doubly-tilted strata and to determine the dip of laminated beds, in which a key horizon is lacking, that are cut by nonparallel drill holes.

An account is given of the manner in which stereographic projection aids the construction of block diagrams for illustrative purposes, while a further chapter, headed "Tectonic syntheses," deals with fabric analysis on equal-area and stereographic diagrams by procedures familiar to structural petrologists. An appendix explains the use of simple spherical trigonometry in verifying the correctness of plotting and, when necessary, as a more accurate substitute for the latter. A series of problem exercises and their answers and an extensive bibliography are provided. This latter partially mitigates the lack of more than passing reference to projection protractors and other field aids that have been devised by earlier authors.

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Tropical Soils. A critical study of soil genesis as related to climate, rock and vegetation. E. C. J. Mohr and F. A. Van Baren. N. V. Uitgeverij, W. Van Hoeve, The Hague and Bandung; Interscience, London–New York, 1954. 498 pp. Illus. + plates. $9.

Mohr is a recognized authority on tropical soils and is well known for his monumental work on the soils of equatorial regions, which he wrote between 1933 and 1938, and which Robert L. Pendleton translated from the Dutch and made available to English readers in 1944. The present volume was written at the invitation of the Royal Tropical Institute of Amsterdam and is much broader in scope than its predecessor, treating all tropical soils rather than just those of the former Netherlands Indies. In the task Mohr had the collaboration of an able younger associate, F. A. Van Baren.

The title calls attention to the climatic basis of soil formation and the first chapter, comprising one-fifth of the book, is entitled "Fundamental considerations of atmospheric climate and soil climate" In the earlier edition Mohr devoted a great deal of attention to the seasonal march of soil moisture and in this book the authors go even further and say that "in the study of soil genesis it is soil climate . . . which should be given foremost attention."

Of course, they do not overlook the role of rocks and rock minerals in soil formation. In fact, since both men are soil experts this is the part of their book in which they excel. One might wish that they had done as well with the climatic theme. It is probable that the real answers to the problem of origin of tropical soils will not be forthcoming until the methods of microclimatology and topoclimatology are understood and pressed into service. The authors intimate as much in their concluding section when they say that "the *overhead climate* is not the essential factor in soil genesis but *soil climate,* and many different soil climates can occur in one and the same zonal region looked at from an overhead-climate point of view."

There is no doubt that this is a very important book—important not to soil scientists alone but also to climatologists, geographers, and botanists as well. It should be highly recommended.

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The Sun, the Sea, and Tomorrow. F. G. Walton Smith and Henry Chapin. Scribner's, New York, 1954. xii + 210 pp. Illus. $3.50.

The writing team of Chapin and Smith got off to an indifferent start with *The Ocean River,* but this book is so much of an improvement that it does not seem to have been written by the same people. Of late we have been bombarded with all sorts of opinions about the infinite riches of the sea, the billions of kilowatts to be generated from tidal energy, and the inexhaustible bowls of plankton soup that are to be had for the asking, that it is something of a shock to find a book in which these expectations are reduced to sensible orders of magnitude. This does not mean that the authors are gloomy pessimists; they have simply presented their discussion of "potential sources of food, energy and minerals from the sea" in a realistic manner, with adequate recognition of the magnitude of problems to be overcome and without extravagant estimates of food for untold billions of mouths. Their main emphasis is on the need for research and political and economic cooperation. We are only at the threshold of knowledge required to improve our utilization of the sea and its resources. In this context more emphasis should have been given to the fluctuations in pelagic stocks, such as that of the California pilchard, which may make a fishery uneconomical and seriously impair an established source of food.

Ostensibly a book for lay readers, *The Sun, the Sea, and Tomorrow* deserves the attention of those optimistic economists who have placed too much faith in Sunday supplement pieces.

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Abhandlungen aus der Sowjetischen Physik. Folge III. Gesellschaft für Deutsch-Sowjetische Freundschaft. Robert Rompe, Ed. Verlag Kultur und Fortschritt, Berlin, 1953. 347 pp. Illus. + plates.

The book *Abhandlungen aus der Sowjetischen Physik* is a translation (in German) of 24 papers apparently representing typical or outstanding products of Soviet research. The exact reasons for bringing them forth in this form are not stated. The topics covered range widely but include statistical theory, Brownian motion, luminescence, cosmic rays, gas discharges, organic chemistry, and spectroscopy, to name a few. Of these, experimental and theoretical aspects of luminescence are the most strongly represented, with 10 papers.

In a paper on color centers in alkali halides, it appears that an original contribution was made, but no outstandingly new discoveries are presented. In this work, the photoelectric and optical absorption of silver chloride and silver bromide were studied as functions of wavelength and heat treatment. It was concluded that in the silver halides F-centers analogous to those already found in alkali halides are formed under the action of ultraviolet light, x-rays, or heat. The conclusions are of interest in connection with the theory of the latent photographic image.

It should also be pointed out that, although the publication date of the book is 1953, all the papers presented in this translation had previously appeared in Soviet journals during 1950 and 1951. For those who are interested in the subjects included in this volume, and who read German but not Russian, perusal of the book may be worth while.

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Modern Aspects of pH. With special reference to plants and soils. James Small. Van Nostrand, New York, 1954. xi + 247 pp. Illus. $5.

The technologic importance of *p*H measurements stems largely from the use of *p*H numbers to characterize the acidic and basic properties of a wide variety of materials—suspensions, solutions in nonaqueous media, and even soft solids. It is clear that these numbers have little or no significance in terms of hydrogen-ion concentrations, and none is usually needed. The operational definition of the "practical" experimental *p*H places these diverse measurements on a sound, reproducible basis and also clarifies the meaning of the *p*H in the rare instance where a fundamental interpretation is justifiable. Within the past 5 years, this approach has received the endorsement of the A.S.T.M., the National Bureau of Standards, and the British Standards Institution.

It is these "modern aspects" to which the title of this book refers. If the true *p*H factor is linked too closely to hydrogen-ion concentrations, the *p*H of a plant sap, for example, is not likely to be accurately determined. Within the compass of the new definition, however, the *p*H of plant sap is a number obtained by a prescribed experimental procedure. The earlier equivocations of concentration, activity, and liquid-junction potentials enter the picture only when the fundamental meaning of this experimental value is examined. Hence, the author's view that "the new empiricism" allows only first-decimal accuracy in *p*H values seems unjustified.

To counter a misleading title, the author, professor of botany at Queen's University, Belfast, has chosen the subtitle "With special reference to plants and soils." The work, an outgrowth of his earlier volume *pH and Plants,* is a readable and informative presentation of the role of *p*H in controlling the growth and color of plants and the activity of enzymes and plant hormones. The significance of *p*H in agriculture and ecology is also treated, and there is a short chapter on industrial applications. Attractive features of the book are the convincing arguments for the utility of buffer index values and the discussion of the base avidities of surfaces and the "suspension effect." Both subjects have failed heretofore to receive the attention they deserve. The book will be of particular interest to botanists and agronomists. The paper and binding are of fair quality.

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New Books

Two Years in the Antarctic. E. W. Kevin Walton. Philosophical Library, New York, 1955. 194 pp. $4.75.

Experimental Cookery from the Chemical and Physical Standpoint. Belle Lowe. Wiley, New York; Chapman & Hall, London, ed. 4, 1955. 573 pp. $7.50.

Animal Life in Deserts. A study of the fauna in relation to the environment. P. A. Buxton. St Martin's Press, New York, ed. 2, 1955. 176 pp. $4.25.

Traité de Zoologie: Anatomie, Systématique, Biologie. vol. XII, *Vertébrés.* Pierre P. Grasse, Ed. Masson, Paris, 1954. 1145 pp. F. 10,550.

Let's Have a Better World. A program for progress and survival. Daniel Wolford La Rue. Exposition Press, New York, 1955. 240 pp. $4.

Catalogue of the Type Specimens of* Microlepidoptera *in the British Museum (Natural History) described by Edward Meyrick. vol. I. J. F. Gates Clarke. British Museum Natural History, London, 1955. 332 pp. £3.

Diseases of the Nervous System. Described for practitioners and students. F. M. R. Walshe. Williams & Wilkins, Baltimore, ed. 8, 1955. 357 pp. $7.

Grain Crops. Harold K. Wilson. McGraw-Hill, New York–London, ed. 2., 1955. 396 pp. $6.50.

Antibiotics Annual 1954–1955. Proceedings of the 2nd annual symposium on antibiotics. Henry Welch and Felix Marti-Ibanez, Eds. Medical Encyclopedia, New York, 1955. 1154 pp.

Experiments in Organic Chemistry. Louis F. Fieser. Heath, Boston, ed. 3, 1955. 359 pp. $5.25.

Flight Handbook. A complete introduction to aviation. Maurice A. Smith, Ed. Philosophical Library, New York and Iliffe, London, ed. 5, 1954. 282 pp. $6.

An Introduction to Stochastic Processes with Special Reference to Methods and Applications. M. S. Bartlett. Cambridge Univ. Press, New York, 1955. 312 pp. $6.50.

Introductory Applied Physics. Norman C. Harris and Edwin M. Hemmerling, McGraw-Hill, New York–London, 1955. 729 pp. $6.75.

Electrons, Atoms, Metals and Alloys. William Hume-Rothery. Philosophical Library, New York and Iliffe, London, ed. 2, 1955. 387 pp. $10.

Mathematical Foundations of Quantum Mechanics. John Von Neumann. Trans. by Robert T. Beyer. Princeton Univ. Press, Princeton, 1955. 445 pp. $6.

The Nitrogen Metabolism of Micro-organisms. B. A. Fry. Wiley, New York; Methuen, London, 1955. 166 pp. $2.

Fundamentals of Plant Science. A laboratory manual. G. W. Prescott and J. C. Elliott. Burgess, Minneapolis, 1955. 271 pp. $4.