

PLANT TAXONOMY

Chairman: GRADY WEBSTER, Purdue University
JOSEPH HENNEN, Indiana State College, was elected chairman
for 1963

ABSTRACTS

Notes on the Comparative Biology of the Eastern North American Species of *Bidens*. GUSTAV W. HALL, Indiana University.—Although well-known taxonomically through the monographic study of Sherff (1937) and of others, little has been recorded of the biology of speciation of any portion of the cosmopolitan genus *Bidens* (Compositae, 270 spp.).

The three sections of the genus most conspicuous in and largely restricted to eastern North America demonstrate a progressive loss of accommodation for cross-pollination, e.g., loss of the genetic self-incompatibility barrier, reduction or absence of rays; modification of disk floret morphology and pollen presentation. Accompanying this shift in breeding system are virtual absence of known natural hybrids and a breakup of the advanced species into numerous local races. The investigation has so far centered on the two smaller sections, *Meduseae* with 4 diploid species, and *Heterodonta* with 3 or 4 tetraploid species; within each, fertile species hybrids can be readily produced by artificial crossing in the greenhouse. The members of the *Meduseae*, showy and wholly cross-pollinated, have apparently been maintained in nature by ecological preferences and partial allopatry, now being put to the test by widespread migration of two species. The *Heterodonta* line, through self-fertilization and restriction to a very narrow estuarine habitat, has evolved into a group of highly endemic, allopatric taxa scattered from the St. Lawrence to the Susquehanna River.

Preliminary Taxonomic and Chromatographic Studies of Marigolds (*Tagetes*). ROBERT T. NEHER, Indiana University.—The genus *Tagetes* comprises some 60 valid species ranging from Southwestern United States to Argentina. Subgenera have not previously been recognized but the recent cytogenetic studies of Dr. J. W. Towner of the University of California at Los Angeles, along with the oil and pigment analyses carried out by the author in collaboration with Dr. E. Ikenberry of LaVerne College make it clear that two natural groups are present. They may be distinguished by the morphology of the leaves (filiform or simple vs. compound), the odor (anisate vs. tagetone), and apparently a complete barrier to hybridization.

Notes on Indiana Algae, Primarily from Putnam County. CHARLES R. HALL, Emmerich Manual Training High School, Indianapolis, Indiana.—New county reports of algae from Putnam County, Indiana, are added to the 207 species and varieties reported to the Indiana Academy of

Science during the 1961 fall meeting. There are also several new reports for the state of Indiana from Putnam County and other areas of Indiana. All specimens have been preserved by drying on glass slides or mica sheets and are located in the Herbarium of DePauw University, Greencastle, Indiana.

Preliminary Studies on the Genus *Tragia* (Euphorbiaceae). KIM I. MILLER, Purdue University.—The pollen grains of *Tragia* fall into three general classes with the most common and widespread type being tricolporate and oblate spheroidal in shape. The exine is usually thicker in the area around the colpi and ornamented with pila on its surface. The bases of the pila are connected by a minute reticulum. A rather large operculum is present on the colpi membranes. A second class of pollen, occurring only in Section *Bia*, possesses no apertures of any kind and the pila may be fused at their summits (tectate) or slightly separated. The third class represents a transition between the other two. No pores are present until the grains become fully expanded at which time the spore wall ruptures and definite germ pores appear. Of the species examined this type occurs only in *T. smallii* and *T. urens*.

Cytological studies have been carried out using aceto-carmine squashes of young leaves and root tips. *Tragia urens*, *T. smallii*, *T. urticifolia*, and *T. glanduligera* have a chromosome number of $2n=44$. *Tragia ramosa* has a number of $2n=c. 110$. These are the first chromosome counts reported for *Tragia* and indicate that the base number for the genus is $x=11$.

The Chromosomes and Affinities of the Genus *Reverchonia*. GRADY L. WEBSTER, Purdue University.—*Reverchonia*, a monotypic genus of Euphorbiaceae restricted to sandy desert areas in the southwestern U. S. and Mexico, is unusual in being the only genus outside Australia with extremely narrow cotyledons. Palynological studies have shown that the microspores of *Reverchonia* resemble those of some American species of *Phyllanthus* sect. *Phyllanthus*. Cytological observation of mitotic figures have demonstrated a chromosome number of $2n=16$. This number has so far been found only in *Phyllanthus* sect. *Isocladius*, the taxa of which have somewhat similar pollen grains but very different floral and vegetative features. *Reverchonia* may prove to be an aberrant, highly specialized group related to sect. *Isocladius*.

Migratory and Phylogenetic Trends in *Prenanthes*. WAYNE L. MILSTEAD, Purdue University.—Twenty-one species of *Prenanthes*, family *Compositae*, were examined to evaluate their relative positions on an advancement index scale. This was based on assigning varying values to morphological characters depending on the degree of advancement they exhibited. From this a dendrogram was constructed to show possible phylogenetic relationships of these species. Suggested migratory routes from the purported center of origin in Central Asia were also shown. The New World members of the genus appear to be the most primitive, with a trend to a more advanced nature in Southern Asia and Europe.

Studies on a New Species of *Allomyces*. JOE F. HENNEN, Indiana State College.—A new species of *Allomyces* was isolated from soil obtained near Blunt, South Dakota while working in cooperation with C. J. Mankin, South Dakota State College. Hemp seed bait was used to obtain water cultures. These were used to obtain bacteria free cultures on agar media. This species differs from all other known species primarily in that the resting sporangial walls are reticulate rather than pitted and the resting sporangia are formed basipetally within the hyphae, thus producing long rows of resting sporangia. The sexual stage has not been observed. The reticulate wall pattern of this new species seems to indicate close relationship between *Allomyces* and *Blastocladiella*.