

MINUTES OF THE 923rd NEW ENGLAND BOTANICAL CLUB MEETING
DECEMBER 6, 1996

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

The 696th meeting of the New England Botanical Club, Inc., being the 923rd since the original organization, met on Friday, December 6, 1996 at the Harvard Biological Laboratories with 28 members and guests present. Friday's snowstorm and poor driving conditions kept many members at home.

Following the reading of the minutes, Barre Hellquist (past president) called for old or new business and gossip. Judy Warnement circulated a card for John Barrett, wintering in Washington State. Les Mehrhoff recommended a new book, *Biodiversity II: Understanding and Protecting Our Biological Resources*. Les also pointed out that Dick Goodwin holds the record for the longest continuous membership and is a nephew of Faxon.

Barre introduced the evening's speaker, Dr. David Barrington of the University of Vermont, a club member since 1970. Dave noted that the trip south from Burlington was the worst trip of the 22 years that he has been travelling to Club Meetings from UVM. Dave studied at Harvard with Rolla Tryon and therefore is an academic grandson of Fernald. Dave concluded the Centennial Year presentations with a talk entitled "What We Don't Know About the New England Flora and Why We Want To Know It".

Some of the major unknown areas of the New England flora are those that first interested the founders of the Club - disjunctions in distributions and the origins of the flora. Using examples from research in his lab, Dave showed how modern techniques are expanding our knowledge of the evolution of New England taxa through both reticulate and divergent evolution. Major themes of his talk focused on how new techniques are resolving old taxonomic problems and shedding light on the evolutionary origins of these taxa.

Problems still remain in how to recognize and protect elements of our biological diversity that are morphologically somewhat cryptic.

Maidenhair spleenwort, Asplenium trichomanes, consists of two different cytotypes, a diploid and tetraploid, which prefer different substrates but are morphologically almost indistinguishable. Work by Beth Howard has shown that the tetraploid is an allopolyploid that arose through hybridization and reticulate evolution, ending (at least in New England) a long debate. The fragile ferns in New England pose a similar challenge. The two taxa are difficult (but not impossible) to distinguish by appearance, but prefer different habitats. They also hybridize, which complicates the picture in the field. Recent work has shown that these are allotetraploids sharing only one common parent and therefore are evolutionarily distinct species, *Cystopteris tenuis* and *C. fragilis*.

Other cryptogamic taxa provide examples of recent advances in our knowledge of the New England flora and of research that needs to be done. Cathy Paris' work on the *Adiantum pedatum* complex documented that New England includes an allotetraploid that is endemic to a small strip of serpentine in Vermont and Quebec. The *Diphasiastrum complanatum* and *digitatum* complex provide an interesting example of biogeography and the recent overlap of northern and southern species that still requires study.

The glacial history of Lake Champlain and its seabeach species also provides opportunities to explore the evolution of New England taxa. Lake Champlain was, at one time in the periglacial past, an arm of the ocean. Whether its coastal beach plants (*Ammophila*, *Lathyrus* and *Hudsonia*) represent recent long-distance dispersal or relictual disjuncts continues to be a puzzle. Recent molecular genetic work on *Ammophila* by Pete Walker has shown that it consists of 4 genetically distinct groups centered in the Great Lakes, Champlain, the Atlantic Coast, and Cape Cod. This work may show that the Champlain populations are a distinct species as well as documenting its evolutionary history.

Dave concluded by noting that there have been great advances over the past 25 years in the theories of systematics and in ways of thinking about evolution. The use of new and powerful molecular tools will, in combination with detailed morphological studies, allow us to understand the evolutionary relationships and history of the taxa in the New England flora as well as on a broader scale.