

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."

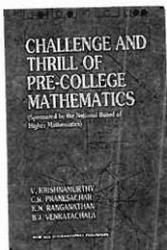
Following the GATT agreement and multinational companies demanding neem as their 'intellectual property rights', organisations from many nations filed petitions against them. Vandana Shiva, co-author of this book was one of the petitioners. The authors rightly see the neem tree as a symbol of resistance 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 Venkatchala
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

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syllabus. Moreover, topics are covered much more extensively in this book than taught in schools. The reason is that while a school syllabus keeps an average student in view, this book is for the mathematically talented child. An intelligent school child will be thrilled to see the coverage given to geometry. As many as 57 geometrical constructions are given here (for instance, given two triangles, construct a triangle similar to one and equal in area to the other, or, construct a cyclic quadrilateral given all its sides). A number of amazing geometrical results, *geometrical gems*, are also presented.

Though all chapters are very well written, the ones on geometry, combinatorics and permutations and combinations stand out for their lucid treatment. A very important feature of this book is that it puts a lot of stress on problem solving and contains a large number of very exciting problems. The authors advise the student reader at the outset: "You will find that mathematics has a special purpose, namely, it solves problems. In equipping you for problems solving, it takes you into the most original creations of the human mind, together called,

mathematics, the kingpin of scientific thinking".

The reviewer talked to some students who had seen this book. They were very enthusiastic about it and thought that it was a treasure house; but some of them felt that the book would have been more useful if the authors had given brief hints about solving some of the exercises. Answers not being provided to some of the questions asked was also another drawback.

There are a few errors in the book which will hopefully be taken care of in the next edition. For example, exercises 1,4,5,6 on p.342-343 and exercise 44(a) on p.663 (the reviewer is grateful to Apoorva Khare, a student from Bhubaneswar for these examples). Also, the reviewer feels that exercise 12 on p.43 (prove by induction that $\sqrt{2}$ is irrational) should have been accompanied by a hint. Otherwise a reader is likely to conclude that this is impossible and the exercise is a mistake. (Do the authors have infinite descent in mind?)

There are many instances in history when a challenging problem has ignited the creative powers of a bright student and won him over to mathematics. I would not be surprised if this book fires the imagination of many a 21st century mathematician.

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