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ined. In addition to the mathematical treatment of double refraction, this chapter contains considerable discussion of the methods of measurements of the photoelastic constants and many interesting notes pertaining to the historical development of the topic.

Specific problems of stress-strain analysis which can be examined experimentally by the photoelastic method are treated in the next three chapters. There follows a chapter dealing with the difficulties and techniques of testing of materials. The book is then concluded with a consideration of the use of the photoelastic method for the investigation of stress in structures and machines.

The chief weaknesses of this book are associated with the date of writing. While many archaic points can be ignored, this volume does not contain a treatment of three-dimensional stress analysis, which is undoubtedly the most important development in photoelasticity since the first edition.

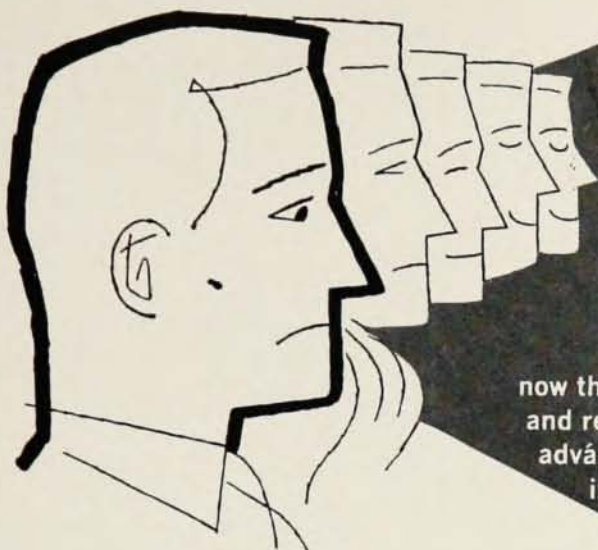
The Tree of Mathematics. Edited by Glenn James. 20 contributors. 403 pp. The Digest Press, Pacoima, Calif., 1958. \$6.00. *Reviewed by P. J. Davis, National Bureau of Standards.*

This is a collection of 27 expository articles on various topics in mathematics. Written by 21 authors, the articles range from high-school algebra to the theory of games, stopping at such intermediate places as infinite series, differential geometry, projective geometry, abstract sets, and group theory. The articles are highly uneven in length and quality. Some of them seem to be encyclopedia articles. Some seem to be technical survey articles and there are several very good ones. Some contain watered down material from standard textbooks. Some articles have the flavor of a professor trying hard to interest an audience of students in his specialty. Some have problems to work and some are on the frontiers of research. I can't say I understand the grand plan of the book. There is a picture on the outside cover which shows mathematics as a tree. The roots, the trunk, and the branches are labeled with the names of various mathematical subjects. But the book contains little that bears directly on the interrelationships depicted. Yet, I think it might be useful for undergraduate collateral reading. Readers of this magazine might like to take a look at the chapters on matrices, elements of a theory of probability, dynamic programming, and the theory of games.

Communication, Organization, and Science. By Jerome Rothstein. Foreword by C. A. Muses. 206 pp. The Falcon's Wing Press, Indian Hills, Colo., 1958. \$3.50. *Reviewed by R. Bruce Lindsay, Brown University.*

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the author brings together material he has presented at society meetings and in various journals on certain aspects of cybernetics, with special reference to the relation between information and organization. The book is unfortunately not well organized and gives the impression of being a series of rather disconnected essays put together with not sufficient concern for the logical development of the ideas. The style and level of difficulty are very uneven: some sections are popular in character and can probably be understood by those with limited attainments in mathematics and physics, while others demand a considerable acquaintance with the fundamentals of thermodynamics.

The stress which the author lays upon the connection between communication and organization and the role of entropy in the description of both is interesting though not entirely novel. He has a good section on the interpretation of scientific theory as the organization of observation. His comments on the possible application of information theory to the biological and behavioral sciences are tentative and hardly profound. The book would certainly have been more valuable to all those interested in the field had the author been willing to arrange his presentation more carefully and document his ideas in greater detail.

The main text is preceded by a lengthy foreword (96 pages) by C. A. Muses, which appears to have little relevance to the theme of the book and the presence of which in such a volume is somewhat difficult to understand.

Concepts of Classical Optics. By John Strong. 692 pp. W. H. Freeman & Co., San Francisco, Calif., 1958. \$9.50. *Reviewed by C. C. Kiess, National Bureau of Standards.*

One who has been brought up on such textbooks as Preston's *Theory of Light*, Drude's *Lehrbuch der Optik*, or Wood's *Physical Optics*, wonders what a new book, designed as "an intermediate course in optics", has to offer in the way of novelty in a field for which a half-dozen, or more, books are now available. Since "some familiarity with electricity and magnetism, at the intermediate level, and some knowledge of calculus, vectors, and complex numbers are prerequisite", one wonders further at what stage of intermediacy a student is ready for Professor Strong's book. To one so prepared the book has much to offer.

In the first two preparatory chapters light is introduced as a wave phenomenon of which the analytical properties are derived. In the third chapter one learns that the particular waves, applicable to optics, are those by which a disturbance is propagated in an electromagnetic field in accordance with Maxwell's equations. These are transverse waves which, in their interaction with matter, account for the main features of physical optics, namely: "reflection and refraction; velocity and dispersion; polarization and crystals; and finally, interference and diffraction". These properties of light flow as logically from the field equations as do those of