

techniques of time-lapse microcinematography and electron microscopy. These could be valuable to persons contemplating using these tools.

This volume might be particularly useful to those persons who are heavily grounded in biology and biochemistry and who wish to bring themselves up to date in the areas covered. The contributors, A. S. Bajer, G. H. Czerlinski, E. D. Korn, H. D. Mayor and P. Mitchell, have all made important advances in their respective fields and have covered their subjects adequately and included substantial bibliographies.

NORMAN A. BAILY
Professor of Radiology
University of California, San Diego

A Course in Vector Analysis

By L. G. Chambers

231 pp. Chapman and Hall, London, 1969. \$7.25

Another little introduction to vectors might seem hardly necessary; but Llewelyn Chambers, senior lecturer in applied mathematics at the University College of North Wales, has written with particular empathy. His work emphasizes clear and concise explanations, rather than mathematical rigor. Thus products of vectors are discussed in terms of mechanical applications, and pseudovectors are simply described in terms of rotation. Theorems such as those of Stokes and Gauss are shown to be reasonable extensions of elementary cases rather than being strictly proved. Surprisingly, in view of other physical explanations, these theorems are little discussed in physical terms (although problems give applications).

Except for the omission of differential geometry, the content of the first five chapters is standard coverage of three-dimensional vectors. The sixth chapter concludes with "Miscellaneous Topics" that gives the book a modern cast, by briefly introducing abstract vector spaces and tensors, with considerable discussion of dyads. Although many readers would want more detail, there are sufficient exercises and worked examples to make the book attractive for self study.

PETER L. BALISE
Professor of Mechanical Engineering
University of Washington

Fission Damage in Crystals

By Lewis T. Chadderton,
Ian McC. Torrens

265 pp. Methuen, London, 1969. \$13.50

This book describes numerous experiments carried on in the Surface Physics

Laboratory of the late F. P. Bowden, professor at Cambridge University, and additional related work subsequently conducted by the authors in the US and in France. It is in a sense a continuation of the monograph *Radiation Damage in Crystals* (Methuen, 1965) written by L. T. Chadderton.

The present work is limited to the damage produced in single crystals by the passage of fission fragments. The closely related phenomena of radiation damage produced by fission neutrons is not included; however, the book cites auxiliary studies of damage produced by electron excitation as correlated with the effects of fission fragments. Several types of experimental investigation revealing the "spikes" and other changes produced in lattices are treated, including detailed studies by electron diffraction and field-ion microscopy.

A short but excellent chapter describes a study of the passage of a fission fragment directly through the tungsten tip of a field-ion microscope. The detailed examination of the "spike," as successive layers of the crystal tip are evaporated, adds considerable interest to the volume. The theoretical treatments are related primarily to the phenomena of "spike" formation in the passage of fission fragments through crystals and are sketched only in outline. However, there are many excellent electron-micrograph photographs and other photographic records. This book can be recommended for its highly specialized treatment, which relates almost exclusively to the specific research interest of the authors. Yet, it provides in no sense a general discussion of the subject, and it is deficient in that it does not relate to the experimental or theoretical work of other workers in this general field.

ROBERT S. SHANKLAND
Ambrose Swasey Professor of Physics
Case Western Reserve University

Gas Laser Technology

By D. C. Sinclair, W. E. Bell

161 pp. Holt, Rinehart and Winston, New York, 1969. \$7.00

Twenty-eight pages of this book are devoted to the choice of materials and design problems encountered in the actual construction of gas lasers. The remainder of the textual material discusses the theory of operating gas lasers. Thus the title is slightly misleading, if one interprets it to refer to the actual art of constructing a gas laser. Once one puts aside this bias the material presented is both useful and well done.

After an initial introduction to what constitutes a gas laser, the authors use a "semiclassical" approach to the theory

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