SATURDAY AFTERNOON SESSION

December 8, 1962

The final session convened at 1:30 o'clock, President Snyder presiding.

PRESIDENT SNYDER: We will get started on the afternoon program. The panel discussion is on the Propagation of Specific Plants. The Moderator is John B. Roller, Verhalen Nursery Company, Scottsville, Texas.

MODERATOR ROLLER: Thank you, Bill!

The first subject under discussion is the Propagation of Oaks. To discuss the propagation of Unusual Oaks is Mr. R. Roy Forster, Horticultural Experiment Station, Vineland, Ontario, Canada.

UNUSUAL OAKS

R. Roy Forster
Horticultural Experiment Station
Vineland Station, Ontario

Before I undertook a short study necessary for the preparation of this discussion, my knowledge of oaks was limited to perhaps a dozen or so species commonly found in tree and shrub collections. I learned that there are 300 species of Oak in the temperate regions, less than a third of which are in cultivation. If all the cultivars and hybrids are included with the species there is a wide variety for the grower to choose from. There are shrubs and small trees, deciduous or evergreen. There are fastigiate and pendulous forms. Some have variegated or colored leaves, while others have deeply cut leaves like those of a fern.

There seems to have been little, if any, systematic breeding work done with Oaks. This is hardly surprising considering the generally slow growth rate of the trees. Propagation is slow if not difficult. Most of the hybrids and variants have arisen by chance, and few seem to have been distributed beyond Botanical Gardens and other collections

During a recent trip to England I was able to browse around the Oak collection at Kew Gardens. For the purposes of this talk I might better have visited Botanical Gardens in the United States, but this was not possible.

Thus my selection of Oaks reflects my own background, which is in Britain, and more recently in Canada.

America is a rich continent in Oak species. I am unfamiliar with most of these, so it would be foolish for me to attempt to describe them. Of the Oaks I will attempt to describe, not all are being grown in this country. Some of them you might not consider unusual but they are unusual to me -- and above all, attractive trees.

Q. castanaefolia. Chestnut-leaved Oak.

A large deciduous tree up to 100 feet. The leaves have a striking resemblance to the chestnut. Caucasus and Algeria. Zone VII (Rehder).

Q. coccifera. Kermes Oak, Grain Tree.

Evergreen shrub to 12 to 20 feet, resembling a holly with stiff leaf spines. Host plant of the Kermes insect once used as a dye. Mediterranean region. Zone VIII (Rehder).

Q. cerris. Turkey Oak.

A deciduous tree to 120 feet of quick growth. k Southern Europe. Asia Minor. Zone VI (Rehder).

var. *variegata.* A good variegated form.

Q. georgiana.

Deciduous shrub of the red oak group, noted for autumn color. Georgia, U.S.A.

Q. ilex. Holly or Holm Oak.

An evergreen tree of the Mediterranean region. A striking tree in the landscape in regions where it is hardy. Very variable in leaf characteristics and has many cultivars. Zone VIII (Rehder).

Q. x *lucombeana.* Lucomb Oak.

A hybrid (*Q.* cerris x suber) having many forms some of them up to 100 feet high.

var. *diversifolia.* An evergreen small tree with a variety of leaf shapes and corky bark. Zone VII to VIII (Rehder).

Q. pontica. Armenian Oak.

Small spreading tree up to 20 feet, having large handsome leaves. A rather exotic looking tree and one of the best small oaks. Zone V (Rehder).

Q. robur. English or Common Oak.

The type is a large spreading tree to 100 feet. Europe, North Africa, West Asia. Zone IV (Rehder). There are many cultivars. Three of the best are var. *asplenifolia*, var. *atropurpurea,* var. *fastigiata.*

Q. velutina. Black Oak, Yellow Bark Oak.

Deciduous tree to 100 feet. A yellow dye is extracted from the bark. One of the finest native oaks especially var. *rubrifolia.* Zone IV (Rehder).

Q. canariensis syn. *mirbeckii.*

A deciduous tree to 120 feet which retains its leaves into the winter. A well shaped densely clad tree with attractive leaves. North Africa, S.W. Europe. Zone VII (Rehder).

Acknowledgments.

I am grateful to the following who supplied lists of oaks growing in the various Arboreta which were of great help in making the selection of Species.

A. R. Buckley, National Arboretum, Ottawa.
Dr. Richard A. Howard, Arnold Arboretum.
Sylvester G. March, U.S. National Arboretum.

Roy M. Nordine, Morton Arboretum.
L. Laking, Royal Botanical Gardens, Hamilton, Ontario.
Fred Galle, Ida Cason Galloway Gardens, Pine Mountain, Georgia

MODERATOR ROLLER: Thank you, Mr. Forster.

Next is Propagation of Oaks from Seed, and we will hear again from Roy Nordine of Morton Arboretum.

PROPAGATION OF OAKS BY SEED

ROY NORDINE
The Morton Arboretum
Lisle, Illinois

The genus *Quercus* L. or Oak contains about 275 species and 50 hybrids. 45 species and 30 hybrids are found in North America. They are distributed through the colder and temperate regions of the Northern Hemisphere and southward into the mountains of the tropics. They include evergreen and deciduous trees and shrubs. They are found on nearly all soil types from rich, moist, and sometimes swampy sites and heavy, tight soils to the drier, rocky, sandy, and barren sites.

The oaks are divided into two groups, the white oak group and the black or red oak group. The white oak group is identified by the rounded outer margins of the leaves, while the leaves in the black or red oak group have pointed margins. The two groups are also separated by the ripening of the acorns. Plants in the white oak group ripen the acorn in one year; those in the black or red oak group require two years to ripen. The only known exception is *Quercus agrifolia* (California Live Oak), which, though belonging to the black oak group, ripens the acorns in one year.

The oaks are monoecious. The staminate flowers are borne in slender, pendulous catkins; the pistillate flowers are located in the axils of the young leaves. The flowers are pollinated by the wind, which can carry the pollen for a considerable distance. Oaks hybridize readily, more so when single or scattered trees are among other species belonging to the same large group. There are no known hybrids between plants of the white oak and the black or red oak groups.

The fruit is a one-seeded nut, surrounded at the base or sometimes almost enclosed by a cup-like involucre. The acorns vary widely in size, but all have a hard outer shell that contains an embryo with two large cotyledons.

All the oaks are spring flowering, ripening the acorns in the fall. Among the tree-sized oaks, plants do not become seed-bearing until twenty or more years old. The shrubby oaks can start fruiting when only three or four years old. Seed years through the geographical range of a species may be frequent, while in a local area seed years may be very infrequent, ranging up to ten or more years between good crops. An example of this condition occurred this fall with Northern Red Oak. We had no seed in our extensive woodlands.