

## BOOK REVIEW

E.C. Subbarao, *AN EYE FOR EXCELLENCE : (Fifty Innovative Years of IIT Kanpur)* Harper Collins Publishers India, a joint venture with the India Today Group, 2008, Ten chapters. Pages xxii + 337.

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There is no doubt in the mind of the reviewer that his ex-colleague, the author, who had served and even guided IIT Kanpur for two decades (1963-1981), has performed an excellent task in writing this book. *An Eye for Excellence (AEFE)* is indeed an inspiring chronicle of how a newly established institution – the Indian Institute of Technology, Kanpur abbreviated as IIT Kanpur in this review – achieved a global status in a short time, and how to-day, as it completes fifty years, it is poised for greater glories.

Dr. P.K. Kelkar, the Founder-Director started this excellent institution in 1960, aided by the Kanpur Indo-American Programme (KIAP), its Programme Leader, Professor Norman C. Dahl (of the Massachusetts Institute of Technology, MIT, USA), and the nine famous consortium universities in the USA. This reviewer has the nostalgic remembrance of his alma mater, MIT which was celebrating its centenary in 1961 and hosted the lectures of Norman Dahl on IIT Kanpur blessed by Jawaharlal Nehru and John Kennedy.

This reviewer intends to (a) summarise the huge amount of insightful information that the author of *AEFE* has collected on the fifty years of IIT Kanpur and presented in ten chapters, and (b) mention some notable lacunac and lapses which are normally unavoidable in a single-authored volume of this kind with limited space.

In Chapter I the author discussed 'The Genesis of the IIT System', the original five IITs and the knotty question whether the decision to have many more IITs in the 21<sup>st</sup> century has been a wise one. The author is against the spreading of the national resources too thin and is in favour of reinforcement of the present

IITs (p.5). The leading institutions in USA are five to ten times larger than the IITs but the Founder-Director Dr. P.K. Kelkar had been 'ever skeptical of increasing the size of the IITs and also of concomitant bureaucratization, increasing government interference, and the attitude of teacher and staff unions' (pp. 65-66)

A separate Chapter II has been written on the life of the 'Visionary' Dr. Kelkar. Quite unfortunately, the contents of his famous 1981 Convocation Speech has not been touched upon in this book. In 1981 Dr. Kelkar was a 'visitor' and the author left the institute. 'The American Connection' of the institute (1962-1972) has been discussed in Chapter IV. There may be some internal reports but the effects of the Indo-US collaboration have not been so far openly and critically evaluated.

Chapter III entitled 'Realizing a Vision' records how, breaking loose from the established educational patterns, IIT Kanpur went in for an innovative broad-based curriculum with sciences and humanities and social sciences forming an essential component. It also introduced in India the concepts of the semester system, a continuous evaluation of students and letter grades. The author should have described, in greater detail, the rigour of the tutorial system, the vigour with which the young USA-trained faculty members discussed among themselves the course contents and even the tutorial sheets, and the official procedure of the students confidentially evaluating the performance of the faculty members. IIT Kanpur's undergraduate curriculum was outstanding, one year receiving sixth rank in the world. Did it impose excessive load on the teachers affecting their research performance? Did it induce psychological strain on some students?

The author beautifully describes in Chapter V how the IIT Kanpur students have traversed, during the last forty years 'The Path of Glory' as entrepreneurs, industry leaders, in the academia, R & D, government and public service both within India and abroad. Manindar Agarwal, who has made an important discovery about prime numbers, Satyendra Dubey (reputed for his selfless public service), Anil Agarwal (icon of environment), N.R. Narayana Murthy the Infosys entrepreneur, Umang Gupta (of Silicon Valley fame) and many other students have made IIT Kanpur famous nationally and internationally.

The author does not think that the phenomenon of 'brain drain' from India is of an alarming proportion, and prefers 'to look upon IITians abroad as a brain bank, instead of as deserters or as non-nationalist, or even worse brain in the drain' (pp. 136-140). The author approvingly quotes the US Congress Resolution

of 21 April 2005 'recognizing the valuable and significant contributions of Indian Americans to American Society, and honouring the economic innovation attributable to the graduates of the IIT's (pp. 66-67). John Kenneth Galbraith of the Harvard University was the US ambassador when IIT Kanpur was being set up. He used to exhort the Indian students in USA to complete their education and then go back to serve their motherland. Later, the realities induced him to reverse the nature of his advice. He noted that Purdue University alone had fifty Indian faculty (p. 103). USA must indeed be grateful to the developing nations for ceaselessly supplying talents free of cost!

The present reviewer who has served IIT Kanpur for 32 years (1963-95), a decade longer than the author, genuinely feels that the faculty in this institute may admire the undergraduates 'who traversed the path of glory', but their sense of gratitude should rest more on the post-graduate students who had been chiefly non-IITians at the UG level, who ably supported the research programmes at the IITs, and later manned beautifully the Indian educational institutions and research establishments such as the CSIR, BARC, ISRO etc.

In p. 142 the author suggests that 'the feverish tempo in building up the UG curriculum at IIT Kanpur during 1960-70 to become the world's best, should now drive the PG education and research'. Why was this not done before? In p.xix he admits that 'the quality and quantum of research has gradually gone down compared to the early years'. In p. 142 the author calls for 'ruthless adherence to uncompromising standard in research'. Why could not the standards be maintained for research and PG education in an institution which could boast of a high standard in the UG programme and a high level of faculty recruitment? The book is woefully short of answers or insights in this regard.

Should we not opt for more collaborative research in our developing society, more multi-authored original papers and monographs, to boost the quality of our research, rather than cut-throat competition, 'ruthless' rat race, individual glories and secretive patents, blindly aping the developed nations, pursued as the only approaches to achieve 'excellence'?

Professor E.C. Subbarao, the author of the book under review, was the first Dean of Faculties in IIT Kanpur. His Chapter VI on 'Faculty – The Dronacharyas' and Chapter VII on 'Pioneering Activities' are good but could have been better. He has done well in highlighting certain 'pathfinding' areas such as computer Science, Materials Sciences, Chemistry, Library, High Level Summer

Opportunities for Faculty in Industry etc. (VII. 1-4 & 7) which flourished in IIT Kanpur, but sadly ignored several other noteworthy areas. He provided selected 'examples of faculty achievers' (VI. 2) which also reflect a lamentable bias for individuals rather than broad disciplines. This point may be illustrated with an example.

In the area of 'Mineral Engineering', the book under review records the glorious contributions of three persons associated with IIT Kanpur. This is fine. But there were many others not named, such as more than a dozen students, half a dozen faculty members in three departments who collectively contributed to the world standard research in this area. An outstanding academician Professor S. Ranganathan of the Indian Institute of Science, Bangalore has passionately written: "The seventies and early eighties marked one of the golden periods of Mineral Processing Research in India. IIT Kanpur was perhaps the best school in the field in the India and easily one of the best in the world at that point in time because of its sheer breadth and depth" (Metallurgy in India – A Retrospective, NML, 2001, p. 199).

It is not our contention that more names should have been mentioned in *AEFE*; what stands amiss is that the subject itself has not been highlighted in the book, and quite significantly, the discipline is no longer taught at IIT Kanpur. 'The sun has virtually set on all Mineral Engineering activities in the department', as mentioned in an official report.

More examples could be given of the disciplines vanishing from IIT Kanpur : Hydro and Pyro-metallurgy, Chemical Technologies Spectrum, Foundry and Metals/ New Materials Fabrication, Nuclear Chemistry Technologies Spectrum, Foundry and Metals / New Materials Fabrication, Nuclear Chemistry, Geology, Geo-Physical Prospecting and Remote-Sensing, Waste Recycle, Workshop Technology, Computer and Electronics Hardware, History of Science and Civilization, Indian Languages and Machine translation, Indian Philosophy and Religion etc. It is often argued that suitable faculty members have not been available in some of these areas. We are not certain whether honest efforts have been made to induct the best ones available and train them upto excellent standards.

Evidently, the author has been not at all enthusiastic in writing the Chapter VIII entitled 'Eclipse' of this great institution during the momentous decade (1970-1980) after which he left it for greener pastures. For those ten years of campus tsunami, he wrote less than the pages (pp. 282-290) and allowed some of his junior colleagues to articulate the pathos of the scenario:

Agitating staff, retrenched workers on war-path, 'the institute administration having no solution to this human issue' (pp-283-284), a faculty member (Professor A.P. Shukla, not even named in this book) 'suspended on account of undesirable political activity in the campus', 'an unequal and often inequitable campus community as well as the clash of egos and values between senior and junior faculty' (p. 166), 'leadership at the senior level weak, few outstanding faculty capable of leadership' (p. 200) and so on and on.

The junior faculty were up in arms since no rational criteria had even evolved for faculty promotion, most of them were young and of similar qualification and age bracket, and yet some had been already arbitrarily promoted without performing any fresh and substantial research in IIT Kanpur.

During 1970-80, the sequence of the fast moving events was indeed of historical importance: departure of the Founder-Director, abrupt termination of the Kanpur Indo-American Programme, simultaneous removal of the second Director and the fourth Chairman of the Board of Governors, the national emergency, political polarization in the country and in the campus, arrests of a few faculty members, and to cap it all the emigration of many faculty, particularly the senior architects, to the safer and greener pastures. On this tumultuous episode what has been written in the book does not measure even upto ten pages, and therefore does not deserve more comments from this reviewer!

Chapter IX entitled 'Beginning of a Renaissance' is equally and woefully short, only nine pages (pp. 291-299) allotted for the second long quarter (25 years) of the existence of IIT Kanpur since 1984. Is it because the author ceased to have direct touch with this institute since 1981?

It is true that since the 1980's, the institute was slowly 'coming back on its original trajectory, and retrieving its lost glory'. For this, sufficient credit should be given to Dr. P.K. Kelkar, the Founder Director who came back in 1981 to deliver his Convocation Address, to the sixth Director Professor S. Sampath (1981-1986), and to the large number of donors such as N.R. Narayana Murthy, one of the students at IIT Kanpur, who founded Infosys in January 1981. Shri Arun Shourie, a Rajya Sabha member donating Rs. 12 crores twice, and many ex-students.

Dr. P.K.Kelkar made a sensational revisit to his institution and delivered an over 12000 words Convocation Address on 17 May 1981 which should be

re-produced and permanently retained for the posterity. He admitted in his printed Address that serious mistakes had been made during the 1960's, and 'the problem of genuine welfare and well-being of a very large number of persons had been pushed under the carpet in the pre-occupation with matters academic'. Professor P.C. Kapur echoed very much the same sentiment in the book (p. 290) : 'there was fundamental flaw in the vision underlying IIT Kanpur, namely an ivory tower, resplendent in its splendid isolation'.

The author of the book under review has not paid much attention to Dr. Kelkar's 1981 Convocation Address in which he advised the institution to start three new Centres for Advanced Studies: (1) Centre for Science Studies – its Method, Sociology, History, Philosophy etc. (2) Centre for Educational Research and Development and (3) Centre for the Study of History of Civilization. Can these Centre be instituted during the Golden Jubilee Celebrations in 2010?

During the 1980's, the Indian Languages Society was founded in IIT Kanpur (05 April 1982) for the promotion of the sadly neglected Indian languages and the cultivation of the three languages formula. It organized a National Conference (10-12 December, 1982) in which 27 articles were read & contributed by 28 national experts on scripts, regional languages and literature, philosophy of language and socio-linguists. The entire set of contributions was published as 'Profiles of Indian Languages and Literature', the first ever multi-authored publication (1985) from IIT Kanpur, which became internationally famous.

A number of faculty collaborated among themselves to voluntarily offer to the students a set of courses on History of Science. The Indian National Science Academy, its History of Science Division and this journal (*IJHS*) have been benefited through the publication of papers and books emanating from IIT Kanpur. For example, one mineral engineer, a Sanskrit and an archaeologist teamed up to author internationally reputed publications on (*Minerals and Metals in Ancient and Medieval India* (1996). Another faculty of IIT Kanpur has shaped up as an archaeo-metallurgist of international repute and an authority on Delhi Iron Pillar. The B.B. Lal Chair in Archaeology has been set up through donations from Vrajesh Lai, a Metallurgy Graduate of 1970, in honour of his father a renowned archaeologist and a Padma Bhushan (2000).

Some of the outstanding books which came out of IIT Kanpur efforts 1980 are entitled: Swami Vivekananda and the Indian Quest for Socialism (1986); multi-authored volumes: Frontiers in Applied Chemistry (1989), Selected Topics

in Mineral processing (1995), Science and Tradition (2000), Science in Archaeology and Archaeo-Materials (2005). Professor S. Sampath and the successive Directors have patronized the aforesaid developments, hardly reckoned by the author of the book under review.

Of course the huge donations to IIT Kanpur could not be missed. This reviewer fully agrees with the author that 'the campus to-day is cleaner, greener and more colourful than before', and there seems to be 'grater harmony in the IIT Kanpur community now, compared the turbulent years'. Yet there are murmurs regarding possible pitfalls for the future: addiction to glamour, self-publicity and rat race, 'easy money availability causing complacency and jealousies, decrease in enthusiastic collaboration and participation in inter-disciplinary activity' (p.299), a serious decline in the standard of school education in the campus, absence of a B.Sc programme as in IIT Kharagpur, neglect of sports and music, the suicide incidents!

The author hopes in Chapter IX that there is 'the beginning of a renaissance', and then moves on to greater realism and very concrete suggestions for the future, in the last Chapter X 'The Road Ahead-Bumpy or Smooth?' The question mark is important.

In p. 282, the author refers to 'a curse that condemns Indian academia', the sad decline of institutions such as the universities of Bombay, Calcutta and Madras after periods of excellence. Yet he is optimistic, that since IIT Kanpur has overcome the hurdles in its path, such 'Nalandas' can indeed be built and sustained in modern India. We, the historians of science, are anxious to find out how Nalanda suffered its extinction, whereas Oxford and Cambridge are going strong after eight centuries.

No praise is too high for this wonderful, informative, nostalgia-and thought-provoking monograph written by my ex-colleague who happened to be of the key players in the institute saga. The reviewer recommends that this book may be purchased, read and preserved in the important libraries all over the world. There is a not-too-bold price tag of Rs. 595/- for sale in India. The quality of printing is excellent; photographs could have been better. The publisher should have printed the colour photograph of Jawaharlal Nehru and John F. Kennedy taken on 11 November 1961 in the White House, replacing the black and white version in page 43. The two leaders were recording the official agreement on IIT Kanpur.