THURSDAY AFTERNOON SESSION

SECOND SECTION

The second section of the Thursday afternoon session was moderated by Mr. Charles Tosovsky, Home Nursery and Greenhouse, Edwardsville, Illinois.

MR. CHARLES TOSOVSKY: The first paper in the second section will be presented by Dr. Leon Snyder, Department of Horticulture, University of Minnesota, St. Paul, Minnesota.

PLANNING A PLANT INVENTORY FOR THE TWENTY FIRST CENTURY

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In planning a plant inventory for the future one must understand the manner in which new cultivars are developed. Each plant in nature belongs to a particular genus and species. i. e. *Pinus sylvestris* (Scotch Pine), *Pseudotsuga menziesii* (Douglas Fir) and *Acer platanoides* (Norway Maple). A species may be defined as a group of numerous individual plants, usually within definable geographical limits, all with so many common characteristics transmitted by seeds without loss from from generation to generation, that the plants are considered closely related and of a common descent. A botanical variety is a group of individual plants. usually within a geographical area, that differ from the type species in some important characteristic. Both the species and the botanical variety breed reasonably true from seeds. Individuals within a species are known to differ in such characteristics as form, color of foliage, color of fruit, etc. Some of these individuals may be selected and grown as cultivated varieties.

To distinguish between the botanical variety and the cultivated variety, a new name 'cultivar' has been proposed and is rapidly gaining acceptance. A cultivar may be a selected *clone* that must be propagated by vegetative means or it may be a *line* or a *line-hybrid*. Every plant of a clone has evolved from one parent plant by vegetative increase. A line is seed propagated but maintained by rogueing the seedlings to a uniform standard. A line-hybrid is also seed propagated but maintained by reconstituting a first generation hybrid by crossing two selected clones or inbred lines.

Nurserymen and landscape architects have used seed propagated species and botanical varieties rather extensively in the past and still use them to a considerable extent. Most of our street trees in the midwest are still seedling American Elm

(*Ulmus americana*), Green Ash (*Fraxinus pennsylvanica*), or Sugar Maple (*Acer saccharum*). Only recently have nurserymen turned to the vegetative propagation of selected cultivars of some of our important street and commercial trees.

Cultivars are by no means new to the nursey industry. We have been growing selected varieties of fruits, lilacs, mock-oranges, peonies, iris, etc. for centuries. As early as 1771, the Prince Nursery of Flushing, Long Island listed 42 cultivars of the pear.

It is of interest to note the manner in which new cultivars have been introduced to the nursery industry and to the gardening public. By far the greatest number of cultivars among our woody ornamentals has been the result of the selection of superior clones from natural or cultivated stands of species or botanical varieties by observant plantsmen. Examples of this sort are: *Prunus virginiana* 'Shubert' (Shubert Chokecherry). *Malus ioensis* 'Plena' (Bechtel Crabapple) and *Acer platanoides* 'Crimson King' (Crimson King Maple).

An ever increasing number of cultivars are the result of plant breeding efforts. Selected parents are crossed and superior individuals are selected from the resulting seedling populations. Some of these plants may have two or more species in their gentic makeup. Occasionally crosses may be made between species in two related genera. Sometimes a species name is applied to the individuals resulting from an interspecific cross, i.e *Spiraea* x *bumalda* (*S. japonica* x *albiflora*) and *Philadelphus* x *lemoinei* (*P. microphyllus* x *coronarius*). 'Anthony Waterer', 'Crispa' and 'Froebelii' are cultivars of the hybrid species, *Spiraea* x *bumalda*. 'Avalanche', 'Innocence', and 'Manteau d'Hermine' are cultivars of the hybrid species, *Philadelphus* x *lemoinei*. When several species are used in the development of a cultivar or when the male parent is unknown, the cultivar name may follow the generic name, i.e. *Malus* 'Flame' and *Rosa* 'Chrysler Imperial' x *Sorbaronia alpina* is an intergeneric hybrid resulting from a cross between (*Aronia arbutifolia* x *Sorbus aria*).

The development of new cultivars in woody ornamentals is in its infancy. Breeding efforts at our educational and research institutions have been confined largely to edible plants: fruits, vegetables, and cereal crops. Only recently have plant breeders at these institutions been encouraged to turn their efforts toward the improvement of ornamental plants and even now these efforts are inadequately financed to accomplish very much.

True, much has been accomplished by hobbyists, commercial plant breeders and government research workers in the improvement of our annual flowers and certain specialty groups of perennials such as iris, peonies, garden roses, daylilies, chrysanthemums, etc. The popularity of these plants and the relatively short period of time needed for these plants to come into bloom have made the improvement of these plants a profitable venture.

As we look to the future, what improvements are needed in our inventory of woody plants and whose responsibility should it be to bring about these improvements. The rapid urbanization of our population, the endless freeways, and the emphasis on recreation with resulting parks and recreational areas are creating needs for types of plant materials that do not now exist. There is need for low compact shrubs for the modern home, groundcovers for difficult slopes, narrow upright trees for narrow boulevards and screens, low globe headed trees for use under wires and smaller ornamental trees for lawn and patio. Attention must be paid to disease and insect resistance.

To develop this inventory of plant materials will require the best efforts of everyone concerned. Nurserymen will need to keep an ever watchful eye for superior variations that occur in nature and in cultivated plantings. Plant breeders and geneticists at our research institutions will need the support of their administrations and funds at the local, state and federal level will need to be increased for this purpose. We can all help by informing our administrators of the need for this type of research.

There are encouraging signs that research efforts are being directed to this task. Arboretums and Botanical Gardens are adding geneticists and plant breeders to their staffs. An ever increasing number of Agricultural Experiment Stations are recognizing Ornamental Plant Breeding as an important area for research. Our New Crops Research Branch of the United States Department of Agriculture has recognized the importance of new ornamentals and a number of recent plant exploration trips have emphasized ornamentals.

Gardeners are becoming more plant conscious. They are becoming better informed through garden magazines, garden programs and through visits to arboretums, botanical gardens, and commercial nurseries. They are beginning to demand and will continue to demand plant materials suited to their needs.

The isolation of superior cultivars alone will not be enough. Practical means of propagating these cultivars and an educational program to acquaint the gardening public with their merits will be needed. We have too many superior cultivars today that are known only in arboretums and botanical gardens. Only if all of us, nurserymen, plant propagators, research workers, garden editors, horticultural extension specialists, and others engaged in educating the gardening public work together can we meet the challenge of better ornamentals for the future.

MR. CHARLES TOSOVSKY: Thank you very much, Dr. Snyder. Our next paper is by Dr. L. C. Chadwick of Ohio State University.