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 Biebabach'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.

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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 theoretical 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 foreward: "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.

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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

stream-function equation are given. A few examples of rotary flows are discussed and the book concludes with an outline of lubrication theory and a selection of problems that arise in this subject.

The reader will probably find the first half of the book more useful than the second. The methods of tensor analysis are explained well, and the derivations of the basic equations are done carefully. The emphasis is mathematical, and more attention is given to rigor of analysis than to the physical phenomena that give rise to the assumed (incompressible-Newtonian-Fourier) fluid properties. For example, incompressibility is introduced as a postulate, rather than as a limiting form of the compressible flow equations for low Mach number and small temperature gradient. As he indicates in his preface, the aim of the author in the second half of the book has been to select for discussion certain "creeping" flows that he feels are not adequately treated in existing texts and treatises. Consequently, though a student of viscous flow may find certain sections helpful, he must perforce look elsewhere for a complete and unified treatment of the subject.

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Four years too late

WEAK INTERACTIONS OF ELEMENTARY PARTICLES. By L. B. Okun'. Transl. from Russian by Z. Lerman. 174 pp. Israel Program for Scientific Translations, Jerusalem, 1965. $12.75.

by E. M. Henley

The English version of this small but expensive book comes about four years too late. It is based on lectures given by Professor Okun' in 1960-61 and is aimed at "experimentalists engaged on elementary particles and high energy physics, and for beginning theoretical physicists who prepare to specialize in this field." Although the book probably served this purpose when it first appeared, the rapid advances in the field now make it out of date.