dislocations are involved in this discussion, they are not specifically considered from a geometrical standpoint.

In two related chapters Urusovskaya first discusses the theory of asterism (smearing of Laue reflections as a result of plastic deformation), as a prelude to discussing deformation without asterism, and then kink bands and related plastic features. The common aspects of these phenomena are discussed.

Indenbom specifically treats the dislocation theory of plastic deformation. His treatment is quantitative and concerned especially with the interaction between dislocations.

Miuskov examines the nature of intracrystalline boundaries, including both small-angle and large-angle boundaries. The discussion includes the various theories of such boundaries, the detection of these boundaries by etching, the motion of boundaries under stress, their surface energies, and diffusion along them.

This book assumes a general knowledge of crystal plasticity. Its subject matter centers on the dislocation explanation of the plasticity of crystals. Most, if not all, of the material has already been published elsewhere; the value of the book is in integrating the material. I found the chapters by Urusovskaya, on deformation with and without asterism and on deformation related to kinking, most interesting and very readable.

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Applied Mathematics

Advanced Calculus for Applications. Francis B. Hildebrand. Prentice-Hall, Englewood Cliffs, N.J., 1962. ix + 646 pp. Illus. $13.

This textbook of advanced calculus for students of applied mathematics is a revised and enlarged version of the author's earlier book, *Advanced Calculus for Engineers* [Prentice-Hall (1948)]. In its present form the book is roughly comparable to Sokolnikoff and Redheffer's *Mathematics of Physics and Modern Engineering* [McGraw-Hill (1958)], although, on the whole, it is both less comprehensive and more "integrated" than the latter. It is also some 260 pages shorter and somewhat more heavily weighted in the direction of ordinary and partial differential equations.

Consideration of several examples may clarify this comparison. In Sokolnikoff and Redheffer, numerical analysis is the subject of a final separate chapter of some 60 pages, which touches on iteration methods, interpolation, approximation, and numerical integration of differential equations. In Hildebrand, numerical methods appear mainly as a part (some 25 pages) of an opening four-chapter sequence on ordinary differential equations. The Newton-Raphson iteration technique is also given brief notice in a much later chapter in which Jacobians have been introduced, while the method of Stodola and Vianello is noted in connection with boundary value problems in still another chapter.

Again, in place of separate systematic study, which Sokolnikoff and Redheffer award the subject of infinite series in a chapter of more than 100 pages, Hildebrand integrates parts of this subject into treatments of ordinary differential equations (nearly 70 pages), boundary value problems, partial differentiation (Taylor's series), and functions of a complex variable.

Hildebrand introduces the Laplace transform early as a method for ordinary differential equations and uses it again in connection with a particular partial differential equation and in inversion via contour integration. Here Hildebrand's 40-page introductory treatment, which concludes with a table of some 40 particular Laplace transforms, is considerably more full and comprehensive than the 15-page appendix on the Laplace transform in Sokolnikoff and Redheffer.

Occasionally, Hildebrand's definitions are less than precise. For instance, the first sentence in chapter 8, on partial differential equations, reads as follows: "A partial differential equation is said to be *linear* if, when the equation has been rationalized and cleared of fractions, no powers or products of the unknown function or its partial derivatives are present." Is the partial differential equation

$$\frac{\partial u}{\partial x} + \sin\frac{\partial u}{\partial y} = \tan u$$

linear? And what of partial differential equations which cannot be rationalized and cleared of fractions?

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New Books

Mathematics, Physical Sciences, and Engineering

Boiler House and Power Station Chemistry. Wilfrid Francis. Arnold, London; St. Martin's Press, New York, ed. 4, 1962. 447 pp. Illus. $15.

Consolidated Index of Selected Property Values. Physical chemistry and thermodynamics. Publ. 976. Prepared by the Office of Critical Tables. Natl. Acad. of Sciences–Natl. Research Council, Washington, D.C., 1962. 297 pp. $6.

Creep in Structures. A colloquium held at Stanford University, July 1960. Nicholas J. Hoff, Ed. Academic Press, New York; Springer, Berlin, 1962. 383 pp. Illus. $15.

Digital Information Processors. Selected articles on problems of information processing. Walter Hoffmann, Ed. Interscience (Wiley), New York, 1962. 761 pp. Illus. $27.

Digital Processes for Sampled Data Systems. Alfred J. Monroe. Wiley, New York, 1962. 497 pp. Illus. $12.50.

Diophantine Geometry. Serge Lang. Interscience (Wiley), New York, 1962. 180 pp. Illus. $7.45.

Electric Circuit Analogies for Elastic Structures. vol. 2. Richard H. MacNeal, Wiley, New York, 1962. 277 pp. Illus. $11.50.

Geochemistry in Mineral Exploration. H. E. Hawkes and J. S. Webb. Harper and Row, New York, 1962. 429 pp. Illus. $12.50.

An Introduction to the Physical Chemistry of Iron and Steel Making. R. G. Ward. Arnold, London; St. Martin's Press, New York, 1962. 247 pp. Illus.

Macromolecular Chemistry. A symposium held in Montreal, Canada, July–August 1961. Butterworth, Washington, D.C., 1962 (reprinted from *Pure and Applied Chemistry*, vol. 4, Nos. 2–4). 341 pp. Illus. $9.50.

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Rock-Forming Minerals. vol. 3, *Sheet Silicates.* W. A. Deer, R. A. Howie, and J. Zussman. Wiley, New York, 1962. 280 pp. Illus. $15.50.

Studies in Optics. A. A. Michelson. Univ. of Chicago Press, Chicago, Ill., 1962. 201 pp. Illus. Paper, $1.75.

The Theory of Electromagnetic Flow-Measurement. J. A. Shercliff. Cambridge Univ. Press, New York, 1962. 157 pp. Illus. $4.50.