

also been highlighted. The sixth chapter discusses catalysis in living systems and industry. Catalysts like enzymes, metals and zeolites have all been discussed. This chapter ends, like all the other chapters, with a discussion of the areas in which catalysts will play a greater role in the future.

The last two chapters, somewhat more technical, but still highly readable, discuss how chemists make molecules, and determine structures and reaction mechanisms.

All the chapters have many illustrations and photographs in vibrant colours which makes reading this book a pleasure. For non-chemists much of the basic chemistry has been explained with simple examples. Formulas and technical details are presented in boxes (the layout and format are not very

different from those of *Resonance!*). Overall, I feel that this book should be read by a wide audience. General public, especially science administrators and policy makers, who may harbour negative feelings about the field will be able to see the practical value of chemistry. Students who feel that chemistry is a 'dry' subject requiring remembering endless terms and names, would certainly appreciate what chemistry really does for us, and will become aware of numerous challenging problems it holds. This would certainly encourage many young individuals to take up chemistry as their profession, and make significant contributions to our well being.

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Neem : A User's Manual

The 'Free Tree' – Its Healing Power and Other Uses

M D Subash Chandran



Neem : A User's Manual

K Vijayalakshmi, K S Radha and
Vandana Shiva

Centre for Indian Knowledge Systems,
Chennai and Research Foundation for
Science, Technology and Natural
Resource Policy, New Delhi, 1995
pp. 96. Rs.75.

It is an irony that a tree from the Indian sub-continent – *Azad-darakth* i.e. the 'Free tree',

(in Persian) obviously for its property to free people and plants from diseases and pests, is itself slipping into the hands of the multinational companies in the West as their 'intellectual property'. That is the story of neem *Azadirachta indica*, as portrayed in this book. Neem is venerated in India and used from time immemorial in agriculture, human and livestock health, cosmetics and rituals.

The sleek book has a beautiful *Kalamkari* painting by C Subramaniam on its cover, depicting the *puranic* story of churning the ocean of milk by the *Devas* and the *Asuras* and the neem tree springing from the drops that spilled from a pot of ambrosia (*Amritha*)

held by Lord Dhanvantri. No doubt this story is linked to the disease curing property of neem.

Beginning with the role of neem in the Indian tradition, the book takes us through its medicinal uses, propagation, preparation of its products, its uses in grain storage, pest control and as a fertilizer. It has a chapter on the case history of biopiracy and a glossary on diseases. Synonyms and properties of neem, common and scientific names of pests controlled by it and details of 14 patents on neem are given in the appendices.

Growing opposition to chemical products particularly pesticides, in the West, made entrepreneurs and scientists search the species rich tropics for biological substitutes. Their quest is yielding an array of useful plants and products which includes neem

Neem has unbreakable bonds with India. For millennia it has been used here for rituals, as medicine for humans and animals, rejuvenation of soils, as a pesticide and for roadside planting.

Many ailments can be treated with neem. The book provides simple formulations of neem for enhancing health and treating various ailments like diabetes, hypertension, skin and hair problems, conjunctivitis, ear infections, jaundice, worms, stomach problems, urinary stones, urticaria, piles, fistula.

Despite the use of neem in traditional health care in India from ancient times, regrettably, the chapter on neem in medicine is on a shaky foundation. It is neither supported by references to any ancient medical texts nor any clinical trials. It is a compilation based on folk medicines. Hope the future editions of this book will carry case studies and clinical trials. A word of caution should have been sounded regarding the use of neem products by novices for self medication. This chapter fortifies India's claim over neem whose products are getting patented in the West. The book is obviously written to shelter neem and other indigenous biological materials of the Third World from GATT and Intellectual Property Rights. Unfortunately the protagonists of modern medical and health care systems in India have ignored the healing powers of neem.

Amply supported by research done in India the chapters pertaining to the use of neem for food grains storage and pest control are more impressive. Most neem products act as a medium to a broad spectrum of pesticides, although they do not have the 'knockout' effect of the chemical pesticides. They affect pests in many ways as growth regulators, deterrents to feeding and egg laying, as inhibitors of chitin formation, disrupters of reproduction, poisons for larvae and adult etc. The extensive table on the use of neem products for pest control gives the names of the crops, target pests, form and concentration, time and mode of application, effects observed and reference.

Under the title 'A Case History of Bio-piracy' the penultimate chapter of the book makes a very convincing portrayal of the grim situation that arose following the granting of patents on neem. W R Grace & Co. USA, one of the earliest patent holders of anti-pest neem products justified their patents claiming that their modernised extraction processes constitute a genuine innovation. The book considers the several patents granted to neem products as a clear case of bio-piracy. It states: "...the processes are supposedly novel and an advance on Indian techniques. However, this novelty exists mainly in the context of the ignorance of the West. Over the 2,000 years that neem-based biopesticides and medicines have been used in India, many complex processes were developed to make them available

for specific use, though the active ingredients were not given Latinised scientific names."

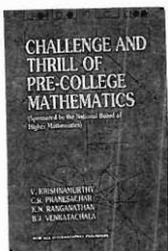
Following the GATT agreement and multinational companies demanding neem as their 'intellectual property rights', organisations from many nations filed petitions against them. Vandana Shiva, co-author of this book was one of the petitioners. The authors rightly see the neem tree as a symbol of resistance to the creeping power of the global capital. At an easily affordable price of Rs.75 this book is a model for future efforts which aim at systematically documenting the country's biodiversity and its uses.

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Challenge and Thrill of Pre-College Mathematics

A Treasure House for Students

A M Vaidya



Challenge and Thrill of Pre-College Mathematics

V Krishnamurthy, C R Pranesachar,
K N Ranganathan, B J Venkatachala

New Age International. First Edition, 1996,
pp.xii+692, Rs 220.

This book of nearly 700 pages is one of the most important works published in recent years on pre-college mathematics. Working

on a huge canvas, the authors have spread their net far and wide capturing almost all pre-calculus mathematics and going deep into every topic.

The topics covered are number systems, arithmetic of integers, geometry of lines, triangles and circles, quadratic equations and expressions, trigonometry, co-ordinate geometry of lines and circles, systems of linear equations, permutations and combinations, factorisation, inequalities, elementary combinatorics and probability, number theory, finite series and De Moivre's theorem. Not all these topics are covered in a typical Indian school (or junior college) math