

The following was provided by Lisa A. Standley, Recording Secretary

MINUTES OF THE 921th NEW ENGLAND BOTANICAL CLUB MEETING - OCTOBER 4, 1996

The 694th meeting of the New England Botanical Club, Inc., being the 921st since the original organization, met at the Harvard Biological Laboratories Lecture Hall with 57 members and guests present.

Following a summary of the minutes of the previous meeting, President Hudson introduced Drs. Rolla and Alice Tryon, noted NEBC members and past presidents, visiting from their current residence in Florida. Don then called for old business, new business, and gossip. He announced that the upcoming December, January, and February meetings would start at 6:45 PM, as a compromise that will accommodate members who travel long distances as well as members who travel to the meeting during rush hour. Paul Somers reported for the Library Committee and described several new additions to the collection. These include a second edition of the Nantucket Flora, with corrections, as well as a hand-written checklist of the Boston flora by the late member Hugh Raup. He also announced that Peter Dunwiddie, former Massachusetts Audubon Society ecologist on Nantucket, is now working for The Nature Conservancy in Seattle. Dan Sperduto described the recently publicized discovery of an ancient *Nyssa* stand in New Hampshire. Most trees appear to be over 300 years old, and one tree was cored and aged at 562 years. This may be the oldest angiosperm in temperate regions! Dave Conant requested information on the northern extent of *Wisteria*; he has recently found it in New Boston, NH. Don Hudson reported that the Quebec and New Brunswick portions of the International Appalachian Trail will be completed next year, but that there are landowner problems with the route in Maine that will delay completing the trail. Don also warned that Harvard may ticket cars that are parked in nearby parking lots without \$5.00 day permits even in the evening, and that the Club is trying to find a solution to the parking problem. Lisa Standley noted that name tags would be available at refreshments to help members get to know each other.

Nancy Eyster-Smith introduced the evening's speaker, Dr. Thompson Webb III of Brown University. Dr. Webb spoke on "**Vegetational History of New England and Eastern North America: A 20,000 year perspective**". The talk was based on a recently published book, "Global Climate since the Last Glacial Maximum" produced by the Cooperative Holocene Mapping Group (COHMAP) and edited by Herb Wright. The book integrates vegetational data derived from pollen analyses with climatic data from lake levels to produce computer simulations of climate that are useful both in documenting the past and providing a test for predictive climate models.

Pollen analyses are based on only that portion of the flora that uses wind for pollination - most trees and some herbaceous species. As Dr. Webb pointed out, this is a science based on the inefficiency of pollen transfer. There are other limitations to the method. Because pollen is often transferred over long distances, the pollen record from any pond may represent several plant communities or vegetation types. Pollen analysis uses cores taken from ponds or bogs, where 4-10 meters of sediment are often recovered (70 cm may represent 1000 years). Samples are analyzed for frequency of pollen species and dated using radiocarbon techniques.

A quick overview of the history of the New England flora shows that spruce and pine dominated the vegetation before about 9,000 years ago, with oak and pine the more recent dominants. Ragweed pollen appeared following the European colonization and land-clearing and is probably the first source of New World air pollution.

Dr. Webb discussed the correlations between scale and dominant factors. At the continental scale, the vegetation reflects climate. At the landscape scale, edaphic factors control plant communities, while the local scale reflects disturbance. Recent work has shown that the relative abundance of tree species and pollen deposition correlate well at the continental scale, but less well at smaller scales. Scale is also an important consideration when looking at climatic data, to distinguish random short-term fluctuations, medium-range trends, and repeating long-term patterns of variation like the glacial periods.

Pollen data show that plant associations were very different at past times than we know them today, and that distributions have changed substantially. Spruce/fir forests, for example, have only occurred recently. Patterns of plant migration following the last glaciation are much more complex than formerly thought. Species did not simply migrate south and north in response to the advancing and retreating glaciers, but individually responded to changes in climate. Some species were rare everywhere at the glacial maximum but increased in abundance after glaciation, spreading along the glacial front.

Dr. Webb concluded the presentation with dynamic representations of the change in some plant species distributions over time using a video of a computer 3-dimensional model. He demonstrated that spruce, birch, and hemlock have all moved in distinctly different patterns and rates, and distributions are continuing to change because of climate and disease.

The meeting concluded at 9:30 PM for refreshments.