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simple structural elements). Included are results of recent work on conical shells and the influence of localized loading on thin cylinders.

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The reviewer formerly taught mechanics, and is currently involved in research work on stress analysis in layered systems.

Complex variables generally considered

THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. By A. I. Markushevich. Transl. from the Russian by Richard A. Silverman. Vol. 1, 459 pp., Vol. 2, 333 pp. Prentice-Hall, Englewood Cliffs, N.J., 1965. \$32.00 per set.

by J. Gillis

Textbooks on complex variable theory can fairly be divided into two types, according to whether the emphasis is on special functions (e.g. Whittaker and Watson) or on general theory (e.g. Titchmarsh). The one under review is an excellent example of the second type and the reader will search the index in vain for the words "Bessel," or "hypergeometric." However the book does contain some excellent chapters on a wide variety of topics which do not feature in the usual texts, for example the Poisson-Jensen formula and subharmonic functions.

The treatment is thorough and there is an abundance of illustrative examples. The quality and the clarity of the English prose are both considerably above the average for translations from the Russian. The printing and production are elegant and the whole eminently readable. In short it is the sort of text that a junior graduate or senior undergraduate could use with advantage.

The production is so polished that it seems churlish to criticize. However the feeling at the end is that the text could have been made more exciting. Thus the proof of Picard's theorem without the elliptic modular function was an exciting tour de force in its time, but only to those who knew the proof with that function. To those coming on the matter for the first time surely there is

more life in the modular function proof, opening up new vistas of mathematics far beyond the theorem itself. Again the chapter on univalent functions does not mention Biebach's conjecture. This conjecture may be no more basic to science than Goldbach's, but a great deal of very interesting mathematics has been created in the search for a proof. Its omission is typical of the disinterest in spice shown by so many textbooks of our time.

* * *

The reviewer is a member of the department of applied mathematics at the Weizmann Institute in Rehovoth, Israel.

Atomic collisions

ADVANCES IN ATOMIC AND MOLECULAR PHYSICS, VOLUME 1. D. R. Bates and Immanuel Estermann, eds. 408 pp. Academic Press, New York, 1965. \$13.50.

by Sanborn C. Brown

Physicists are trying in many different ways to publish the latest advances on the many research fronts in a way which will maximize the usefulness of survey papers for people interested in specific areas. The present volume is a most successful attempt to bring together review articles of the highest caliber concentrating on atomic and molecular collision phenomena.

There are six survey articles in this volume covering the subject matter of "Molecular orbital theory of the spin properties of conjugated molecules," "Electron affinities of atoms and molecules," "Atomic rearrangement collisions," "The production of rotational and vibrational transitions in encounters between molecules," "The study of intermolecular potentials with molecular beams at thermal energies," and "High intensity and high energy molecular beams." Each article is complete in itself with a detailed table of contents, and in every case a carefully prepared and inclusive list of references. In general the material covered concentrates on progress that has taken place in the last five years, and the contributors are all leaders in their particular fields of endeavor. The emphasis of the collection is on the theoretic

cal side although experimental advances are not wholly neglected.

In many ways the book reminds one of the effort of S. Flügge with his *Handbuch der Physik* in both form, content, and objective. The editors, themselves, say in their foreword: "This serial publication is intended to occupy an intermediate position between a scientific journal and a monograph. Its main object is to provide survey articles in fields such as the following: atomic and molecular structure and spectra, masers and optical pumping, mass spectroscopy, collisions, transport phenomena, physical and chemical interactions with surfaces, and gas kinetic theory." Professors Bates and Estermann are to be congratulated on this first volume, and we look forward with expectation to forthcoming surveys and review articles in future volumes.

* * *

A professor of physics at MIT, the reviewer has worked in atomic and plasma physics for many years.

Incompressible fluids

SLOW VISCOUS FLOW. By W. E. Langlois. 229 pp. Macmillan, New York, 1964. \$8.95.

by L. Talbot

The contents of this book may be divided roughly into two parts. In the first half, the author sets out the fundamentals of Cartesian and curvilinear tensor analysis, and uses tensor methods to derive the basic kinematical and dynamical equations of viscous fluid flow. In the second half, methods are presented for some of the well known exact solutions of the incompressible Navier-Stokes equations, such as pipe flow, and the Rayleigh and Hamel problems. Stokes and Oseen flow past a sphere are discussed, and the method of matched asymptotic expansions is illustrated briefly through a presentation of the Proudman and Pearson calculation of the next term in the sphere-drag formula. Plane "creeping" flows, that is, flows where the inertia terms can be neglected, are discussed, and some conformal-mapping techniques for solving the biharmonic

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