the author, by the time it is printed and issued. Most of the few references in the present book refer to work that was done before 1954. Although the book is lacking in some respects, particularly in the practical application of theory, it could be read with profit by any student of aerodynamics who is mainly interested in the mathematical solution of compressible flow problems. From the general reader's point of view, however, it could be greatly improved by the inclusion of more experimental data for comparison with theory, and fuller discussion of problems that are not amenable to theoretical treatment. An author's and a subject index would also make it more useful for reference purposes. W. P. Jones

NUCLEAR THEORY

Shell Theory of the Nucleus

By Prof. Eugene Feenberg. Second printing. (Investigations in Physics, 3.) Pp. xi+211. (Princeton, N. J.: Princeton University Press; London: Oxford University Press, 1955.) 4 dollars.

THIS volume is the third production of the Princeton University Series "Investigations in Physics". When it was first published in 1955, the covers were of paper and the style of print was that of typewritten stencils, both features suggesting that serious effort had been devoted to keeping the price to a minimum. The actual cost was rather less than thirty shillings, which was impressively low for a specialized American text.

A second printing has now been made without any change in textual content, style or price. (Even typewriting errors are reproduced.) Unfortunately, between the two printings, the book has suffered the usual fate of expositions on topics in the front-line of research, and has become dated. Even when the book first appeared, it could not be said to provide an adequate discussion of all important branches of the subject-matter. This is much more true now as a result of the publication of many new papers on nuclear shell theory in the past three years. The book is still a good guide to certain classical aspects of shell theory, but there are a roughly equal number of topics which are scarcely mentioned. In particular, there is little mention of the modification of the theory that has been made necessary by the discovery that many nuclei are not spherical but egg-shaped (the strong-coupling version of the unified model of Bohr and Mottelson). No space is given to the work of Brueckner and others on the problem of why the shell theory failed to explain nuclear binding energies. Most surprising of all, only very brief reference is made to the work of Inglis and Elliott on the intermediate coupling version of the theory, which results in some of the most convincing and detailed agreement with experiment. Preliminary reports on these items appeared in 1953 and a great amount of work has since been published. It is regrettable that the production of the Princeton Series, although admirable in many ways, apparently lacks the flexibility necessary to enable a dated text to be revised.

The book opens with a survey of the evidence for shell structure in the nucleus, then presents the single particle model, and follows this by successive chapters on the comparison of the model with electromagnetic moments, electromagnetic transitions (isomeric states), and beta transitions. The latter chapters contain tables of data which are not complete in view of recent results but give a fair picture of the situation. The last chapters give discussions of particular shell-theory configurations and of collective vibrations of nuclei. In several places, nuclei lighter than neon are discussed in terms of j–j coupling, although it is well established that this is a very poor approach to such nuclei.

A. M. Lane

TRANSISTORS

An Introduction to Transistor Circuits

By E. H. Cooke-Yarborough. Pp. xii+154. (Edinburgh and London: Oliver and Boyd, Ltd.; New York: Interscience Publishers, Inc., 1957. Published in collaboration with the United Kingdom Atomic Energy Authority.) 15*s*. net.

An Introduction to Junction Transistor Theory

By Dr. R. D. Middlebrook. Pp. xxiv+296. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1957.) 68*s*. net.

Transistor Circuit Engineering

Edited by Richard F. Shea. Pp. xx+468. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1957.) 96*s*. net.

UNTIL recently, little of the vast amount of information published about transistors had come by way of books, with the result that many newcomers to the transistor field have found the going somewhat heavy. Now, it appears that the drought is being followed by a deluge and it is interesting to see how three of the recent books help to produce a more balanced literature.

All three books are primarily concerned with the application of transistors, although Middlebrook's should also appeal to the designers of transistors. Cooke-Yarborough and Middlebrook intend their books as introductions, each author choosing an approach which is based on his own interests and experience. Shea and his co-authors, on the other hand, set out to give detailed guidance to the design of a wide range of transistor circuits.

After describing, with commendable brevity, how it works, Cooke-Yarborough considers the transistor as a circuit element. He discusses its use in various circuits, in each case carefully explaining what the transistor does, an approach which will help the reader when later he has to solve his own transistor problems. In view of Cooke-Yarborough's earlier contributions, it is not surprising that non-linear circuits take pride of place. Despite this limitation, the book should still appeal to both students and practising engineers who are looking for a readable introduction to transistor circuits. Some may find the unusual symbolism irksome, but the clarity of Cooke-Yarborough's writing should more than enable them to find the capacity for forgiveness.

Middlebrook's main interest centres around the transistor as a linear amplifier. However, the first section of the book deals with transistor physics, both qualitatively and quantitatively. This is followed by a section on electrical characteristics, leading to the derivation of equivalent networks for transistors. Much of the third, and final, section is taken up with a particular equivalent network. Engineers who specialize in the design of transistor linear amplifiers will find in this book a thorough theoretical background to the transistors themselves. Many others, including the designers of transistors, will find this a