dealing simply with a differential growth rate or death rate for the two sexes.

Among oysters over 40 mm in length, and growing singly, that is, not in the near neighborhood of other oysters, there were 34 ♂ to 131 ♀. Among oysters of length similar to the above, which, however, were growing in compact clusters of two or more individuals, so that the valve margins of the associated oysters were less than 40 mm apart, there were 85 ♂ to 82 ♀. Among oysters of this same length, growing in clusters, but whose valve margins were separated from those of their neighbors by 40 mm or more, there were 27 ♂ to 46 ♀. The clusters of closely associated individuals were almost always composed of oysters of dissimilar sex. Thus, the close association of large oysters seems to cause some members of the group to be male, while individuals of this same size, if growing singly, are almost all females. The figures given above dealing with clusters of less closely associated individuals indicate that the likelihood of large oysters being male decreases rapidly with increasing distance from associates.

Small oysters, no matter what their position relationships to other oysters, are almost always males.

Nine morphologically hermaphroditic individuals, irregularly placed as to size- and position-relationships, were found, an incidence of about 1 per cent.

The experimental control of the sex of oysters has been accidentally accomplished on a large scale in Louisiana, in the following manner:

Oysters growing in natural clusters are usually more than half of them males. The oyster planters of the state often break up these clusters and re-bed the individuals singly to grow for market. When these single, bedded oysters, presumably over half of them males at the time of replanting, are taken up during the next year's spawning season, almost every one is found to be a female.

A more detailed description and discussion of the data obtained is in preparation.

M. D. BURKENROAD

LOUISIANA STATE DEPARTMENT OF CONSERVATION, IN COOPERATION WITH DEPARTMENT OF ZOOLOGY, TULANE UNIVERSITY

CORRECTION ON PSYLLID-YELLOWS

IN the issue of SCIENCE for December 20, 1929 (lxx, 1825), on page 615, there was an article published on "Transmission Studies with the New Psyllid-yellows Disease of Solanaceous Plants." This disease was previously described by Dr. B. L. Richards, of the Utah Agricultural Experiment Station, who first associated the Psyllid insect with the trouble on potatoes. The report on the damage to the early potato crop, and the description of the symptoms on potatoes was likewise made by the same investigator. The work reported on in the article was based on Dr. Richards's first description and association of the insect with the disease.

In order to clear the confusion that exists on the original association of the Psyllid with the disease, this explanation is deemed highly necessary.

A. M. BINKLEY

COLORADO AGRICULTURAL COLLEGE

SCIENTIFIC BOOKS

Plant Life through the Ages. A Geological and Botanical Retrospect. By A. C. SEWARD. 601 pp. 140 figs. including 9 reconstructions of ancient landscapes drawn by Edward Vulliamy. Macmillan Co., New York, 1931.

THIS book is written for the layman as well as for the student of botany and geology, and in the words of the author is designed "to illustrate the nature of the documents from which geologists have compiled a history of the earth, or at least such scraps of history as can be written from the material that is available: to give some account of the methods employed in the interpretation of the documents: and to present in language that is not unnecessarily technical a summary of the more interesting results obtained from the records of the rocks which throw light on the development of the plant world."

It is charmingly written and has a distinct literary flavor, and will undoubtedly enable many to obtain a comprehensive view of a wholly unsuspected past of the plant world. The special student will find it equally useful because very little that has been contributed to this and cognate sciences in late years has escaped the author's intellectual curiosity, as is attested by the very useful bibliography.

The general plan leads the reader from an introductory consideration of the elementary facts of historical geology, the manner of preservation of fossil plants, and the classification of plants, through a brief discussion of pre-Cambrian life and that of the earlier Paleozoic (Cambrian, Ordovician and Silurian periods), to a more detailed account of the earliest fairly well-known land plants of the Devonian. The later Paleozoic, appropriately enough since the floras in their variety and our knowledge of them is so much more complete, has three chapters devoted to its consideration. There follow chapters devoted to the Triassic, Jurassic, Cretaceous, Tertiary and Quaternary, and a final chapter discussing the more general questions growing out of the story related in the preceding part of the book.

Naturally in such a limited compass much must be omitted—a bare catalogue would occupy much more space—and Professor Seward has had to select, partly with a view to continuity in the narration. This is done with a skill and a lack of dogmatism which is in pleasing contrast to some of his more youthful work. The illustrations also are one of the noteworthy features of the book. Tables of geological and geographical distribution, together with maps—both distributional and paleogeographic—are added to the chapters devoted to the botanically more important periods. In all the reader is furnished with an easy and satisfactory guide which will enable him to delve as deeply as he may wish into the technical literature. Nothing that has been written on the subject approaches the present book as an introduction to professional study in paleobotany, especially in its broader and more cultural aspects.

A few slips have been noted, such as calling the Black Hills a spur of the Rocky Mountains, the locating of Staten Island off the west coast of North America, the "salt lakes in the Newark series" and the placing of the Albian stage first in the Upper and then in the Lower Cretaceous, but it is perhaps carping to mention such very minor blemishes in a work which is so exceedingly well done as a whole.

There are a number of geological concepts that are taken for granted which are open to question, particularly in the section devoted to geological cycles—a belief that has appealed to many geologists, but which is wholly subjective. Nor are the folding of strata and the elevation of mountains interchangeable terms. There is also a lack of appreciation of continental sedimentation, other than lacustrine, particularly in connection with the discussions of the Old Red sandstone, the Gondwanas, Triassic, Wealden, etc., and a too easy acceptance of red beds as indicative of arid climates. Although he does not accept it, the author might be said to flirt with the Wegener hypothesis, although, as has been frequently pointed out, its acceptance raises more difficulties—distributional and climatic, not to mention geophysical—than it solves.

It may well be doubted if there is the implied change in floras at the Paleozoic-Mesozoic boundary, and although it is perhaps wholly a matter of opinion the reviewer has grave doubts regarding the relatively late appearance of the first land floras. Paleobotanists are at present in about the state of mind on this question as were paleozoologists a couple of generations ago regarding the similar question of the time of appearance of marine life.

Despite these criticisms, the verdict must go to the author, for they are more than counterbalanced by the pleasing character and meritorious qualities of the book as a whole.

Edward W. Berry

Johns Hopkins University

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN INEXPENSIVE LIGHT SOURCE FOR A PORTABLE MICROSCOPE

We have devised an inexpensive portable light source for a high and low power portable microscope. There are certain obvious situations in which this apparatus is of value. (a) During a surgical operation fresh frozen microscopic sections made from tissue removed while the operative procedure is in progress can be passed around among spectators and students in an amphitheater and give a vivid picture of the disease which the surgeon is trying to combat. (b) The apparatus furthermore lends itself admirably to teaching histology, pathology or biology, when occasion arises requiring a demonstration to a class of a certain feature or features in a microscopic preparation. (c) There is also possible application for the apparatus when one is doing blood or spinal fluid cell counts in a home. (d) Botanists and entomologists in field work have a need for such an apparatus.

The essential features of the apparatus are a small portable microscope, such as the Spencer Lens Company demonstrating microscope, No. 96, and a light source. (Fig. 1a). The light source is composed of a lamp and reflector from a flash light, a hinge-topped metal case, containing two standard dry cells and a rheostat switch which allows two different degrees of light, bright and dim. (Fig. 1b).

The lamp house is fastened to the base of the microscope with two screw clamps. (Fig. 1a). The flash light lamp is dissembled from the usual tubular handle and the outer collar with screw threads is soldered to the hinged lid of the lamp house. When the lid is closed, the center of the lamp makes an electrical connection, with a base plug by spring contact. (Fig. 1b). The dry cells are held in place by spring contact carriers which convey electrical energy to the rheostat switch. Resistance for this switch is formed by about 3 feet of fine annealed wire wrapped on a wood pulp spindle and insulated from the metal housing by sheet mica. The inside of the lamp housing is lined with paste board as an insulating medium.

Parts of the apparatus that will deteriorate can be bought in any electrical goods store.

The apparatus with the self-contained light source