

account of exile from Paradise that seems to deny him this power. It is perhaps here that the deepest mystery is to be found, the stifling contradiction that the more vast, more open, more joyous East has not known. Because, if we look closely, God, the God of the Bible, gives us full and entire enjoyment of creation. To exercise this enjoyment, we need to know. And we have a violent desire to know.'

The sweep of *Conversations* is extensive. Not a single essential scientific concept is missed nor is neglected a single observation or concept of cosmological significance. And all the time Jean-Claude holds a tight rein and Jean and Michel are halted repeatedly in their gallop and are asked to repeat and explain the essence of the ideas without recourse to obscure technical language. They, in turn, repeatedly suggest and prompt Jean-Claude to bring in analogies from the literature and to examine ethical and sociological issues. We are told of three things: the building blocks of the physical world, the nature of space and time, and the astronomical observations relevant to cosmology. We are also told of the subtleties of the mechanics and the dynamics of subatomic particles and of the cosmos. The interaction and interrelationship of these three aspects of the physical world with the subtle state of life and consciousness is also discussed. It would not serve any purpose here to give a précis of the contents of the book, but one should mention that the coverage is essentially complete. All the topics of current research, from the big-bang origins and nucleosynthesis to the grand unification of the four known forces, are covered with elegant simplicity. Even subtle questions like origins of time and space and the effects of an observer on quantum systems are not left out. All of these make it the most enjoyable and thought-provoking book on elementary particles and cosmology written for the non-specialist in recent years.

For an excellent translation which captures the spirit of *Conversations*, Saroj Butani is to be congratulated. The poetic and philosophic passages of the

book sparkle with undiminished splendour. However, I should add that the reading pleasure is often marred by numerous typographical errors and the occasional use of the wrong synonyms in translating, especially the technical terminology. But these are not serious. A brief effort on the part of the scientific editor and a proof reader is all that is needed before bringing out the next edition.

In closing, I should express my appreciation of the fine effort on the part of Saroj Butani and Wiley Eastern Ltd which has made the excellent book accessible to the English readership.

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Brief reviews

Essentials of Nuclear Chemistry (Third edn.). H. J. Arnikar. Wiley Eastern Ltd, New Delhi. 1990, 433 pp.

Earlier editions of this book did not contain information on 'Detection and measurement of activity'. This, the third edition contains a full chapter on it and the description and explanation of the principles are lucid and indicative of Prof. Arnikar's expertise in teaching. However there seems to be some scope to revise the chapter on the following lines: (i) measurement of range and energy of radiation are taught in postgraduate classes and some experiments are also arranged for the laboratory course; (ii) detection by neutron activation needs some elaboration; (iii) well-structured problems with answers on this topic are required.

The other important addition in this book is the Mössbauer effect and its applications. Relevant revisions on breeder reactor and thermonuclear reactions have been made. On the whole

the book is an essential one for postgraduate students as the syllabus content is fully covered with sufficient detail.

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Genetic Engineering and Biotechnology: Concepts, Methods and Applications. V. L. Chopra and A. Nasim, eds. Oxford and IBH, New Delhi.

In recent years there has been a spurt of publications in the field of biotechnology. Many of these books describe methods that are commonly used in laboratories. This book is one such publication. The chapter on DNA sequencing by R. Brousseau *et al.* and the one on purification and characterization of nucleic acids and proteins by S. Muthukrishnan could be useful for researchers embarking in this area. The strategy for analysis and sequencing of large DNA fragments could have been described in a little more detail in view of genome projects being undertaken worldwide. Methods for isolation and purification of undegraded proteins from different plant tissues are useful for young researchers. Moreover, the book adequately covers a number of different nucleic acid-based techniques that are routinely used. However, there are a few important omissions, for example radiolabelling of DNA by random priming, separation of chromosome-size nucleic acids by pulse field gradient electrophoresis, and amplification of target DNA by polymerase chain reaction. The chapter on genetic engineering in medicine by J. R. Lupski is out of place in this book.

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