

Book Reviews

New Zealand Pollen Studies: The Monocotyledons.

Bulletin of the Auckland Institute and Museum, No. 3. Lucy M. Cranwell. Cambridge, Mass.: Harvard Univ. Press, 1953. (For the Auckland Institute and Museum.) 91 pp. Illus. + plates. \$5.00; paper-bound \$3.50.

To one who is not a pollen specialist the extent to which the study of this one feature of higher plants has been developed may come as a surprise. Two things which have given an impetus to this study, recently dignified with the special name "palynology," are the importance of pollen in causing hay fever and the use of fossil pollen in detecting climatic changes in prehistoric times.

As a descriptive test, Lucy Cranwell's publication is a highly competent and professional piece of work, but she does not content herself with this. For the benefit of the nonspecialists and beginners there is an introduction explaining the history, aims, and methods of the study of pollen, as well as the essential features of pollen morphology. The first parts of this are admirable examples of covering much ground and conveying much information in a short space. The part on morphology is also an excellent example of brevity and clarity, but this might have better served the purpose of orienting the beginner if it were a bit fuller. For example, the discussion of polarity leaves one wondering just what the polarity is oriented with respect to, both in the several sorts and tetrads and in the original anther sacs. This seems an important omission since the subsequent discussion involves polarity to a marked extent.

The introduction is followed by a short glossary. That this is an absolute essential, even for devotees of "palynology," is shown by the fact that practically every term in it has been used with two or more different meanings, cited with their authors in this glossary. (This tendency toward undue multiplication of meanings of technical terms seems inherent in the scientific type of mind in spite of claims to the contrary.) In at least one place, however, even the definition given in the glossary fails to clarify in the mind of the reviewer the meaning of a term which he previously thought quite clear: "Sculpturing: F. & I., p. 25, 'those elements which project beyond an imaginary surface, either the endexine in intectate pollen or an imaginary surface touching the lower-most parts of the tectum.'"

The body of the work consists of a very usable key for the identification of New Zealand monocotyledonous pollens, a detailed descriptive treatment of the pollen features of all families, most genera, and many species of New Zealand monocotyledonous plants, illustrated by clear drawings, and a beautiful series of microphotographs of pollen grains. The excellence of both the keys and these microphotographs is demonstrated by the fact that even one unfamiliar with pollen identification can usually arrive at the correct

names by "keying out" the photographs. The systematist interested in the general relationships of the plant families will find the comments and discussions scattered through the descriptive text most interesting and significant. Some of them completely justify the author's opinion that taxonomists might well find in the study of pollen morphology another important line of evidence bearing on some of their problems of systematic and phylogenetic relationships.

The author is to be congratulated on having contributed an interesting paper and a fundamental tool for the use of those working on any aspect of New Zealand palynology. A companion volume on the dicotyledons and another on the fascinating New Zealand gymnosperms will be awaited with interest.

F. R. FOSBERG

212 Holmes Run Road, Falls Church, Virginia

Differential and Integral Calculus. Philip Franklin.

New York-London: McGraw-Hill, 1953. 641 pp. Illus. \$6.00.

This is a soundly written standard text for a first course in the calculus. The various salient ideas are introduced in an intuitive way but with emphasis on the important concepts. A more rigorous treatment is then usually given later in sections printed in smaller type. As is common in recent texts, integration is introduced early although the fundamental theorem of the integral calculus does not appear until later.

The book is written with care and consideration for the student and should also be suitable for self study. One feature is the large amount of review material from trigonometry and analytic geometry. This review material should render the book suitable for students with but little knowledge of analytic geometry, and accounts for the fact that the length of the book is somewhat greater than is usual. A chapter on vector analysis is a welcome addition to the usual offering. The final chapter is a brief but quite thorough treatment of differential equations. There are plentiful illustrative examples and numerous problems of varying degrees of difficulty.

M. E. SHANKS

Mathematics Department, Purdue University

Industrial Wastes: Their Disposal and Treatment.

Willem Rudolfs, Ed. New York: Reinhold, 1953. 497 pp. Illus. \$9.50.

This book is No. 118 in the American Chemical Society Monograph Series. The policy of the Board of Editors is to confine monographs to relatively restricted areas in order that a thorough treatment may be available to those working in related fields and that further research may be stimulated.

Industrial Wastes is edited by Professor Willem Rudolfs of Rutgers University whose reputation in the field of sanitary science is worldwide. Three of the chapters are written by the editor and the remain-

ing fourteen chapters by contributors who are active workers and recognized authorities in the field of treatment, utilization, and disposal of industrial wastes.

In the initial chapter setting forth the general problem, Rudolfs points out that at least half the pollutional load carried by streams is of industrial origin. Three large industries, steel, petroleum, and pulp and paper consume 95% of the water used in manufacturing operations. However, several smaller industries are characterized by wastes that are very high in terms of "population equivalent," which is determined by organic wastes requiring the same purification as that of domestic sewage. In 1949 organic industries producing oxygen-demanding wastes had a population equivalent exceeding 134 million. A very sensible note is sounded by the editor in the statements that "the recovery of by-products from waste is usually unprofitable" and that "industrial waste treatment should be considered as an integral part of production." A broad foundation is laid in the second chapter which discusses stream pollution and self-purification in general terms.

Remaining chapters cover: milk products; canning, freezing, and dehydrating; slaughterhouse and meat packing; fermentation industries; corn starch processes; tanning, fat processing, and laundry soap industries; textile dyeing and finishing; pulp, paper, and paperboard; acids and explosives; steel pickling; metal plating; coal mining and processing; petroleum; radioactive liquids; and miscellaneous materials. Problems incident to liquid radioactive wastes represent a very recent and complex addition to the field.

Although many of the methods and techniques are common to several industries, their applications are quite varied and specialized. Every phase of waste disposal and treatment is covered from the standpoint of physics, chemistry, biology, engineering, and economics. The references at the end of each chapter are complete and recent. The book represents a thorough and comprehensive treatment of a topic of great public interest and importance.

W. T. READ

1225 13th Street, N.W., Washington, D. C.

An Introduction to Statistical Science in Agriculture. D. J. Finney. Copenhagen: Ejnar Munksgaard; New York: Wiley, 1953. 179 pp. Illus. \$3.75.

Dr. Finney's short and leisurely book is a welcome antidote for the statistical indigestion which seems to be experienced by so many otherwise competent people, investigators and students alike. This bilious attitude toward statistics appears to rise among haphazard and empirical users or those exposed to a near-lethal dose of detailed manipulation of formulas and symbols. For those whose refractive index has not yet crystallized, this book can do much to dissolve any smog which may enshroud the noble and truly indispensable outlines of statistical science. Finney is one who shares the notion that statistics is simply quan-

titative reasoning, the prime requisite for converting correct assumptions and suitable observations into a more precise understanding of nature. Incorrect conclusions obtained because of faulty assumptions or inadequate data (or even plain arithmetic mistakes!) are sins of the user rather than the tool he professes to employ.

Finney's book also will be particularly helpful to those seeking to impart the basic principles for good experimental design and statistical analysis of data to pupils having little previous training or experience in this field. The book is also hopefully recommended to those colleagues who, with pardonable pride, declare that statistics are unnecessary for interpreting the results of *their* investigations. Perhaps Finney's definitions of statistical science will pierce the symbol curtain.

Incidentally, readers of *An Introduction to Statistical Science in Agriculture* will find evidence that the logic of statistics had rudimentary roots in (or at least survived!) the earliest English literature.

GORDON E. DICKERSON

Research Division, Kimber Farms, Inc.
Niles, California

Atlas of Medical Mycology. Emma Sadler Moss and Albert Louis McQuown. Baltimore: Williams & Wilkins, 1953. 245 pp. Illus. \$8.00.

This volume is indeed not only an atlas of mycology from the pictorial point of view, but a concise, ready reference medical mycology for the physician, student, scientist, or laboratory worker.

It is printed on excellent quality paper with good photographic reproductions in black and white of actual organisms and well-chosen clinical cases. Each classification is broken down into etiology, definition, laboratory diagnosis, mycology, histology, treatment, and prognosis. Practical aspects of examination, a chapter on immunology, the recognition of contaminants, plus an excellent glossary complete the work.

Most of the mycoses are well covered, but no mention is made of the prolonged use of the antibiotics, e.g., the new mycin drugs to generalized moniliasis. The importance of underlying disease such as diabetes or malnutrition is not discussed in the causation of moniliasis.

Oxgall agar is listed as a medium of choice for the routine cultivation of fungi; however, Sabouraud's glucose agar (or Emmons' modification) is easier to prepare, cheaper, and satisfactory for routine work.

The section on dermatomycoses is not as well outlined as the other chapters. This section would have been easier to read and study if the pictures of the organisms had been kept closer to their text descriptions. *Tinea capitis*, particularly, could have been better handled. *Microsporum* ringworm should have been distinguished from other trichophyton infections. *Favus* should have been treated separately. The scarring alopecias should have been listed by types of causative organisms, and the black dot ringworm should have been mentioned.