lowing the head and abdomen to be "pumped" like a rubber bulb, thus expelling any free bits of tissue within.

(3) Place in stain. The stain is made by dissolving acid fuchsin in pure phenol. Acid fuchsin is only sparingly soluble in phenol, so that a saturated solution is clear dark pink. For use, dilute the concentrated stain with at least an equal quantity of phenol in a hollow ground slide and stain for about 20 min. Should the specimen be overstained, destaining may be done in phenol to which a little KOH has been added.

(4) Rinse off the superfluous stain in pure phenol. The specimens may be left in pure phenol at least several hours without destaining, though too prolonged a stay in phenol will destain. The phenol used must be fresh and clear. We allow phenol crystals to liquefy in an open dish, after which they are kept covered. Old phenol will not make a satisfactory stain, and stained specimens will destain rapidly when placed in it.

(5) Mount. Since xylol balsam has a tendency to take up water under tropical conditions and hardens too rapidly, we use balsam or copal dissolved in pure phenol. The Canada balsam-phenol mixture darkens rather rapidly and must be made up fresh every month or so, but copal darkens much less rapidly and is equally satisfactory in other respects. In mounting, the separated head, thorax, abdomen, and wings are placed in separate small drops of phenol-copal on a small cover glass, the medium being allowed to harden a few hours or overnight. The cover slip is then turned over onto a generous drop of phenol-copal or ordinary thick balsam. This insures the specimens being close to the cover slip and accessible to the oil-immersion lens. It is important that the cover slip be supported in the final mount by chips of cover slip at the corners, as shrinkage during drying will crush and distort the specimen. The final mounts must be thoroughly dried with gentle heat; otherwise, the residual phenol may crystallize out in fine needles and spoil the specimen.

In mounting the abdomens of female *Phlebotomus*, we find it necessary to proceed gradually from pure phenol to the resinous mounting medium; otherwise, the thin-walled spermathecae will collapse. This may be done by placing the abdomen under a cover slip in phenol, either supported on a flat slide or in a hollow ground slide and gradually adding thinned resinous mounting medium at one edge, withdrawing the phenol a little at a time from the opposite side with a bit of filter paper. When the medium under the cover slip has become sufficiently concentrated, the abdomen may be transferred to the inverted cover slip in a drop of medium and allowed to dry with the rest of the specimen. In processing unidentified female specimens of *Phlebotomus*, it is wise to examine the spermathecae either in phenol or in water after KOH treatment, as the spermathecae and their ducts are best seen at this stage. If the specimen is of special value, drawings should be made at this time, since, even with the most painstaking care, shrinkage and collapse may occur in mounting.

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Book Reviews

Plants and environment: a textbook of plant autecology. R. F. Daubenmire. New York: John Wiley; London: Chapman & Hall, 1947. Pp. xii + 424. (Illustrated.) $4.50.

Prof. Daubenmire believes that course work in ecology should be preceded by the study of plant morphology, taxonomy, physiology, and chemistry. He also believes that the study of vegetation should not be undertaken until the student has a grasp of the numerous and often complex influences which affect the individual plant, and of the attendant responses of plant life to such influences. Thus, his approach is analytical and deductive.

For the purpose of exposition he breaks down environment into 7 "factors"—soil, water, temperature, light, atmospheric and biotic factors, and fire—and devotes a generous chapter to each. The two concluding chapters deal, respectively, with "The Environmental Complex" and "Ecologic Adaptation and Evolution." A list of 612 references in English and a detailed index are appended.

Throughout the book there is a beautiful consistency of style and organization. Both are lucid, logical, economical, and yet thorough. The illustrations, which are well chosen, are in large part original and bespeak the author's long discipline in the field. These merits, together with the sound critical scholarship which the book displays, reflect honor both upon the author and upon the fine American ecological teaching tradition of which he is a product. Happily, too, *Plants and environment* tends to round out, rather than displace in any measure, the small but vigorous teaching literature on ecology which is available to students in this country.

By the canons of criticism, if an author accomplishes what he sets out to do, and does it well, there is nothing more to say. Yet I do not believe the book would have suffered in any respect if Prof. Daubenmire had given some play to his "conception of the synthetic nature" of ecology and to his belief in the fundamental importance of the "holistic outlook." He does himself less than justice when he calls the environment the *sum* of all its factors. He knows, and later makes clear, that the relationship is not merely additive.

In short, the ultimate business of all ecology is the inseparable relationship between process and form. It seems scarcely sufficient to mention the application of Le Chatelier's theorem. The fundamental physical con-

cept from which it derives ought to be made clear to every student of biological processes. Nor should it be necessary to become involved in "the several conflicting philosophies of plant sociology" before one can show that the living community has the attribute of form by virtue of the processes of which it is an expression.

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The corrosion handbook. Herbert H. Uhlig. (Ed.) New York: John Wiley; London: Chapman & Hall, 1948. Pp. xxxiii + 1188. (Illustrated.) $12.00.

This volume was prepared as a project of the Corrosion Division of the Electrochemical Society. Approximately 100 contributors supplied 142 articles which make up the book. These articles have been grouped into 9 sections: Corrosion Theory; Corrosion in Liquid Media, the Atmosphere, and Gases; Special Topics in Corrosion; High-Temperature Corrosion; High-Temperature Resistant Materials; Chemical Resistant Materials; Corrosion Protection; Corrosion Testing; and Miscellaneous Information.

As the title implies, the principal purpose of this book is to provide a single source of information, in terms of data and observations, concerning corrosive effects of a wide variety of media on many substances, metallic and nonmetallic. The authors chosen to present this material were well qualified on the basis of their interest or direct efforts in the particular areas covered. The purpose has been served directly in most instances or through references to the original literature. The information given necessarily lags behind the research in the field, but this does not detract from its usefulness.

A number of widely used experimental methods for measuring corrosion rates in the laboratory and in the field are described in some detail. Brief descriptions of various general techniques which might gainfully be applied to corrosion research, e.g. microscopy, X-ray diffraction, electron diffraction, wetting, adsorption, and others, could have been added profitably.

Theoretical aspects of corrosion as such are treated only briefly in about the first 40 pages, but considerable discussion of fundamentals may be found in many of the individual articles. On reading the book, the newcomer to the field will have no difficulty in determining the prevailing opinion on theories of corrosion mechanism, corrosion inhibition, passivity, etc. At the same time there are sufficient expressions of conflicting opinion to indicate that much is still improperly understood. It follows, then, that this book might well stimulate research in corrosion.

The physical make-up of the book is satisfactory, and there are many useful photographs, figures, and references to the original literature. A badly needed glossary of terms is included, and the index, an important item in such a book, is adequate. The book will serve very well the engineer and the scientist interested in corrosion.

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Scientific Book Register

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