SATURDAY MORNING SESSION

December 2, 1967

The Saturday morning session began with a symposium on rootstocks at 8:30 a.m. in Ballroom A of the Admiral Semmes Hotel. Ralph Shugert served as moderator. The symposium was followed by the annual business meeting. The minutes of the business meeting appear at the beginning of the 'Business and Technical Sessions' of the Eastern Region.

MODERATOR SHUGERT: Our first paper this morning will be a slide and tape presentation by Brian Humphrey and Peter Dummer. This idea was started last year by President Stu Nelson in order to give us a chance to hear and see some of our foreign members. It was very well received and we are very pleased that Brian Humphrey and Peter Dummer agreed to do it again for us this year. They will discuss "Stock-Scion Relationship."

STOCK/SCION RELATIONSHIPS

B. HUMPHREY & P. DUMMER
Hillier & Sons, Winchester

ENGLAND

HUMPHREY: Pete Dummer and I are sitting here in Winchester, one time Capital of England, when the Romans were around anyway. We are going to look at a few slides together concerned with the subject which we have been asked to talk about which is Stock/Scion Relationships. We are going to treat with this in a very practical way and we hope some of the information that comes out during our discussion will be of use to you in your propagation efforts.

The first point we want to make is that the stock and the scion retain their identity although of course we all know one influences the other as has been shown on many occasions by East Malling Research Station. Here we have a fairly fast growing scion of Fraxinus angustifolia worked probably onto F. excelsior and you have got this rather ugly union which you can see, I am ashamed to say, at Kew Gardens. Now what is your comment on this one Pete?

DUMMER: I am glad you let me get a word on this Brian, because if I was grafting this particular plant, I would have at least grafted it at ground level.

HUMPHREY: I quite agree with you Pete, working at ground level would have been preferable. Now this next shot brings out another aspect of what we should look for in the stock. These Abies are probably worked onto Abies

alba or A. nordmanniana, but we think we have got a better one than that now Pete.

DUMMER: Yes there is a far better stock now, that is Abies cephalonica.

HUMPHREY: And why is that do you think?

DUMMER: Well, with us it is a healthier stock altogether, better root system and also it grows on lime and acid soils.

HUMPHREY: Of course that is very important in Winchester because we have a lot of chalk around here and the top soil is very shallow. I think local people at least will be much happier if they buy their Abies with cephalonica roots instead of alba or nordmanniana. Now this next one is Rhododendron Loderi and it is worked on ponticum.

DUMMER: It is yes, ponticum stock. We are trying to get away from this stock for several reasons, among them that ponticum stock tends to get woody very early.

HUMPHREY: Yes, well you can see this is correct in this shot can't you?

DUMMER: Yes and in fact we are now rooting Cunningham's White because it retains it's green wood very much later.

HUMPHREY: And we think that young green wood at the point where you are putting on the scion is a definite advantage.

DUMMER: Definitely, because it calluses more quickly and makes a union earlier.

HUMPHREY: Yes, of course Cunningham's White is a rather dwarf growing sort isn't it? I don't know whether we can find anything a little more vigorous.

DUMMER: Well, I think what we are really after of course is something with a long stem, say for instance, Pink Pearl or Elegans, something like that which roots easily.

HUMPHREY: Ponticum is causing us trouble with this disease Phomiopsis which it gets so badly doesn't it?

DUMMER: It does yes, the stem can be girdled by the disease and if you start grafting, the stock and scion die rapidly.

HUMPHREY: Yes, as soon as they get a bit of heat, the stocks die out and the disease spreads up into the scion and it is a lot of effort wasted. Here is another practice which we rather frown on these days and in fact it is hardly necessary, that's on the right-hand side there. Cytisus grafted onto Laburnum.

DUMMER: Well Brian, we do not practice it these days because we get all these things quite easily from cuttings.

HUMPHREY: Yes, but of course you do get a fairly large plant quite quickly by grafting from Laburnum I suppose, but it is a fairly expensive procedure I would think.

DUMMER: It is and it makes a very bad union as well, it swells out.

HUMPHREY: Yes, this is a fairly usual sign of a union which is not too happy and is rather incompatible. It is due to excessive callus formation causing swelling isn't it? Well now the next slide is another mixed genera, it is Sorbus aria which we commonly bud onto our native Thorn, Crataegus, you might think it is rather an odd combination, but in fact that Sorbus grows very much better on Crataegus than it does on Sorbus aria seedlings.

DUMMER: Of course Sorbus aria seedlings, Brian, themselves are with us, a small tree.

HUMPHREY: Yes they grow wild quite close to here, just a matter of half a mile away it is growing wild and you hardly ever see one over about 15 to 20 ft. Well now, while we are looking at this Sorbus, Pete, you could tell us quite a story about some of the rarer species which we graft at Hilliers I think, some of the problems there of compatibility.

DUMMER: Yes, I suppose the most difficult one or some of the most difficult ones are the micromeles group, and I had an occasion a few years ago of having some scions and no stocks to put them on.

HUMPHREY: What were the scions Pete?

DUMMER: Sorbus epidendron, very rare plants and folgneri and one or two other choice species and one or two Kingdom Ward species which belong to the micromeles group. As I said, we did not have any stocks which should be alnifolium, so I decided to put one in between. So what we actually did was to graft meliosmifolia onto Thorn and then graft these rarer species onto meliosmifolia.

HUMPHREY: I see, rather like double working Pears. You have not tried double budding using this technique and these species?

DUMMER: No we have not.

HUMPHREY: Well now Pete, we seem to have now got on to what is the real meat of this talk, compatibility and the relationship between stock and scion. This is a shot of Quercus coccinea Splendens grafted and the union doesn't look too happy does it?

DUMMER: No it does not Brian, I think myself that the wrong stock was used. I think with coccinea Splendens, one should aim for coccinea seedlings rather than rubra although it belongs in a rubra group, ideally it should be grafted onto coccinea seedlings.

HUMPHREY: Yes, well the next slide seems to prove your point there, the tree has broken away at the union. I wonder if we aren't splitting hairs a bit here, don't you think possibly in this particular case that another interesting factor could be the cause of this, and that is the rather crude grafting technique.

DUMMER: Yes, I think the graft in this case was a cleft graft

and you can actually see that part of the wedge is still intact.

HUMPHREY: Of course Oaks are notoriously difficult to produce a good union aren't they, they take many years.

DUMMER: Yes, it is a hard-wooded tree, it takes three or four years in a young state to really get going.

HUMPHREY: So in fact the stocks we would use for Oaks would be what?

DUMMER: One of the Red Oak type, that is rubra, coccinea or palustris for working with that group.

HUMPHREY: What about schumardii, schneckii, some of these rarer things? Scochiana, I suppose would grow too, but we are beginning to find that in fact many species that we felt were happy on these stocks are not so happy. For instance, velutina Rubrifolia is best worked on velutina isn't it?

DUMMER: It is yes, scochiana, kellogii and texana seems to do fairly well on palustris.

HUMPHREY: And now what else would we use, Quercus phellos for one or two?

DUMMER: Well, we use phellos of course for it's own hybrid x ludoviciana which is a very fine tree.

HUMPHREY: Cerris is rather an odd stock isn't it?

DUMMER: It is Brian, yes.

HUMPHREY: Quercus cerris Variegata won't grow on anything else but cerris will it?

DUMMER: No it is quite true.

HUMPHREY: But castaneaefolia which is in the cerris group is alright on robur.

DUMMER: Yes it is, and another one for instance is libani which comes in the cerris group, we have got trees at Chandler's Ford which are over 40 years old and they were grafted onto robur, but nothing really wrong with them.

HUMPHREY: Well, we are back to Rhododendrons aren't we on this next slide Pete, any thoughts on incompatibility here?

DUMMER: Well, of course there are a few Brian, a few species that come to mind, we have never proved lacteum to be compatible on ponticum at all.

HUMPHREY: No we seem to fail regularly on that one.

DUMMER: And of course, these larger leaf ones like grande, sinogrande.

HUMPHREY: Yes, but you might expect to see that, they are so different from ponticum. Lacteum is a bit of a surprise isn't it really?

DUMMER: It is yes. Of course there are a few more difficult ones, for instance, thompsoni and barclayi.

HUMPHREY: Barclayi is a barbatum hybrid isn't it?

DUMMER: Yes, and of course barbatum itself is very difficult.

HUMPHREY: Our friends in the States may be surprised to hear in fact that we are grafting some of these species. The reason for this is that we have stock mother plants on our nurseries which have been selected as being especially true to type and we graft a certain proportion of our Rhododendron species as true to type selected plants, grafted, vegetatively propagated plants. I suppose what we should do is to raise some of these species from seed and then graft onto the seedlings.

DUMMER: Well, we have done this, the last couple of years, and every year now of course we are sowing a certain amount of seed for this particular purpose.

HUMPHREY: Yes, I am sure this will pay off.

DUMMER: I am sure it will yes.

HUMPHREY: Well, now this next slide shows a grafting case full of Walnut grafts and they would be on regia now I suppose Pete.

DUMMER: They would be now Brian, because as you know, East Malling Research Station has found incompatibility after 25 years with the stock nigra.

HUMPHREY: Yes, this is delayed incompatibility. As far as nurserymen are concerned, we are happy to work regia on nigra because nigra is resistant to grafting disease and it has the added advantage as well as being resistant to Boot-lace (Armillaria) Fungus which is quite a problem in England.

DUMMER: Of course it makes a better stock from our point of view.

HUMPHREY: You must not forget the conifers, Pete, and the next slide shows a Pine, Pinus strobus seedling and it is important to match up the number of needles on stock and scions on the Pines isn't it?

DUMMER: I quite agree with you Brian, that the needles should be matched up if we are going to get compatibility.

HUMPHREY: In other words, a five-needled Pine on a five-needled Pine stock and a three-needled Pine on a three-needled Pine stock and so on. This is fairly simple I think really. Well here next is a batch of Acer seedling stocks. We have got quite a lot of things to say about Acers, Pete haven't we?

DUMMER: Well, its a very large family Brian, and to start off with, the film shows in the front here the common one, at least our common one, pseudo-platanus.

HUMPHREY: And palmatum behind.

DUMMER: I suppose the pseudo-platanus comes in for practically everything, three parts of them anyway.

HUMPHREY: Yes, you do some of the American species on pseudo-platanus don't you? Nigrum for instance.

DUMMER: Nigrum does very well on pseudo-platnus, coriaceum.

HUMPHREY: What about this lovely thing we have got from Strybing Arboretum?

DUMMER: Oh yes, if anyone is there at the meeting they will be pleased to know that this Acer pentaphyllum is going very well now and it is in fact, we presume, related to mandschuricum. As we have never had any seedlings of mandschuricum to graft at the time, it was put onto pseudo-platanus and the plants now are 4 or 5 ft. high after only two years from grafting.

HUMPHREY: And what other Acer stocks would you reckon to use to carry out our grafting programme.

DUMMER: Well, I suppose one of the most important ones after pseudoplatanus would be cappadocicum. We graft x lobelli onto cappadocicum because it has milky sap.

HUMPHREY: This is a good guide actually isn't it, whether the Acer is milky or non-milky as to what you put on them.

DUMMER: Actually, we class the Acers in two separate groups, milky and non-milky, but of course they can be split down again, for instance, platanoides and cappadocicum are both milky.

HUMPHREY: But are not necessarily interchangeable are they? Lobelli for instance, won't grow on platanoides very well, but it will on cappadocicum.

DUMMER: Yes, that is quite true. In this last year we have tried lobelli on campestre which is another milky one. We are keeping our fingers crossed.

HUMPHREY: Yes, this is interesting, campestre would be much easier and cheaper for us to get. This is a native tree and if in fact lobelli does grow on campestre, this will be a very good thing. Lobelli, if you don't know over there, is a wonderful tree, naturally fastigiate a hybrid, a first class street tree, very important commercially. Other American species, Acer rubrum, saccharium and saccharum, I expect our audience know more about their characteristics than we do.

DUMMER: We use rubrum quite a bit and one species we like to graft on it is franchetti.

HUMPHREY: Now while we are on Acers, Pete, this next one is interesting, this is a rather feeble scion of Acer hircinum. The tree was dying and Mr. Garner was around this particular summer and he recommended this technique.

DUMMER: Yes, that is right, it is in fact a bridge graft as you can see.

HUMPHREY: His idea was that the sap had to go through the scion and had to keep it alive until it made a union wasn't it?

DUMMER: Yes that is quite right, if you see that little white patch in the middle there, the skin in fact has been removed and a knife scraped all the way round it and then rubbed round with a cloth dipped in formalin so that

there is no possibility of sap flow at all, so that if the stock is going to keep alive, sap has got to pass through the scion.

HUMPHREY: It is a very good idea and did in fact work didn't it?

DUMMER: It did work, but unfortunately, the stock used here was saccharinum and it should have been saccharum. We did not have saccharum stocks at that time.

HUMPHREY: So the scion grew away for a little while and then died out.

DUMMER: That is quite right, yes.

HUMPHREY: Incompatibility took over.

DUMMER: This is an interesting graft really, because if anyone does get any rare material in a poor state of health, they can in fact get over the problem by using this particular type of graft.

HUMPHREY: Well, enough about Acers I suppose. Now we are looking at some Prunus grafts and here again there is a fairly complex picture isn't there?

DUMMER: This is quite right, yes.

HUMPHREY: We are using avium aren't we, cerasifera, padus and persica. Anything else, I don't think so is there?

DUMMER: No I don't think so Brian, I think we have covered the main ones anyway.

HUMPHREY: Avium I suppose takes the bulk doen't it?

DUMMER: Oh it does, yes.

HUMPHREY: But cerasifera is rather interesting perhaps in that Prunus mume grows well on this.

DUMMER: Yes it does very well on cerasifera.

HUMPHREY: And Prunus padus appears to take padus varieties doesn't it?

DUMMER: Yes. very easily.

HUMPHREY: And of course the Rum Cherry, Prunus serotina varieties, are worked on padus aren't they? And then there is this maackii which you turned up some information on.

DUMMER: Well, for years, you know, we struggled to graft this because we thought at one time that it was related to padus, one year down at our Eastleigh nursery, I tried a few on avium. little pieces of wood the size of matchsticks, and the first year they jumped to 40 ft. high.

HUMPHREY: Jolly good. So Prunus avium is the stock then for Prunus maackii, a rather rare, but choice species.

DUMMER: And incidently, it is a very beautifully Chinese tree with peeling bark.

HUMPHREY: Yes, and Prunus serrula which is grown for its bark is also happy on avium isn't it?

DUMMER: Quite true. yes.

HUMPHREY: Well now here is a Magnolia graft, a side graft, this picture was actually taken in Holland and here

again we have got an interesting and complex situation with the Magnolias haven't we?

DUMMER: Yes, Brian, I suppose the two main stocks are kobus and soulangeana which are used generally.

HUMPHREY: Now some people would be surprised at you saying soulangeana, for instance the Japanese use kobus for pretty well everything and so do the Dutch I believe.

DUMMER: Yes, but this is not our choice.

HUMPHREY: Yes, soulangeana is most important for us. Soulangeana is used as a stock obviously for soulangeana varieties and also for stellata, presumably if you wanted to graft that, although it can root from cuttings well and also these beautiful Himalayan species campbellii and sargentiana robusta. And kobus then, you would use for cordata wouldn't you, and salicifolia.

DUMMER: And of course, its forms, concolor etc.

HUMPHREY: And what about these large leaved species like macrophylla, what would you use for that?

DUMMER: Macrophylla, we would put on tripetala or officinalis.

HUMPHREY: This next one, on the face of it, it looks straight forward enought doesn't it, it looks like one of the Exbury hybrids (Azaleas).

DUMMER: That's true, Brian, it is in fact the variety Berryrose.

HUMPHREY: The Exbury's are of course quite straight forward aren't they, but what about some of the other ones which we graft?

DUMMER: Oh some of the others can be difficult. We are sure there is some incompatibility, for instance with schlippenbachii. We have got a beautiful white form at the nursery and it will not grow well except on schlippenbachii seedlings.

HUMPHREY: Yes, and pentaphyllum is exactly the same isn't it? They seem to grow away for a time and then die out don't they? It appears to be delayed incompatibility.

So really suggesting a possible division concerning stock/scion relationships, you have two or three groups: — 1) You have the group that will readily form a union, the scion will grow away very vigorously and very well and then at some later date, any time from three years onward, you get signs of incompatibility, commonly known as delayed incompatibility: 2) You have the type of union that if you can get the two to stick together for life, but there is some evidence of early incompatibility: 3) Then you have the ideal group at the end where you get ready union, ready compatibility and partnership for life, the ideal marriage.

DUMMER: Brian, I think when one is using stocks like this, one should always try to graft if possible onto closely

related seedlings, in that way you can be sure because no person wants to wait twenty years and then find out that the union is not compatible.

HUMPHREY: Quite. We do in fact use some form of guide, we use Rehder's Manual of Trees and Shrubs as an initial indication don't we? We really base our combinations on botanical characteristics and work it from there, it saves a certain amount of hunting anyway doesn't it?

DUMMER: It does, yes, but of course it is not always right.

Sometimes with things like Azaleas for instance, one should not worry too much, if one can get a union for a while and plant deeply enough, the scion will eventually form roots. In other words, carry out nurse grafting.

HUMPHREY: Well, I think, Pete, our time must be up by now, we have had a very pleasant evening sitting here together looking at these pictures and we hope very much that the tape reaches you over there on time and that the slides reach you as well and the projectionist is clever enough as I am sure he will be, to match the two together. We wish you all every success for a really good meeting.

Goodbye to you all.

MODERATOR SHUGERT: Our second paper on rootstocks is being presented by a gentleman who has also traveled a good distance to be with us. He is president of the Western Region of the International Plant Propagators' Society and his topic is "Bloom Production on Selected Garden Rose Rootstocks." It is my pleasure to introduce Bob Ticknor.

BLOOM PRODUCTION ON SELECTED GARDEN ROSE ROOTSTOCKS

R. L. TICKNOR AND A. N. ROBERTS
Oregon State University
Corvallis, Oregon

Introduction

Nursery performance of sixteen rose rootstocks budded with five scion varieties, Etoile de Holland, Lowell Thomas, Picture, Pres. Hoover and White Prince, were reported at the Western Region meeting in 1963 (2). The majority of the rootstocks rooted well with the exception of O. S. U. 1 and 8, P.&D. 5214 and 5360, and Dr. Huey. On a comparative basis, five of the rootstocks, D-1, Ginn, P.&D. 5222 and 5234, and Van, proved to be outsanding for bud stand with the five scion varieties used in this trial. Four other rootstock-scion combinations were outstanding, O. S. U. 1 and Burr with Pres. Hoover, Burr with Etoile de Holland, and 5250 with Picture.