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Short Notice

Lectures on the Electrical Properties of Materials

L. Solymar and D. Walsh
Oxford University Press (1970), £4.00

This is an interesting book because the authors have attempted to combine a discussion of the basic electrical properties of materials with a description of the devices, whose operation is based upon these properties. This is of course a major undertaking and the authors have not made the task any easier by starting many of their discussions at an extremely elementary level. For example, no prior knowledge of crystallography or of atomic bonding appears to be assumed, and the *p-n* junction is introduced from the concept of putting a piece of *p* type and a piece of *n* type material together.

In contrast to this, the reader is expected to be familiar with such quantities as Maxwell's equations of electromagnetism and Gibbs free energy and readily able to manipulate matrices and differential equations. These combine to give the book a rather odd balance and I find it

difficult to appreciate the type of 2nd year engineering student at whom it is aimed. For 2nd year electronic or electrical engineers, the section on semiconductors and semiconductor devices is not really sufficient, and in any case would be dealt with in other courses, whilst for civil and mechanical engineers, such topics as energy band theory and super-conductivity, are perhaps taken too far.

However, the book is written in a light hearted informal manner that is very refreshing. This, coupled with the liberal use of analogies and simple models, makes it a very "readable" book, and I consider that all students would find it acceptable.

In conclusion, I feel that the book has suffered from the authors setting themselves the extremely difficult task of trying to explain both the electrical properties of materials and the operation of many devices in one text. In spite of this, it would be a useful book for most engineering students and I would not hesitate to recommend it to them.

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