SUCCESSION OF FORESTS AS INDICATED BY FOSSIL POLLEN FROM A NORTHERN MICHIGAN BOG

THE study of fossil pollen and the history of past forests linked up with it has claimed considerable attention among botanists here and in Europe. The present paper is part of the research on peat from Bryant's Bog, one of the deepest bogs near Douglas Lake, Cheboygan County, Michigan. The work was carried on during the summer of 1931 at the Biological Station of the University of Michigan, under the direction of Professor F. C. Gates.

Bryant's Bog is evidently an old glacial kettle-lake, approximately 65 feet deep. Up to a few years ago the adjacent plain and upland were covered with virgin deciduous forest, most of the region, otherwise, was covered with pine. Collection of peat was made at one foot intervals to a depth of 20 feet.

The customary method of pollen investigation seems to be to boil the peat in KOH to separate the pollen from the débris. The writer tried to avoid this treatment of the peat, as it frequently distorts the pollen grains. Northern Michigan peat is usually very moist and not densely packed, so that the KOH treatment would hardly be necessary. The fossil pollen grains of these bogs are in an excellent state of preservation. The peat was placed in a glass vial as soon as it was taken from the chamber of the borer; separation of the material was made by the addition of distilled water just before the count was made.

In preparing the slide, a scalpel-tipful of peat was moistened with water and the well-stirred mass scraped to one end of the slide while it was being held on a slant. When sufficient liquid had drained from the coarser particles, a cover-glass was placed over the fluid and counting was made from this preparation. An area covered by an 18 x 18 mm cover always permitted a count of 100 pollen grains. Two sets of 100 counts each were made for every level. As specimens of pollen grains of present-day plants were not available in sufficient number of species to make absolute identification of the fossil pollen possible, a comparison was made of the proportions of pollens of conifers and of deciduous trees and herbaceous plants at the different levels in the peat.

Pollen of conifers was very scarce in the upper layers of the peat and very abundant from the 9-foot level on, being most abundant at the 10-foot level. In a way this record presented a remarkable picture of the floristic aspect of the region, both of the present and the past; especially since it correlated with that part of the past which has left other records to the present. Ring counts made by Professor F. C. Gates when the deciduous woods was cut showed an age of 370 to 400 years for the oldest hardwood trees in the region. Assuming approximately 100 years for deposition of two feet of peat, the pollen record showing dominance of the deciduous forest correlates with the time indicated by the ring count. According to the record presented by the deeper layers of peat, conifers controlled the area about 1,000 years ago,

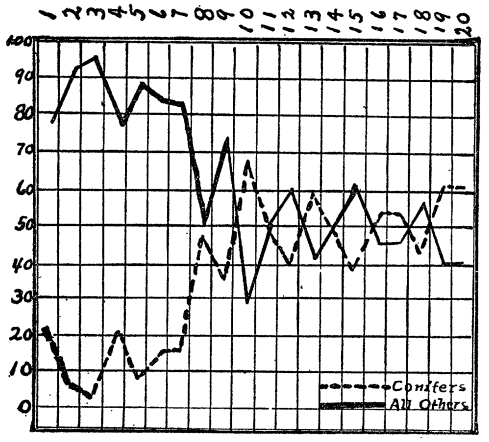

FIG. 1. Showing comparison of the percentage of pollen of conifers against all other pollen present in peat from Bryant's Bog. Horizontal lines percentage pollen. Vertical lines level of peat.

after which for some reason deciduous trees invaded the region and held this position to the time when white men first knew the forest. The sudden dip from coniferous to deciduous pollen dominance between the 9- and 10-foot levels even suggests the possibility that some factor destructive to the then dominant forest aided the invader in rapid ecesis.

J. E. POTZGER,
Research Fellow at Indiana University
BLOOMINGTON, INDIANA

BOOKS RECEIVED

BLANCHAN, NELTJE. *The Bird Book.* Pp. xii + 498. Illustrated by Nellie M. Pairpoint. Doubleday, Doran. $5.00.

BOAS, FRANZ. *Anthropology and Modern Life.* Revised edition. Pp. 255. Norton. $3.00.

COLLINS, A. FREDERICK. *How to Understand Chemistry.* Pp. xii + 322. 31 figures. Appleton. $2.00.

TAYLOR, ALONZO E. *Corn and Hog Surplus of the Corn Belt.* Pp. xxi + 658. Food Research Institute, Stanford University. $4.50.

U. S. TREASURY DEPARTMENT, COAST GUARD. *The "Marion" Expedition to Davis Strait and Baffin Bay, 1928: Scientific Results.* Pp. vii + 81. 50 figures. U. S. Government Printing Office. $.50.

WARMING, EUG. and P. GRAEBNER. *Lehrbuch der ökologischen Pflanzengeographie.* Pp. 481–720. Illustrated. Von Gebruder Borntraeger, Berlin.