

Vikram Sarabhai: The Man and the Vision. Padmanabh K Joshi, ed. Mapin Publishing Private Limited, Ahmedabad, 1992, Price: Not given

It is indeed a pity that no good books are available on Vikram Sarabhai, the founder of the Indian space programme. Perhaps, the view was that the vibrant space programme itself speaks for Vikram Sarabhai and there is no need to write about him. Whatever be the reason, the very fact deprives many persons outside the Indian Space Research Organisation (ISRO) and other institutions which Vikram Sarabhai created, to know something about the historic developments and experiments in modern organizational systems initiated by Sarabhai. To that extent not only will a historical research on Indian science and technology be without good basic data but also sadly many outside Sarabhai institutions may not be able to benefit from the tremendous storehouse of indigenous experience. (Since this book review is about Vikram Sarabhai, this comment has *not* been expanded to cover in some detail other stalwarts of the Indian Space Programme like Prof. S. Dhawan about whom again very little is available in the public domain)

Viewed from this angle the book 'Vikram Sarabhai - The Man and the Vision' is a welcome addition. The current reviewer's affection, respect and admiration for Sarabhai on the one side becomes a handicap due to his close association with him since 1964. On the other hand, benefit of a ring side view which the reviewer had, can help to highlight many points not covered in the book. It is not easy to bring out everything about Sarabhai in a single book. To a certain extent one is relieved by the powerful introduction which describes with deep emotion and good English the many-sided personality of Sarabhai. The introduction starts with a statement 'It is a daunting task to write an introduction to a book which reflects the myriad of a gem. To attempt anything like a preview of these thousand faces is foolhardy'. A review on a book on Sarabhai is perhaps more difficult

The book is a welcome collection of articles even if it has its limitations. It contains a few excellent articles written

about two decades ago but which are still extremely relevant. The book also has two articles (out of 25) specially written for this book. Almost all sections of the book comprise articles of 1972-74 vintage - mostly written soon after the demise of Vikram Sarabhai. This is somewhat disturbing because it gives a feeling that this book project has not attempted to make a serious and deep study of Vikram Sarabhai's contributions. Despite this limitation, the book is an important addition to the history of science in modern India. Also a few articles reproduced in the book have relevance even today for issues concerning policies and management of S&T in India.

The book, 192 pages long, has tried to capture different aspects of Sarabhai including some excellent photographs from his childhood. The photographs with Rabindra Nath Tagore and the introductory letter by Tagore for Sarabhai's admission in Cambridge University are noteworthy.

The book begins with a foreword by his wife Mrinalini Sarabhai and brings out the features of his personal philosophy. The introduction by T.N. Seshan is touching. The subsequent sections describe Sarabhai as the man, as a scientist, entrepreneur, policymaker and planner and as an educationist. Each section has 4 to 7 articles of 4 to 8 pages each. There is a section 'Remembering Vikram Sarabhai' giving excerpts from writings/speeches of 11 eminent persons from various walks of life, most of which were written around 1970's. There is a set of appendices giving Sarabhai's membership of learned bodies, his major institution-building efforts, bibliography of articles and addresses on and by Sarabhai, and a bibliography of his scientific papers.

The section 'The Man' begins with a description of Sarabhai (1919-1971). However, Ramanathan's article 'Peaceful uses of space' appearing under 'The policymaker and planner', describes his contributions in the field of space more lucidly (pp. 111-119). Some special qualities of Vikram as a boy and his daredevilry come out well in a brief article by C.J. Bhatt. The perceptive article by J. S. Badami 'My student, employer and friend' and the interview by Margaret Dale of BBC with Sarabhai bring out the many facets of his value systems. The article by his daughter Mallika Sarabhai written in 1984 describes the man and inter-

connects his personality with his entire management approach. Another article 'versatile mind' by L. K. Jha is a special contribution to this book and should have come under the section 'Policymaker' as it contains important information about Sarabhai's approach on nuclear non-proliferation treaty (NPT) and some special efforts by the Government of India. *Probably it contains information unknown to public domain so far on NPT.* This is perhaps an area which NPT analysts may like to read and research upon.

The first article in the Section 'The scientist' by S. P. Pandya describes the physicist in Sarabhai and brings out his contributions to physics. The article 'Karmayogi' by R. P. Kane, one of Sarabhai's students, describes some lighter aspects of his scientific studies. Another by M. G. K. Menon 'Like a Prophet' details Sarabhai's association with Bhabha and the birth of the Indian space programme. *The article specially written for this book 'The aim of a lifetime' by APJ Abdul Kalam describes several hitherto publicly unknown details about how Vikram Sarabhai worked with rocket development teams at Thumba and Veli.* Perhaps, some of the common jargons of space technology like CTPB, PBAN, etc. should have been expanded and explained. Nevertheless, researchers may find that article useful to study the growth of space programme in the country.

In the section 'The entrepreneur' a notable article is by Kamla Chowdhry explaining with examples how ATIRA (Ahmedabad Textile Industries Research Association), Sarabhai's first experience in institution-building and of innovative change, provided his apprenticeship and the beginning of his emerging identity.

The section 'The policymaker and planner' has 5 articles, all written during 1972-73 and contains material still relevant. The article by A. Parthasarathi addresses the crucial role played by scientists, the strategy for science and technology in a developing country, the approach to S&T planning and also organizing and managing scientific institutions. Sarabhai's views are described in some detail on all these aspects. An appendix reproduced from the extracts of the Administrative Reforms Commission is relevant even today, especially when solutions such as privatization of R&D efforts are discussed. It is pointed out that while many organisations are established as auto-

mous in the legal sense, administrative practices negate the principle. Sarabhai, all through, was a passionate believer in real autonomy for scientific establishments. The article 'Permissive leader' by Kirit Parikh contains a list of science-based developmental efforts that Sarabhai desired. It may be good to revisit the 27 items when the worlds 'thrust areas' or 'missions' have today become fashionable. The list provides a glimpse of the foresight of Vikram Sarabhai. Ramnathan's article is a superb summary of Sarabhai's contribution for the space programme. Similarly, Ramanna's article describes his contributions to the atomic energy programme.

The section 'educationist' comprising six articles mentions Sarabhai's contributions to the many facets of the educational system. The article, 'The satellite and TV in national development' by B. S. Rao *et al.* provides Sarabhai's vision for the use of satellite for TV, only partly realized through the present-day INSAT system.

Appendices while useful do not appear complete. For example under the major institution-building efforts of Vikram Sarabhai the name Indian National Committee for Space Research (INCOSPAR), the real cradle of the Indian Space Programme, nor ISRO to which it was converted are mentioned. There is also a mix-up between institutions and projects.

Notwithstanding these limitations the book is a valuable contribution to stimulate further work.

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State of India's Health. A. Mukhopadhyay, ed. Voluntary Health Association of India, Tong Swasthya Bhawan, 40 Institutional Area, South of IIT, New Delhi 110 016, 414 pages, hundreds of illustrations. Price: Rs 300 plus packing and air postage Rs 343 (US \$26); books ordered from TALC, P. O. Box 49, Saint Albans, England, with payment in sterling £15 will be dispatched from India.

India, that vast country of hundreds of millions of people, extremes of wealth,

climate and health, is surveyed. Any attempt to survey health must begin with the extreme optimism of the health officials in the capital and be tempered with the realism of health workers in the clinics in the slums and the villages. Yet VHAI has done the seemingly impossible: it has produced a readable, non-technical, beautifully illustrated book, crammed with interesting accounts of all aspects of health. The photographs, drawings and cartoons vividly illustrate not just the problems, but also the hope and joy which charm visitors even in the midst of poverty and pain. In each chapter, boxes large and small detail vignettes of the problems and remedies, and lighten the facts with personal experiences and explanations.

There are more than one hundred medical schools in India, some with very high standards and good students. However, for most of them, medicine is the gateway to a good standard of living, not necessarily a dedication to improving health. Very few wish to work in the rural areas. Doctors who work in the public sector may neglect their patients and clinics to see paying patients at home or at their private clinics in the towns. I visited a public hospital early in the morning; it was deserted. I found the doctor busy with a crowded private clinic in his quarters in the hospital grounds. The government targets for immunization filter down to the health workers. As in other countries, paper targets are fulfilled, but no-one knows what is really happening in villages and slums and official statistics are suspect. However, in the last three years, great progress has been made in immunizing children and the reported cases of polio paralysis have fallen dramatically.

Although India has good doctors, many leave to work in the US and the UK. Those who remain and work for the people are overwhelmed, research becomes almost impossible. One result is that common diseases are likely to be seen through Western text books rather than local observation. Thus, poliomyelitis is represented on p. 382 by an adolescent struck by paralysis, although the shortening of the limbs would only occur after paralysis in a young child. In India, the median age of paralysis has been about 12 months, truly infantile paralysis rather than the poliomyelitis which struck adolescents and adults in the West.

Women's health is neglected in India. Sex ratios range from 1032 females to

1000 males in Kerala, to only 870 in Haryana (p 268); Kerala has the highest female literacy and women are 'regarded with respect and dignity'. However, groups of women like the wonderful Working Women's Forum of Madras have shown what great progress can be made in economic status, education and health.

As if there were not enough health hazards provided by Nature, Man continues to add his own. In Pondicherry I saw an unpublished thesis recording farmers who use their domestic water containers in which to dilute the concentrated pesticides, mixing it with their bare arms. This book vividly discusses the problems of pollution, effluents and hazards at work; the clouds of poisonous smoke belching from huge factories are dimly reflected in the stinking pools of effluent from village industries. Westerners are shocked by the level of cigarette smoking.

There are more than 7000 voluntary groups or Non-Governmental Organizations (NGOs) in India. They represent the very best of Indian philosophy and are increasingly being used by the Government to deliver primary health care, rehabilitation and leprosy treatment. Some are supported by gifts from abroad. The NGOs I have seen bring commitment and skills, replacing the apparent cynicism of the bureaucratic government services. VHAI itself publishes *Health for the Million* and many booklets and information on all aspects of health. I found that few health workers had heard of Teaching Aids at Low Cost (TALC) books, slide sets and materials. In particular, the TALC weighing scale and integrated growth chart form a simple low cost way of monitoring child growth, which I never saw in India although all kinds of less satisfactory and more expensive apparatus were used.

The book begins with nutrition, health systems, the environment, indigenous and alternative health systems then passes to the underprivileged, family welfare, health education and information, women, medical and nursing education, research, finance, legal and ethical issues, disability and mental health. There is no index and this is a minor handicap. There are references at the end of several chapters, but these will not be very helpful to the reader. Many are from Indian newspapers and others have incomplete addresses of