sult of natural selection, they are more hardy and the southern grown plants have evolved with less hardiness.

JOERG LEISS: I would say that if you took a red maple from Northern Canada and propagated it in Texas and brought it back to Canada it would be just as hardy as it was before. It is more or less the source of the seed which determines the hardiness. If it is genetically hardy, it stays hardy no matter where you propagate it.

MODERATOR JOHNSON: The report of the fourth round table discussion will be given by William Flemer.

ROOTING CHEMICALS, LIQUID VS. POWDER, USE, ETC. AND ROOTING MEDIA, NATURAL, ARTIFICIAL, ADDITIVES, ETC.

WILLIAM FLEMER, III, *Moderator*
JAMES D. KELLEY, *Recorder*

Various methods of hormone application used were tabulated as follows:

Soak Treatment — 11 participants
Quick Dip — 9 participants
Talc Treatment — 24 participants

Soak Treatment — Reports of 18 hour soak, cuttings were bundled with rubber bands during soaking in idolebutyric acid solutions. Such solutions were usuable for two days before discarding was necessary.

Hormones in general were not found to be useful for improving rooting of hard wood cuttings. There were two exceptions reported in which deciduous hard wood cuttings of *Berberis thunbergi* Crimson Pygmy in which hormone soak in IBA greatly increased rooting percentages. A Dutch paper was also cited which indicated that *Laburnum vossi* hard wood cuttings rooted better with hormone treatments.

David Leach observed that: "Theoretically the activity of any hormone should double with every 10°C temperature increase but this does not appear to be strictly so." Comments from the floor bore out this contention of increased activity was true, and instances were cited in which increased heat caused stem burning of cuttings from excess hormone activity. Martin Van Hof reported using weaker hormones for summer than for winter Juniper cuttings.

Jim Wells reported no decrease in the activity of stored hormones but others had experienced a decline in effectiveness during the shelf life of the materials. All agreed light was harmful to hormones.

Leach reported on rooting Exbury, Knaphill, and Ilam hybrid deciduous azaleas and generalized that yellow hybrids required a weaker hormone concentration than orange or red clones. He also reported a wide difference in the use of clonal stock. Cecile for example roots very easily and some of the Ilam varieties are very difficult.

It was generally agreed that hormone powder was absorbed only through the cut surfaces of the cutting and that excesses applied should be tapped off before inserting the cutting into the medium.

For the general run of deciduous soft wood shrub cuttings, most propagators used straight sand as a rooting medium. Joerg Leiss reported best success using a layer of peat with a layer of sand over the peat in which the cuttings were actually stuck. The control of moisture was improved, and after rooting has taken place and the roots have grown down into the peat, growth and root mass are greatly improved. Martin Van Hof reported excellent rooting in beds of carefully prepared soil, covered with a plastic tent.

Nobody reported using Vermiculite or expanded mica at the present time.

One man reported using calcined clay for rooting cuttings, but others felt that it had no discernable advantages.

It was generally agreed that sphagnum peat was in all cases greatly superior to sedge peat or "peat humus" for rooting cuttings. Dutch, German and Canadian sphagnum peats were used.

Shredded sphagnum moss was reported to give good results in rooting Viburnums but was too expensive for extensive use. Also it was difficult to separate rooted cuttings upon removal from the sphagnum moss.

Two disadvantages of Perlite were:

1. It was abrasive to the lungs of the workers when it was being benched and moistsened.
2. It gave a fleshy and very brittle root system which fractured badly when the cuttings were removed and handdled.

A member from Florida wondered why more propagators do not stick cuttings directly in pots and root them there. Reasons for the rarity of this practice are that it ties up too much space, especially heated space in winter which is at a great premium. Also if a poor stand occurs, all the expense of potting and the space usesd has been wasted. For very slow rooting crops, space would be tied up for too long a period. Peter Vermeulen said that he rooted quite a list of ordinarily considered "difficult" items by this method of sticking unrooted cuttings directly in pots of a peat, perlite, styrafoam, and sand mix.

Several growers reported good results with a 50% peat and 50% perlite mixture used for Juniper and other coniferous cuttings stuck on a greenhouse bench. Its advantages are good moisture retention coupled with very rapid drainage.

Two cases were cited in which dry slow release fertilizers were mixed in the rooting medium with success. One was for blueberry propagation and the other was in California in which Osmocote, plastic coated fertilizer 20-16-14 was mixed in the rooting medium for a wide range of ornamentals.

In summation, the concensus of the members present was that the best rooting medium should combine a maximum of aeration with sufficient retention of moisture to maintain cutting turgor.

MODERATOR JOHNSON: The summary of the fifth round table discussion will be given by David B. Paterson.

SELECTION, TESTING AND INTRODUCTION OF NEW PLANTS AND TEST GARDENS AND ARBORETA AS THEY RELATE TO PLANT PROPAGATION

DAVID B. PATERSON, *Moderator*
OLIVER D. DILLER, *Recorder*

The moderator started off by briefly describing the joint Longwood Gardens—USDA Plant Exploration Program which has sponsored 8 expeditions since 1956 and is planning one to Korea in 1966.

The word "new" as applied to plants was re-defined to include not only new-born (for example brand new hybrids or selections) but plants that are new to a particular area, for example, Azaleas are now being grown in St. Louis where it was said it couldn't be done. They are new plants.

The New Crops Program at the University of Minnesota Arboretum has been testing potential ornamentals for about ten years and about 150 introductions have been made. Many of these are examples of little known plants that have been buried in collections for years and are now available to the nursery trade. In Minnesota there has been a fine relationship between University and nurserymen. The nurserymen help support to research section. A seven man committee meets twice a year with the University Arboretum staff and helps to decide whether a new plant is worthy of introduction. An introduction date is set and budwood given to nurserymen. A fee is paid to the Research Committee. The plants are not patented.

It was pointed out that some time ago the AABGA published a list of names of Arboreta willing to participate in a plant testing program. American Nursery Association showed interest in the idea but nurserymen have not participated. Effort is being made now to revive this program.

Test gardens in various parts of Europe were described. At least one or two are run by an association of nurserymen who establish and maintain the collections. This not only tests new varieties and shows what is available but provides an opportunity to check nomenclature. Old private estates are good sources of unusual material but must be taken advantage of right away as many are being disbanded.

It was pointed out that one source of "new" plants was American natives — many of which have to be imported from England.