to various points of view, which are not incorrect for the substrata but lead to genuine misconceptions for the class as a whole. For instance, although two thirds of the aged are physically able to take care of themselves socially and economically, and are able to function psychologically, physicians may popularize quite a different view as a consequence of their examination of the other third.

The meager data from this study suggest the need for orienting experts about potential biases from their own experiences. There is need for a campaign to change the attitudes of the public toward the older worker. Such an educational campaign should stress the normality of the physical and psychological changes that come with age, and that should not be confused with deterioration. In view of the fact that the number of older workers in the labor force, already large, will continue to increase in the future, a change in attitudes toward the older worker is necessary if they are not to become a severe drain on the economy because of discrimination in employment. The experts seem to be in especial need of orientation.

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Book Reviews

London Essays in Geography. Rodwell Jones Memorial Volume. L. Dudley Stamp and S. W. Wooldridge, Eds. Cambridge, Mass.: Harvard Univ. Press, 1951. (Published for the London School of Economics and Political Science.) 351 pp. $5.00.

The 17 essays comprising this memorial volume were prepared by colleagues and former students of Professor Jones. The authors received most of their training and developed their specialized interests in the King's College and London School of Economics joint School of Geography which Rodwell Jones, in cooperation with W. T. Gordon, of King's College, was largely responsible for organizing in 1921–22. It was due to his patience, wisdom, and experience that the new venture was able to surmount the difficulties encountered in the first few years of operation. The school developed a broad coordinated approach to geography—economic, historical, and physical—designed to meet the specialized needs and capabilities of the two colleges, to build a sound academic treatment of the subject, and to put it upon a firm academic foundation.

The essays cover various aspects of geography. All are well written, in language that should present no difficulties to the understanding layman. Some, like Kenneth Hare's "Climatic Classifications," are technical and functional in approach, designed for the specialist. Others, such as Beaver's "Development of the Northamptonshire Iron Industry, 1851–1930," or Gordon's "Severn Waterway in the Eighteenth and Nineteenth Centuries," which effectively integrate physical, economic, and historical data, are excellent examples of historical geography and closely resemble the Rodwell Jones approach to the subject. Dudley Stamp's "Applied Geography" does a superb job of demonstrating in a practical fashion the role of geography in land-use planning. One could wish that the volume contained more essays of this type covering economic, political, and social problems. In his approach Stamp clearly demonstrates "the application of geographic principles and methods to the problems of town and country, the actual methods employed by the geographer in attacking his problem," and the basic goals the study should achieve.

Geographers the world over will find the essays stimulating and helpful. Their variety will satisfy needs of both specialists and generalists. To social scientists they present a clear picture of how geographical factors can contribute to the solution or interpretation of many types of problems.

As a memorial to "a loved and respected friend and teacher" the volume is somewhat disappointing. Too little emphasis is given to "the man"—the man who contributed so much to the development of geography in the University of London and, particularly, to the joint efforts of the London School of Economics and King's College.

Rodwell Jones was not a prolific writer, but what he did publish is characterized by a very high standard of scholarship. It is unfortunate that the editors did not see fit to include a bibliography of his essays as well as of his books, a reprint of his stimulating inaugural address made in October 1925 when he succeeded H. J. MacKinder as head of the Department of Geography in the London School of Economics and professor of geography in the University of London, and a portrait. These personal aspects, appropriately highlighted, would have sharpened the picture of the man from whom many students drew inspiration and guidance.

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Advanced Engineering Mathematics. C. R. Wylie, Jr. New York–London: McGraw-Hill, 1951. 640 pp. $7.50.

The increasing extent to which modern engineering technology has availed itself of mathematical tools beyond the calculus is well illustrated by the content of this book. Technically, the material divides into two parts, although the presentation itself is con-

tinuous and logically integrated. The first eight chapters, making up the first part, are a course in linear differential equations with emphasis on time invariant systems and their solution by Laplace transform methods. The second part, Chapters 9 through 14, is a course in complex variables, leading, on the one hand, to the complex integral inversion of the Laplace transform and, on the other, to engineering applications of conformal mapping. A chapter on Gibbs vector analysis, one on numerical analysis, and an appendix covering selected topics in algebra and calculus complete the book.

The text is one that could be used for self-study. The style has classroom informality, without being verbose, and a running account of all manipulative steps in proofs and derivations is provided which is adequate to guide an unsophisticated reader. The text is illustrated by many worked examples, and the student is offered a wide and graded selection of problems for solution. Few of the examples or problems are formal exercises. Most of them illustrate both a mathematical point and a potential application by means of a problem drawn from, or at least in the language of, some branch of engineering.

The author should be commended on maintaining a high standard of mathematical precision, without sacrifice of readability or heuristic explanation.

The book is well made, well printed, and liberally illustrated with excellent diagrams.

The selection of material seems generally good. Omissions in a work of some 600 pages can scarcely be criticized. The reviewer has a serious disagreement with the author concerning the importance of the impedance concept, however. In particular, the author's last sentence on page 95 is simply wrong. This difficulty could be resolved by a transfer of much of the applicational material of Chapter 4 to a point following Chapter 6, expanding the horizon to include analyses of transient behavior by calculation of impedances.

The reviewer would like to make a general comment on selection. The linear mathematics of engineering is a forest which, in all works known to him, is completely obscured by trees. These works, including the present one, are botanical catalogues; each needs at least one chapter on ecology.

In fact, throughout the linear field, one is dealing with a relatively small number of basically geometric concepts. Admittedly, the emphases and the details, in the specific instances of ordinary differential equations, boundary value problems, etc., are varied and essentially so. This, however, is no reason for concealing from the student an underlying unity which does exist. A good introduction to the *geometry* (not the formalism) of finite dimensional vector spaces could provide the language and intuition needed here, but to this reviewer's knowledge no such introduction has yet been made accessible to engineering students. It is his belief that adequate coverage of these ecological, or at least morphological, topics could simplify later presentations to a point where a net saving in bulk might result. The reviewer would, in any case, include the ecology even at the expense of omitting botanical items from the catalogue.

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The Role of Engineering in Nuclear Energy Development. Proceedings of the Third Annual Oak Ridge Summer Symposium, August 27–September 7, 1951. N. F. Lansing, compiler. Distributed by Office of Technical Services, Department of Commerce, Washington, D. C. 509 pp. $1.40.

The material covered in this volume will be of great value to administrators as well as to research men in engineering schools who want answers to the questions: Just what should be the background of a nuclear engineer? What type of courses should be taken? What are the problems involved in reactor technology and the problems for the practicing engineer in the atomic energy program?

The symposium is divided into four parts. In the first part, T. K. Glennan deals with general problems in engineering and the objectives of the Atomic Energy Commission. This is followed by C. J. Suits discussing some economic aspects of atomic power. L. R. Hafstad describes the atomic energy reactor program, and, finally, J. A. Lane considers the contribution of engineering to nuclear energy development. The second part covers the scientific background, starting with basic concepts of nuclear physics (A. H. Snell). A simplified approach to reactor calculations by A. V. Masket will certainly be valuable for the engineer who wants to become familiar with the problems involved in reactor calculations. This is followed by standards of radiological protection and control, by K. Z. Morgan. This information will be of great interest to the practicing engineer, as well as to anyone organizing a nucleonics program.

Part three covers the engineering aspects. J. A. Swartout discusses chemical problems in the development of nuclear reactors. This is followed by the problems of separation of stable isotopes, materials of reactor construction, heat transfer problems in nuclear reactors, instrumentation in control of reactors, nuclear radiation shielding principles, and disposal of radioactive waste material. This section should be of great interest to the industrial and sanitary engineer.

M. M. Mills, of North American Aviation, presents a discussion of hazards of low power research reactors—a subject for careful consideration by all educational institutions and research laboratories building a small reactor. A survey of reactor types by N. F. Lansing is well illustrated with schematic drawings and photographs of the declassified existing reactors.

The last fifty pages of the symposium are devoted to a panel discussion of the problems in nuclear engineering education. Experts in nuclear technology from Oak Ridge (A. Weinberg and F. C. Vonder