

MODERATE HANCOCK: Thank you Hubert for that thought provoking talk. I'm always intrigued by such wonderful phenomena of nature. Are there any questions?

RON HUROV: Researchers have shown that basal parts of the tree are associated with juvenility and this is also associated with the roots but as you get further out along the root the juvenility disappears. But in some plants juvenility can be induced in the upper portion of the tree. Have you had any experience in rooting different parts of the plant and is etiolation a factor in the induction of juvenility in your root cuttings?

HUBERT RHODES: In respect to etiolation, I don't think that light is too much of a direct factor in induction of roots on root cuttings. Unfortunately there is little information on the induction of roots on root cuttings on many species but from the information I've read there is a variation in time and season. Concerning the tops of plants, high humidity and high temperature have been found to cause a varying amount of rejuvenation, particularly in the case of *Hedera helix*. In the case of tropical and sub-tropical trees this would be expected to occur more generally on the plant than in just the basal region and many of the tropical plants have a juvenile stage that persists for many years or much more extensively than occurs in our plants of the more temperate climates.

GUS MEHLQUIST: You indicate that we can propagate plants easier by going to the juvenile stage and if we are going to produce plants by tissue culture we will have to go to some sort of juvenile tissue to start with. You mentioned dwarf evergreens and this got me to thinking that many of these are periclinal chimeras and when you can propagate some of these by root cuttings you don't get the desirable type but rather the old "mother" form and this of course would not be good.

HUBERT RHODES: The point about chimeras is in my manuscript but I was not specifying dwarf evergreens but was talking about juvenile evergreens some of which are fairly low growing since as you mention many of these are chimeras derived from witches brooms.

MODERATOR HANCOCK: The next gentlemen really needs no introduction since by his enthusiasm coupled with his love of plants he has become a great propagator and is known to all of us. Mr. Joe Cesarini.

DWARF CONIFERS

JOE CESARINI

*Johnson Avenue Rare Plants Nursery
Sayville, New York*

In the last few decades, smaller homes and properties have become very popular; likewise the interest in low growing and dwarf plants has increased due to a desire to create a

scale proportionate to existing surroundings. Oriental gardens have also had a large influence on modern landscaping. There are several people who have gotten an early start in collecting these dwarf conifers and have arranged them in beautiful gardens which the public is welcome to visit. With this increased interest, a greater demand for dwarf material exists; therefore the capability to satisfy the market rests with the propagators and nurserymen.

When a new collector gets the plant fever, the first plant he usually buys is a weeping hemlock. The Weeping Canadian Hemlock reproduces fairly true from seed and in some cases, even better. Viable seeds are hard to come by. The germination is very poor and erratic. This plant can also be propagated from cutting by using Hormodin #3 on the current year's growth and inserting it in a mixture of sand and perlite. They root quite well but the after-growth is very slow. We don't feel this is commercially feasible because by grafting we can produce a plant much more quickly without losing any of the effects. Grafting hemlock for us three or four years ago was not an easy thing. The percentages were very poor and even after planting them out, many would die.

For understock we use Canadian Hemlock which is potted in the spring. We used to bring the understock in to the greenhouse after one or two frosts and graft it after good root action showed. However, now we find that we have better results by bringing the understock in in late January or early February and grafting on it before root action starts. Perhaps this sounds strange, and you may wonder how we found it out. Someone brought us some scions and all of our hemlock in the greenhouse were grafted, so we had to go out and get some frozen understock. We grafted as soon as it thawed out because we didn't want the scions to dry out. The results were very good. This happened two or three years in a row, with the same results. Now this is the only way we treat our hemlock.

As the collector becomes more sophisticated and knowledgeable he seeks the more exotic plants, such as pines. We have many forms of dwarf pine. *Pinus strobus nana* is a very beautiful plant whose origin is not known. However, through observation we have noted that there are various strains of it. Some of these strains are a little more yellow, others more blue. We believe that soil conditions have an effect on the color of these variations. The propagation of *Pinus strobus nana* is by grafting on *P. strobus*.

The weeping form of the Eastern White Pine is an interesting plant. We also graft this on *P. strobus*. If I were to do research on propagating pines from cuttings, this is the one that I would select. Many of the scions in the grafting bench send out a lot of roots which indicates a good rooting ability. A weak scion will produce almost a prostate form.

A vigorous scion will produce a tall weeping plant. The

selection of the wood is therefore a very important factor if you try to achieve certain results.

Pinus densiflora umbraculifera, also called Table Top or Tanyoshyo Pine is an attractive dwarf. This plant can be propagated by seeds or grafting on *P. densiflora* or any two needle pine. The variegated form of *P. densiflora*, *P. densiflora oculus-draconis*, or Dragon's Eye Pine is a very interesting garden subject. This also is propagated by grafting on *P. densiflora*. This year we found a specimen with some viable seeds which we collected and intend to plant. It should be interesting to see the outcome. There is also a weeping form of *P. densiflora* which, if not supported will grow flat on the ground.

A good strain of a *Pinus parviflora glauca* is a very interesting conifer. On visiting some of the estates on Long Island we found a plant labeled *P. parviflora glauca nana*. We learned with much sorrow that the bulldozer, on his way to progress, did not spare this plant. Old time propagators in the neighborhood and some other literature claim that this form can be achieved by grafting the regular *P. parviflora*, so called Japanese White Pine, which is a five needle pine on *P. thunbergi*, (Japanese Black Pine), which is a two needle pine. We tried this and it proved to be a fallacy. However, we did learn that *P. parviflora* is compatible with *P. thunbergi*. Now we are producing *P. parviflora glauca nana* by grafting it on *P. strobus*. So this is not a manipulation but a plant as such.

Pinus bungeana is a noteworthy conifer. At the I.P.P.S. meetings the question is always raised as to what is a good understock for this plant. The usual reply is that a five needle pine should be grafted on a two needle pine. However, this is a three needle pine and we have grafted it on a two needle pine. We are presently grafting all our *P. bungeana* on *P. strobus*, a five needle pine. I don't want to challenge many years of experience, but after a little work with *P. parviflora* and *P. bungeana* and other pines, I am wondering how rigid the rule of five needle on five needle or two needle on two needle is. This *P. bungeana* can also be grown from seed but the variation in quality is so great that we feel some of the seedlings are not worth growing. *Pinus bungeana* is an important plant and is a topic for many a discussion. There are not too many very good full grown specimens around. Although this is not a dwarf conifer, I have included it because it is one of my favorites. These plants that I have mentioned and many others are sold as dwarfs when they are quite young, as they get older, they get much larger.

As the collector progresses, he switches to spruce. Spruces can be propagated by cuttings and by grafting. Other people, far more qualified than I am, have gone into more detail on this. Looking back through the I.P.P.S. Proceedings will give all the information necessary. We have some beautiful forms of a blue prostate Colorado Spruce and Weeping Blue Spruce.

We also have a plant named *Picea abies virgata*, commonly called Snake Branch Spruce or Foxtail Spruce. Visitors tell me that this plant is used for timber in its native stand and I can see why by looking at the long leader that it sends up.

I find it very ornamental. We propagate it by grafting it on *Picea abies* understock. We have never tried to root it. We have noted that by using terminal branches as scions we get a plant exactly like the mother plant. By using a weak, pendulous side branch we get different forms of weeping spruce. So now I have a question in my mind. Are the many forms of the Weeping Norway Spruce that we have, mutations or are they results of using scions of the lower portion of *Picea abies virgata*?

MODERATOR HANCOCK: Thank you for an interesting talk Joe. We certainly won't lack for humor as long as we have such people as you in the Society. The next speaker is a well-known and well-loved member. The soul of the nursery is the propagation department but I'll have to say that the soul of the Morton Arboretum is our good friend, Roy Nordine, and Roy is one of our charter members.

DWARF CONIFERS

ROY M. NORDINE
The Morton Arboretum
Lisle, Illinois

What is a dwarf conifer? There are several definitions of this term and all are valid. The accepted one includes all low and slow growing evergreens. Since there are exceptions to all rules many of the low growing junipers are not slow growing. Several forms of prostrate type *Taxus* are also rapid growing. A great many of the slow growing conifers continue this manner of growth until they are large or much larger than what we accept as a dwarf conifer.

The customer, the consumer of our products, will define a dwarf conifer as any plant that will remain small. How small he doesn't know, except he is concerned with a foundation planting that will not eventually hide his house, nor block out the entrance to the house.

Another definition is a natural one—what does nature define as a dwarf conifer? Mugho Pines in their native state range from low, nearly prostrate plants to some 30 feet tall, while the adjacent Austrian Pines will grow to 120 to 150 feet high. Nature has defined Mugho Pines as a dwarf form and except for selected clones hardly a species for a foundation planting.

The Morton Arboretum has defined "dwarf" as any plant that remains below five feet. A dwarf plant collection was begun about ten years ago to include any plant that will remain below this arbitrary height.