

## Uncanny confidence

*An obituary of P. K. Kelkar*

Purushottam Kashinath Kelkar was born in 1909, the son of a professor of philosophy, in Dharwar, then in Bombay Presidency. Early scholastic accomplishments enabled him to graduate with honours in physics and then secure a diploma in electrical engineering from the Indian Institute of Science, Bangalore, in 1934. Three years later he was awarded the PhD degree in electrical engineering by the University of Liverpool. After a brief stint as a junior faculty member in the department of electrical engineering of the Indian Institute of Science, he moved over in 1943 as professor and head of the department of electrical engineering in the Victoria Jubilee Technical Institute (VJTI), Bombay. The ensuing dozen years found in him a prolific innovator and a great teacher.

In 1956 the Government of India appointed Kelkar planning officer for the Indian Institute of Technology, Bombay. From this time a premonition of his being made an instrument in radically changing the profile of technical education in India took possession of him. Many of the feats that he accomplished in the ensuing years, which even now appear to border on the fantastic, make sense only when viewed from this perspective. Latent convictions, rooted in originality of thought, creativity, deep mystical insights and a superb power of abstraction, bubbled to the surface, to craft a profile of one prepared to traverse through even seemingly hopeless situations with the uncanny assurance that success could eventually be wrested from them. He set out to build the Indian Institute of Technology, Bombay (IITB), brick by brick, in borrowed quarters first in VJTI and later in the newly constructed building of the Silk and Art Silk Manufacturers (India) Research Association on Dr Annie Besant Road. By the time he had relinquished control of IITB as the chief executive officer, he had recruited 80 faculty members within a mere 18 months!

On a bleak December afternoon in 1959, he arrived at the Kanpur Central station platform to take charge as the

director of the Indian Institute of Technology, Kanpur (IITK). The statement here is euphemistic in the sense that no such institute existed at that time. Indeed, when Kelkar landed in Kanpur, there was no one to receive him and to tell him the assigned place of work. This turned out to be a run-down cafetaria building at the Harcourt Butler Technological Institute. These unpretentious premises were shortly made luminous largely by the presence of this one man who had in him the power to influence and guide in overcoming the myriad impediments that incessantly arose in the structuring of the Indian Institute of Technology, Kanpur. Even today, viewed with some



detachment after a lapse of a quarter of a century, one is overawed at the way he was able to secure the best from the ministry, the participating American universities, and, above all, from the gallant band of very young faculty to create a model for higher learning and research that has, by and large, withstood the ever-present equilibrating tendencies that invariably haunt every establishment in our country.

Breaking out from the dark clouds of traditional systems in technical education, Kelkar brought forth a new, daring concept that would cast the engineer in a new mould, one with a multifaceted capability, a maverick, who could above all become adaptable to

the needs, be they related to scientific theories, innovation, design or even the traditional shop-floor practice. He perceived, above all, that the best intellectual young minds that flow into the IITs would like to be cast into such a mould. He proceeded with the conviction that nothing would be more practical for an engineer than to have a thorough working knowledge of science with its theoretical and empirical base. He argued that problems come in many guises, some pretty mundane and others that require the application of rigorous scientific thinking. He linked the fortunes of IITK to a faculty with a highly elitist profile, who, by their own professional stature, would be able to protect the system from reduction to ground level. He gathered a band of young pioneers, most with an unusual spurt of ideas, innovation and adventure, occasionally bordering on recklessness. He progressed with the firm conviction that IITK was a historical necessity and that it should be the guiding spirit in technical education for a long time to come. He generated a pervasive environment that encouraged vigorous discussions in hammering out proper solutions to even the most vexing problems.

Optimism was enshrined in his core. He focused on the brighter side of issues, elected to light the candle rather than curse the darkness, cooled down even vigorous dissension to manageable level, and, like light, proceeded as waves when the path was clear and went around as particles when faced with obstacles. He bestowed academic heritage in the hands of the faculty and went to great lengths to protect them from frustrating abrasions with administration, accounts, stores and several other incursions that preyed from within and without. His predominant obsession was the quality of the faculty, who alone he considered are worthy of moulding the intellectual capital that perpetually flowed through IITs in the form of extraordinarily gifted young minds.

Kelkar was a deeply religious person and yet totally secular. He was able to blend our heritage and culture with state-of-the-art technology. He dreamed of the birth of a new civilization in India that would give full play to intellect, originality, creativity and reasoning power, and, with compassion, make life agreeable to the multitude of human beings who have their roots in

this country. Many honours came his way, the title of Padma Bhushan was conferred on him in 1970. These had little impact on his profile. To the very end, he evinced keen interest in all aspects of the generation of academic excellence and novel intellectual forays. His weakness, synonymous with that of the IIT system, was the inability to foresee the emergence of new generations where materialism and obsession with individual well-being would overshadow the larger goals for which he strived.

The bulwark of the edifice that he has built, with firm conviction that the goals of an educational institution be for the pursuit of academic excellence; that the teachers must have the freedom to decide what to teach, whom to teach and who will teach; and that institutions of higher learning should remain totally autonomous, has witnessed cracks and is continually buffeted by strong equilibrating factors. If the academic community of our country met this continuous onslaught, that would perhaps be

the best tribute we can pay to this stalwart amongst men.

Professor A. S. Parasnis, 1-Chandaban, 1105/4 Shivajinagar, Pune 411 016 provided early biographical information.

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## Bardeen passes away

John Bardeen, a two-time winner of the Nobel prize died on 30 January at a Boston hospital. He was 82.

Bardeen was born on 23 May 1908 at Madison, Wisconsin. He won the Nobel prize for physics in 1956 with William B. Shockley and Walter H. Brattain for their joint invention of the transistor. He won the Nobel prize again in 1972 with Leon N. Cooper and John R. Schrieffer for development of the theory

of superconductivity.

Bardeen obtained the Ph.D. in 1936 in mathematical physics from Princeton University. As a staff member of the University of Minnesota, he served as a principal physicist at the US Naval Ordnance Laboratory in Washington DC during World War II. After the war he joined Bell Telephone Laboratories, where he did research on the electron-conducting properties of semiconductors.

This work led to the invention of the transistor, which replaced the bulkier vacuum tube in many applications and ushered in the age of microminiature electronic parts. In 1951 Bardeen joined the staff of the University of Illinois, in Urbana. The theory of superconductivity which is now called the BCS theory (from the initials of Bardeen, Cooper and Schrieffer) was first advanced in 1957; all later theoretical work in superconductivity is based upon it. Bardeen was also the author of a theory explaining certain properties of semiconductors.

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## INSA awards

Anil Kumar Bose Memorial Award 1990 to **Biman Bagchi**, IISc, Bangalore, in recognition of his research paper 'Molecular theory of solvation and solvation dynamics of a classical ion in a dipolar liquid' published in *Journal of Physical Chemistry* (1989, 93, 6996-7003).

Anil Kumar Bose Memorial Award 1989 to **K. V. R. Chary**, TIFR, Bombay, in recognition of his research paper 'Analysis of intrasugar interproton NOESY cross-peaks as an aid to

determine sugar geometries in DNA fragments' published in *FEBS Letters* (1988, 233, 319-325).

INSA Vainu Bappu Memorial Award 1989 to **Geoffrey Ronald Burbidge**, University of California, San Diego, USA in recognition of his outstanding contributions to our understanding of stellar nucleosynthesis and the enormous energy requirements of extragalactic radio sources.

The Bires Chandra Guha Memorial Lecture 1990 to **Nihal Kishinchand Notani**, BARC, Bombay. The work of

N. K. Notani is in genetic transformation, repair of DNA, and molecular mechanisms of genetic recombination.

The Sisir Kumar Mitra Memorial Lecture 1990 to **Mrinal Kumar Das Gupta**, Calcutta University, for his outstanding contributions in radio astronomy.

The Meghnad Saha Medal 1990 to **Chintamani Nagesa Ramachandra Rao**, IISc, Bangalore. C. N. R. Rao has made contributions in solid-state structural chemistry, chemical spectroscopy and molecular structure, surface science and high-temperature superconductivity.

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