BOTANY

Chairman: WINONA H. WELCH, DePauw University

The usual interest shown in the program of this section was maintained. About 70 to 75 were in attendance.

Ralph M. Kriebel, of the Soil Conservation Service, was elected chairman of the section for 1940.

ABSTRACTS

Dr. John Thomas Plummer, pioneer Indiana botanist. LAWRENCE J. KING, Richmond.—Little notice has been given to the scientific work of an early physician of Richmond, Indiana, Dr. John Thomas Plummer (1807-1865). From an extensive search into the early scientific literature, it has been possible to construct a bibliography of approximately 145 titles. These papers cover many subjects from botany to philology. Some of his first writings were botanical, and these are among the earliest contributions to the flora of Indiana. An extensive biography is in preparation.

Pteridophytes of the Lower Yangtze Valley. CHARLES E. DE VOL, Indiana University.—This is a list of 154 species and varieties of pteridophytes collected over a period of six years. Keys, descriptions of genera, critical taxonomic notes, and Chinese names are given. The paper includes a brief history of Chinese pteridology and a digest of the literature. Two new species, *Athyrium Devollii* Ching and *Athyrium giganteum* De Vol, are described; *Monachosorum flagellare* (Max.) Hayata and *Hymenophyllum Wrightii* v.d.B. are reported from China for the first time; and twenty-two species new to the Lushan area are listed.

A key to the ferns and fern allies of northeastern North America. RAY C. FRIESNER, Butler University.—The appearance of Broun's *Index to North American Ferns* has done much to stabilize the nomenclature of this taxonomic group. So many new species, varieties, and forms are recognized that it is highly desirable that keys be constructed for their determination since there are none at present available except those scattered through periodical literature. The present key covers all species and varieties occurring within the range of Gray's *Manual.*

The distribution in Indiana of *Quercus ellipsoidalis* E. J. Hill. RALPH M. KRIEBEL, Bedford.—A study of the distribution of *Quercus ellipsoidalis* E. J. Hill has shown that it is definitely limited to that region of sand ridges, plains, and marshes in the northern part of the state where the substratum is sandy or gravelly and is now artificially drained. It is an inhabitant of the Plainfield soil types and is found more frequently on the heavier types of soil. Apparently, it is absent on the sand dunes around Lake Michigan but is a frequent to a common

tree in the sandy areas in the Kankakee Valley. It is mostly associated with *Quercus velutina* Lam. and *Quercus palustris* Muench. Specimens taken from two to eight trees from each of 18 counties are deposited in the author's herbarium, and duplicates of most of them were deposited in other herbaria in Indiana and in several of the larger ones outside of the state.

A post-Pleistocene fossil pollen study of two northern Indiana bogs. FRANK A. HAMP, Butler University.—The study deals with pollen analyses of the Lakeville and Round Lake bogs in deposits of late Wisconsin glaciation in northern Indiana. Both bogs show about the same successional record. Significant climatic changes from cool-moist to warm-dry are indicated by a striking decrease in Abies and Picea and appearance of numerous deciduous genera. The Lakeville bog showed a brief Pinus dominance in the 28-foot level which was absent in the Round Lake bog. Picea and Pinus persisted to the top foot level in both bogs. From the 27-foot level in the Round Lake bog and 26-foot level in the Lakeville bog, the forest dominance was essentially Quercus-Carya with a weaker co-dominance of Acer indicated in seven levels.

Correlation of radii in asymmetrical growth of *Quercus velutina*. RAY C. FRIESNER, Butler University.—Microscopic measurements of year ring growth made from 11 to 15 radii, each for four asymmetrical stump sections, 120 years old, of *Quercus velutina* show that there is a general gross correlation of growth increments, but the precise amount varies greatly. When all the radii of a particular section are compared for each year, we find 100% conformity for 8% to 10% of the years, 80% for 31% to 32% of the years, and 73% to 75% for 39% to 42% of the years. Conformity is greater in years of pronounced change. Curves plotted for successive radii of each individual year of growth show that growth follows a rhythmic pattern as the curve moves around any particular year. This is more pronounced in periods when annual growth increase is 2 mm. or more. External environmental factors play no recognizable role in determining asymmetrical growth.

Formation of the perispore of the megaspore of *Isoetes Engelmanni*. DOROTHY PARKER, St. Mary's College, Notre Dame.—The perispore of *Isoetes Engelmanni* is exogenous in origin. The formation involves an unusual multiplication of tapetal cells. The normal function of the tapetum is that of supplying food, but these cells go through a complicated process of division into morphological units which supply the megaspores with a perispore.