

ABSTRACTS OF PAPERS PRESENTED AT THE ANNUAL MEETING

GENERAL SESSION

FRIDAY, NOV. 22, 10:30 AM

University Center Ballroom

AEC Special Fellowship Program, Granvil C. Kyker, Oak Ridge Associated Universities.

The Isolation, Identification and Systematic Significance of Isoflavonoid Compounds in the Genus Baptisa. William H. Wilson, White Station High School, Memphis.

Resource Management and Research Opportunities in Land Between The Lakes. Raymond W. Nall, Biologist, Land Between The Lakes.

Some Foliose and Fruticose Lichens in Land Between The Lakes. Haskell C. Phillips, Austin Peay State University.

Pharmacological Control of the Mind. Emmett S. Manley, The University of Tennessee Medical Units.

SECTION MEETINGS

FRIDAY, NOVEMBER 22, 2:00 PM

BOTANY SECTION

CLAXTON EDUCATION BUILDING, ROOM 103

PHILLIP WATKINS, CHAIRMAN

A Preliminary Report on the Aquatic Algae from Selected Sites in Shelby County. Sister Adrian Marie Hofstetter, O.P. and Therese Mangold, Siena College. Samples taken from twelve stations on the Mississippi River and its tributaries in Shelby County were assayed for the number and kinds of phytoplankton present by the Sedgwick-Rafter counting cell technique, by culturing and by special frustule preparation of the diatoms. Eleven genera of Myxophyceae, seven genera of Euglenophyceae, fifty-eight genera of Chlorophyceae, one genus of Xanthophyceae, and two genera of Dinophyceae were identified with certainty. The genera of Bacillariophyceae will be described in another report. (This investigation is supported under the Department of the Interior Grant OWRR B004-TENN and a National Science Foundation Undergraduate Research Participation Grant, GY4336, to Christian Brothers College.)

Dimorphism in Cladosporium werneckii. M. R. Houston, K. H. Meyer, Nancye Thomas and F. T. Wolf, Department of General Biology, Vanderbilt University. *Cladosporium werneckii*, the cause of *tinea nigra palmaris*, is a dimorphic organism, which may grow either as a mold or as a yeast. The organism has been grown on a variety of media and under a variety of conditions, and the mold- or yeast-like character of the resulting growth was determined. Nutritional factors, particularly

cysteine, are of great importance in determining yeast-phase growth, and temperature is of minor importance. *C. werneckii* is a microaerophilic organism, and can be grown in an atmosphere of nitrogen or carbon dioxide. When grown in an atmosphere of carbon dioxide, it has the morphology of a yeast; under nitrogen or oxygen it grows as a mold.

Trends in an Old-Growth Forest Remnant in Unglaciated Southwest Illinois. G. T. Weaver and W. C. Ashby, The University of Tennessee and Southern Illinois University. Thirty-eight arboreal taxa 2.6" dbh and over occurred in the stand in 1967. Hickories (*C. ovata*, *C. glabra* and *C. ovalis*), dominating 12.6"-20.0" dbh class and oaks (*Q. velutina*, *Q. rubra*, and *Q. alba*), dominating 20.1"-48.5" dbh class, were the major canopy species. *Acer saccharum*, dominating all diameter classes between 0.5" and 12.5", formed a dense understorey throughout the stand. Mortality rates were low for *A. saccharum* and *C. ovata* and high for *Q. rubra*; *Sassafras albidum*, and *Ulmus rubra*. Of the several taxa represented in the small reproduction class, only *A. saccharum* was growing into larger classes. Oak regeneration was poorly represented and *Liriodendron tulipifera* regeneration was absent.

Between 1956-1967, no compositional changes occurred in the canopy (trees 12.6" dbh and over). Density increased from 39 to 46 stems/acre and basal area increased from 87 to 103 ft²/acre. Density changes within diameter classes suggested recovery from disturbance. *C. glabra*, *C. ovalis*, *Q. velutina*, and *Q. rubra* decreased in importance. *A. saccharum*, *C. ovata* and *Ulmus* spp. increased in importance.

The rapid ingrowth of *A. saccharum* apparently began about the year 1900 and will continue in the future. Continued decline of oaks and hickories is indicated. The ingrowth of *A. saccharum* could indicate release from fire, or result from short term or long term climatic shift. Better evidence for the latter cause is available.

Variations in Secondary Plant Succession. H. R. DeSelm and David W. Smith, The University of Tennessee. During the summer of 1967 a study was made of 30 fields ranging in age since abandonment of 1-70 years. They occurred on rolling Great Valley topography on at least 11 geologic mapping units and 7 soil series. The vegetation passed through forb, grass, vine, and thicket stages and by 60-70 years was pine-hardwood or hardwood dominated in ratio of about four to one among the oldest plots.

Soil Algae from Fall Creek Falls State Park, Bledsoe and Van Buren Counties, Tennessee. Martha Frances Langford, Middle Tennessee State University. This investigation represents an exploratory study of the soil algal flora of Fall Creek Falls State Park, Bledsoe and

Van Buren Counties, Tennessee. From 86 unialgal isolates, 10 new chlorophycean species, including one new genus, were isolated into axenic culture and were compared with similar previously described forms whenever the latter were available in culture. The physiological and cultural attributes were deduced in this study so that the information would be available for comparison with the data obtained in previous studies of this type. The judgments exercised as to the delimitation of the new taxa described herein were based primarily on morphological criteria. The newly described taxa are *Heterochlamydomonas lobata* sp. nov., *Heterochlamydomonas rugosa* sp. nov., *Radiosphaera tennesseensis* sp. nov., *Spongiochloris striata* sp. nov., *Radiosphaeropsis* gen. nov., *Radiosphaeropsis lobata* sp. nov., *Radiosphaeropsis tennesseensis* sp. nov., *Radiosphaeropsis vegetata* sp. nov., *Spongiosphaera dilatata* sp. nov., *Spongiosphaera macropyrenoidosa* sp. nov. and *Spongiosphaera tennesseensis* sp. nov.

Forest Communities in the Ridge and Valley Province of East Tennessee—A preliminary report. W. H. Martin, The University of Tennessee. Forty-five stands of relatively undisturbed forests have been located in six counties of the Great Valley of eastern Tennessee in an attempt to relate stable forest communities and individual tree taxa with geologic formations and soil properties. The underlying rock strata in the area are limestone, shale, and sandstone. The residual soils developing from this parent material are the substrates of 95% of the study areas; over 40% of the stands are associated with soils developed from dolomitic limestone, which is the prevailing bedrock. The composition of these forests and their relation to soils and geologic formations will be discussed.

Recent Changes in the Distribution of the Kentucky Coffee Tree, Gymnocladus dioica. P. L. Hollister, Cumberland College. The writer met this species, officially, along a small flood plain near Carlinville, Illinois. In Wilson County, Tennessee, it was found by accident along a mid-slope of a hill locally called Old Egypt some six miles south of Lebanon, the county seat. Later, it was found, essentially in pure stand, about three-fourths of the way up the south-eastern side of Jennings Knob, a hill some six miles south-east of Lebanon, this in 1940. A visit to the same spot in July, 1968, revealed this species has extended itself completely around the summit of this pyramid-shaped peak.

Chromatographic Comparison of Three Species of Vernonia: Compositae. G. E. Hunter and B. K. Burch, Tennessee Technological University. The flavonoid compounds from leaves of three North American species of *Vernonia* compared chromatographically and spectrophotometrically are strikingly different from each other. Methanolic extracts from leaves of *Vernonia lettermanii* yielded the fewest flavonoid compounds. Six compounds consisting of flavonol di- and tri-glycosides and their aglycones in addition to a minute trace of a flavone aglycone were isolated. Leaves of *V. altissima* yielded ten detectable flavonoids including flavonol di- and tri-glycosides and their aglycones, all similar to those of the former species. Three flavone aglycones were also

present in easily detectable amounts. A strikingly different complex of ten flavonoids were found in leaves of *V. marginata*. No flavonols were detected and the glycosylation level was lower, with principally monoglycosides and aglycones of flavones present. One compound interpreted as a glycoflavone, a flavonoid group not found in the other two species, represents another marked biochemical distinction for *V. marginata*.

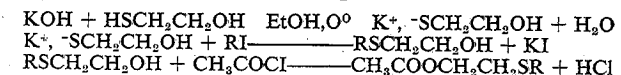
A Flavonoid Study of Pycnanthemum: Labiatae. R. Keith Carr, Tennessee Technological University. Morphological data alone are insufficient to classify species of *Pycnanthemum* because of intraspecific polymorphism and interspecific hybridization. Flavonoid compounds from methanolic leaf extracts have been analyzed by two-dimensional paper chromatography for many of the species. Each shows a distinct flavonoid pattern. This information can be used to supplement morphological data for classifying *Pycnanthemum* or for determining the parental species of interspecific hybrids.

CHEMISTRY SECTION I

MCCORD SCIENCE BUILDING, ROOM 101

ROBERT T. SWINDELL, CHAIRMAN

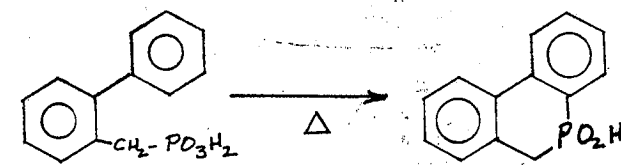
Preparation of 2-alkylthioethyl acetates and their enzyme inhibitory activity. D. P. Claypool, J. G. Beasley and R. C. Lewis, Memphis State University and University of Tennessee, Medical Units. The 2-alkylthioethyl acetates were prepared in the course of a synthetic program to prepare sulfur analogues of acetyl choline for testing of their enzyme inhibition. These precursors of the desired compounds were prepared by the following sequence of synthetic steps:



Where R=methyl through decyl

When these compounds were tested in 1 x 10⁻³M solution in a weakly (HCl) acidic isolated horse serum acetyl choline system by the method of Beasley et al. enzyme inhibition was observed. The results of these tests and further studies will be reported in the literature at an early date.

The Preparation of Organophosphorus Heterocyclics by Thermal Cyclization. Charles N. Robinson and William A. Pettit, Memphis State University. In 1962, E. R. Lynch reported the cyclization of *o*-phenylbenzylphosphonic acid to 9-hydroxy-9,10-dihydro-9-phosphaphenanthrene-9-oxide.



This preparation has been repeated and extended in an attempt to prepare the ylid. The thermal cyclization reaction has also been used to prepare a number of other new hetero systems.