

those cuttings with the secondary root system will stand much rougher treatment, will go ahead more vigorously and generally are far less difficult to handle and deal with.

Our preoccupation with this problem was directed to machine planting of young material and cuttings coming out with soft roots couldn't be machine-planted. They just wouldn't take it, but get the roots toughened up and get a secondary root system and they will take it very well. I believe that is a very fundamental point.

CHAIRMAN FILLMORE: Are there any other comments on this topic of rooting viburnums with cuttings? If not, we have two other speakers, Mr. Kern and Mr. Hoogendoorn.

PRESIDENT WELLS: This question of viburnums from cuttings is not closed because we pass along to the next subject. If anyone gets a brainstorm and thinks of something, by all means get up and say it. These proceedings are going to be edited and put into some sort of order before they are finally printed. What we want is information, so at any time during the meeting if you have something to say on any topic, please come forward with it.

Now our next speaker is Carl Kern, and probably many of you know him much better than I do, but on a number of occasions I have met him and his wife, whom I am very glad to see here, too. She always comes with him to these meetings. Carl is another one of these real plantsmen. He sent me a magnolia some long time ago. I planted it in my garden and a man came along with a mower and cut the thing to the ground, and that was the end of Magnolia Carl Kern.

MR. CARL KERN: You will get another one.

PRESIDENT WELLS: That is what I had in mind. (Laughter). Without more ado, therefore, I would like to present Carl Kern, Wyoming Nurseries, Cincinnati. (Applause).

MR. CARL KERN: Mr. President, ladies and gentlemen: It gives me great pleasure to appear before you this afternoon and speak to you on the subject of viburnum. You know viburnums and magnolias are two of my pet hobbies. I have played around with those plants all my life. I give magnolias primary choice and viburnum second.

Just a few short remarks to give you some idea of the importance of the viburnums. We know of about 120 species of viburnums which are native of North and Central America, Europe and North Africa and of later years we have received these wonderful comparatively new introductions from eastern Asia which can be enumerated as high as from 54 to 70 Asian species. So you see, we have a tremendous reservoir of plant material to deal with from these viburnums.

All the viburnums are highly valuable shrubs of great plant material value in landscape composition or wherever else they might be used. We have tall species viburnums that will attain a height of 25 to 30 feet, such as *Viburnum rufidulum*, and I think I have another one here *Lentago*, the common inkberry, a native species.

Then, on the opposite side we have *Opulusnanum*—a plant about 18 to 24 inches in height, and the next medium-sized shrub, *cassinoides*, a very valuable plant in any landscape composition.

Among the viburnums, the general public thinks immediately of snowballs. That seems to be the charm of viburnum, the snowball. They all have a picture in their mind of a round, glossy, shiny ball of flowers. Among the snowball types, the flowers are totally sterile so you will never find any seeds on the so-called snowball viburnums.

The oldest known snowball is the European *Viburnum Opulus* and then we have our Japanese viburnum *Viburnum tomentosum, sterile* or *V. plitcatum* as it is sometimes called. The Chinese snowball viburnum, is *Viburnum macrocephalum, sterile*.

The Chinese snowball is perhaps the peer of all the snowballs. It will produce balls eight inches in diameter and the plant is loaded from top to bottom. The range of hardiness of the Chinese snowball is somewhat limited. I don't think it would grow as far north as Boston.

CHAIRMAN FILLMORE: No, not successfully.

QUESTION: What is the Latin name of that Chinese?

MR. KERN: *Viburnum macrocephalum*. That means big head.

MR. HOOGENDOORN: Is it true they have flowers eight to 10 inches across?

MR. KERN: Yes, eight inches across.

MR. KERN: These are just a few short remarks as to the family of viburnums in general, and I would like also to point out to you the value of the gorgeous fall coloring foliage of the viburnums. Some of these are: *Carlesi* is gorgeous. *Bitchuense* is a gorgeous sight with its hard-to-describe orangy-red color. All of our viburnums are very highly attractive subjects in the fall, aside from the evergreen species of which we are able to grow a few, but only one of which I would recommend.

Now, on the subject of seeding. The viburnum family produces most unusually attractive fruits which are at times more attractive than the flower or the foliage of the plant itself—I might say two-thirds of our viburnums are planted and grown for the attractiveness of their fruits. So in order to produce plants, then we go back to seed. That means we usually have seeds to produce plants in large quantities.

One of the first things the propagator concerns himself with in producing viburnum from seed is careful observation of the seed-bearing plants, beginning as early as August. Some of our viburnum species have a habit of maturing the seeds very early and others again are later. In order to acquaint ourselves with the habits and nature of these various maturing viburnums we have to watch them carefully.

One of the earliest to mature is *lantana rugosum*. They mature about the earliest. I have made it a practice to observe these plants carefully. As you are fully aware, viburnum seeds are of the bony hard shell type. A tough customer to handle, as far as germination is concerned.

I have made it a practice to clean the seeds early, just as soon as the first signs of approaching maturity appear. That is the time to get them. If you permit these seeds to remain on the mother plant until they reach full maturity, that seed coat becomes tougher and tougher. It will, therefore, take that much more time to germinate the seed. That is one theory I have followed consistently.

I might illustrate to you. You all know *Viburnum lantana* seed will remain on the bush until the seeds shrivel up, become black and hard, almost dry. You gather that seed and proceed to plant it and you will find that late harvested seed will lay over at least two years until it germinates. If you plant it in the fall, nothing happens the following spring. It lays over until the following summer and comes up the year after. You should gather your *lantana* seed early, when it just has reached about the transition point from green to red and a few berries here and there will already have shown that bluish-black color. I bring them in and let them mature on a tray for a week or 10 days. I always clean any seeds, especially the seeds of these fleshy viburnums. It is essential to wash these seeds clean, due to the fact that you can't handle the sticky gummy masses. You have to clean them. After the seeds are clean, I never permit them to dry too much. I let them dry so I can handle them. That is only a matter of six or eight hours or a day.

As soon as they have been thoroughly cleaned we stratify these seeds immediately in pure sand and, as the viburnum varieties come in we eventually reach the point at the middle of October or end of October when we plant everything out in seed beds at once, with a few exceptions. I would recommend fall planting of all viburnum seeds with a few exceptions which I will mention to you later.

A viburnum seed bed should be a well-prepared one, consisting of a sandy loam, perhaps a liberal amount of peat chopped in with it.

The method of planting seeds is optional. You may broadcast them if you want to. I prefer to plant them in drills. I use a strip of sheathing, I think about 4½ or 5 inches wide, draw the drill, and insert the seed. That does away with the laborious job of stripping the seed bed, sowing the seeds and then covering afterwards. By sowing in drills, we move backwards, push back beyond the seeds and we are always done. Incidentally, when the seedlings first appear, it gives us a chance to do a little cultivating, if necessary.

Now, the stratification of seeds, as I will mention at times, is quite an essential thing, especially of seeds of your old pet which has been mentioned so often, *Viburnum Carlesi* and the leather leaf viburnum. These two species have a funny habit. They never will germinate in the spring months. I don't care how I have handled these seeds, they will only germinate and the seedlings will appear late summer, July and August.

I brought with me here a sample of *Viburnum Carlesi*. It appeared about the middle of August. We potted them immediately. A plant like this would never carry over winter out of doors in an open seed bed. There would be 100 per cent loss.

At the end of one year, we have this. Now this is an average size plant. Sometimes we get them two feet high in one year. This plant is ready to be bedded this coming spring.

At the end of another year we have a *Viburnum Carlesi* of this type. Look at the root system. This plant is ready to go into the field now. You still see the remains of the old pot ball.

Now here we have a *Viburnum Carlesi* on its own roots, which I prefer to any grafted on *dentatum* or *lantana*. This is absolutely on its own roots, and incidentally, you will find a seedling *Viburnum Carlesi* is a better plant than any ever grafted or even a cutting.

Some of my friends say these viburnum seedlings won't bloom. Who said so? *Viburnum Carlesi* is a true species. It blooms certainly in the field after the second year. We have bushes in full bloom. You will find that plant really grows. This plant is only 30 months old from seed.

I brought a specimen of *Viburnum rhytidophyllum*. (Showing specimen of plant). *Rhytidophyllum* seed behaves like *Carlesi*. It will not germinate until late summer. We carry it over one year, transplant it in a bed and this is the resulting one year transplant of *Viburnum rhytidophyllum*.

I have selected types of these *Viburnum rhytidophyllum*, I am a great believer in the selection of types. Nature is a great selector of types when it comes to hardiness. We grow these seedlings from plants that I have known have survived for the last 30 years in the Cincinnati area, bloomed and had fruit in the last 30 years. In other words, they have become the survivors of the fittest. There is a great deal in the selection of types.

Among other things, I brought you here the result of seedlings of the Chinese tea viburnum, *Viburnum setigerum*. Here I believe we have one of the most gorgeous of all fruiting viburnums. It took these fellows two years and they sprouted this spring. It is a very rapid-growing thing. Incidentally, it is one of the best to grow from cuttings.

Among the other specimens, I have *Viburnum rufidulum*, the so-called rusty-black Haw, a native which I think has been overlooked much too long. You see it still carries its leaf. We have had several frosts and it still has a beautifully thick, glossy foliage resembling a laurel. *Viburnum rufidulum* lends itself to pruning in all forms. If you care to grow them up into pyramids or grow them in a standard manner, or a globe—head, you can do so. All these things are possible. As a foliage plant and for fruit, it cannot be excelled. It has always been a mystery to me that this native has never found its way into the nursery trade. The fruit starts in as a dark olive green fruit and turns—how could I describe it—to a sort of a plum-blue color, with a plum blush. Later, it goes over into blue-black in large heavy clusters. *Viburnum rufidulum* should be planted as a single specimen. When it is in fruit, it beats anything I could picture to you, even in the flowering shrubs.

Here are a few seedlings, one of *Viburnum lantana rugosum*. I know you are familiar with the *lantana*. This is *rugosum* or the so-called crinkly leaf viburnum. There again, we have a viburnum of exceptional value as far as its fruit is concerned,—great big, gorgeous clusters of berries three times as large as the common *lantana* and as a specimen plant it cannot be excelled.

Then I have a few more. It won't do for me to mention *Viburnum dilatatum*. It is not a novelty any more, but one of our best red-fruited viburnums in the business.

Among the commoner native viburnum are *Viburnum prunifolium*, which is next to a flowering dogwood. When that is in bloom it makes a nice plant. It can go 30 feet high, usually 10 or 15 feet. When in bloom it is a very showy, gorgeous plant.

Then among our common native species *Viburnum trilobum*, or common cranberry, need not be overlooked.

We also, of course, in every list have *Viburnum dentatum*. I use

*Viburnum molle*, the Kentucky viburnum in preference to *dentatum*. It is a much heavier, broader leaf, thicker foliage, and a heavier structural shrub which does a great deal more good as far as foliage effect is concerned than *dentatum*. Both shrubs are valuable adjuncts for shady plants and things of that type.

I am going to tell you something else about seeding other than viburnum. I would like to show you something in cherry. Here we have a seedling, a one year's seedling of *Prunus subhirtella pendula*, the weeping cherry. This plant has grown from a seed smaller than a small half-size pea, since the end of March, to a three-foot plant. It is unbelievable. You will notice the tendency of these little branches to become pendulous.

Now it is amazing that in two years' time I can grow a weeping cherry to four or five feet height, and the *Prunus subhirtella* in the market are standard grafts on a common sweet cherry which seems to have a dwarfing effect of the weeping cherry. E. W. Wilson (Chinese Wilson) from the Arnold Arboretum, with whom I have talked many a time, used to tell me he had seen *Prunus subhirtella pendula* 80 feet high. He mentioned that in his book, "Natural Things Weren't Grafted." They grew on their own roots from seeds, and I have been doing that.

I gather these seeds from a grafted specimen of *pendula*. I know it is a good pink. They may vary from blush pink to pink. Look at a plant like that. You can get trees 40 or 50 feet high of weeping cherry.

MR. HOOGENDOORN: Is that the single flower?

MR. KERN: The single type. There is no seed on the double.

MR. HOOGENDOORN: The stem of the single flower—is that not called "Higan Cherry?"

MR. KERN: I believe that is what it is. The double never seeds, of course. The only trick is to gather the seed of these cherries. Sometimes we have a late spring treeze and the seed of these flowers is lost. It takes a lot of time and patience and observation to gather these seeds and most important of all, we have got to beat the birds to the punch. The birds wait for these cherries. They are gone in one day. Maybe that is the reason things like that are never listed.

Now I have very nearly reached the conclusion of my talk on viburnums. Here I brought also a seedling of *Cedrela sinensis*, a tree that has been overlooked too long, big compound foliage in summer creamy white, bluish-black berries in the fall. It is a tree of China. This plant grew in one year.

If any of you care to look over these specimens later on, I will take them to the table and we will do our best to answer questions.

MR. HOOGENDOORN: Those little seedlings you showed us, how do you keep them over winter?

M. KERN: We carry them over in a cold deep frame. They come through 100 per cent.

MR. HOOGENDOORN: Don't you have trouble with damping off?

MR. KERN: We cover with glass, carry them air-tight. They come through.

MR. PIETER G. ZORG (Fairview, Pa.): We have trouble when we buy our seeds of viburnum. The seeds come up in about September or October and then when they come up they stay just above the ground and in the cold they freeze and we may many times lose them. What do we do in a case like that?

MR. KERN: Like I showed you, I pot them.

MR. ZORG: Where you have thousands and thousands, it takes a lot of space.

MR. KERN: You might try covering with pine needles or sawdust.

MR. ZORG: Wheat straw is used and then in the spring we always check them and we find some of these varieties coming up already.

MR. KERN: I wouldn't use common wheat straw. Wheat straw carries too much moisture. It becomes supersaturated. You should use pine needles or sawdust, which is fluffy.

MR. ZORG: Is there any method known to you to hasten germination?

MR. KERN: I might tell you this: I started to experiment with these sulphuric acid solutions, 1 and 2 and 5 per cent solutions. I have subjected the seeds to the action of sulphuric acid. So far I haven't gotten anywhere. It is too early to say anything about it, but I think eventually I will be able to break these seeds so they will germinate in April and May instead of three months later. When we do that, we can grow this thing the first year.

MR. HUGH STEAVENSON (Forest Keeling Nursery, Elsberry, Missouri): I would like to comment on that dormancy of the shoot that you referred to. All types of viburnums have two kinds of dormancy—hypocotyl and epicotyl, which is shoot dormancy. The roots start growing in the first summer and if you will dig in your seed bed you will find a very extensive root system by fall, but the shoot is still dormant and it has to go through the second cold period to break dormancy and it shoots up the following spring. I think where you get them early you no doubt get that root growth the first fall, when normally it occurs the following summer.

MR. KERN: That is right.

MR. STEAVENSON: Viburnums are nearly always a two-year proposition.

MR. KERN: In closing my remarks, I have made a list here of the specimens of viburnum which I would recommend for mass production from seed:

*Viburnum acerifolium*. It is a native, low-growing, excellent for shade plan.

*Viburnum alnifolium*, a great big, enormous, broad-leafed viburnum, a very valuable plant, also a native.

*Viburnum Carlesi*.

*Viburnum dilatatum*, the Chinese red species.

*Viburnum molle*.

*Viburnum nudum*, with laurel-like foliage, shiny and very beautiful. This viburnum should be grown more.

*Viburnum trilobum*, the high-bush cranberry.

*Viburnum prunifolium* or so-called black haw.

*Viburnum rhytidophyllum*, the leather-leaf viburnum.

*Viburnum rufidulum*, the rusty black haw.

*Viburnum setigerum*, Chinese tea viburnum.

*Viburnum tomentosum* can be grown from seed very successfully. There again, you must be on the trigger when the seed is exactly right, red. You might be two days too late. You have to catch it right at the right moment.

*Viburnum Wrighti*, another red fruiting viburnum.

*Viburnum dentatum*, the old arrow wood.

And *Viburnum Sieboldi*, another one of our tall-growing Asiatics. Speaking of *Viburnum Sieboldi*, there is one of the trickiest things. I have stratified *Viburnum Sieboldi* seed and tried to hold it over until the middle of March. Invariably, I lost it. It must be fall planted. *Viburnum Sieboldi* in one year will grow 15 or 18 inches high.

This is a list of viburnum species, the clones of which I would recommend for seed production in large quantities. Any other question?

MR. HOOGENDOORN: Do you find *Viburnum Wrighti* comes true from seed?

MR. KERN: Yes, we get good seed.

MR. HOOGENDOORN: Does it come true?

MR. KERN: Yes, it is an original species, not a clone. Often my friends say *Viburnum Carlesi* seedlings won't bloom. I say, "How come? Who said it won't bloom? We proved that long ago." It is an original botanical species and will bloom.

I will say this, in these seeding operations and handling thousands of seedlings we ran across quite a few outstanding variations. I have some crosses from seeds gathered from *Viburnum Carlesi* and *Viburnum Burkwoodi* which I grew side by side. I obtain crosses. Some will hold foliage, yet they bloom like *Carlesi*. I am watching these things carefully. Maybe some day we will stumble across something.

Another thing you might hear about, in the next two or three years—we are about to introduce a pink Japanese snowball. Now that may sound pretty fishy to some of you men, but we were fortunate enough to observe a twig on *Viburnum plicatum*. The foliage was deeper and greener. It just was different from the rest of the plant. That twig attracted my attention and I thought it might be something valuable. I was able to get a piece of wood and made three buds. I happened to have *tomentosum* in the field, and I budded it. The following year the buds stood very well. Last year, I was able to get the first bloom on these buds and I have appleblossom pink viburnum. I am now in the second generation to prove whether this thing is constant. You know they can reverse themselves. I may wind up

with a pure white one, like the original plant. However, I think possibly a pink snowball is in the offing.

MR. HOWARD SCARFF (W. N. Scarff & Sons, New Carlisle, Ohio): What has been your experience with *Viburnum Burkwoodi*?

MR. KERN: That is a clone.

MR. SCARFF: Will it revert?

MR. KERN: You get all sorts of types. That *Viburnum Burkwoodi* is a hybrid of *utile*, an evergreen viburnum and *Viburnum Juddii*, which is a hybrid clone (*V. carlesi* and *V. bitchuense*). We have *Juddii* growing from seed. It is not the real thing.

Another viburnum is *Viburnum Chenaulti*, another coming viburnum. It is a pink bloomer, seeds very heavily. It is hardly mentioned yet, but a very fine plant.

MR. A. SHAMMARELLO (South Euclid, Ohio): In a block of *Viburnum tomentosum*, I found one form resembles arbor vitae. Will you tell me what it is. I don't think it is anything new.

MR. KERN: In the trade there is a *Viburnum tomentosum* Hessei, a compact form that the Hessei Nursery in Germany propagated. That might be one of these sprouts. Hang onto it.

MR. SHAMMARELLO: I have never seen it in bloom.

MR. KERN: It may bloom eventually. I would hang onto it. There is one variety, called, "Hessei."

MR. LADDIE J. MITISKA (Mitiska Nurseries, Amherst, O.): I wish to comment on the flowering qualities of *Viburnum Carlesi*. We have about 15 plants. We gathered the seeds and picked out 15 pounds of clean seed. I think that shows they bloom nicely.

MR. KERN: Again I might tell you, we are never sure what seeds will do from year to year. There is no fixed rule. The maturity of seed is variable, just as variable as the weather. One year you may have a tremendous crop, 100 per cent germination results, another year you come out zero, nothing doing, so you have to have a lot of perseverance, patience and "stick-to-it-ive-ness," and that is the only way you will get results. There is no cure-all for everything.

In closing my remarks, I might say that we love this work in our Plant Propagators Society. We love the activity as a whole. We propose to plant propagators to disseminate good practical knowledge and we propose to pursue the science of plant propagation along scientific lines. Let us first of all be propagators and not "profitgators." (Applause).

PRESIDENT WELLS: I am glad to see everyone so heartily endorses that last remark.

Just a couple of comments before Dick introduces the next speaker. We don't want to be pedantically difficult about getting these records down, but would you please be very careful when you get up to speak clearly and speak loudly? The essence of this meeting is in what this lady is doing down below here and she needs to hear what your name is and what you have to say. So speak slowly, clearly, distinctly, enunciate your name so she knows what to put down.

The second thing, a number of people have brought plant material and at the end of the afternoon meeting we will try to get some tables set up here and get this material lined out so for this evening's meeting we can have the material on hand and it will, no doubt, form a basis for much discussion. If anyone has anything with him, will he please bring it along after the meeting is over this afternoon, so we can set it up?

CHAIRMAN FILLMORE: Now I would like to make a couple of comments also. The first one is that Mr. Kern's discussion of green seed or nearly green seed interests me a good deal. I don't know of a single instance where, if the embryo is excised from the seed at the proper time, that embryo will fail to grow. In other words, the embryo begins to develop and it goes on developing and at some time in its development dormancy is usually imposed upon it by the fruit. If the fruit matures very fully, the depth of dormancy may be very great; if the fruit is relatively immature, dormancy may be relatively short. If the embryo is excised early and grown under sterile conditions, dormancy may not be present at all. There is, therefore, a very great deal of advantage sometimes in handling seeds in the green condition.

There is another thing, too, not all viburnums have dormancy. For example, I once got a collection of *Viburnum nudum* from the Carolinas in which there was no dormancy whatever. We simply sowed cleaned seeds in a warm greenhouse. They germinated like tomatoes. The Boyce Thompson Institute has reported *Viburnum scabrellum* which behaves the same way. I have never been able to find *scabrellum*. I understand that southern *scabrellum* and northern *dentatum* are related. There is a complex, beginning with *dentatum* in the north and going south into *pubescens* and *scabrellum*. At the southern extreme you have seeds which will germinate freely and don't exhibit dormancy and in the north with the *Viburnum dentatum* you may have the double type of dormancy which was mentioned earlier in the afternoon.

Now I should like to introduce Case Hoogendoorn of Newport, Rhode Island, whom I have known for a number of years. Mr. Hoogendoorn is one of the most competent and successful plant propagators in the east. I have frequently visited his greenhouses. His latchstring is always out and I would certainly urge any of you folks who find yourselves in the vicinity of Newport to try to call around on his birthday because that is always a festive occasion and he is particularly happy and glad to greet visitors at that time. (Applause).

MR. CASE HOOGENDOORN (Newport, R. I.): Mr. Chairman, ladies and gentlemen: They selected me to speak on "The Grafting of *Viburnum*" which to me has a lot of advantages.

I didn't bring any sample or demonstrations. All I brought was some paper and what I am going to read to you is only our experience with grafting viburnums, and as you will notice, we still have problems. Most viburnums are easy to graft, and the one we have most trouble with is *Carlesi*. That is why I want to tell you our experience. After I get through, maybe somebody can straighten me out with some of these problems.

. . . Mr. Case Hoogendoorn read his paper on "The Grafting of *Viburnum*" . . .