

AMERICAN DAFFODIL SOCIETY, INC
HYBRIDIZERS BREAKFAST

Columbus, Ohio

7:15 A.M.

April 25, 1987

The meeting was called to order by Dr. William A. Bender, chairman of the Breeding and Selection committee.

Dr. Bender: Welcome, to you all to the Hybridizers breakfast. It is nice to see such a crowd. We have nothing on the agenda, but I thought maybe I would start out telling you about the way the Brodie of Brodie planted his daffodil seed. I was at Brodie Castle in Scotland last year. It was quite interesting that the twenty-fourth Brodie of Brodie came back from World War I and started growing daffodils from seed. He was a Major in the Army and he planted his seeds with military precision, every three inches in rows a foot apart. How did his germination compare with ours, I wonder? He said nothing about that. If I planted seeds three inches apart and apparently he left them there until they bloomed, I would have a straggly looking corp of troops to look at. I thought it was an interesting side light that I had never heard of, so much for that.

Dr. Bender : I reviewed my files and I see we are supposed to talk about anything that is pertinent and act as an intermediary to the Board of Directors. What would you like to talk about?

Dave Karnstedt: You brought up the subject of germination. Is there any kind of rule of thumb that you should expect? Mine range anywhere from zero to the 60% range.

Dr. Bender: The various articles in the Journal have indicated that in England it is anywhere from 65% to 70%.

Robert Spotts: I read in the Tasmanian Daffodil Journal that David Jackson of Jackson Daffodils, said, that last year was a disaster for them. They only had 60% germination compared to there normal 95%.

Julius Wadekamper: How long is a daffodil seed viable under just ordinary house conditions, not cold storage?

Dr. Bender: I lifted seedlings that were down four and five years last year and left the ground fallow. This year I put stakes in for about 30 or more plants that came up in that area. One half of those plants were first year germinated seeds.

Julius Wadekamper: I mean under ordinary house conditions, not in the soil, in a packet in the house.

Dr. Bender: I do not know. I had some seed POPS [Phil Phillips Open Pollinated Seed] laying around in the cellar for one or two years. I planted it and got poor germination.

Kate Reade: I just want to say, my experience is that the sooner you plant the seed the better. I had wonderful germination last year. I don't normally. I think it was planting the seed when I am normally sending out parcels, early as I could.

Dr. Bender: John Lea said when he was here, that he planted the seed directly from the pod and got 100% germination.

Nancy Wilson: I got some seed from my mother that she kept in her dresser drawer since 1978. It was *narcissus wateri* and it germinated.

Meg Yerger: Speaking of poet germination. One year, I had just about 100% germination and the next year I had practically none of them come back.

John Blanchard: Beware of statistics. Some seed look good some do not look so good. If you get a pod of seed and you throw out some of the seed that does not look good you get a better percentage germination and you may have thrown some out that would have grown. Sometimes it happens that a poor looking seed never the less germinates.

Dr. Bender: Thats right, when I planted POPS seed to test germination, I picked out all the nice round seeds to count and the chaff I planted in another row. A good deal of the chaff did germinate , so we can't really tell just by looking at the seed.

Helen Link: Well, I find that some of the seeds will germinate the second year that they are down and you don't see them the first year. It may take two years for some of them to germinate.

Dr. Bender: Thats right. The plot where I lifted my seedlings last year were down in the same soil for four and five years and the seed must have been there five years and it germinated this year.

Dr. Throckmorton: It is my experience when seed do not germinate for a year or two and then do, you do not get much.

Dr. Bender: I thought I would try that and dig all these little plantlets from five year germination and see what I get. The general consesus is that your good seeds are the seeds that germinate the first or second year are probably the best seeds in the lot. Has anyone done any research on this?

Dr. Koopowitz: To change the subject slightly, has anybody been able to get good seed from pollinating a flowers that has already been cut off a plant and trying to maintain the ovary.

Polly Anderson: Yes.

Eve Robertson: Yes.

Dr. Koopowitz: The gladiolus people do this routinely and other amaryllids make seed from cut flowers. Do you keep it anything special.

Polly Anderson: It was just happenstance. I had one flower in a vase. It seemed to be forming a seed pod, so I let it finish. It did germinate.

Helen Grier: I did have one once develop like Polly. I read in a Iris Journal a long time ago if you put in a little bit of white Karo syrup in the water, I think it was a teaspoonful, you could ripen your seed. I have picked one of the *n. cyclamineus* hybrids and brought it in the house, I noticed the pod was getting larger and larger and I put it in a solution and I ripened the seed and I got three seed out of the pod and I planted the seed and nothing happened.

Dr. Koopowitz: The gladiolus people do this routinely. They call it "Winking", because they use a solution of water and a soft drink called Wink and they also added a lit bit of clorox to the solution, just a little bit, to keep bacterial growth down. We found that it works for Gladiolus and I just wondered if anybody had tried this with Daffodils.

Nancy Cameron: Are you talking about making the cross befor you pick the flower or after?

Dr. Koopowitz: No, Actually made afterwards on the picked flower.

Wim Lemmers: When we visit the London show, some people got some flowers from the other exhibitors and pollinated the flower and brought the flowers home and planted them in the glass house in the soil in humid condition while the stem is rotting, you can pick a piece of it and replant it and you sometimes get seed and it germinates, but you have to delay germination so as to give the seeds time to rest. In a hot climate this time is short, but it is possible.

Dr. Bender: Did the seed germinate?

Wim Lemmers: They got seeds. I think it depends on what seed it is. *Cyclamineus* seed is mostly sterile. It depends on what cross.

Dr. Koopowitz: I tried this several years ago and it becomes a race. The ovary swells and it starts rotting from the base. I just had mine in water and I had to keep cutting the base and hope the ovary will make it and it got to the point where the seeds would be brown but could never get a good shiny black seed out and never got any germination from it.

John Blanchard: I have had the trouble with the stem rotting. Last year, I collected a lot of stems from the wild of *narcissus tortofolius* and brought them home. The were well developed at the time, but instead of putting them in water, I put the stems in polyethylene bags with the seed heads outside the bag. As far as

I know, people have germinated the seed quite successfully. It is not quite the same thing because the pods were quite well developed before they were cut.

Dr. Bender: I have broken off developing stems and taken it in and got seed.

Dr. Snazelle: I have not thought too much about what Mr. Blanchard said. By placing the stems in a plastic bag and with the ovaries out, you would be collecting ethylene gas from the dying stem which also causes ripening of an ovary. I'm not quite sure of the translocation of the ethylene gas through the stem. Ethylene is involved in ripening process. The ethylene content within the bag, I think, would be much higher because it would not disperse. It might well have an effect on ripening of the ovary.

Jaydee Ager: I would like to hear a comment on what you plant your seeds in, how much water, how often, should you keep them constantly damp or let it dry out? Is there various opinions or is there one general consensus?

Dr. Bender: Last year, I watered my seeds after they were planted, from there on they were on their own. That year it was a dry season. I think you would have to have some moisture before late fall sets in to get the seed to germinate. I was curious when one of the Robins came in to see if I was going to get any germination. So I went out the first of November and lifted about six inches of a row. There were about a half dozen seeds each with a nice sprout in November. They were planted the first of September. They do germinate before winter sets in. They need water of course to germinate but to add extra water, I have never done so.

Jaydee Ager: Do you plant your seed in the open ground?

Dr. Bender: Yes, I plant mine in the open ground with military precision in a four foot bed. It is a coolmatic. I open the first row. I have a four foot board with an inverted "V" on the bottom, so that when you press it in, the row it is a twin row, so that the seed is separated to some extent. When the seedlings come up you see a double row very easily. One year I did not mulch my bed and had 10% germination. When I mulch the bed when they are planted I get 65% germination, generally.

Jaydee Ager: How much mulch?

Dr. Bender: You do not put a whole lot of mulch on. I use a ground bark and run it through the grinder. It is quite fine, but if you put too much mulch on in the second year the daffodil plants are going to push up that mulch in crusts so you can't put too heavy of a mulch on. You have to keep your spade pretty well in line or you will slice the bulblets. I slice maybe twenty out of five thousand.

Dr. Snazelle: Do you fumigate your four foot square bed before you plant your seeds?

Dr. Bender: I said I have the filthiest garden around. I grow daffodils in the same soil that my mother used to grow hers on the farm. I have been fumigating soil with Dowfume but I am going to stop. I am going to try it this year without fumigating.

Dr. Snazelle: Do you ever scarify the seed? Put a little scratch on the seed.

Dr. Bender: I think that does not really pertain to daffodils. I think having the hard seed coat is probably not the thing that causes delayed or dormant seed. In clover seed, you have to scarify the seed or you will get poor germination. I think from what I have learned it is not the hard seed coat that causes delayed germination.

Dr. Throckmorton: We took some seed and took them apart and did embryo cultures (took the embryo out of the seed) and put them in agar. Daffodil seeds germinate when they are damn good and ready. The embryo did not do anything.

Kate Reade: How many years does it take most people to get a flower from seed that is sown in the autumn.

Dr. Koopowitz: It depends on the cross.

Bill Pannill: I would like to speak to several of the questions. When I first starting hybridizing in a big way and I got a lot of seed. I would plant them in flats as soon as they were ripe in potting soil that had been sifted and therefore it was pretty fine it would go through a quarter inch sieve. I planted them in rows with tweezers and it took me a long time to do it. I kept them watered and my feeling about scarifying it when you get good big black shiny seed in June, if you plant the seed right away and keep it moist through the summer the seed is still in pretty soft condition; whereas if you wait until fall to plant it, then you are planting something pretty hard and dry in many cases especially in the species seed or the closely related miniature seeds so my best efforts have been to plant them immediately and keep them moist. The reason for sifting them was two or three years later when you want to replant those seed further apart you can take that little section of the box that had the cross and put it back through the sieve and all that dirt falls out and you get your seedlings. You don't have to look for them. It is much easier to keep up with them. I would get 80% plus germination. Later, I started sending my seed to Oregon and planting them out in the soil in the late summer or early fall and the germination dropped off to probably 40%. I am getting a lot more seed so when I make a cross now I hope they won't germinate. One of the reason I started sending my seeds to Oregon is because I get blooms in four to five years and by the sixth year, I have made my final selections and gotten rid of the rest of them and in Virginia you might get a occasional bloom in the

fifth year but usually the sixth year and if it is a poet usually in the eighth year. I think it depends on your climate and growing conditions. I think in Holland you might get them in three or four years the way they grow there. Obviously the idea is to get the seed all the way too a blooming size bulb. The quicker you can do that the quicker you can get your representative bloom.

Helen Link: I find I can get bloom from some of the miniature seedlings in three years. Especially, if I use *narcissus cyclamineus* as the pollen parent. I have had good success with that. I have a special bed which is raised a little bit from the ground around it and the soil is potting soil which has been sterilized and I plant my seed as soon as they are ripe in plastic berry boxes and then when I am ready to take them up and I just dump the box on a scree and get all my little seedlings and I go plant them out somewhere.

Dr. Koopowitz: I think the fastest time we flowered anything in California was eighteen months and that was a 'Paper Whites' grown in a greenhouse and you do not let them go dormant and you actually get several years growth in a single year. I think the longest in the *tazettas* was nearly eight years that as 'Avalanche' x 'Accent'. I think as Mrs. Link said, it depends on what you have. Certainly the *cyclamineus* hybrids do come along faster, often in three years. I have been planting seeds in four inch pots in a so called soilless mix which is clean sand, peatmoss and perlite. We leave them in there for about two years. The amount of germination depends on the cross, it can go from nothing to nearly 100%. I think a lot depends on the parents you are playing around with. For our standards in Southern California, I think the first blooms usually come in the third year and we peak in the fifth year.

John Reed: I think a few variables exist. Probably moisture and temperature are the most critical in a climate that most of us experience here [Michigan]. I counted in the 1980 crosses the first flowers were about eleven in four year olds of about ten thousand seedlings and then it went up after that. The latter crosses of 1981-82 are now much worse because they were very dry years planted on a little bit of an incline so there was less water taken in by them, in fact I had to hand water the 1981 seedlings. The year they were put out because it was a pure draught that spring. I think those are the two major things, the combination of how hot and dry would determine the number of flowers. The other thing in terms of germination, if I plant the seed in the summer I could expect normal germination of 50 to 100 percent. I have never planted them absolutely pure ripe just taken out of the pods. I take the seed out of the pods and put them in a drying container in envelopes and marked them and try to plant them within two to four weeks. The longer I delay until September the worse the germination. The worst germination I have had was no germination from seed planted in November from things that I had sent from California which they normally have nice hot

weather and nothing germinated that spring and the next year they all came up so that one set of crosses is basically a year behind. One year I just didn't have time so all the seeds that year were saved and planted the following year when I had more time to deal with it and I had normal germination. In terms of how long you want to keep them in the boxes it depends on space and time. I have kept them in their two years on the average, but for the last couple of years I have gone three years, from that standpoint it gives me more time immediately to deal with other things and secondly when I replant them I will have bigger bulblets to handle with my fingers out in the field. Two years they are awfully small and hard to deal with and a little less chance of field survival, also if you have a big box situation you can water them or spray them with very little labor as compared with dealing with them in the open field.

Dr. Bender: Mulching helps keep the weeds down. From my experience, four year germination is approximately 10 to 15 percent.

Mr. Shepard: My experience in the rain forests of British Columbia. I always plant the seed when it is the hardest in clay pots about one each deep in soil. I get the top layer of soil under dicideous trees, it is kind of a coarse soil and put it through a quarter inch scree. I leave the seed out in the open in the summertime and give the seed ordinary moisture, just what we usually get in the summer. They usually start to germinate about the last of January or the the first of February and in the second year I will put another inch or two of the same type of soil on top of the pots. When I dig the pots in three years, I find the bulblets in the bottom of the pot. Some of them will flower in the third year but not too many. It is usually the fourth and fifth year when they flower. The bulbs are usually three quarters of an inch in diameter when I remove them from the pots.

Leo Sharp: Does anyone have expereience with fertilizing the seeds?

Dr. Bender: I prepare my seed bed and put fertilizer in when the seed are planted but I never put fertlizer on after that.

Barabara Tate: I use Peters 20-20-20 and experince really good seed growth, green foilage. I only have a few years experience using it.

Dr. Bender: You had better watch that 20 (Nitrogen), I think.

Dr. Bender: Are there any other questions or comments.

Dr. Koopowitz: You might be interested in some of the West Coast things that are happening with the fall blooming species and the hybrids we are getting from them, some from my experience and some from Manuel Lima. I have done quite a few crosses now with

n. serotinus which normally flowers for us anywhere from July through January depending on when we start to water it. I have put it onto several of the spring cultivars trying to extend the flowering season and so far only one of the crosses have given good quality seedlings that was a cross onto 'Lilac Delight' which has given several good ones. They typically flower for us about the 10th of January in Southern California. For the first time this year we tried a few bulbs in Mt. Pleasant, Texas to see if they could handle the winter and what would happen. They flowered in time for the Dallas show. I'm not quite sure when they were planted probably two weeks before the show [Note: Right after New Years], so they could handle some of the cold which is good. Some of the seedlings do appear to be fertile and a friend has used some of the pollen onto 'Gloriosus' which is an old tazetta and got good seed. The thing that I think is really interesting was a series of crosses that Manuel Lima did in Central California using *n. viridiflorus* onto a wide range of standard cultivars. I think some of you are aware of this. When he made the cross he sent me one half of the seed of several batches. Frankly I just didn't believe he had made the crosses, I thought a bee came along after him and pollinated the flowers. We planted the seed and we have now flowered them for the third year. The crosses range from *n. viridiflorus* x 'Jetfire', *n. viridiflorus* x 'Gaytime' and *n. viridiflorus* x 'Bithynia' a wide range of cultivars. Manuel says he did not get any greens out of his. I got many greens out of mine. They range in shape and form. They have a very leathery substance. They will last two weeks on the plant. Some of them look like gigantic *n. viridiflorus* and the scent comes through in nearly all of them and what's nice is nearly all seem to be fertile. Manuel has been playing around with the second and third generation seedlings already and I have put the pollen from some of the greenest ones onto some reverse bi-color trumpets and got good seed set and that seed has germinated. This looks as if it is a way of getting a whole new series of forms and some real green daffodils.

Robert Spotts: I was lucky enough to go and see Manuel's seedlings this January. He had things blooming like *n. viridiflorus* x 'Triandrus Albus' which turned out to be a very nice little 5Y-Y, very small, if we are lucky we will see that as a potential miniature candidate, *n. viridiflorus* x 'Surfside' and *n. viridiflorus* x 'Easter Moon'. The 'Gaytime' double was rather scraggly but it was impressive. It had multiple heads as do all of them. They come out with several florets on the stem. Manuel judges them only in one way. Are they green? So if they are not green he doesn't care anything about them. But he gave me pollen of about six different crosses. I put the 'Easter Moon' x *n. viridiflorus* onto 'Ashmore' and now have gotten some seed. Hopefully it looks good. I also used some pollen on 'Sydney' a 5W-W. The pollen does appear to be fertile, so we might see some interesting things. As Dr. Koopowitz says he has got second generation things coming. The problem with them if they are not green, Manuel is not interested in them and we may not see them.

Dr. Koopowitz: A few other observations on some of them , they tend to flower for me right at the beginning of the season. They may be growable in other parts of the country. Some of them are vigorous and in the third year, I have one or two clones which are quite green, which sent up about six flower spikes, so they are multiplying as well. When I speak to Manuel, his concept of green and my concept of green are very different. I think he is thinking of a real grass green. The whole thing has to be bottle green color. Many of them flower a quite nice gray green. They are very definitely green. It is not a yellow green it is a new kind of green color.

Helen Link: Some years ago at a fall board meeting, we had some *poeticus* flowers from New Zealand. I had various flowers blooming at this time varieties at the time and I took home some of the poeticus pollen and put it onto *n. viridiflorus* and I got pretty good germination. The seedlings did quite well in the cold frame for two years and then we got a twenty below zero and they all died.

Dr. Bender: That is a problem with most of us in this area. [Midwest] When you mix a fall flowering plant with spring flowering plant you get blooms in the winter.

The meeting was adjourned at 7:57 A.M.

Respectfully Submitted,

Marilynn Howe, Secretary