

many of the readers and justify the writing of the book. On the other hand, some of the applications of x rays are not covered at all, for example scattering by gases, measurement of stresses. The usefulness of the book could be improved very much by a detailed subject index. There are many instructive problems, some of them difficult and time consuming to solve, at the ends of the chapters; they appear to result from the author's teaching at Northwestern University.

* * *

Martin E. Straumanis is professor of metallurgy and research professor of materials at the Graduate Center for Materials Research, University of Missouri at Rolla.

Practical math for use

MATHEMATICAL METHODS IN THE PHYSICAL SCIENCES. By Mary L. Boas. 778 pp. Wiley, New York, 1966. \$11.95

by Jacques E. Romain

Reviewing this book was a rather lengthy task as the reviewer was so engrossed in his reading that he had a recurring tendency to forget he was reviewing and keep reading for his own pleasure. Boas's students (she is presently teaching at DePaul University in Chicago) are lucky fellows: Not everyone enjoys such a vivid and practical introduction to applied mathematics. It is a good fortune for present-day students (and instructors) all over the country, and abroad as well, that the result of the author's teaching experience and unique ability for lively, attractive and to-the-point presentation are now available in book form.

The book, which is intended for students with one year of calculus, does not claim to study every field in detail. It is not written for abstract mathematicians even though it would be a good idea for pure-math students to have a look at it and become quickly aware of the practical use of what they are taught. The purpose is to enable the reader to develop a basic competence in the areas that will be relevant to his later physical work, essentially by giving careful definitions, stating the necessary theorems and the simpler relations (many without proof), and by stressing the use and usefulness of the

methods, the particular techniques and their limitations.

The reader who has digested this book will not know everything of the theory and rarer details of any of the topics covered. But he will know principal available techniques for dealing with physical problems, with a clear notion of what these techniques can and cannot do; he will be supplied with examples of applications and shortcuts and will be cautioned against pitfalls, and he will know where to find more on the subject if necessary. The book is particularly well suited to self-study, thanks to the numerous stimulating examples that are worked out to illustrate possibilities and difficulties and to the impressive collection of problems, a good many of which have numerical answers given in an appendix.

The topics covered are infinite series, complex numbers and functions, determinants and matrices, partial differentiation and multiple integrals, vector and tensor analysis, Fourier series, differential equations, calculus of variations, special functions, integral transforms (Laplace and Fourier), probability and essentials of elementary statistics.

* * *

The reviewer formerly taught mechanics, theoretical physics and applied mathematics. Presently he is a scientific adviser in the same fields.

Modern infrared

INFRARED INSTRUMENTATION AND TECHNIQUES. By A. E. Martin. 180 pp. American Elsevier, New York, 1966. \$12.00

by Stanley S. Ballard

All workers in laboratory phases of infrared instrumentation will find this book of great value, and so will those who are involved with the so-called field applications of infrared technology. Martin is head of the infrared department of the Grubb-Parsons firm in England and is in a most knowledgeable position to write on the subject of instruments for the infrared spectral region.

The major part of the book is devoted to succinct descriptions of modern infrared spectrometers and spectrophotometers. It appears that this



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CONTENTS

1. Introduction
2. The Watson Transform
3. The Irregular Solutions
4. The Regular Solution ϕ
5. The Jost Function and the S-Matrix
6. Behavior as $|z| \rightarrow \infty$
7. Regge Poles
8. Pole Trajectories
9. Threshold Behavior
10. The Residues
11. Representations of the S-Matrix
12. Examples
13. Exchange Potentials
14. Trajectories in the k-Plane
15. The Uniqueness Problem
16. Two Particles of Spin- $1/2$
17. The Three-Body Problem
18. The Three-Body Problem (continued): The Dynamical Branch Points
- Appendixes. Bibliography. Reprints. Index.

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