Two Indian scientists elected to the Royal Society

Two Indian scientists, M. S. Raghunathan, Professor of Mathematics, Tata Institute of Fundamental Research, Mumbai and T. V. Ramakrishnan, Professor of Physics, Indian Institute of Science, Bangalore are among the 42 newly-elected Fellows of the Royal Society.

Raghunathan has made fundamental contributions to the field of Discrete Subgroups of Lie Groups, an area which has deep connections with Geometry and Number Theory. He is a leading figure in this field which has witnessed remarkable progress in the past few decades. His work on the cohomology, rigidity and arithmeticity of Discrete Groups, as well as his work on the Congruence Subgroup Problem, are among his contributions which have advanced this field. Raghunathan's Conjecture on the unipotent flows on homogeneous spaces, has had far-reaching consequences in Number Theory and was a catalyst to major progress in this area. Raghunathan is also the Chairman of the National Board for Higher Mathematics in India.

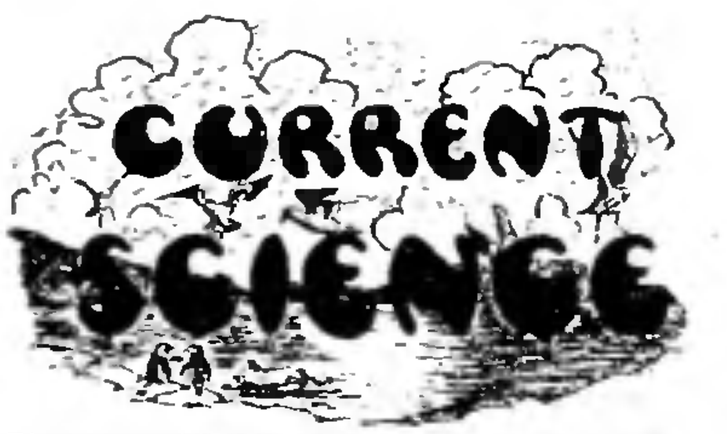
M. S. Raghunathan

T. V. Ramakrishnan

Ramakrishnan has made crucial contributions to our understanding of condensed many-body systems. His pioneering work started two major areas of activity. These are: the liquid–solid transition as well as related phenomena in dense classical systems, and the onset of electron localization in disordered systems. He has also made many significant contributions to their growth. In a third area, namely mixed valence in rare earth metals, his work on the inverse orbital degeneracy expansion has had a major effect on the field.

The Royal Society also elected six Foreign Fellows. John Maddox, former editor of *Nature* is elected as Honorary Fellow.

From the archives



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Science and the Pace of Life

In an interview with a press correspondent at Bremen before he went on board the liner, 'Oakland', for San Francisco, Professor Albert Einstein is reported to have said that the present pace of life was too fast for the man-in-the-street even to catch the newspaper headless and it was imperative that we slowed down. 'A few years ago people had a chance to sit down and think. It could not be helped if some did not make use of the opportunity, but now no one is in a position to stop and think even if he desires to do so. We are moving too fast to allow a general understanding of science. The public is not much interested in it nor does it understand science. It is paradoxical, but apparently true, that the very instruments of science, instead of being devoted to help common men to a greater understanding of reality are doing just the opposite and are only succeeding in befuddling things even more. Scientific technique is growing so fast that it must soon slow down to permit the ordinary man to catch up.' ...

It has a higher purpose and nobler destiny. Most of these discoveries have a practical application which may be directed to the improvement of life as well as its destruction, but science does not lead the way to either. The prostitution of the gifts of science is the business of the commercial and industrial syndicates and of the Government. It is here where the scientific results are applied to the practical problems of life that the pace commences, stimulated largely by economic competition, trade jealousy, fat dividends and capitalization of industry. The hunting after money like every species of hunt, is intoxicating and in its mad pursuit, the graces and beauties of life are ruthlessly sacrificed for those goods which all religions condemn as the parents of every vice and wickedness. The gold frenzy is at its critical point just now and when it subsides religion and science will have to step in to increase the wealth of the world by substituting new values in regard to human happiness which is at present treated as synonymous with material comfort. It is when we have reintroduced fear and admiration in our town life which is marred by social unrest, when we have humanised the commercial and industrial organizations which are riddled by maladjustments, when the rural population is enlightened enough to become intelligent participators in the gifts of learning and in civic administration that hopes

may be entertained of the co-ordinated progress of the nation, with sufficient leisure and tranquillity to devote time and talents to the enrichment of their home and environment.

No one can be more vividly conscious of the limitations of science than he who has lived it, and its function is 'no more to save our bodies than it is to save our souls'. It seeks to uncover the veil of nature and deals with her facts and phenomena disclosing new worlds of thought, reality, laws and history of the visible universe. With the more technical parts of science, the general public can have very little to do, but it ought to be possible for those who have attained a reasonably high degree of education to become acquainted with the general advances of those departments of knowledge in which they are most interested or in which they have received their earlier training. To democratise science need not necessarily involve its degradation. At present the whole firmament of public life is dark, illumined here and there by a few stars of the first magnitude whose glory is scarcely discernible in the immense general gloom of the sky. What Professor Einstein wishes is a widespread diffusion of light throughout this vast area, each body in it having the power of self-luminescence. It would be too narrow a view to take that the task of science begins and ends with research; for if the knowledge of science is good then it must be good for something and for somebody. It is perfectly legitimate for the scientist to emerge from the laboratory and give the people who care, an account of the joys and pleasures and the difficulties and trials in the prosecution of his studies and make them feel the same thrills, and participate in the cultural benefits which may have accrued to the investigator himself. All the agencies that are impressed in this task, viz. the Universities, the learned societies, the scientific associations and congresses and the press, have established wide channels of communicating knowledge to the general public, but their efforts are obscured by causes over which science has little control. We have to cure the gold fever before science can come to its own.

In India the task is far harder. Education has scarcely touched the outer fringe of the vast population. Those who have received the benefits of education are interested in matters and problems far removed from science. The younger generation is concerned more with the task of obtaining a livelihood than with extra courses of studies for the cultivation of mind. Those that have worldly goods, leisure and a fair measure of tranquillity are engrossed with activities naturally befitting their station in life. To the businessmen science is a superfluity. The Indian universities are nevertheless engaged in overcoming the inertia and in improving the pace of life in the right direction; but it will certainly take a long time for an exotic knowledge conveyed best in the foreign language to permeate and enlighten the whole of the Indian population. Whether it be in India or in any country, public life when freed from the tyranny of gold will instinctively seek knowledge, create leisure for the enjoyment of the beauties of art and literature, acquire power to visualise the higher ideals and the ambitions of a larger life than the one circumscribed by the narrow limits of industries, commerce and lop-sided progress.

OPINION

Science content in IIT engineering education

S. C. Dutta Roy

At the Indian Institutes of Technology (IITs), why should we bother about science content in the curriculum? Apparently, we should not, because of two reasons. First, irrespective of the contents, our graduates are the most wanted commodities in India as well as abroad. Secondly, whatever the contents are – of science or engineering, and whatever the discipline is – civil, electrical or textile, most of our graduates run after jobs in software or management, which have very little to do with what they learn in the curriculum.

The science content in the IIT engineering curriculum has undergone a drastic cut after the transition from 5 years' to 4 years' duration – from 15 to 20% to an average of 10%. In this 10% also, in the name of basic sciences, every department tries to find out courses which are intimately related to the discipline, so much so that some of the chosen courses could as well be considered as belonging to the departmental core. As an example, in one IIT, there is a solitary course in Physics, on Electromagnetic Theory, to fulfil the Physics requirements of a B Tech Electrical Engineering (EE) curriculum!

The arguments in favour of the drastic reduction in basic science courses are basically three in number. First, with the reduced duration of the programme, it would not otherwise be possible to accommodate all aspects of the particular discipline. Second, it is assumed that the 10 + 2 level science background is adequate. Thirdly, it is essential to accommodate a number of computer-related courses in each discipline. The first argument is hardly tenable, because if a student is exposed to the major aspects of a discipline, then he can himself learn and grasp the other aspects. As to the second argument, even a casual examination of the 10 + 2 curriculum will reveal that this is not true either. The school syllabus is heavily crowded, and therefore necessarily shallow, and the choice of topics is