ators, presumptuous politicians, pursuers of the bitch goddess; the recklessness, arrogance, and petulant demands of a self-anointed aristocracy; the social irresponsibility for which it is damned twice over: for the things it does and the things it fails to do. What can be set in the opposing column? Simply refusal to allow the pursuit of knowledge to degenerate into this. Science can change again, and this need not be forced by rough hands. Science can still turn to its responsible men who believe that the best of controls is self-control, and to its wise counselors for the young whose minds are still bright with curiosity."

The table of contents shows that part I of *Science: U. S. A.* is concerned with the state of the establishment, part II with the state of the art. In 15 chapters there is presented a view of today's laboratories, the new elite, genetics, drugs, automation, the military and peaceful atom, the "new" physicists, the "practical" chemists, and a warning about choices that will soon have to be made on how to spend lives and dollars among the attractive, competing paths open to science. The reader is not strongly aware of the structure of the book, for its style suggests conversation and free association.

Of particular interest to scientist and taxpayer should be Gilman's contrast of tax-paying and tax-exempt research and development corporations including such names as Aerospace, Arthur D. Little, Bell, Cornell, General Electric, IBM, Jackson, Lincoln, Mitre, Sandia, etc. Comments are offered on a range of controversial topics: President Eisenhower's warning against "acquisition of unwarranted influence . . . by the military-industrial complex," Mohole ("Mo-Ho-Ho and a Barrel of Funds"), Dr. Oppenheimer, MURA, Project Ozma, etc. On page 316 we are told that the government owned 512 lie-detecting machines (computers) that cost $428 000 and that the annual salaries of their operators came to $4 million. The significance of that, and some of the other figures offered, is not obvious.

In places, the writing tends to be flowery. The spectrograph is the "queen of scientific instruments," the electron microscope is the "young king," . . . the second law of thermodynamics is Thanatos. Some statements are puzzling: "Though the average statistician cannot be held responsible for the announcement that 50 per cent of the nation's schoolchildren are below average, he cannot escape blame for leveling creativity down to an average mediocrity." How? A few statements are misleading: "E. O. Lawrence invented his cyclotron at Berkeley" (p. 124), or a suggestion for a bomb to be "dropped" from a space-platform satellite (p. 366). Some criticism seems pointless. Twice Gilman berates Yale for having "disdained" and "expelled" its center of alcohol studies (p. 109, 111), apparently ignoring the university's stated academic policies applicable in this change. A little farther on (p. 205) Yale appears in an odd comparison: "Counting one suicide every twenty-six minutes, the mental health people triumphantly name suicide as America's ninth (and Yale's second) 'most preventable fatal sickness' ".

While a reader may take exception to individual statements he will welcome Gilman's book if he believes, as Gilman does, that (1) the powers given science carry responsibility, and (2) the money poured into science carries obligations—it must not build merely a playground for the new elite.

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A practitioner's handbook

FORMULAS FOR STRESS AND STRAIN (4th ed.). By Raymond J. Roark, 432 pp. McGraw-Hill, New York, 1965, $12.50.

by Jacques E. Romain

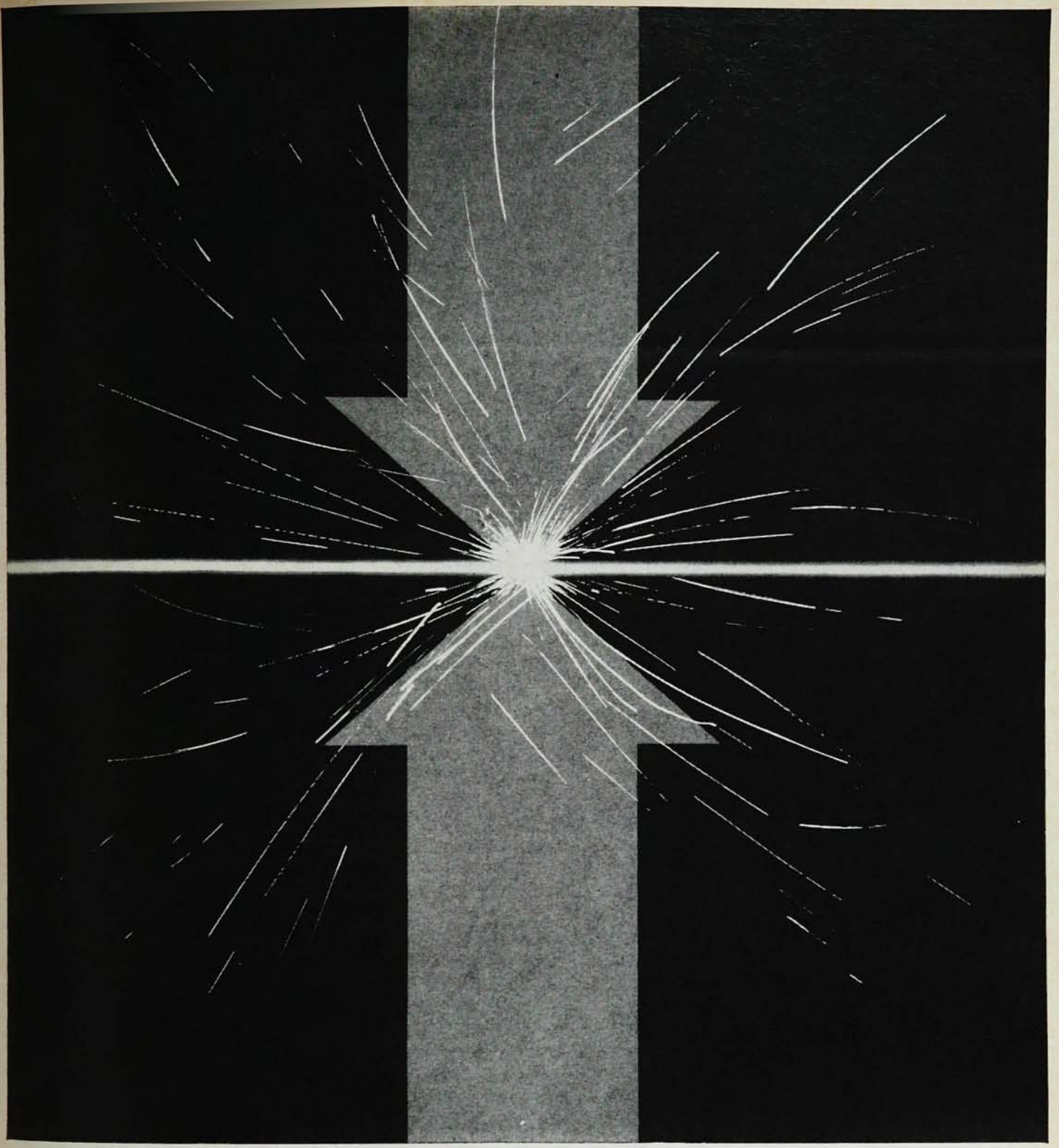
Professor Roark, emeritus professor of mechanics at the University of Wisconsin, has gained a wide experience in stress analysis and design in the course of some forty years of consulting work. He felt the need for a handbook of stress and strain design formulas, in which the design engineers would find, in a compact form, data that are otherwise scattered in an extensive literature. This concern was the origin of the present book, whose first edition goes back to 1938.

This is no textbook. The sole emphasis is on the extreme values needed by the design engineer (critical stresses and deflections in structures). The description of stress distributions (e.g., isostatics patterns) is outside the scope of the book. No derivation is given, but numerous bibliographic references are mentioned for the benefit of the reader who requires additional or more detailed information on a given problem.

An introductory part (amounting to some 70 pages) contains a glossary and a list of general symbols (the particular notations are indicated at the head of each table) and a brief statement of the essential facts of materials behavior under stress, of the main principles of mechanics likely to be useful in applying the formulas, and of experimental methods in stress analysis.

Two general purpose chapters contain formulas on geometrical properties of a plane area and on the general relationships between stresses and strains in a material element. The bulk of the book consists of formulas (mostly in tabular form) on the following classified topics: beams in flexure, torsion, flat plates, columns and other compression members, pressure vessels and pipes, bodies under direct bearing and shear stress, elastic stability (buckling), dynamic and temperature stresses. In each section, in addition to the typical case, a variety of special cases is considered, representing peculiarities of form, proportions and conditions of loading. The book is concluded with miscellaneous tables of design factors and of properties of materials. A detailed subject index will help the reader to retrieve a specific piece of information.

As compared to the previous editions, this revised fourth edition contains new material on such subjects as: allowable stress and factor of safety, fatigue, simultaneous axial and transverse loading, plastic analysis and mechanical vibrations (table of proper frequencies for a number of



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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-Jenson 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