

zed Hall resistance, physical parameters of soft condensed matter systems such as membranes and polymers, etc. This book could have formed a good entry to these lively fields.

Two extreme but necessary stances in regard to the creation of such literature can be labelled *bedazzlement* and *empowerment*. Venkataraman uses a judicious mixture of the two. I would perhaps stress the latter, because I believe that we (especially in India) are already dazzled; there is an overwhelming need to enable all of us, starting young, to figure things out for ourselves. It is essential to instil the hope and confirm by practice that this can be done. For this reason, I worry a little about the occasional myth making overtones in Venkataraman's book. But unlike the rest of us, he has taken the plunge and has come up with a unique range of offerings for an age group which is intellectually hungry, but gets an unbalanced and unappetizing diet. This series of books will help in the growth of scientifically zestful and well nourished youth. Their style and the manifest need for them ensure continued popularity. With some further critical attention and about 10% change in future editions, these contributions will fulfil their purpose perfectly. I congratulate Venkataraman on this service, born out of his love for the subject, his talents as a writer, and his concern for the young.

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Superconductivity Today (An elementary introduction). T. V. Ramakrishnan and C. N. R. Rao. Wiley Eastern Ltd., 4835/24 Ansari Road, Daryaganj, New Delhi. 115 pp. Price: Rs. 55.

The announcement in 1987 of the discovery of new materials, which are superconducting above the boiling point of liquid nitrogen, generated an over-enthusiastic belief that a revolution in technology would be caused very soon by this discovery. Such an expectation was generated when prominent scientists all over the world made extravagant

statements about the possible applications of these new materials. With the realization that there are formidable technological problems yet to be solved before serious application could be realized, public euphoria has died down.

However, this discovery still excites the imagination of serious students of science. The problem of low temperature superconductivity was a hard one to understand. With the work of Bardeen, Cooper and Schreiffer, which was a culmination of decades of effort by first rate theoreticians, it was felt that a correct theoretical understanding of superconductivity has been achieved. The new discovery has shown that this belief is incorrect and we are still far from an understanding of the mechanism/mechanisms responsible for this fascinating phenomenon.

The present book has been written by two eminent scientists of the Jawaharlal Nehru Centre to provide the student with an elementary introduction to the complex phenomenon and to put before him the new discoveries and the ongoing efforts to understand the problem. The effort is aimed at not only creating a general awareness of this new discovery among students of science but also to create an interest in some bright young minds to attract them to pursue serious research in this field. From this point of view this effort is to be commended.

The theory of superconductivity is very recondite and is clothed in complex mathematical formalism. It is very difficult to propound the ideas in simple language for a student at the Master's level to comprehend. Anyone attempting to take on such an onerous task needs a lot of courage. It is heartening to note that the physics aspects of the phenomenon have been presented very ably in this book. Elementary mathematics has been used to derive, the phenomenon of flux penetration in a type I superconductor and the phenomenon of flux quantization. The concept of pairing and coherence length has been explained adequately and the difference between type I and type II superconductors has been explained.

The description of the anomalous normal state properties in the cuprates is interesting. An attempt at evaluating the various mechanisms proposed for superconductivity has been made, though space limitations and the scope of the

book do not permit the discussions from being anything more than cursory. A valiant attempt has been made to explain how the spin and charge degrees of freedom get decoupled to give the concept of holons and spinons in RVB theory. On the whole the coverage of the physics of superconductivity is reasonably adequate and interesting.

The materials aspect has been dealt with in Chapter 3. This chapter tries to cover too many aspects in too little space. It also assumes that the student is familiar with crystal systems and structure, the concept of twins and the concept of holes in the given context. The materials preparation part is very sketchy.

Chapter 6 on applications is, in my opinion, very unsatisfactory. The book would have stimulated greater interest if the important applications had been dealt with in some more detail. Perhaps the authors did not want to lay too much emphasis on the material preparation and application aspects in order to keep the book within manageable size.

In teaching superconductivity to students I have often found that students are puzzled by the two following questions: (i) how does pairing explain the absence of resistivity in superconductors? and (ii) if the electrons in a pair are moving with Fermi velocities in opposite directions, the distance between them will increase beyond the coherence length in a time of the order of 10^{-13} sec. What happens then? I feel that these questions will still remain in the minds of the students after reading the book.

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Bose and His Statistics. G. Venkataraman. University Press (India) Pvt. Ltd. 1992. 123 pp. Price: Rs. 35.

Blackbody radiation, i.e. radiation inside a cavity in thermal equilibrium with its walls, has been one of the most productive problems in physics. Its