plete but concise description of the pollen. The reviewer has had the opportunity to study many of the slides on which this publication is based. Some of the finer details will be seen only in pollen grains that have been prepared by the acetolysis and chlorination techniques introduced by the author.

This book will be a stimulus to systematists because of the numerous observations about pollen types of particular species and genera that are not in harmony with the other members of their respective groups. Possible relationships derived from pollen should be considered in future monographs. Dr. Erdtman found the pollen of *Cneorum pulverulentum* Vent. differed so much from the other species of *Cneorum* that he made a new generic combination (p. 115). This is mentioned because it is the only new combination and could easily be overlooked.

Those who desire to identify pollen for ecological, geological, and climatic interpretations will experience some difficulty, because a key to the pollen groups has not been included. (Imagine trying to identify a plant in *Gray's Manual of Botany* without the aid of an analytical key.) For the experts, however, there is a wealth of information which can be found through the complete index and the citations of pollen of similar structure in other families. A second volume on the gymnosperms, ferns, and mosses is in preparation. Chronica Botanica will act as agent for American sales.

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Polarized Light in Metallography. G. K. T. Conn and F. J. Bradshaw, Eds. New York: Academic Press; London: Butterworths, 1952. 130 pp. $3.80.

For a long time polarized light in transmission microscopy has found wide application in mineralogy and petrography, and, at first glance, one would assume that its use in reflection microscopy should also be of great advantage. However, because of inherent difficulties, the reflection method has been employed in the past only sporadically, and it is only in recent years that it has found wider application by metallographers for the investigation of metallic structures. It has, indeed, proved to be a valuable tool in this field.

The aim of the present book is to acquaint a wider circle with the technique and method of this new development in reflection microscopy by giving a concise treatment of the physical principles involved, by describing the necessary accessories, and by exemplifying the advantages connected with the method. Nine specialists wrote this survey, which was prepared for the Optical Methods Sub-committee of the British Iron and Steel Research Association. The first two chapters describe polarized light, anisotropic materials, and the principles of reflection and absorption. Four further chapters treat the equipment and procedures of reflection microscopy in polarized light, the examination of metal surfaces, the identification of inclusions in metals and alloys, and the use of reflected polarized light in the study of ores. The closing chapter gives a summary of the subject. A glossary of optical terms is attached.

There is no doubt that this book will help to disseminate the knowledge necessary for a further advance in this very promising type of research. It must be stated, however, that the introductory part contains several serious misstatements and that it needs careful revision.

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Experimental Nucleonics. Ernst Bleuler and George J. Goldsmith. New York: Rinehart, 1952. 393 pp. $6.50.

Experimental Nucleonics is a text for a laboratory course for students who have had previous training in nuclear physics and in chemistry. It is divided into four parts: an introduction, and sections on general, chemical, and physical techniques. It includes details of 24 experiments, of which 16 or 17 are considered to comprise the course. These experiments cover a wide variety of techniques involving the measurement of radioactivity, from the determination of the decay scheme of K^{42} by coincidence measurements on the physical side, to separation of chemicals by solvent extraction on the chemical side. Thus, this volume leads to an integration of the sciences of physics and chemistry, so that the physicist who carries out these experiments should be able to perform his own simple chemical purifications, and the chemist who masters the material in this volume should be equipped to perform accurate physical measurements.

Since a separate chapter is devoted to each experiment, there is room for a full description of the physical and chemical principles involved in the measurement. Thus, the experimental details are the smaller part of the total text by a considerable margin. It is this feature which leads to much of the value of the book. Indeed, the introductory material on scintillation counters is the first simple summary that has come to this reviewer's attention, and it appears to be accurate and complete.

The experiments have been wisely chosen to illustrate a great wealth of techniques, and to provide experience in many of the techniques useful in modern radioactivity measurement. They involve, for example, the detection of radiation with photographic plates, measurements in ionization chambers, and absolute β-counting; and they provide experience with many of the garden varieties of Geiger counter. Indeed, if one is to seek a point to criticize, it is that the equipment required to implement the course is quite extensive, and the work required to present the experiments is quite intensive, so that, more's the pity, one might only expect to find such a course given at relatively few universities.

There is one additional use for this volume which the authors do not seem to have had in mind, and that

is as a handbook for scientists engaged in making tracer measurements with radioactive isotopes. The review of the techniques is broad, the principles that govern each technique are clearly and succinctly explained, and the references to the original literature are wide and varied. Consequently an introduction, as it were, is provided to each technique, and it is possible to choose between the various methods of measurement and chemical manipulation from the material presented. Indeed it might well serve as required reading for many scientists in adjacent fields who make use of radioactive tracers.

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The Aphid Genus Periphyllus: A Systematic, Biological, and Ecological Study. E. O. Essig; illus. by Frieda Abernathy. Berkeley: Univ. California Press; London: Cambridge Univ. Press, 1952. 166 pp. $3.00.

This volume presents the results of several years' intensive and meticulous study of some nine species of aphids belonging to the genus *Periphyllus*. The introductory chapter presents a discussion of the genus, its origin, distinguishing characteristics, the historic background of the species placed in it, their world distribution, plant hosts, and their various body forms, with the variability of accompanying structures.

After this general discussion there are ten chapters, in which one of the following species is treated in the following sequence: The sycamore maple aphid, *P. aceris* (Koch); the American maple aphid, *P. Americanus* (Baker); the Colorado maple aphid, *P. brevispinosus* (Gillette & Baker); the California maple aphid, *P. californiensis* (Shinji); the Formosa maple aphid, *P. formosanus*; the Koelreuteria aphid, *P. koelreuteriae* (Takahashi); the Japanese maple aphid, *P. kuwanaii* (Takahashi); the Norway maple aphid, *P. lyropictus* (Kessler); the box-elder aphid, *P. negundinis* (Thomas); and the European maple aphid, *P. testudinacea* (Fernie). In each case the synonymy of the species, a description of its various stages and forms, its life history, and the host plants upon which it lives are presented, together with data regarding its occurrence in various world collections.

Three species, *P. californiensis, P. negundinis,* and *P. testudinacea,* were studied in detail as to their biology and anatomical characters. The author has shown that within a species as many as 15 unusual types of individuals may occur, one of which, a dimorphic stage in the young of the fundatrigeniae in April and May, continues in the first instar as a tiny disklike individual appressed to the leaf surface through the hot summers, and resumes its development in September and October.

Many apparent specific but complex forms are often difficult to distinguish or separate from closely related species by morphological characters. A study of their biology, life cycle, and ecology is often of great assistance in determining their specific status as biological forms, and is a valuable contribution to our knowledge of this group.

A complete bibliography of some 275 references is furnished.

This monographic paper is an excellent example of a thorough, intensive study of a few species of closely related insects wherein all phases of their biology, behavior, and structures are combined in a single work.

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Scientific Book Register

Blood Clotting and Allied Problems. Transactions of the Fifth Conference, January 21–22, 1952, New York. Joseph E. Flynn, Ed. New York: Josiah Macy, Jr. Fdn., 1952. 368 pp. Illus. $4.95.

Chemistry of Food and Nutrition. 8th ed. Henry C. Sherman. New York: Macmillan, 1952. 721 pp. Illus. $6.00.

Biology and Language: An Introduction to the Methodology of the Biological Sciences including Medicine. The Tarner Lectures, 1949–50. J. H. Woodger. New York: Cambridge Univ. Press, 1952. 364 pp. $8.00.

Introduction to the Theory of Games. A Rand Corporation Research Study. J. C. C. McKinsey. New York–London: McGraw-Hill, 1952. 371 pp. Illus. $6.50.

Metabolic Maps. Wayne W. Umbreit. Minneapolis: Burgess Pub., 1952. 439 pp. Illus. $6.00.

Inorganic Chemistry: An Advanced Textbook. Therald Moeller. New York: Wiley; London: Chapman & Hall, 1952. 966 pp. Illus. $10.00.

Textbook of Physiology. 11th ed. William D. Zoethout and W. W. Tuttle. St. Louis: Mosby, 1952. 692 pp. Illus. $4.75.

Statistical Thermodynamics: A Course of Seminar Lectures. 2nd ed. Erwin Schrödinger. New York: Cambridge Univ. Press, 1952. 95 pp. $1.75.

The Principles of Physical Metallurgy. 3rd ed. Gilbert E. Doan. New York–London: McGraw-Hill, 1953. 331 pp. Illus. $5.50.

Methods of Statistical Analysis. 2nd ed. Cyril H. Goulden. New York: Wiley; London: Chapman & Hall, 1952. 467 pp. Illus. $7.50.

Human Milk: Yield, Proximate Principles and Inorganic Constituents. S. D. Morrison. Farnham Royal, Bucks., Eng.: Commonwealth Agricultural Bureaux, 1952. 91 pp. Illus. 10s. 6d. or $1.50.

Hydrogen Ion Concentration: New Concepts in a Systematic Treatment. John E. Ricci. Princeton, N. J.: Princeton Univ. Press, 1952. 460 pp. Illus. $10.00.