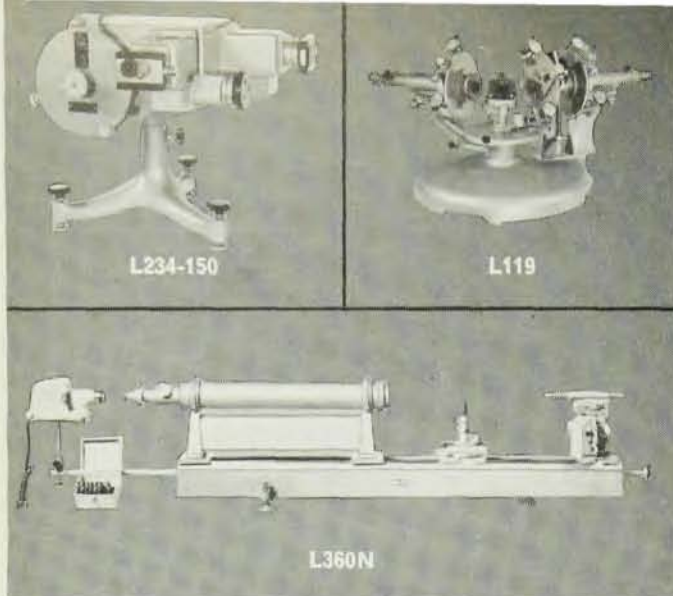
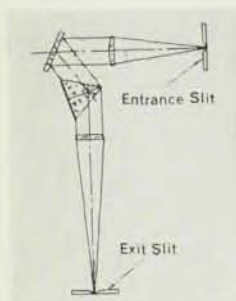




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chemical thermodynamics treated. Despite the statement in the introduction, the text is not useful for chemists.

The latter part of the book is devoted to a treatment of elementary statistical mechanics. This portion of the text is standard in format except for the treatment of diatomic molecules which is unusually complete and carefully done.

In general, I believe this will be a useful text for an elementary undergraduate course in thermodynamics. The drawbacks I have mentioned are exclusively matters of taste and not of substance. The book should therefore be recommended for examination to all teachers of thermodynamics.

Numerical Mathematical Analysis (5th ed.). By James B. Scarborough. 594 pp. Johns Hopkins Press, Baltimore, 1962. \$7.00. *Reviewed by Joseph Hilsenrath, National Bureau of Standards, Washington, D. C.*

FOR the past 30 years, this book, now in its 5th edition, has been widely used for undergraduate courses in numerical methods. Much of its success lies in the fact that it comes quite close to achieving the author's objective which is "to set forth in a systematic manner and as clearly as possible the most important principles, methods, and processes used for obtaining numerical results".

The exposition is clear and detailed. The symbolism is as simple as the subject will allow. A great many examples are worked out in full numerical detail. Derivations are presented from the point of view of exposition rather than mathematical rigor. Aside from the finite difference methods which one would expect in a book of this type, one finds introductory treatments on the solution of ordinary and partial differential equations, integral equations, least-squares curve fitting, statistical and harmonic analysis, and matrix multiplications and inversion. Students of numerical analysis should be grateful to the author and publishers for keeping this book in print.

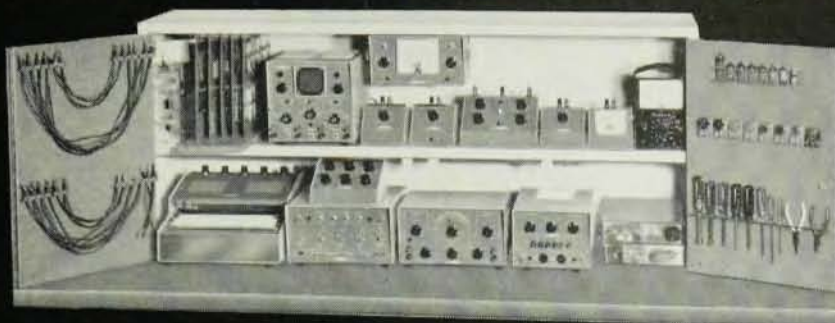
The Mainstream of Physics. By Arthur Beiser. 468 pp. Addison-Wesley, Reading, Mass., 1962. \$9.75. *Reviewed by R. Bruce Lindsay, Brown University.*

THE zeal for providing more effective teaching for college students approaching physics for the first time continues unabated, and new introductory textbooks appear regularly. The trend appears to be in the direction of including a higher percentage of so-called modern physics than was the custom earlier, and this is well exemplified by Professor Beiser's volume. About a third of his book is devoted to topics in relativity, and quantum and nuclear physics. In spite of this relatively large coverage of 20th century material, the size of the book has been kept within manageable limits, and this is much to be commended.

The treatment of classical physics is conventional,

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SCIENCE AND IDEAS

by Arnold B. Arons, *Amherst College* and Alfred M. Bork, *Reed College*. This anthology of readings presents the history, nature, and limitations of scientific thought. It is intended as a supplement for students in introductory physics. May 1964, approx. 240 pp., paperbound, text price: \$4.50

THEORY OF PARTIAL COHERENCE

by Mark J. Beran, *University of Pennsylvania* and George B. Parrent, Jr., *Technical Operations Research*. This work is primarily a study of electromagnetic fields that may be described from a statistical point of view. (In the International Series in Physics) May 1964, approx. 240 pp. Text price: \$9.00

MATHEMATICAL MODELS IN PHYSICAL SCIENCES

Proceedings of the Conference at the University of Notre Dame. Edited by Stefan Drobot, *University of Notre Dame*. Here are eight lectures and three abstracts delivered at the Conference in 1962. The book presents mathematics as an instrument for developing interdisciplinary research. August 1963, 193 pp. Text price: \$3.75

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both in content and order of presentation. The mathematical level is that of elementary geometry and algebra, though the use of the delta notation gives some hint of the importance of calculus. The book is well illustrated with a host of diagrams, many drawn in perspective, some with the use of blue as well as black lines, and some in the form of clever cartoons. The style is straightforward and eminently readable. The author has in general refrained from introducing historical or philosophical material, though in a paperback *Study Guide*, which accompanies the main text, he does include brief biographical sketches of nine famous physicists. The treatment of quantum physics is in the main simply descriptive, and no attempt has been made to convey the fundamental contribution of quantum mechanics.

In examining a book of this kind, a reviewer naturally looks to see how fundamental concepts and principles, like those of mechanics and thermodynamics, are handled. From this standpoint, it is regrettable that the author has not seen fit to emphasize the essentially postulational character of the "laws" of motion as part of the theory of mechanics. This leads him to introduce again the hoary reference to mass as the "amount of matter in a body", even though he admits that this is "loosely" stated. Certainly even the elementary student deserves a better deal than this. Much the same criticism can be directed to the development of the concept of energy and the principles of thermodynamics; in the latter, there is practically no emphasis on the fundamental idea of equilibrium. Wave motion is handled almost entirely from the standpoint of vibrations, and the whole of acoustics is dismissed in two pages. However, it is all too easy to criticize! We must remember that it is not the reviewer's book but that of the author we are discussing. In the presentation of elementary physics, the latter has a right to his own approach, and the author of this book has certainly set forth his views clearly and persuasively.

Nuclear Spectroscopy. Proc. of the Internat'l School of Physics "Enrico Fermi" (Varenna, Italy, June-July 1960). 258 pp. Academic, New York, 1962. \$9.00. Reviewed by Michael Danos, *National Bureau of Standards*.

THE program of this summer school seems to have been designed for physicists working in some particular domain of nuclear spectroscopy and wanting to improve their general background education in this field, or for physicists working in a related field and intending to enter the field of nuclear spectroscopy. The director of the school, G. Racah, assembled a cast which could, and did, fulfill this mission in an admirable fashion. Except for Alaga's contribution on the theory of β decay (before the advent of the 4 neutrinos!) which has the thoroughness of a text book, all articles have an introductory, qualitative character and exude the relaxed atmosphere of an almost informal lecture, even in the printed form of the book. They all

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