teaching, in an environment where the former is not easy to perform, has proved difficult. But, the alumni of the IITs have proved extraordinarily successful in their chosen fields, the world over, particularly in the area of information technology. Some of the most successful IIT alumni have now turned their attention to the cause of higher education in science and technology. A proposal to transfuse a large sum of money into the IITs, by a group of non-resident Indians, has been discussed in the press for some time. More recently a proposal to set up several new institutions, Global Institutes of Science and Technology (GIST), as a completely privately funded initiative, at an estimated cost of between US $300 million to 1 billion, has been reported. The purpose behind these initiatives appears to be the need to strengthen and replicate the IIT model, with a freshly defined emphasis on the coexistence of both high quality research and teaching in science and engineering. In reading about the GIST idea one cannot escape a feeling of *déjà vu.* These proposals bear a striking similarity to the scheme advanced for setting up a National Science University (NSU), which was widely discussed in the columns of this journal a few years ago (*Curr. Sci.*, 10 October 1994). The NSU was an idea projected by Swadesh Mahajan, a non-resident Indian physicist. Its *raison d'être* was, of course, the rapid erosion of the quality of science practiced in Universities. Mahajan's thesis was an unexceptionable one; high quality research within the

ambience of a teaching institution would be the best formula for attracting bright young minds to science. But the NSU proposal differed from GIST in an important way. In the former, the Government of India would have had to make a very significant financial outlay, amounting to about Rs 200 crores, to kickstart the enterprise. In the case of the latter, in keeping with the times, the institutions will presumably be completely funded by private sources. In the six years since the NSU proposal, the financial muscle of potential investors has immeasurably increased. If no governmental inputs are needed, the GIST proposal is less likely to get mired in political quicksands.

But, in considering all these new initiatives our existing system of Universities and colleges appears to have been pushed far from the public view. For almost fifty years, since the early days of the national laboratories, university science departments have fallen prey to the inexorable tide of decline. With the passage of time the pace of decay has quickened. The difficulties of recruiting good faculty, perilous financial positions, the unchecked growth of Universities and autonomous colleges providing advanced degrees and the failure of most university administrators to appreciate the special needs of science departments, have all contributed to a nationwide problem which appears to have no easy solution. A few Central Universities, particularly those of recent origin, are positioned better. There are no substantial initiatives, either governmental or private, which attempt to transform the older institutions. There is a tacit assumption that resurrecting science in the Universities is not a task that has any reasonable chance of success. It would appear, at least in the short run, a better option to start afresh, creating new institutions. The half life of decay of scientific institutions in India has not been very long in the last century, with only a handful struggling to maintain a steady course. It is to be hoped that the new institutions will have a brighter and stabler future.

P. Balaram