

These and other methods, however, are not easily applied without a strong biochemical background and specialization in certain analytical techniques. Furthermore, sampling and testing must be adjusted to the requirements of the quantitative geneticist.

To assist its members with these problems, the Working Party on Biochemical Genetics of the International Union of Forest Research Organizations conducted a workshop at the University of Göttingen, Germany, 5–28 July 1973. The organizers, Professors Klaus Stern, Göttingen, and Robert G. Stanley, University of Florida, both died within little more than one year of the workshop. The papers were then edited by Dr. Jerome P. Miksche, U.S. Forest Service.

There are 13 Chapters: 1, Optical techniques for measuring DNA quantity (G. P. Berlyn and R. A. Cecich); 2, Nucleic acid extraction, purification, reannealing and hybridization methods (R. B. Hall, J. P. Miksche, and K. M. Hansen); 3, Gel electrophoresis of proteins and enzymes (P. P. Feret and F. Bergmann); 4, Extraction and analysis of free and protein-bound amino acids from Norway spruce foliage (J. Lunderstädt); 5, Photosynthesis, respiration, and dry matter production (W. Zelawski and R. B. Walker); 6, Analyses of monoterpenes of conifers by gas-liquid chromatography (A. E. Squillace); 7, Isolation and analysis of plant phenolics from foliage in relation to species characterization

and to resistance against insects and pathogens (J. Lunderstädt); 8, Mineral analyses (F. H. Evers and W. Bücking); 9, Pollution responses (K. F. Jensen, L. S. Dochinger, B. R. Roberts, and A. M. Townsend); 10, Indirect selection for improvement of desired traits (K. von Weissenberg); 11, Pollen handling in forest genetics, with special reference to incompatibility (E. G. Kirby and R. G. Stanley); 12, Tissue culture of trees (L. Winton and O. Huhtinen); 13, Manipulation of flowering in conifers through the use of plant hormones (R.P. Pharis).

One must admit that the selection of subjects is a "mixed bag," but it is related to primary current concerns in the field. Some of these fall into the "pure research" category, others are related to breeding programs, although applications may not be simple or direct. Most of the authors are well known for their contributions in their field of specialty and have done a good job of synthesizing widely scattered information. The editor and also the publisher deserve a great deal of credit for welding language and illustrations from authors in five countries into a clear, easily accessible publication. Teachers, graduate students, and research workers in biological fields will value this book in their library.

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The illustrated Flora of Illinois. Sedges: *Cyperus* to *Scleria*

By Robert H. Mohlenbrock. 1976. Southern Illinois University Press, Carbondale. 192 pp., illus. US \$15.

The publication of this volume constitutes another step forward towards the completion of a series of floristic works on the flora of Illinois which will probably run to many volumes. Although there is an overall plan to the work designed to cover every group of plants from algae to vascular plants, individual volumes will appear as they are completed, rather than follow a schedule. An advisory board was set up in 1964 to make suggestions for the content of each volume during its preparation.

This volume is the sixth to appear and is the first of two treatments on the sedges. The second will contain only the large genus *Carex*. Those that have already appeared are as follows:

Ferns — 1967

Flowering Plants. Flowering Rush to Rushes — 1970

Flowering Plants — Lilies to Orchids — 1970

Grasses. *Bromus* to *Paspalum* — 1972

Grasses. *Panicum* to *Danthonia* — 1973

This list is presented here for those who wish to obtain the complete set. All volumes, except the Ferns, are listed in the literature cited. Why the Fern book is omitted is not clear.

In this book, assistance in the preparation of the text of *Eleocharis* was obtained from Donald J. Drapalik (pp. 59–91), but the remainder was presumably written by the editor/author of the series, Robert H. Mohlenbrock. As he had already treated the group in papers cited, of course the work here was made easier.

The plan of the volume follows very much that of the earlier ones: there is an illustrated section on morphology, an all too brief discussion of family relationships, a paragraph on how to identify a sedge, followed by a very useful illustrated key to the genera of Cyperaceae which should do a great deal for both the beginner and the more well-informed towards clarifying the differences among them. There is a very curious repetition of the family description on pages 10 and 15 which is puzzling; these descriptions are not identical and after reading and comparing them, I

must conclude that either the first is intended to be a general one for the family and the second to the family as it occurs in Illinois, or else it is a manuscript error that managed to reach the printer without being detected.

The second family description is followed by short tribal descriptions (there are 4 tribes of the family in Illinois) and each genus within the tribe is described and followed by a key to the contained species. For each species, principal synonymy, a description, habitat data, general range, and Illinois range are given. The maps for each species are county dot maps without actual locations, in the manner of Deam's *Flora of Indiana*. Maps are supplied even for forms, an unnecessary exercise, for one may question whether even a species map contributes much in a flora of such a relatively small region as Illinois.

Species illustrations usually occupy a full page but at times less, in an evident attempt to keep the plates near the descriptions. The problem, of course, is that, compared with dicotyledonous plants, sedges have a simple morphology. Therefore descriptions are short, and in the case of closely similar species, cannot even be of uniform length. At the end of the book is a four-page glossary, three-and-one-half pages of references, and an index to plant names.

The criticism concerning the waste of space in the drawings which I levelled in an earlier review of the Rushes and Lilies volumes (Canadian Field-Naturalist 87: 82-83, 1973) cannot be equally applied to this volume. Most of the drawings occupy the page although there are a few space-wasters. Some space has been saved by filling in part of the page with text. The drawings of detailed enlargements come out well,

but the overall habits and clusters of spikelets are often too dark. This is probably a result of over-shading in the original drawings causing lines to merge with reduction. Because of this darkening, the illustrations do not attain quite the quality of any of the earlier volumes.

Mohlenbrock has made a number of taxonomic decisions which are usually supported by arguments to sustain them and which do not result in any new combinations or descriptions. Some examples are as follows. He adequately disposes of Fernald's division of *Bulbostylis capillaris* into varieties. Again he supports Koyama's contention that *Hemicarpha* should be considered within the generic limits of *Scirpus*, yet he disagrees with his submersion of *Bulbostylis* in *Fimbristylis*, his merging of *Lipocarpa* with *Scirpus*, and his attempt to merge *Eriophorum* with *Scirpus*. I note also that *Scirpus acutus* Muhl., *S. validus* Vahl, and *S. heterochaetus* Chase are regarded as distinct species rather than as variants of the European *S. lacustris* L. as suggested by Koyama.

Undoubtedly the Sedges volume maintains the high standard of the earlier volumes and will certainly provide a valuable tool for the student of sedges in the state of Illinois, in adjacent areas and even further afield because many of the species have broad ranges. May we wish Dr. Mohlenbrock well in his studies on the more difficult group *Carex*, the subject of the second book on Sedges.

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Carex in Saskatchewan

By John H. Hudson. 1977. Bison Publishing House, P.O. 7226, Saskatoon. 193 pp. Paper, \$10.00 + .50 handling.

This is a conservative treatment of the genus *Carex*, a notoriously difficult group, in Saskatchewan. The stated purpose is identification. The groups and sections used in the key are those of K. K. Mackenzie (1931-1935) "Cariceae" in *North American Flora* 18: 1-478. The descriptions based on Saskatchewan material of the approximately 100 species are in alphabetical sequence and are for the most part quite extensive. Comparisons are given to related species. Following each description is an informative easily written paragraph or two on habitat, distribution, comments on earlier reports, and treatments of other authors.

Distribution maps are provided for 66 of the more common species. These maps do not, as stated by the

author, always depict the true distribution, but rather the distribution of collectors on certain travel routes such as the Hansen Lake road.

Photographs of 40 of the more common species show the habit of these species, but do not show the detail of perigynia often required for the separation of closely related species.

The text is typewritten and is reproduced on only one side of each page, thus making the volume twice as thick as actually necessary. The work is, however, a welcome contribution to a flora of Saskatchewan, which will be most useful to students of that province as well as to those of adjacent prairie provinces.

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