BOTANY

Chairman: ROBERT L. KENT, Indiana Central College

ROBERT SIMPERS, Crawfordsville, Indiana, was elected Chairman for 1970

ABSTRACTS

***Trilliums* of Franklin County, Indiana.** LLOYD BEESLEY and ADELE BEESLEY, Cedar Grove, Indiana.—According to Deam's *Flora of Indiana*, there are seven species of *Trillium* found in Indiana. In our search in Franklin County we have found all seven species: *Trillium sessile, T. sessile f. luteum; T. recurvatum; T. nivale; T. grandiflorum; T. cernuum; T. gleasoni; T. gleasoni f. Walpolei.*

Report of a carotenoid-mutant of *Cyanidium caldarium*. K. E. NICHOLS and W. W. BLOOM, Valparaiso University.—Wild-type cells of *C. caldarium* have been reported to produce *B*-carotene, zeaxanthin, and an unidentified xanthophyll. Chlorophyll *a*, C-phycocyanin, and allophycocyanin also characterize the wild form. A new mutant has recently been isolated from a previously described chlorophyll-less form. Spectroanalysis of an ether extract of ground cells of the new mutant reveal an absence of the carotenoids of wild-type cells. Light absorption maxima are at 378, 400, and 425 mμ. and are similar to those reported for ζ-carotene. If the identification is correct, the finding would appear to support the belief that ζ-carotene may be one of several hydrolycopene precursors of the carotenoids.

Responses of Megagametophytes of *Marsilea* to Growth Substances with Respect to Rhizoid Formation. WILLIAM W. BLOOM and KENNETH E. NICHOLS, Valparaiso University.—High concentrations of indole acetic acid and napthalene acetic acid inhibit rhizoid formation in both light and darkness in non-pregnant megagametophytes of *Marsilea* but lower concentrations stimulate rhizoid growth. Gibberellic acid stimulates cell division but has limited effects on rhizoid production.

Phenology Studies of Ten Species at Eleven Locations in Indiana. BYRON O. BLAIR, Purdue University.—In 1964 with support from the NC-26 (Regional Committee on Climatology Studies) and the Purdue Agricultural Experimental Stations, 10 semi-shrub perennial species were planted at 9 locations in Indiana. Plantings in each case were located near a functioning weather station and, in most instances, at experimental farms where weather data have been taken for several years. The species vary in blooming habit, varying from early spring until early fall. All species have been developed from cuttings or clonal material as a means of controlling genetic variability. This is an essential feature of phenology studies which was neglected in most past records and studies.

At each location, in addition to daily weather data which are available, 4-inch soil cores have been taken for physical and chemical analysis.

Three years of satisfactory flowering data have now been collected and with analysis of soil profiles which vary from muck, to sands, to imperfectly drained clays, we are ready to evaluate seasonal influences and diurnal effects of the local climate on growth and development of these species.

Chromosome Associations in Corn Monoploids. L. FORD, Butler, Indiana.—Today there is good evidence that haploids occur spontaneously in most Angiosperms, including *Zea maize*. The study of cytological aspects and interpretations of univalents, bivalents, secondary associations, restitution nuclei, and somatic doubling have become important not only in evolutionary and species relationships studies, but also from the point of view of practical plant breeding. There have been only a few studies of maize monoploid microsporocytes in the literature, and because of the importance of corn monoploids in modern hybrid corn production, this study is offered. Microsporocytes from 50 maize monoploid plants were identified, collected, and prepared by aceto-carmine squash techniques, and examined cytologically. A rather high amount of non-homologeous pairing was found. In 43 cells with chiasmata or bivalent association, 31 also had secondary association. In addition, there were 87 cells in the same material with secondary association only. There does appear to be evidence, therefore, for a type of secondary association in corn due either to basic homologies of chromosomes; presence of homologous parts in non-homologous chromosomes; or residual attraction between chromosomes.

A Microspectrophotometric Analysis of DNA in the Heterothallic Species of Slime Mould, *Didymium iridis*, Which Sometimes Exhibits Apogamy. J. YEMMA, Pennsylvania State University.—Data are presented which show that selfing (or apogamy) sometimes takes place in individual clones of known mating types. These conclusions were arrived at through appropriate use of the microspectrophotometer for Feulgen-DNA nuclear content analysis, and IBM 360 computer for data analysis.

Some Charophytes from the Pleistocene. FAY KENOYER DAILY, Butler University.—The occurrence of specimens belonging to the genus *Latochara* in glacial deposits of New York and Indiana was reported in Daily (1961). This extended the range of the genus from the Eocene. Representatives were again discovered in the late Wisconsin till of South Dakota. Specimens were so abundant that sectioning of lime-shells was possible, allowing confirmation of identification and providing new information about the species, *Latochara Waynei* Daily. Other specimens in the lacustrine deposits were referred to the modern species, *Chara delicatula* Ag. emend A. Br. A mineral incrustation on the exterior of the whole plant provided casts of several structures rarely preserved in fossil charophytes.

Dr. F. V. Steece (1961, 1966) examined the charophytes from two of the sites and provided these specimens and additional material as well as stratigraphic data for the present study. Dr. Steece reported *Clavatorites* and *Chara* from these sites. The *Clavatorites* are considered to be *Latochara* in the present study, although eventually they may be found to be synonymous.