Book Reviews

Research in Photosynthesis. Papers and discussions presented at the Gatlinburg Conference, October 25–29, 1955, sponsored by the Committee on Photobiology of the National Academy of Sciences–National Research Council and supported by the National Science Foundation. H. Graffron, C. S. French, R. Livingston, E. I. Rabinowitch, B. L. Strehler, and N. E. Tolbert, Eds. Interscience, New York, 1957. xiv + 524 pp. Illus. $12.

The National Science Foundation has now sponsored two general meetings on photosynthesis, both held in Gatlinburg, Tennessee. The first one, in November 1952, covered all aspects of the subject, but unfortunately the proceedings of that first conference were never collected and published in any single place. In this volume are not only the 67 papers which were presented at the second conference on photosynthesis but also transcriptions of a major portion of the discussions which took place there; thus the volume provides for the world at large not only a record of the conference in the form of the formal papers but something of the atmosphere of the conference, which comes through in the transcribed discussion.

This second Gatlinburg conference was not intended to encompass all aspects of the subject of photosynthesis. It was supposed to be limited to papers and discussion relating to the primary photochemical act itself. Since knowledge on this particular aspect is, as yet, limited to an enormous collection of empirical observations, together with some half-dozen theories which encompass one or another area of these empirical observations, it is clear that no volume can present any coherent story beyond this. The editors of this collection, however, have done a remarkably good job of arranging the wide variety of contributions. They have done this under six principal headings, as follows: (i) "Absorption, fluorescence, luminescence and photochemistry of pigments *in vitro*"; (ii) "Absorption, scattering, fluorescence, luminescence and primary photochemical processes *in vivo*"; (iii) "Possible role of cytochromes"; (iv) " 'Dark' reactions"; (v) "Kinetics, transients and induction phenomena"; (vi) "Formation and condition of chlorophyll in the living cell."

It is clear that all workers in any aspect of the field of photosynthesis will require this collection for their reference shelves, regardless of the specific area of their work. It not only gives a general impression of the status of our knowledge of the particular area, as of October 1955, but it will be of great value as a key to an enormous variety of observations to be found in the literature.

One cannot but be tempted to compare this publication with the record of a similar conference, also a second one, which was held in the Soviet Union 21–26 Jan. 1957. All that is available to us as yet as a record of this "Second All-Union Conference on Photosynthesis" is a set of abstracts. An examination of these abstracts reveals a breadth of activity, even in the limited area of the primary photochemical process, at least as great as that to be found in the present volume.

One looks forward with considerable anticipation to the records of the third conferences.

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The Pharmacologic Principles of Medical Practice. John C. Krantz, Jr., and C. Jelleff Carr. Williams and Wilkins, Baltimore, Md., ed. 4, 1958. xi + 1313 pp. Illus. $14.

The fourth edition of this well-known textbook is substantially larger than the first edition, which appeared in 1949. This is true in spite of the effective manner in which the authors have deleted discussion of various drugs as they have come to be used less frequently; the increase in the size of the volume reflects the growing content of this discipline.

Two new chapters have been added, one on "Use of drugs in the treatment of mental illness" and the other on "The local use of drugs in the ear, eye, nose, and throat." Other chapters, especially those on the treatment of bacterial diseases and of hypertension, arthritis, and diabetes, have been expanded appreciably.

This book is for all students of the medical sciences. It is less comprehensive than some texts commonly employed, but the material has been well chosen, and many summary tables help to reduce the length. Most structural formulae are given, and illustrations are frequent. Historical developments in the field are presented along with portraits of important investigators. The chapter on the response of cells to drugs is particularly interesting to the professional pharmacologist, and the attempts to explain drug actions in terms of intracellular enzyme reactions provides a nice correlation of pharmacology with biochemistry.

The references at the end of each chapter are well selected, although the authors make no attempt to be comprehensive. Most of the drug preparations that are officially listed in the United States Pharmacopeia and the British Pharmacopeia are given, with the recommended dosages.

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Geography in the Twentieth Century. A study of growth, fields, techniques, aims and trends. Griffith Taylor, Ed. Philosophical Library, New York; Methuen, London, ed. 3, 1957. xi + 674 pp. Illus. + plates. $10.

This work, now in its third edition, offers an imposing array of essays on various aspects of contemporary geography, by 22 authors. Unfortunately, it fails of being "a study of growth, fields, techniques, aims, and trends" in any comprehensive sense. What it does provide is a mixture of the good and the bad in contemporary geographic thought.

The book is divided into three parts. The first, "Evolution of Geography and its Philosophic Basis," includes useful chapters on 19th-century geography and on French, German, and West Slavic contributions to the field. Unaccountably, the English-speaking world is not discussed. An excellent paper by G. Tatham on the environmentalist-possibilist controversy, pointing out the fallacies of environmentalism, concludes the section. The second part, although entitled "The Environment as a Factor," deals with such diversified topics as geomorphology, climatology, land use surveys, exploration, and the tropics, and by no means defines "the environment as a factor"—if, indeed, this is capable of definition. Karl J. Pelzer's chapter on "Geography and the tropics" is perhaps the high point in the book. The third section, "Special Fields of Geography," samples a number of fields, providing rather spotty coverage of the discipline.

The third edition differs from the preceding one in few respects. A reprint of

H. C. Darby's stimulating and authoritative paper, "The relations of geography and history," has been added, and Taylor's chapter on the exploration of Antarctica has been brought up to date, or nearly so.

As a reference work, the volume is distinctly useful. A reader desiring a brief summary of contemporary thought in geomorphology, climatology, historical geography, applied geography, cartography, and other such fields will find these fields well covered in the book. If, however, he is looking for a general overview of geography, of its breadth of scope, its aims, philosophy, and advancing frontiers, he should seek elsewhere: the volume, almost totally lacking in *Zusammenhang,* fails to provide a comprehensive and coherent view of the science.

The nongeographer would be well advised, therefore, to avoid reaching any conclusions about the status and accomplishments of this science from evidence found in this book. For one thing, a wholly anachronistic bias toward environmentalism underlies many of the contributions, notably those of Huntington, Visher, and, particularly, the editor himself. For another, systematic fields of human geography are not adequately covered. In sum, it can be said that the value of this work—and it is considerable—lies rather in the many useful essays it contains than in the character of the work as a whole.

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Chemical Engineering in the Coal Industry. An international conference organized by the National Coal Board, Great Britain, June, 1956. Forbes W. Sharpley, Ed. Pergamon Press, London and New York, 1957. v + 141 pp. $8.50.

Due to the need to use the lower grade coals and also to produce a more nearly smokeless domestic fuel it has become increasingly important to upgrade these fuels by means of chemical engineering. In this volume there are seven technical papers, three by British authors, three by French authors, and one by a German, with an opening address by A. H. A. Wynn and a closing address by J. Bronowski, both of Great Britain. There is considerable discussion following each paper.

The conference considered various methods for developing suitable ways to produce a good low-smoke briquette suitable for domestic use. In the several papers the authors cover controlled oxidation and fluid oxidation of coal, carbonization of briquettes, hot briquetting, and semicarbonization, as well as tars that have been obtained and how to treat low-temperature tars. In Great Britain, the problem is the need for efficient fuels for heating "fourteen million grate-heated houses"; in France, the production of good coke from coals which do not produce coke; in Germany, the production of special briquettes for smelting; while here in the United States it is the improvement of techniques for liquefying our coals, as in South Africa.

To sum up, this book urges us to use coal for the production of better fuels instead of the production only of heat and smoke.

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Our Nuclear Future. Facts, dangers and opportunities. Edward Teller and Albert L. Latter. Criterion Books, New York, 1958. 184 pp. Illus. $3.50.

The first part of this book is a straightforward and engaging account of factual scientific material on nuclei and nuclear energy. The second part is something else again. Edward Teller is noted for the imaginativeness of his ideas and the intensity of his feelings and opinions. The last half of this book is concerned with material of a more political nature, regarding which Teller's opinions, like those of anyone else, can hardly be subjected to scientific tests of validity. It is perhaps a hazard for the uninformed reader, who may expect that the latter part of the book, like the first part, will give him a careful, balanced, objective account. With chapter 8, on "Action of radiation on matter," the noncontroversial and completely objective account ends. The subsequent part of the book does contain a good deal of equally objective material; but in addition, and in spite of the evident attempt of the authors to present both sides of many highly controversial questions, their strong belief that weapon development and testing must be continued not only is explicitly stated but also unfortunately results in severe coloring of the factual material involved.

Teller himself has stated that it is impossible to discuss these problems in a short space and that therefore he was, with Latter, writing a book on the subject. It is clearly also impossible to take up, in this short space, the very large number of instances where I find the authors' presentation and approach to be severely incomplete, illogical, or misleading. But one must give at least one example. The following illustrates the point.

In a discussion concerning the fact that the radiation dose to the average individual from fallout is so small that it cannot produce any statistically detectable increase in leukemia, which is true, data are given in so unscientific a way as to be most unworthy of two such capable scientists as the authors. The data give the leukemia incidence in Denver, New Orleans, and San Francisco as 6.4, 6.9, and 10.3 new cases, respectively, per 100,000 population, for a single year. These data are then used to indicate that the extra cosmic radiation received by an individual in Denver as compared with the other cities does not produce any measurable increase in leukemia. The authors go even farther to discuss possible explanations for the "lower incidence of leukemia" (and of bone cancer: the corresponding numbers given are 2.4, 2.8, and 2.9) in Denver—for example, that "disruptive processes like radiation are not necessarily harmful in small enough doses." How improper it is to base their discussion on these data! It is clear that these data are so poor that they should not have been used at all. If given at all, the numbers should have been given in some such terms as 6.4 ± 1.3, 6.9 ± 1, and 10.3 ± 1.5. (These statistical uncertainties follow from the sample sizes involved.) And if one asks how much additional leukemia might be expected from the extra cosmic radiation in Denver, the answer, calculable from data given elsewhere in the book, would be that the 6.4 ± 1.3 would be expected to be about 6.35 ± 1.3 were it not for the excess of cosmic radiation over that at sea level.

We all owe a very considerable debt to Teller for his contributions to the defense of the country. But his current views on the necessity of weapon development, and on the attendant questions of tests and fallout, are sharply disagreed with by a very large number of his fellow scientists. It would be most desirable for him to debate these matters, directly and as calmly as possible, with dissenters. If he would submit his arguments to the searching interrogation of these of his colleagues, it is possible that his great originality might be better directed toward the most constructive solutions to the problems which face the world.

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Histology. Arthur W. Ham. Lippincott, Philadelphia, ed. 3, 1957. xv + 894 pp. Illus. $11.

This third edition of Ham's *Histology* continues the standard of excellence which characterized the two earlier editions. Excellence of organization and unusual clarity of expression make this textbook one to be read for pleasure as