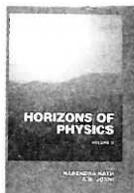


Horizons of Physics

A Series for Undergraduate Students and Teachers

Avinash Khare



Horizons of Physics – Vol. II
Narendra Nath and A W Joshi (ed.)
New Age International Publishers
4835/24, Ansari Road, Daryaganj
New Delhi 110 002, 1995
pp.334, Rs. 600.

This is the second volume of a series on *Horizons of Physics* which is being brought out by the Indian Association of Physics Teachers. The series, addressed to students and teachers, is devoted to physics teaching at the tertiary level. It aims to enhance the knowledge and vision of the teachers and let students know what is happening at the forefront of different areas of physics. These volumes could also serve as text material for teacher orientation programmes.

The present volume has 15 articles covering a very wide spectrum of areas in physics. Looking at the growing importance of materials science and the related area of condensed matter physics, the series has articles about diamonds, the role of neutrons in the study of solids, inelastic scattering of X-rays, high temperature superconductivity, as well as basic crystal structure analysis. Physics at the microscopic level has been addressed in three articles: one on the nature of the nuclear force, the second on the basic

Several articles written for undergraduates explain complex concepts, arouse curiosity and take the reader to the frontiers.

constituents of nature and the unification of forces and the third on the symmetries amongst strongly interacting particles. The series also covers two recent discoveries which are really rooted in the proper understanding of basic physics namely geometric phases in physics and randomness and chaos. Finally there are articles on the concept of time in physics and the fight against the second law of thermodynamics

It is not an easy task to write articles at the undergraduate level and yet explain complex concepts, arouse curiosity and take the reader to the frontiers. I am happy to note that several articles have succeeded in achieving this goal. I would specially recommend the articles on high temperature superconductivity, inelastic scattering of X-rays, randomness without randomness, and the fight against the second law of thermodynamics.

I must add that some of these articles would have been much more useful if only the book had been published in 1990–91 instead of 1995. I hope that the third volume of *Horizons of Physics* will come out by the end of 1997. I have not seen Vol. I of the series and would have liked to see the list of articles

in it. It would have been useful if the contents page of Vol. I had been included in Vol. II. I hope that the contents pages of volumes I and II would be added to volume III. I must add that the binding is of poor quality. Finally, the book is priced at Rs. 600 which I

feel is expensive, and may put off some readers.

Avinash Khare, Institute of Physics, Sachivalaya Marg, Bhubaneswar 751 005, India.

Elements of Cosmology

A Lucid, Direct Style that Goes to the Heart of the Subject

N Panchapakesan



Elements of Cosmology

J V Narlikar

Universities Press India Ltd, 1996

ISBN 81 7371 043 0

pp. 95, Rs. 65.

To begin at the beginning one has to go to cosmology. Starting literally with a bang, the standard model explains events that happened in the early universe but left tell tale marks which can be observed at the present time: the Hubble law, the synthesis of light elements, the separation and cooling of radiation which began a thousand years after the bang. The discovery of this relic radiation was the biggest triumph of this model which also resulted in the killing off of the rival *steady state theory*. It is ironic that J V Narlikar, a strong proponent of the earlier steady state theory and its later avatars, has emerged as one of the most successful expositors of the big bang model.

Thirst for information about cosmology continues to be as great now as it ever was. The first series of articles to be published in *Resonance* was on cosmology by the author of the book under review. The publication of this book by JNCASR of Bangalore is therefore not surprising. It is one of a series of 'high quality educational monographs written by leading scientists and engineers in the country..... which are short accounts of interesting areas in science and engineering addressed to students at the graduate and postgraduate levels, and the general research community'.

In answer to the query 'What is new?' from readers familiar with Jayant Narlikar's other books on cosmology the author explains in the preface, "since the unfamiliarity with the general theory of relativity hampers the understanding of basic cosmological issues I (have) used the rather unusual method of discussing the subject within the framework of Newtonian gravity and mechanics". It is also 'up to date at the time of writing' (1996) and includes cosmological models, their physical properties and observational tests. A brief account of the alternative model of quasi steady state cosmology by Hoyle,