FRIDAY AFTERNOON SESSION

October 19, 1962

The third session convened at 1:30 P.M. with Moderator Richard Maire, University of California Agricultural Extension Service, Los Angeles, presiding.

MODERN SANITATION IN PROPAGATION

MODERATOR MAIRE: *Automation* — a word that has fast become a by-word in our world of modern industry. The ever-present effort to cut corners, mechanize, reduce labor cost and production cost, to compete for their share of the dollar in a fast moving market, has stimulated this transition to automation.

Agriculture, like the other industries, has followed suit. So have the nursery and floriculture industries as a segment of agriculture, but not as fast, and they are not as far advanced as many other industries.

The importance of automation to the nursery industry is well stated in the first paragraph in the first section of University of California Manual 23, "The UC System for Producing Healthy Container-Grown Plants," with which most nurserymen are very familiar. It reads as follows:

> "The most urgent need of the California nursery industry, within the limits of its present market, is for lowered costs of production. This is best achieved by reducing plant losses and by lowering labor cost through mechanization. These in turn require modification of many existing practices. Production must be dependable, uniform, and largely free from unpredictable failures due to diseases, salinity, insects, or weather."

Our session this afternon, as you know, is to cover the topic of modern sanitation in propagation. A good motto to adopt, and is applicable to the control of diseases, is one used by the fire-fighters:

"Hit 'em while they're small."

Or you may be familiar with the slogan in Manual 23:

"Don't fight 'em, eliminate 'em."

Prevention is still the best cure. It is desirable to eliminate disease organisms from soil before prevention is used, but treatment of the soil alone will not control plant disease; recontamination must be prevented.

A surgeon today would not think of placing his sterilized scalpels and knives in a container that had just been used to hold the implements of a previous operation. So, this should be true for the nurseryman or plant propagator. Treated soil will not remain sterile long if flats or benches are not sterile, if propagating stock is not disease free, or if equipment and utensils are not treated.

It can't be a half-way job; it must be all the way, or your efforts may even backfire and result in more problems than you had at the start.

The magnitude of the nursery and cut flower industries here on the West Coast gives us an idea of the tremendous size of the over-all problem. In the nursery industry in California it is estimated that 350,000 cubic yards of soil are used each year — this is equivalent to the top foot of soil from 217 acres of land. This much soil fills many 1-gallon cans and flats, and the volume has been on the increase.

The presentations to follow approach these problems from a practical way, with practical procedures, to insure the nurseryman that he is doing a thorough job of maintaining a clean, sanitary production process.

The first speaker this afternoon will be Dr. Robert D. Raabe, Department of Plant Pathology, University of California at Berkeley. Dr. Raabe.

THE DETERMINATION OF DISEASE-FREE PROPAGATING MATERIAL

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The title of this paper should probably be "The Determination of Pathogen-Free Propagating Material." The distinction between "pathogen-free" and "disease-free" is one which is technical and yet, it is important enough so that it should be mentioned here. Disease is a complex resulting from the interaction of a susceptible plant (called a *suspect* or a *host*), a causal agent (called a *pathogen* in infectious diseases) and an *environment favorable for disease development*. 'Disease-free' would mean the absence of disease as a result of the absence of any one or more of the three factors necessary for disease. Thus it would be possible to have plant material with a pathogen present but because of environmental conditions not favorable for disease development, there would be no disease. Later should favorable environmental conditions occur, disease would then result. If, however, the plant material is pathogen-free, disease would not result even though the plant might be placed in an environment favorable for disease development. This is not to say that once plant material is pathogen-free that it will remain so indefinitely. This aspect, however, is to be discussed by Dr. Wilhelm and Dr. McCain in the following papers.

Although the term 'propagation' includes both propagation by seed and by vegetative means, the number of seed-borne diseases is not extremely large. One of the advantages in propagating plants from seed is that many diseases are eliminated this way. Because of this and the fact that the presence of seed-borne pathogens is determined by culturing technique similar to those used in determining the presence of pathogens in vegetative propagation material, the remarks here will be confined almost entirely to the vegetative reproduction of plants.