BOTANY

Chairman: B. H. SMITH, Indiana State Teachers College

Professor R. E. Girton, Purdue University, was elected chairman of the section for 1945.

A trial-balance sheet for the respiration of excised maize roots. RAYMOND E. GIRTON, Purdue University.—The respiration of sterile excised maize roots was measured in terms of carbon-dioxide production for periods exceeding 100 hours. Losses in organic matter by the roots were determined for these respiration periods. From the data thus obtained, the amounts of carbon dioxide produced per gram of organic matter consumed were calculated. These values were compared with those obtained from generalized equations for respiration based upon different assumed respiratory substrates.

The existence of physiological strains in the myxomycete Physarum polycephalum Schw. WILLIAM D. GRAY.—The earlier reports concerning the existence of physiological strains among species of myxomycetes are reviewed and evaluated on the basis of more recent findings. Applying Torrend's fusion test and using a technique which precluded possible interference with fusion of plasmodia by exotoxins excreted by the plasmodia, it has been found that the common myxomycete, *Physarum polycephalum* Schw., is composed of a number of strains so distinct that their plasomdia will not fuse. Among eight plasomdial cultures from different sources which have been examined to date, three distinct strains have been found.

A study of lake filling and bog formation. J. E. POTZGER, Butler, University and IRA T. WILSON, Heidelberg College, Tiffin, Ohio.—The old, and still commonly prevalent conception of writers of textbooks and scientific articles, is that lakes progress in their filling to bog stage by a centripetal process, which in the closing stages frequently results in a small central pond surrounded by a more or less solidified mat. According to such a theory it would, theoretically, make no difference where in a basin a boring for pollen analysis would be made to obtain a complete pollen profile, one beginning with the earliest plant invaders. Experience showed, however, that borings made on the upper slope of a bog or lake basin had truncated lower sections of a pollen profile, indicating that filling there began later than in the deeper portion. Using a complete pollen profile (one which showed the earliest spruce period) from a given bog or lake as "standard," pollen profiles from borings in line transects across the basin were compared with the "standard," and time of filling was indicated by the progress of succession shown in the pollen profiles. Records from seven lakes and eight bogs indicate that as a whole lakes begin filling centrifugally, i.e. the deepest part of a basin,

or the various depressions in a complex basin, like that of Tippecanoe Lake, fill first. Only after shallowing of the basin does centripetal filling begin. Where a bog mat forms it is in a late stage of the "verlandung" process. For pollen workers it is, therefore, very essential that borings be made in the deepest part, or parts of a bog or lake.

Post-glacial history of the lake forest type of formation. J. E. POTZGER, Butler University.—The lake forest is a transitional type of formation where species of Pinus and southern deciduous trees, associated with Tsuga, constitute the vegetation complex. Distribution of the northern and southern elements is apparently controlled by edaphic factors. The aim of the study was to determine by aid of 24 pollen profiles how far south this formation type extended during post-glacial times. Results show that the lake forest type is of comparatively recent origin, succeeding a decided pine dominance, which earlier had succeeded Abies and Picea climax forest. This is true at least for an area extending from northern Indiana northward, and from western Minnesota to New England (the area covered by the 24 pollen profiles).

If we designate the pine-deciduous forest complex as characteristic of the lake forest type, it ranged from northern Indiana northward and northeastward. If, however, we designate Tsuga and Betula as key genera in the deciduous forest element then the lake forest varied little in geographical range from that of today, but had formerly a more decided eastward extension to northern New Jersey and New England.