

metabolic communication pathways, plant signalling systems and their coordination. Researchers, instructors, students of crop science, biotechnology and plant physiology may find this book immensely useful. The editors and contributors deserve applause. Kluwer Academic Publishers, as in the previous volume of the series, have maintained the high quality in publication and therefore high cost. Unless the book comes to the reach of a wide spectrum of readers, the impact of the book as a valuable reference text may not be fully realized. This reviewer would very much like the book to be made available in all universities.

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Prospects and Problems of Environment across the Millennium. M. N. Madhyastha *et al.* (eds). Daya Publishing House, 1123/74, Deva Ram Park, Tri Nagar, Delhi 110 035. 2003. 327 pp. Price: Rs 750.

This sleek volume, a collection of 34 papers, is the outcome of a National Symposium held at Mangalore during December 2000. The papers cover an assortment of topics related to environment and its management, some of them faintly so. The book has parts devoted to coastal zone, environmental health, human health, pollution, environmental monitoring, waste management, conservation and futurology. Many papers are the outcome of scientific research and others are general write-ups.

Ananda Rao's analysis of the environmental issues regarding the beaches and estuaries of Karnataka is relevant, and these issues require immediate attention. He has also suggested measures to safeguard their ecology and to uplift coastal economy as such. One paper each deals with the problems and prospects associated with the mangroves of Kerala and of

Sunderbans–Orissa region. Ananda and Sridhar highlight the fungal diversity of mangrove ecosystems, a rarely researched field.

Water shortage and salt-water intrusion in the Kanyakumari district form the subject of the article by Anitha Mary and Lazarus. Neglect of ponds and lakes, population growth and consequent developmental pressures, including overuse of groundwater, have culminated in such crisis. Kanyakumari indeed reflects the hydrological problems faced by much of the Indian coast.

The study by Agashe *et al.* on the dynamics of pollen and fungal spores in the Bangalore air will be of interest to aerobiologists and doctors. It can as well create awareness about these potential agents of allergies among the vulnerable people. Shyama's work on the alarming rise in congenital malformations (CMs) in Goa (41 per 1000 live births in 1991 to 105 in 1998), also causing increased mortality of infants, however, needs to be corroborated with data from adjoining coastal regions before drawing any meaningful conclusions. Most CMs are however believed to be the result of complex interaction of genetic and environmental factors.

The role of fibre-rich diet for good health is a well-established medical truth. The meticulous study by Menon *et al.* on rats shows that fibrous diet can prevent intestinal tumours. The inclusion of fibre from coconut kernel and black gram in the diet checked the loss through excretion of tumour-preventing beta-glucuronidase and mucinase. Rats fed with protein-rich and fibre-free diet were prone to tumours in the colon. Fibre also modified the catabolism of cholesterol.

The section on environmental pollution has one paper dealing with the dispersion of CO in the air from automobiles and another on the dispersion of gaseous pollutants from industrial stacks. Snehal *et al.* observed that the abundance and diversity of the molluscs and bivalves of the Indian coast are poised for a decline due to crude oil pollution. Thin-shelled bivalves showed more sensitivity to water-soluble fractions of crude oil, and to other hazardous hydrocarbons, for which the Mumbai coast is a major sink.

Disconcerting are the findings of Shivaramaiah *et al.* about the residue of the deadly pesticide Endosulfan in the soils of coffee plantations and in the coffee berries, sampled in the Coorg

district of the Western Ghats. Endosulfan residues were detected in all the 14 soil samples of sprayed plantations as well as in 10 out of the 14 samples of coffee berries.

Today's environmental impact assessment (EIA) is intended to protect the totality of the environment, which includes biophysical, social, economic, cultural and aesthetic aspects, explains Manoranjan Ghose. The EIA should see that development activities carried out should not compromise the needs of future generations. The book also carries the case study of an EIA conducted for a foundry in Coimbatore.

Wastewater purification using low-cost biological methods was attempted by Shiny *et al.* Using *Daphnia*, a freshwater flea, and *Cyprinus carpio*, a fish, they converted organic matter in the waste water into zooplankton and caused its mineralization as well. There was considerable reduction in the biochemical oxygen demand (BOD) and in the population of coliform bacteria. *Daphnia* was effective in improving the bacteriological quality of water.

The construction of a nuclear power plant at Kaiga on the bank of the Kali River in the forest-clad Uttara Kannada district in the central Western Ghats, had witnessed raging controversies and unprecedented public opposition in recent times. With the power production already commenced, the Kaiga Generating Station, is today a reality. Explaining graphically the waste disposal mechanism adopted at the plant, Venkata Ramana *et al.* try to allay public fears of possible threats to human life and to the fragile environment prevailing around from radioactive substances. Their statement that 'radioactivity releases to the environment are kept within the authorized limits as stipulated by the Atomic Energy Board' could have gained greater credibility, had they supported it with data. The public fears continue as the Municipality of Karwar town, at the river-mouth of Kali, recently turned down a proposal to supply the river water to the town.

R. S. Goel's advocacy of major dams as a panacea for the country's poverty, brushing aside their environmental and social costs, is not substantiated except hyperbolically. Terming the apprehensions about major dams as 'fantasies built around unfounded data', the writer goes on the offensive against the opponents and terms their stand against large

dams as 'furious overtones by novelists and pseudo-environmentalists'. Such statements blemish the scientific tenor of the book, intended to fulfil, 'the requirement of environmental education at graduate and postgraduate level'.

Rekha and Madhyastha trace the history of 'eco-feminism' in the Indian context in the 'Futurology' section. The section also has writings on the use of children's projects to create environ-

mental awareness and on transgenic plant technology. The book ends with a philosophical discourse on the 'Limits of science' by B. M. Hegde.

Despite the fact that the book lacks a coherent central theme, it gives us glimpses of contemporary research in our country on various environmental and related fields. The book will certainly help students of life sciences and ecologists to widen their vision on holistic

environmental management. It also will be a good addition to the libraries.

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Amar Nath Bhaduri

Amar Nath Bhaduri passed away at the age of 67 on 5 June 2003 at a South Kolkata nursing home after a brief illness. A dedicated professor of biochemistry for 20 years at the Department of Pharmacy, Jadavpur University (1966–1985), Bhaduri joined the Indian Institute of Chemical Biology (IICB), Kolkata in 1985 as a Director-grade scientist and later became the Director of the institute. Born in a respectable family at Shyambazar, Bhaduri had his early education from Scottish Church Collegiate School, Presidency College and Department of Applied Chemistry, University College of Science and Technology, Calcutta University. He went to USA for higher education, where he obtained his Doctor of Science from the University of Michigan, Ann Arbor and carried out his postdoctoral studies at Harvard Medical School.

Bhaduri began his research career in the early sixties in Paul Srere's laboratory at the University of Michigan, where he made important contributions to the understanding of citrate metabolism in relation to fatty-acid biosynthesis. His work as a postdoctoral fellow at the Harvard Medical School resulted in an interesting finding on the effect of uridine nucleotides on an epimerase.

During his early years as an independent investigator at Jadavpur University, Bhaduri discovered and purified a new enzyme galactose-6-phosphate dehydrogenase. Soon thereafter followed his important contribution on the regulation of the enzyme UDP-glucose-4-epimerase from *S. fragilis*. He not only discovered that the enzyme was allosterically activated by metabolically-related sugar phosphates, but also showed that the enzyme had allosteric kinetics in one direction

and not in the other – an unusual property that may be of great importance in the regulation of galactose metabolism. He also showed that the enzyme could be desensitized by heat to give hyperbolic kinetics. He further demonstrated that the enzyme could be inactivated by the dissociation of NAD and could be reactivated by the addition of NAD, a fact which he used for characterization of the



pyridine nucleotide-binding site of this enzyme.

Bhaduri's later work threw some light on the organization of the active site of this enzyme. He demonstrated the presence of conformationally vicinal sulfhydryl groups at its active site and also provided evidence for the possible involvement of sulfhydryl, arginine and histidine residues in its function. Bhaduri is one of the very few enzymologists in this country who studied an enzyme in-depth and so successfully.

Bhaduri was not only a scientist and an academician; he served the Calcutta Municipal Corporation as a Councillor from North Kolkata in his earlier years after returning from the US. A person of great versatility with interests in music, literature and drama, Bhaduri was popularly and fondly known as Amar-da to everybody. As a talented man with great intellectuality and dedication to science, he made outstanding contribution in kala-azar research in the country. He was leader of the UNDP-sponsored coordinated programme of kala-azar research at IICB. A recipient of the Shanti Swaroop Bhatnagar Award for excellence in science, Bhaduri was also honoured with fellowships from the Indian National Science Academy, New Delhi, the Indian Academy of Sciences, Bangalore and the West Bengal Academy of Science and Technology. He was a member of the Steering Committee of World Health Organization for parasitic diseases. As an honorary faculty member of Calcutta University and Jadavpur University, and as an Emeritus Scientists at IICB, he rendered valuable service by teaching postgraduate students and contributing his knowledge to scientific workers till the last day of his life. His absence has created a void in the scientific community in the country.

He is survived by his wife, a daughter, and a son.

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