complete list of those who have ever been members or foreign associates of the academy, together with exact dates of election. I have recently been astonished to find that it was necessary laboriously to delve into manuscript records before it could be learned that a certain distinguished scholar became a foreign associate in April, 1883. It is true that in the "Annual Report of the National Academy of Sciences" for 1930–31, one finds the following: (a) a complete list of living members, of members emeriti and of living foreign associates of the academy, with the *years* of election; (b) medallists of the academy, with the name of the medal and the year of the award; (c) a list of deceased members, with the year of election and the exact date of death; (d) a list of deceased foreign associates, without either the date of election or the date of death; (e) the exact dates of birth of living members of the academy. Now if all five of these lists were put in a single alphabet, with additional information, such as places and dates of birth, and of death if dead, *exact* dates of election and as full information regarding foreign associates as members, we should have a list which would be much more useful. Especially would this be true if it were kept up to date and published annually. For nearly twenty years the Academy of Sciences of the Institut de France has published such an *Annuaire,* the one for 1935 being a duodecimo volume of 407 pages covering the period 1795–1935. Another volume (281 pp.) covers the period 1666–1793. What better model could our National Academy follow in getting out its own volume for the period 1863–1936?

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SCIENTIFIC BOOKS

THE MORPHOLOGY OF ALGAE

The Structure and Reproduction of the Algae. By F. E. FRITSCH. Vol. 1, xvii + 791 pp. Cambridge University Press, England, and Macmillan Company, New York. 1935.

THE appearance of a major compendium in the morphology of one of the large plant groups is something of a scientific event; when well done, as in the present case, marked advances in knowledge of the group are sure to follow. But once has an adequate modern treatise on algal morphology been completed (F. Oltmanns's "Morphologie und Biologie der Algen," in two editions). The present work, in so far as the first volume of two projected is concerned, is more limited in scope in that ecological and physiological features receive no separate consideration, although a wealth of data on the environal requirements and food reserves of the various genera are included. With the benefits of the scientific advance of a very active decade and a much more detailed treatment, this work puts English-reading botanists at a great advantage. Should the work be completed in conformity it appears that the basis of reference for a generation will have been established. The title is really definitive, for with but a skeleton of classification the form and structure of these plants are discussed in detail. For the most part the approach is directed to the structures and organs characteristic of the family under consideration, their variation in the several genera and possible evolutionary trend. The information is so closely associated with the original sources by copious citation that a very detailed presentation results, since the author attempts to introduce all pertinent literature since 1890. This puts the text quite out of the introductory class, and invaluable as this work will be to the phycologist it will offer a rather complex picture to any one who approaches it without a little preliminary experience with algal literature. As a source book it will save much labor, but it is not designed to serve as a teaching text, even for advanced students.

The algal groups covered in the present volume include all except the Phaeophyceae and Rhodophyceae. The 75 pages of introductory discussion provides descriptions of these groups and tables contrasting various critical structures. However, the main introductory sections deal with the chief fundamental parts such as chromatophores, nuclei, the flagella and the wall, or more inclusive features as filamentous and tissue organization, growth and reproduction, epiphytism and parasitism in such fashion as to give a very good picture of the algae indeed. Especially timely in view of the numerous equivalent classes of algae is the emphasis on parallelisms in evolution among them. In the body of the book the treatment is much more thorough than that accorded by Oltmanns, particularly in the flagellate types. There is little to be said about the systematic frame adopted. It appears to be well and carefully adjusted to recent researches, and the eleven classes offered have wide acceptance. The author exempts Chloromonadineae and Euglenineae from the word-form standard for classes in the algae, but his reason (lack of members with complete "algal organization") seems hardly to offset the disadvantage of lack of uniformity, since he accepts Cryptophyceae and Dinophyceae, which are so largely flagellate in the vegetative state. Xanthophyceae is used to include the familiar Heterokontae, which brings that group into line; the charophytes are discussed as an order in the Chlorophyceae, which some will feel to be hardly adequate recognition of

their isolated and specialized character. There are some details of this classification, however, such as that given for the Siphonales, which may need rather thoughtful inspection. The book is clearly and abundantly illustrated, with 245 mostly full-page groups of well-chosen figures, generally from original sources, largely not previously met in a text-book, and fairly well reproduced. A few half-tones (as figs. 124E, 127A) are rather vague and there is considerable lack of uniformity in the lettering of the figures (comparing figs. 11, 109, 235 with 113, 158, 166). The type is rather small, and that used for paragraphs dealing with subsidiary topics not very different from that of the body of the text. However, the appearance of the book is on the whole very good.

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ANIMAL LIFE IN THE HOLY LAND

Animal Life in Palestine. By F. S. BODENHEIMER. 506 pp. L. Mayer, Jerusalem, 1935.

IN the initial chapters the zoogeographical position and geological history of the fauna are discussed and the climate and weather are presented in the light of animal response. This section includes many diagrams showing relations to weather, climate and the seasons. The types of vegetation are described; some good grassland and small areas of cedar of Lebanon forest still remain. A series of chapters on the various animal groups begins with the mammals, of which 95 species are enumerated with notes as to habitats. The following have been extirpated from the area or are entirely extinct: the lion, a leopard, the Syrian bear, roe deer, fallow deer, the Arabian oryx, Barbary sheep and two wild asses. Here in 10,000 square miles, after 3,500 years of occupation by civilization, nine species have disappeared, as compared with eleven in an equal area in central Illinois, which has been occupied by civilization one hundred years.

A discussion of the birds, following the general plan for the mammals, also includes data as to migration, with maps. The ostrich has been extirpated and, with the completion of certain contemplated swamp drainage, various water birds will disappear. The chapter on reptiles and amphibia contains diagrams and tables indicating temperature and activity; the species are listed and their habits stated. Chapter four, which deals with the insects, contains 160 pages; it is subdivided into sections, each concerned with an order and accompanied by diagrams and tables illustrating activity and response to conditions. Chapter five is devoted to the lower arthropods and remaining terrestrial invertebrates; parasites are treated in the same manner as the other groups.

Both fresh and salt water communities and fauna are discussed; plankton, fishes and mollusks receive attention.

The book is a good and thoroughly modern treatment, in spite of the fact that it is arranged according to taxonomic groups rather than communities, a necessary result of the impossibility of conducting a complete community study of such an area.

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ELECTROCHEMISTRY

Principles of Experimental and Theoretical Electrochemistry. By MALCOLM DOLE. McGraw-Hill Book Company, New York and London, 1935. 549 pages. $5.00.

WITHIN recent years the science of electrochemistry has passed from a subject whose theories were comparatively easily understood to one which requires an extended knowledge of theoretical physics for its comprehension. This is due principally to the development of the important theory of the effects of Coulomb forces upon the distribution and properties of the ions both in the absence and presence of external electrical fields. Simultaneously with this important advance the experimental part of the subject has been greatly refined in both method and technique. Because of these rapidly developing complications, the writing of a satisfactory treatment of the subject is no easy task.

In spite of the difficulties, Dr. Dole has succeeded in writing an excellent text on the strictly scientific part of electrochemistry which should serve to give students of physical chemistry a comprehensive introduction to the field. The subject-matter is up to date and has been derived from the best of the recent literature. Too great emphasis on the profounder aspects of the theory and the details of the experimental material have been avoided and the result is a well-balanced treatment of the subject.

The material is arranged in the following order: "Conductance," "Transference Number," "Dielectric Constant and Electric Moment," "Concentration Cells with and without Liquid Junction," "Homogeneous Ionic Equilibria," "Membrane Potentials," "Oxidation and Reduction Cells," "Potentiometric Analysis," "Glass Electrode," "Electrokinetic and Electrocapillary Phenomena," "Irreversible Electrode Phenomena" and a final chapter on "Quantum Mechanics and Electrochemistry." In each chapter the author has described in a clear manner the method of measurement and the results and has then pointed out the theoretical interpretation and the limitations of the theory.

The book is well written and may be highly recommended for the concise and exact method of presentation.

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