

NOTES ON DAFFODIL BREEDING

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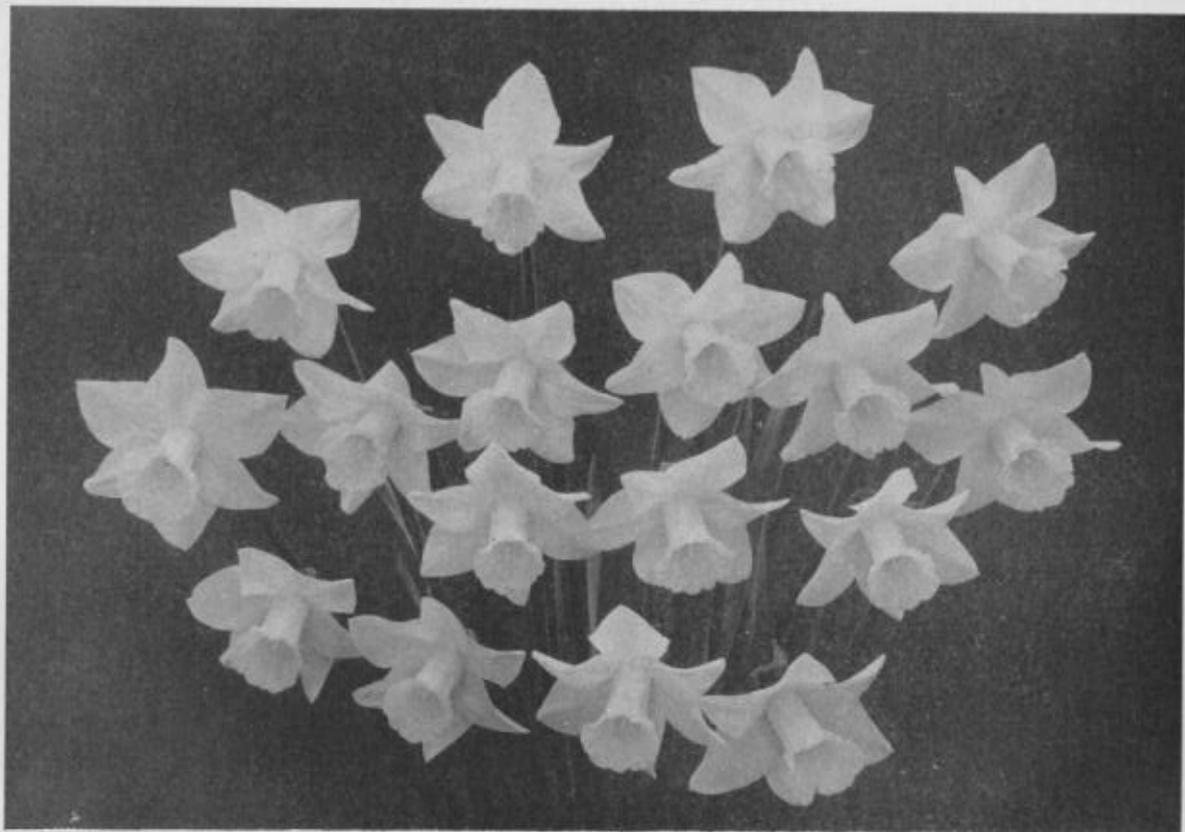
I do not propose to occupy much space in explaining the actual technique of cross fertilisation and seedling raising, as doubtless most readers are familiar with this. Moreover, Professor Sydney B. Mitchell has given some very helpful advice on the cross fertilisation of the flowers and sowing and raising of the seed in the concluding paragraph of his most interesting article on Daffodil breeding for Amateurs in the issue of *Plant Life* for April 1945.

I was much interested to note some slight variations in Professor Mitchell's methods from my own, no doubt partly due to our very different climates: e.g., here I find it best to sow seed immediately it is ripe, before we begin bulb lifting operations; as if kept for a length of time the percentage of germination may be lower or some of the seeds may lie dormant for a season before starting to grow. Also I find it better to sow in fairly deep boxes rather than in beds in the open, as if sown in the open the alternating wet and frosts of our winters would throw most of the seedlings out of the ground, whereas boxes can be given the protection of a cold frame for the first two winters, closing the lights only in frosty weather. At two years old we transplant the seedlings in June, without drying off, straight from the boxes to the beds in which they are to remain till they flower. As the dormant season of *Narcissus* bulbs is very short or nearly non-existent in our cool wet summers, this permits the little bulbs to start new root growth as soon as they feel inclined. I note that Professor Mitchell does his pollenising by using tweezers, with which I take it he picks up the anthers of the pollen parent and touches the stigma of the intended seed parent with it: I have heard of this method, but my own practice, and that of most British raisers, is to use small sable brushes such as are used by water colour artists, for transferring the pollen. It is of course very important to mark your fertilised flowers carefully, and label the resulting seed carefully and clearly by means of numbers when sowing so that a clear and accurate record of parentage can be kept. It is also wise to think out carefully at least some of the crosses you intend to make before the rush of the flowering season is upon you.

A quite bewildering number of new and fine Daffodils have been raised in the past thirty years, and they continue to be produced in increasing quantity. In spite of the world war an astonishing number have appeared since the British Royal Horticultural Society's Daffodil Conference in 1935. Of course the majority of these new things that appear at Shows never get into general garden cultivation; many because they lack stamina and all round good habit of growth (which includes the capacity to produce a sound firm healthy bulb) necessary to stand up to mass field cultivation and commercial handling. Many of course disappear because they are not sufficiently outstanding and distinct or striking.

In view of this ever increasing flood of new varieties, it is high time that breeders gave more concentrated attention to the production of varieties of really sound and reliable constitution combined with good habit and high quality flowers. Mr. Davis, the late Mr. Engleheart's life long foreman, visited our main London Daffodil Show last April, and is reported to have commented, and perhaps not without reason, that we are sacrificing quality to mere size. One of my U. S. A. correspondents said in a letter received a few weeks ago—"I am becoming annoyed by the great influx of what I call elephants without refinement." One does see some very large and gaudily coloured flowers which have only achieved coarseness. We must be very careful not to lose the beauty and dignity of form natural to the Daffodil. We shall lose all its peculiar charm if we try to make it look like something quite different from a Daffodil: we must make beautiful form, which implies perfect balance and proportion combined with good carriage and habit one of the essential objectives: with this we must also have good substance combined with high quality texture and clear clean colouring. We also want stems of adequate length and strong enough to stand up to weather out-of-doors without support, and if the stems carry the flowers above the foliage so much the better—this is a particularly desirable feature when bulbs are grown in pots for indoor decoration. Incidentally, the first objective of Dutch growers appears to be to obtain varieties that will force easily and early. Definite effort might also be directed towards obtaining sunproof colour in red cupped varieties, as many of these burn badly and get spoilt when exposed to strong sun. Non-fading red cups are attainable, as they come from time to time amongst seedlings and there are already a few varieties such as *Rustom Pasha* and *Flamenco* which are practically sunproof, while J. L. Richardson, I believe has some others amongst his newer red cups. Another desirable objective would be the production of varieties that form good clear firm bulbs. P. D. Williams used to pay a good deal of attention to bulbs, and considered *Fortune* as an example of a variety which makes a bulb of first class type. There are certainly wide differences in the bulbs of different varieties, some being soft or scaley and rough, therefore more likely to harbour such pests as bulb scale mites, etc. and become diseased. I think that *Maximus* blood in a breeding strain helps towards a firm type of bulb.

Daffodil breeding is now carried on by an increasing number of people both trade and amateur in many parts of the world. I know at least one keen amateur in Cape Colony, South Africa: New Zealand is full of ardent Daffodil lovers and raisers from end to end; there are also quite a number in South Australia where many good flowers are being raised; while Tasmania likewise has its quota of extremely enthusiastic breeders and exhibitors who are raising first class things, particularly noteworthy amongst them being Mr. C. E. Radcliff of Hobart, who I believe has made more progress than anyone else in the world in the production of pink crowned varieties. In U. S. A. the cult of the Daffodil is very definitely on the increase: I know of successful breeders in both



Hybrid Narcissus—Cantatrice (Esmiko X Beersheba)

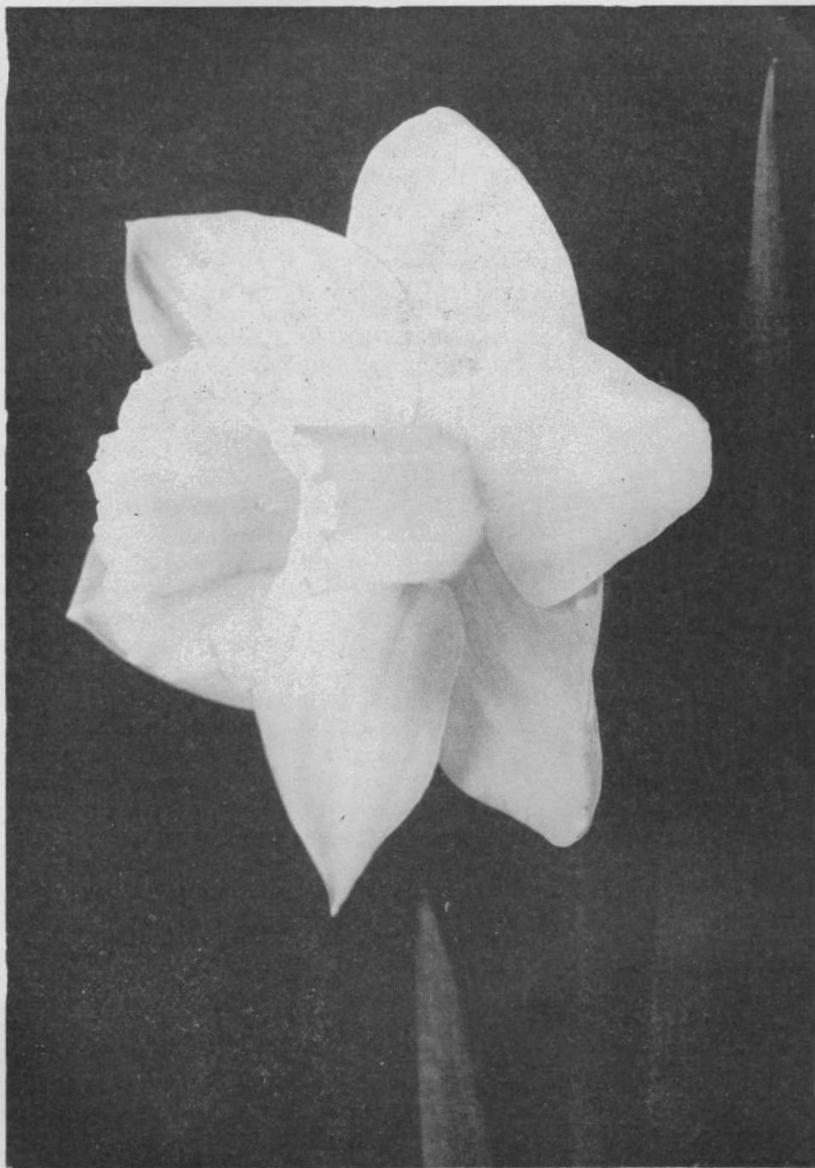
A very smooth large white trumpet of beautiful form; the flower is very graceful, polished; the trumpet is slender, deserving both the Award of Merit and First Class Certificate given it by the R. H. S.

Plate 285

eastern and western States, particularly in Oregon which contains the great Oregon Bulb Farms at Sandy, and Mr. Grant E. Mitsch's farm at Canby—at both of which places the raising of seedlings is extensively carried on; whilst I regard that most brilliant plant breeder, Frank Reinelt of Capitola, California, as likely very soon to become the leading raiser of Daffodils in U. S. A. if indeed he has not already attained that position. If his progress with the Daffodil is as rapid and spectacular as are his glorious achievements in Delphiniums, Begonias and other subjects he may very soon leave us all behind. California has other keen raisers, and there are others still in B. C., Canada. All this is to be warmly commended as varieties raised in each different country are more likely to thrive and do well there than bulbs imported from distant and widely differing climates. It is found, for example, that bulbs sent from Britain to Australia and New Zealand usually take about five years before they settle down and give really good and representative flowers, whilst a few never do really well: it is equally difficult, if not more so to acclimatise bulbs here that have come from there. I understand that many of our British raised things seem difficult to settle in California, frequently lacking vigour and developing Virus there; Although they seem to grow magnificently in the cooler and moister climate of Oregon; but in all these places most if not all survive long enough to provide pollen and seed for producing a home raised race from which plenty can be selected which will thrive and flourish; and breeders will be well advised to work on those strains that they find best adapted to their own conditions of soil and climate.

Breeders of long experience in this country have of course discovered a few varieties that are outstandingly good parents. Time has also taught them to look out for the beneficial influence of certain now relatively remote ancestors in the pedigrees of their seedlings. For example, the good influence of that most beautiful of wild golden trumpets, *Narcissus hispanicus maximus* in transmitting clear colouring, fine durable texture and length and strength of stem; or of Incomparabilis *Princess Mary* in transmitting smoothness and symmetry of form and good habit and carriage with the short necked stems desired alike by market men and exhibitors, combined with a ready tendency to develop brilliant colour. The good influence of the best forms in *Poeticus* are also apparent to the practised eye, e.g., the fine quality and substance of *N. poeticus recurvus* or the neat and broad petalled circular form of *N. poeticus verus*; again the White Trumpet strain would seem to have a definitely refining influence upon quality and texture.

I should say that I have never been trained in the science of plant genetics, and I feel that those equipped with the knowledge and skill resulting from a thorough course of training in that science are likely to have a great advantage over the older generation of breeders, and may be able to achieve desired objectives more rapidly and with less waste of effort. A skilled geneticist may well be able to trace from the number and character of the Chromosomes of a given variety the probable original source of some particular character or characters that it



Hybrid *Narcissus*—*Samite*

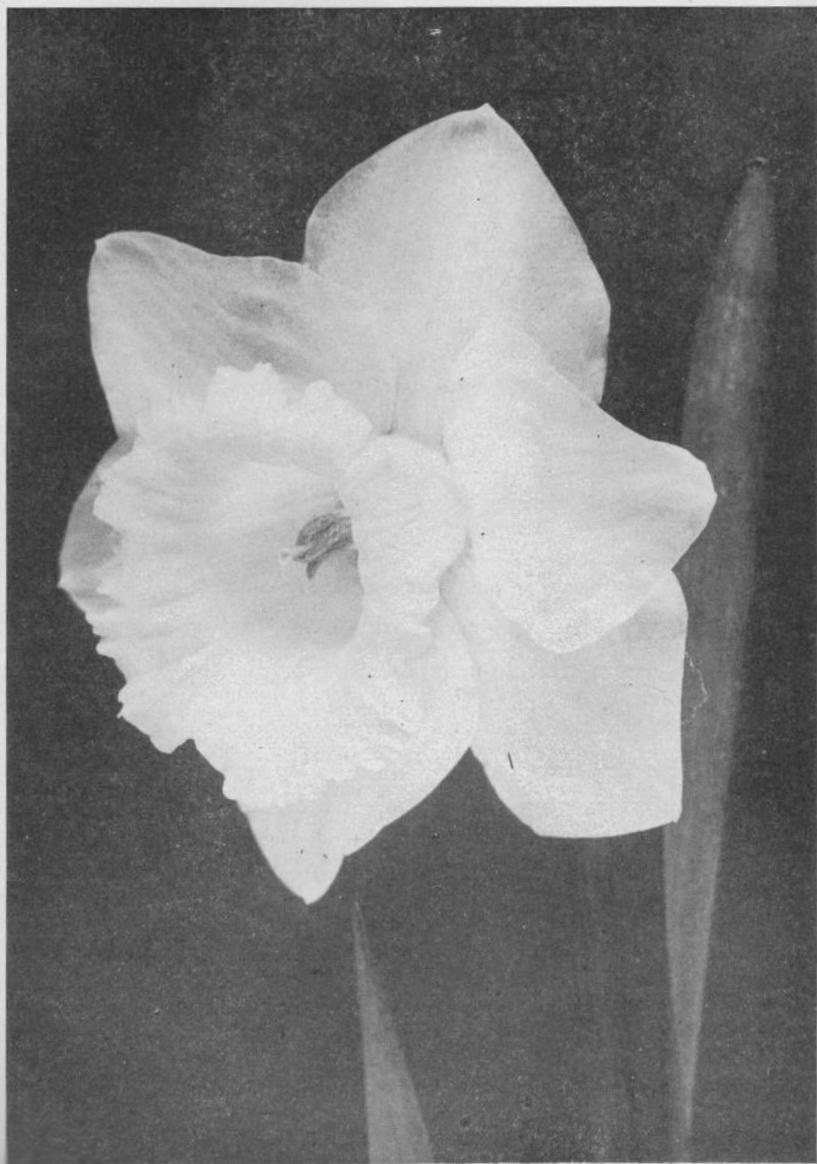
Seedling of *Mrs. Krelage*; a beautiful ivory white trumpet of fine form and finish; First Class Certificate, R. H. S.

Plate 286

possesses and transmits to its progeny. I have recently had extensive correspondence with Dr. C. A. Walker of Nottingham, who is a plant geneticist; he has also been here at Daffodil flowering time, and I have been deeply interested in many of his deductions.

The old *Incomparabilis Princess Mary* which has been such an important factor in breeding was not a spectacular flower, and it had such a poor constitution that it has practically disappeared from cultivation, indeed I do not know of anyone in Great Britain who now has it. Its parentage is not known, but Dr. Walker thinks that *N. poeticus verus* probably figures in its pedigree, which may account for some of its virtues. Engleheart, probably being attracted by its orange tinted crown, mated it with the Poets and produced a number of small bright crowned Barriis which attracted a good deal of attention, as at that time red cups as we now know them were non-existent; but very few of these seedlings survived for any length of time as they had poor constitutions. Curiously enough, however, it was found that if *Princess Mary* was seeded to the pollen of the large trumpets, e.g. *King Alfred*, *Madame De Graaff*, etc. the resulting progeny was large and vigorous, of good habit, and often of good form and quality. Some things that came from crosses of that type were of much value in subsequent breeding, e.g. the yellow *Incomparabilis Golden Pedestal* which was raised by J. L. Richardson from *Princess Mary* x *King Alfred*.

A few of Engleheart's small crowned bright Barriis, which came from *Princess Mary* by *Poeticus* pollen, fortunately survived long enough to be of great value and importance to breeders. *Beacon* is the most notable of these: it is a little insignificant mean looking plant and flower, so nothing in the history of breeding has been more astonishing than the vigorous plants and large fine quality flowers which have come from first crosses between it and large vigorous things such as *Fortune*. P. D. Williams and A. M. Wilson discovered its possibilities and used it for some time before others were aware of them: it was also extensively used by the Brodie of Brodie. I am almost certain that *Beacon* came from a cross between *Princess Mary* and *Poeticus Recurvus*, as some of its seedlings, most notably P. D. Williams' beautiful *Folly* have much of *Recurvus* character. Dr. Walker confirmed this view on examining its chromosomes. The beneficial influence of *Beacon* on the quality and pose of many of its descendants is readily apparent. Another old flower used by P. D. Williams was *Firebrand*, a small Barrii with starry whitish perianth and small very vivid red cup. I had been told by the late F. Herbert Chapman that *Firebrand* came from *Princess Mary* x *N. poeticus poetarum*, and for years believed this to be its origin; but quite recently Mr. A. M. Wilson, who in early days had been in most intimate touch with P. D. Williams and Engleheart, told me that it came out of *Beacon*. Be that as it may, it is undoubtedly closely related to *Princess Mary*. The late J. C. Williams of Caerhays Castle, Cornwall, who was a cousin of P. D. Williams, and also at one time a noted breeder, succeeded in crossing *Firebrand* with *King Alfred*, and produced *Hospodar*, which was in turn largely used by P.



Hybrid Narcissus—Kanchenjunga (White Knight X Conqueror)

A very large white trumpet that has been valuable in breeding other large trumpets with wide full perianths; trumpet of this stately flower is serrated and widely flanged. Award of Merit, R. H. S.

D. Williams, giving him a wonderful series of brilliant red and yellow varieties, including such fine things as *Saltash*. It should be noted that in mating *Firebrand* with *King Alfred*, the good qualities deriving from the *Princess Mary* strain—via *Beacon* and *Firebrand*, and the *Maximus* strain—via *King Alfred*, were combined.

Brodie of Brodie raised a smallish neat Barrii which he named *Mozart*, from *Princess Mary* by one of his own seedlings. *Mozart's* almost flat crown is sharply rimmed with red which rather points to and confirms the suggestion that the sharply crimson rimmed *Poeticus verus* may be somewhere behind *Princess Mary*. From *Mozart* by pollen of *Gallipoli*, which was bred between *Bernardino* and *Will Scarlett*, Brodie raised *Seraglio* and *Therapia*; of these two *Seraglio* has proved a most valuable seed parent and many very fine flowers have been bred from it, such as *Market Merry*, *Dunkeld*, *Garland*, *Green Island*, etc., the *Princess Mary* influence behind it being apparently strongly dominant. It is still worthwhile mating it to the best of recent productions.

The neat little yellow perianth Barrii *Gulliver* was one of P. D. Williams' earlier productions. I don't know how it was bred, but it has excellent form and texture and I should not be surprised if it came from *Beacon*, while Dr. Walker thinks it has much of *Poeticus verus* character. At all events the very fine *Incomparabilis Carbineer* was raised by A. M. Wilson from seed of *Gulliver*; and *Carbineer* has in turn proved itself a parent of great value both as pollen and seed parent: J. L. Richardson of Waterford, Eire, has raised a series of magnificent red and yellow *Incomparabilis* from *Carbineer* by pollen of *Porthilly*; vigorous plants of fine habit, high quality and magnificent brilliant colouring.

I have found the Barrii *Market Merry* a most useful flower in breeding brilliant yellow and red colouring. *Market Merry* was bred by Brodie of Brodie from *Seraglio* by pollen of a seedling he had raised from *Tamerlane* by *Fortune*. *Tamerlane* was bred from *Firebrand* by *King Alfred*, and was a sister seedling to *Hospodar*, already mentioned, but it never got into general cultivation, as it had much less colour in its cup than *Hospodar*. *Market Merry* is a very brightly coloured flower, and a little reflection will show that it inherits a lot of colour on both sides of its pedigree. I crossed it with the pollen of a smallish but very brilliant yellow and orange scarlet *Incomparabilis* of P. D. Williams' raising, and got a nice batch of seedlings of which the two best were *Indian Summer* and *Chungking*, both flowers of fine form with broad overlapping deep golden perianth and intensely vivid orange scarlet crown. *Indian Summer*, which is really a small cupped *Incomparabilis*, holds its colour better of the two, but has the fault of a long though stiff and wiry neck. Among my most recent seedlings are some resulting from crossing *Indian Summer* with Richardson's magnificent red and yellow *Bahram*—a short necked flower bred from *Penguite* by *Porthilly*, also *Carbineer*, besides one or two other short necked red and yellows of my own raising: some of the resulting seedlings promise to be very fine, as *Indian Summer's* long neck has been corrected, while they have beautiful quality and magnificent brilliance and intensity of

colour, in one or two cases I think even deeper than that of *Indian Summer*; but as the most of them have so far only flowered once it is rather soon to form a just opinion of their merits. From *Chungking* by pollen of a tall vigorous yellow and orange red *Incomparabilis* of fine substance and quality named *Klingo* I have in the past season flowered a couple of four year old seedlings which promise to be very fine, so it looks as though this strain is worth going on with.

A great many years ago Engleheart made a cross between *Poeticus Poetarum* and the Wild Trumpet *Abscissus* or *Muticus*, and produced *Will Scarlett*, which he said was the smallest of a family of enormous and coarse brethren. *Will Scarlett* made a great sensation on its appearance, as it was the first all red cup of any size; but it really is a shockingly bad flower, and on the whole I think it was unfortunate that it ever appeared, for it transmits many faults to successive generations of its descendants. Of its parents *Poeticus Poetarum*, though it has a very vivid wholly orange scarlet eye, has a terribly poor thin spidery perianth; while the rather curious Trumpet *Muticus* has also a poor and muddy coloured perianth, and a peculiar long narrow stove pipe trumpet. The temptation to use *Will Scarlett* to obtain striking red cups was too strong for some breeders, though I don't think that Engleheart himself ever used it, and neither P. D. Williams or J. C. Williams ever had it on their places. Mrs. R. O. Backhouse, however, must have used it freely, and she undoubtedly produced many striking and spectacular flowers of remarkable colouring, but in the case of yellow perianthed varieties the petal colour was always somewhat muddy and lacked the clearness, depth and brilliance of P. D. Williams' strains which had *Maximus* instead of *Muticus* behind them. Mrs. Backhouse's strain had undoubtedly great vigour, but they had a tendency to make rather large soft long necked bulbs which are not a good type for commercial handling. The bulk of her stocks eventually came into the hands of Dutch growers who propagated them and distributed them widely and a great many flowers undoubtedly have this strain behind them. Some of the worst faults of the *Will Scarlett* strain are roughness or unevenness of perianth, muddiness of petal colouring, and often disproportionately wide and gaudily coloured crowns which quite frequently have occasioned wart-like excrescences at their edges, or ugly and unwanted spots of pale yellow appearing in their orange ground colour, giving an unpleasant piebald effect, and making up coarse and vulgar looking flowers. By mating varieties of the *Will Scarlett* strain with others of the *Princess Mary* strain, more particularly of course if the progeny of such crosses are again bred to the better strain, it has often been possible to eliminate or at all events mask the faults of *Will Scarlett*.

The late F. Herbert Chapman of Rye, Sussex, attempted to correct *Will Scarlett's* faults in a first cross by mating it with *N. Poeticus Verus*. From this cross he got *Crimson Braid*, a white petalled dark red rimmed Barrii, which he subsequently used in further breeding. *Crimson Braid* had considerable substance, but its perianth still reflexed very badly. Chapman used its pollen on *N. Poeticus Kestrel*, and got a series of

striking white perianthed Barrii-Poets with very rich coloured eyes; but even they lacked something in refinement. He also used *Crimson Braid* pollen on *Princess Mary* and got a very charming little Barrii which he named *Dinkie*, of excellent form and quality and of a most distinct and attractive soft clear rather greenish lemon colour, with a sharply defined narrow red rim to its small crown.

Probably the best known flower which came from the late Mrs. Backhouse's garden is *Incomparabilis Hades*, which has attained great popularity on account of the extraordinary depth and brilliance of colour of its almost cherry red cup. It has the fault of a rather floppy and muddy coloured perianth, though it is less coarse than many of the breed; it also has rather soft foliage and a long necked bulb, but its pollen has been of considerable value in breeding; e.g. J. L. Richardson got the splendid brilliant white and scarlet Barrii *Limerick*, which gained a First Class Certificate this year, by using *Hades* pollen on P. D. Williams' *Incomparabilis Folly*. Mrs. Backhouse must have bred some of her strain back to the best Poets, such as *Recurvus*,* as the best quality flowers which came from her garden were smaller crowned things of the Barrii and Barrii-Poet class; e.g. *Lidcot*, *Sunstar* and *Coronach*. *Sunstar* has been of much value in breeding, especially as a pollen parent, and tends to give flowers with very white perianths, whiter than its own. From its pollen used on *Beacon*, the Brodie got *Pera* a most perfect small deep red and pure white Barrii, while by using it on *Folly*, Richardson got *Mahmoud*, one of the very best and most faultless deep red and pure white Barriis yet seen, and from the same cross I got *Bravura* (Plate 289), a really magnificent large pure white and red Barrii. *Coronach* is a flower of superb colour, real snowy "blue-white" perianth and small deep crimson eye: unfortunately it is a rather uncertain doer. Nevertheless Richardson has bred some very good things from its pollen, and Frank Reinelt tells me that he is using it extensively, so I expect soon to hear of some good results from him.

P. D. Williams had a late flowering small crowned 4B Leedsii which he called *Silver Coin*. I remember he used to tell me that it gave most beautiful seedlings. I did see just a few charming things from it when I used to go to see his flowers in March, but that was too early for most of the *Silver Coin* seedlings, and he said he had much better ones that flowered later. He gave me a few bulbs of *Silver Coin*: it is a small white flower, not much to look at, as it has the habit of seldom opening perfectly, and coming with green tips to its perianth; but it has much substance and a good stem and short neck: unfortunately it flowers very late, so that unless one tries to preserve pollen to use on it there is not

* Editorial Note.—According to Mr. W. O. Backhouse, who recently visited the United States, his mother, Mrs. R. O. Backhouse, never made any crosses with *N. Poeticus recurvus*. Her brilliant red cups originated in a cross between the Tenby Daffodil and *Poeticus Poetarum*. Five or six seedlings were obtained from this cross, of which three had red cups. Two were given the names, *Ladybird* and *Firelight*, both 2A, the latter being given an Award of Merit on March 16, 1903. Only one of these red cups was fertile, *Ladybird*, which Mrs. Backhouse used again and again. Hence, *Ladybird* was the real source of all her many red-cupped flowers.—Arno H. Bowers.



Hybrid Narcissus—Broughshane (Trostan X Kanchenjunga)

A very large white trumpet with extremely wide perianth segments which form a good background for the large trumpet; perianth is $5\frac{1}{2}$ inches across when well grown; Award of Merit, R. H. S.

Plate 288

much choice of things with which to cross it. I did cross it with *Silver Plane* and *Crimson Braid*, getting nine and seven seeds respectively: and with another flower which I had bred from a large Leedsii by pollen of *Crimson Braid*; this flower I called *Armoy*: it had a flat even perianth of thick texture and quite exceptional smoothness and a smallish neat yellow cup; like *Crimson Braid* it flowered very late, and I finally discarded it as it made such very poor soft bulbs. Turning again to the crosses between these three things and *Silver Coin*, I was astonished to get from the *Crimson Braid* pollen several most vigorous and very late 4B's with all strong short necked stems and flowers of quite exceptional substance; they had very good perianths, but the small crowns of some contained thick petaloid anthers or in some respect did not quite come up to requirements: none of them inherited any colour from *Crimson Braid's* dark red rim. The best one of them, which was *No. 28/101* was an icy white green eyed 4B, rather like my lovely 4B *Cushendall*, but taller and more vigorous and free of increase, though not so perfect a flower. From *Silver Coin* x *Silver Plane* came several late flowering large 4B's of enormous substance with broad thick petals and short frilled crowns, strong stiff stems and very short necks; none, however, were considered good enough to name. It should perhaps be mentioned that the quantities of seed obtained from the few available flowers of *Silver Coin* were small. From *Silver Coin* x *Armoy* I got fifteen seeds: presumably most of these were really selfset, as only one came that was obviously the cross, but this was a beautiful flower with faultless white perianth of flawless texture, and great substance, and a neat little pale primrose or ivory crown, it is moreover a plant of good habit with perfect stem and neck: this won the medal as the best flower in the London Show in 1943, and was subsequently named *Tryst*. It may be interesting to state here that Dr. Walker feels pretty certain that *N. poeticus verus* is behind *Silver Coin*; I think that this is more than probable, and if it be so the above mentioned seedlings by pollen of *Crimson Braid* and *Armoy* must have a double dose of *N. poeticus verus* in their make up. I have this year flowered some really beautiful seedlings from *No. 28/101* by pollen of Richardson's magnificent *Green Island*—bred from Leedsii *Gracious* by *Seraglio*—of which some four have been selected for further trial: all of these have excellent smooth white perianths of splendid substance and very pale cool citron shallow crowns or eyes edged with bright orange, and in one case scarlet; so in these the *Crimson Braid* or *N. poeticus verus* rim of colour has returned modified and with charming effect on a very pale ground; which, assuming Dr. Walker's guess that *N. poeticus verus* is behind *Princess Mary*, the grandmother of *Seraglio*, is not surprising, because of course it is also behind *No. 28/101*.

A good number of years ago a flower of a lovely shallow crowned *Silver Coin* seedling was sent me from P. D. Williams' garden. I used its pollen on *Silver Plane*, *Nelly*, *Mitylene* and a *Silver Plane* x *Mitylene* seedling, and got quite a number of really good things. The best of them all was *Chinese White* (Plate 290), which came out of *Silver Plane*

and is still the finest 4B I have yet seen. From *Nelly* came *Foggy Dew* and *Carnalea*, both beautiful flowers: the influence of *Silver Coin* in the pedigree of these things is most pronounced and very beneficial.

From pollen of *Chinese White* (Plate 290) used on a white seedling bred from *Quartz* (*Morven* x *White Emperor*) by *Naxos* I got a very good 4A Leedsii of much substance, excellent form and proportion, a pure clear self white with a shade of cool green in the base of the crown. This plant, which is known as *No. 30/90*, has a very sturdy habit, with stiff stem and short neck and peculiar stiff dark green upright foliage: I have not yet named it, as the crown sometimes comes a little rough. I may mention here that I am pretty certain that *N. hispanicus maximus* is somewhere behind the breeding of Engleheart's white Leedsii *Naxos*: if that be so, the using of *Naxos* in this case blends the *Maximus* character with the *Silver Coin* strain. *Naxos*, it may be mentioned, though not one of the very whitest flowers, seems to have the faculty of giving the most beautiful icy whiteness to a proportion of its progeny—e.g. *Ludlow*, *Zero*, etc., *Maximus* influence would seem to be evident in the hardening of the texture of stem and foliage in *No. 30/90*. I have been using the pollen of *No. 30/90* and have among my most recent seedlings flowered for the first time in 1946 some very promising and beautiful flowers: e.g. from *No. 28/65*, a seedling from *Nelly* by a large 4A, which was a very nice white Leedsii but had a much too long neck and a rather weak stem, by pollen of *No. 30/90* I got some very good white 4A's, all of which were flowers of excellent proportion and remarkable substance, and strong stemmed, short necked sturdy plants. Descriptions of one or two of these from my field note-book read as follows:—*No. 35/106*. "Splendid pure white Leedsii of very good substance and pose."—*No. 35/107*. "Most perfect snow white Leedsii with smallish smooth bowl shaped crown: very nice proportion."—*No. 35/149*. "Pure white Leedsii; green in base of crown, very nice form and proportion, short neck."—and so on. *White Maiden*, a rather distinct Leedsii of somewhat drooping habit with broad perianth and a rather shallow saucer crown, mated to *No. 30/90* also gave nice things—e.g. *No. 35/144*, "Lovely smooth medium crowned snow white Leedsii"—*No. 35/166* "Very graceful beautifully proportioned large white Leedsii." Another cross which is interesting was made between a pure white 4B that I call *Stardust* x *No. 30/90*; *Stardust* is a sister flower to *Chinese White*, and as *No. 30/90* has *Chinese White* as its pollen parent the close relationship can be seen, and also that in mating these two, one gets a double dose of *Silver Coin* blood. I recollect that the seed from this cross, of which there was only a quite small quantity, looked particularly large and fine. The seedlings were vigorous from the outset, and those that have flowered are only 4 years old: they have very strong stems and stiff strong foliage, and they are all large beautiful very white shallow crowned flowers of splendid substance and quality. It would appear from these results that it would be well worth while using the pollen of *No. 30/90* on a wider range of flowers; and it is also easy to imagine further progress resulting from breeding from its progeny. Another

cross which this year gave some most charming and beautiful high quality seedlings at four year old was *Seraglio* by pollen of *Stardust*—thus blending the *Princess Mary* strain with the *Silver Coin* strain. These also were large flowers of the shallow crowned type of great substance and quality, the crowns varying from white to pale citron with charming pale buff or pale gold frills. I think we have struck a good line for combined quality and vigour in this *Silver Coin* strain.

Earlier in this paper I said that the White Trumpet strain seems to have a refining influence. I think we can take it that the original parent of White Trumpet Daffodils is the lovely drooping little white *Narcissus alpestris*, which is probably better known as *N. Moschatus* of the Pyrenees. It is pretty obvious that other wild white Spanish Daffodils, e.g. *Colleen Bawn*, *Ceruus*, etc. are closely related to *Moschatus*, while the old Dutch raised *Albicans* is almost certainly one of its children or grand-children. The once famous white Daffodil *Madame De Graaff*, a most lovely refined thing in its day, was known to be bred between *Albicans* and the very vigorous growing Bicolor Trumpet *Empress*. *Madame De Graaff* was, of course, very extensively used in breeding, and many self fertilized seedlings must have been raised from it: amongst these such things as *White Knight* and *Mrs. Robert Sydenham* appeared. These were small flowers by today's standards, but they had very beautiful quality of texture and were much whiter than *Madame De Graaff*. Engleheart raised his very fine and now well known *Beersheba* from *White Knight*. The great Leedsii family arose in the first instance as a result of blending the blood of the White Trumpets with the Poeticus. In due course this original first generation Leedsii were again mated with *Madame De Graaff*, *Weardale Perfection* and other large trumpets, and gave rise to a beautiful race of large Leedsii which have, of course, been further developed, and have also been mated with very fine results with the *Princess Mary* and *Beacon* strain, and as has already been seen with the *Silver Coin* strain. Amongst the Leedsii many flowers of most beautiful quality can be found.

Pure bred large Yellow Trumpets as a family are with one or two exceptions rather inclined to coarseness; the most notable exception was *King Alfred*, a noble plant which owes its good qualities to its parent *N. Hispanicus Maximus*, whose influence predominates in *King Alfred*. The now well known and popular White Trumpet, *Mrs. E. H. Krelage*, was bred by the firm of Krelage in Holland, by *King Alfred* by pollen of *Madame De Graaff*. This flower was first shown at the London Royal Horticultural Society's Daffodil Show in 1912, when it created a sensation on account of its wonderful substance and beautiful waxy texture: it was in fact a blend of the best Maximus yellow trumpet strain with the further refining White Trumpet strain. I should think that even yet *Mrs. Krelage* is worth breeding from. It is the parent of my own First Class Certificate White Trumpet *Samite* (Plate 286), a very vigorous growing White Trumpet of superb quality; and I believe it to be the grand parent of another F. C. C. White Trumpet of mine,



Hybrid Narcissus—Bravura (Folly X Sunstar)

A large Barrii of great charm and grace, with a broad very white perianth and a well balanced orange scarlet flattish crown.

Plate 289

namely *Cantatrice* (Plate 285), which is still about the highwater mark for refinement and flawless beauty of texture. *Cantatrice* was bred between *Beersheba* and *Eskimo*, the latter a seedling of Brodie of Brodie's raising, which has *Mrs. Krelage* as one of its parents.

Brodie of Brodie raised a flower named *Nevis*, an almost White Trumpet which has proved of great value in breeding. On one occasion Engleheart sent him a small pinch of pollen of a white Daffodil which he said he thought had *N. triandrus* in its pedigree: Brodie's season in the north of Scotland was much later than Engleheart's, and when this pollen arrived, the only thing of any note that was in bloom in his garden was a large early yellow trumpet bred between *King Alfred* and a Dutch Bicolor Trumpet called *Glory of Noordwijk*. He put Engleheart's pollen on this and got *Nevis*, which was distinguished by remarkable thick smooth waxy texture. By using *Nevis* pollen on *Beersheba* he got the very fine large White Trumpet *Corinth*, a flower of great substance, and by using it on a seedling bred between the two Bicolor Trumpets *Weardale Perfection* and *Duke of Bedford*, he got that most noble and very large white or almost white trumpet *Askelon*, a flower that has magnificent breadth of petal, great size and most beautiful quality, which has in turn been of great value in breeding. It is the pollen parent of my *Kanchenjunga* (Plate 287), a remarkable giant flower with enormous breadth of petal, which in turn became the pollen parent of my giant white *Broughshane* (Plate 288). *Nevis* unfortunately makes rather a soft bulb; this fault is inherited to some extent by *Askelon* and *Kanchenjunga*, but is eliminated in *Broughshane*, whose other parent is *Trostan*, a very fine tall bicolor which I think came out of *King Alfred* by *Askelon* and therefore has a good deal of Maximus blood of which indeed *Askelon* itself has a trace, seeing that its grandparent, Brodie's Yellow Trumpet seedling, was a child of *King Alfred*.

The best modern Yellow Trumpets owe their quality to an admixture of White Trumpet blood in their ancestry. Take *Royalist* for example, a medium size Yellow Trumpet of faultless form and wonderful smooth texture. This was bred from *Cleopatra* by *Broadford*. *Broadford* came from *King Alfred* x *Lord Roberts*: *Lord Roberts* was a broad petalled Yellow Trumpet of very good form, which was bred from the Yellow Trumpet *Monarch* by *Madame De Graaff*. *Royalist* has proved to be a parent of great value, transmitting fine form, texture and quality to its progeny. By mating it with *Crocus* and *Trenoon* Richardson has raised a series of very high quality golden trumpets. Another interesting example is *Hebron*, bred by Brodie of Brodie from *White Emperor* by *King Alfred*. *White Emperor* is a very symmetrical White Trumpet of first rate smooth texture. *Hebron*, curiously enough, is if anything a deeper gold than *King Alfred*, and is a flower of smooth texture, though its petals incline to droop forward rather much; but it has given some excellent seedlings of high quality, notably *Cromarty*, bred by Brodie of Brodie from *Hebron* by *Alchemist*, a pure gold flower of faultless form, carriage and quality, which is in turn giving fine

seedlings: also such things as my own *Golden Hind* and *Virtue*, which came from *Hebron* by *Crocus*. This year a small batch of seedlings from *Golden Hind* by pollen of a seedling from self fertilized *Trenoon* show very high quality. In both of these strains, i.e. *Hebron—Crocus—Trenoon* and *Royalist—Crocus—Trenoon* we have a predominant *Maximus* via *King Alfred* yellow strain leavened by a trace of refining white trumpet quality.

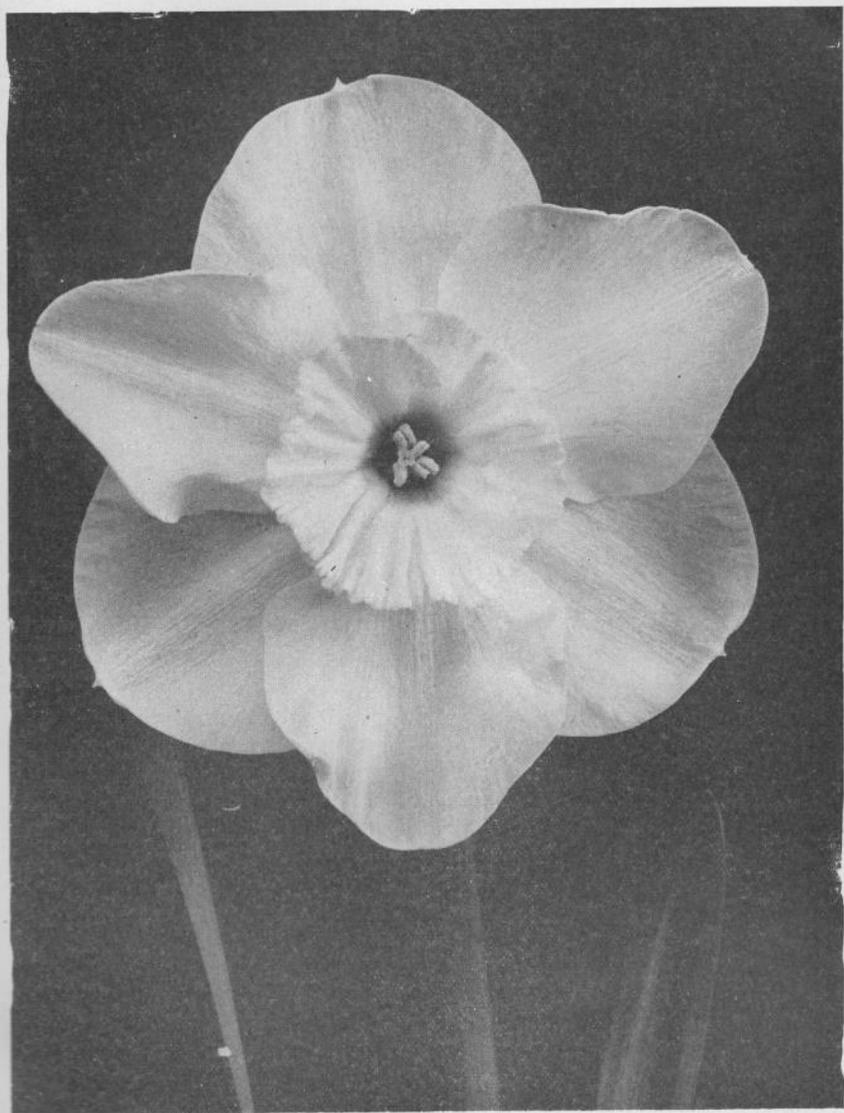
Nothing has aroused more interest in comparatively recent years than the appearance amongst seedlings of the Leedsii and Leedsii-White Trumpet strain of occasional flowers with faintly pink tinted crowns. I guess one of the main origins of pink to have been the Bicolor Trumpet *Weardale Perfection*, which had a just discernible tint of soft warm creamy buffness in its pale yellow trumpet—which may trace back to the very slight buffness noticeable in some examples of the wild Yellow Trumpet *Abcissus* or *Muticus*, which I think is more than likely one of the first parents in the Weardale line. The old Leedsii *Minnie Hume* was mated with *Weardale Perfection*, and one of the resulting progeny was the Leedsii *Lord Kitchener*, which in turn gave several things with pink tinted crowns, the pink I suppose resulting from the blend of Weardale's warm cream with diluted *Poeticus* red. I think that pink may possibly arise from some other sources as well, but time and space forbid further speculations about them. What is now perhaps of more immediate interest is that once pink has appeared it seems possible to reproduce it in gradually increasing strength of colour and frequency by inter-crossing pink tinted things: one will of course get a lot of seedlings without any pink, but a proportion of pinks can reasonably be hoped for, at all events that is my own experience. Mr. C. E. Radcliff, of Hobart, Tasmania, to whose outstanding work in the development of pink crowned flowers I have already referred, tells me that he flowered a small batch of seedlings this year bred from two of his pink crowned things, and that every one of the seedlings had pink crowns. He also tells me that he is gradually getting stronger and purer tones of pink, and often combined with beautiful pure white perianths.

I have long had a special affection for the late flowering small crowned Leedsii or 4B class of which some of the first to be introduced were Brodie of Brodie's *Silver Salver* and *Samaria*, and my own *Mystic*. The latter was bred from pollen of a fine large circular *Poeticus* seedling of Engleheart's raising on one of the old type Leedsii. I crossed *Mystic* with pollen of *Poeticus Dactyl*, a very fine tall late Poet of splendid form, carriage and substance, raised by Engleheart, and got a whole series of charming and dainty things, such as *Grey Lady*, *Columbine*, *Misty Moon*, *New Moon*, *Dreamlight*, etc. I also used the pollen of *Dactyl* on a small flower of Engleheart's raising called *Emerald Eye*, which was a poorish doer and has I fear disappeared: it had very white perianth and small crown with a green eye: from this cross I got two of the best things I have raised, namely *Cushendall* and *Frigid*; both are late flowering small crowned 4B's of faultless form, quality and carriage. *Cushendall* has a perfect circular poeticus white perianth

and very shallow saucer crown edged with a cream coloured frill, while the centre is a lovely moss green; when I saw how good it was I repeated the cross and got *Frigid*, an even later and larger flower with broad but rather more pointed petals of the purest frosty white, and a small crown equally white with a touch of vivid emerald green in its eye; as it flowers as late as *Poeticus Recurvus* so it is never seen at Shows. These green eyes are very enchanting and are evidently capable of further development as at the London Show in 1945, Mrs. Vyner Ellis of Minsterworth Court, Gloucestershire brought me a flower to see which she had bred from my Poet *Cantabile* by pollen of *Cushendall*. *Cantabile*, though of course it has a rim of red to its eye, has more green than any poet I know; Mrs. Ellis' seedling was a thing of exquisite beauty, about the same size as *Cushendall* with a faultless *Poeticus* perianth of purest sparkling snow-white, while the eye was wholly vivid green except for a white fringe. At the same Show Mr. D. Blanchard of Blandford, Dorset, exhibited two remarkable flowers bred from my *New Moon* by *Sorello*, another small 4B of Brodie of Brodie's raising; the eyes of these flowers were entirely grass green without any rim of any other colour. One would like to see the jewel-like colouring of the exquisite eyes of these 4B's, not only the entirely green ones but those that are white, or faint greeny citron, or grey, green, or green centres, with rims of gold, orange, salmon, pink or cerise, carried into larger crowned flowers. I think this is not an impossible development, but it may not be easy of attainment as these charming 4B's are so late that almost all the larger things are over before they come out; moreover, unlike *Silver Coin* they seem unwilling to mate with the larger crowned things, but I dare say something further in this direction can be done with the help of the *Silver Coin* Strain.

I have hitherto omitted all mention of the most charming and delightful miniature Narcissi, such as *Minimus*, *Cyclamineus*, *Triandrus*, *Juncifolius*, *Jonquilla*, etc. as I have never done any work upon them myself, but Mr. Alec Gray of Treswithian Daffodil Farm, Camborne, Cornwall has made a specialty of them and is intercrossing them and has already produced many exquisite refined and dainty fairy-like little dwarf Daffodils suitable for rock gardens or alpine house culture; many of them have the additional charm of delicious perfume. I have no doubt they could be successfully bred in California, and probably also in Oregon and elsewhere in U. S. A. I would refer interested readers to a most informative and comprehensive paper by Mr. Gray on Miniature Daffodils in the issue of the R. H. S. Journal for June 1946 (Vol. LXXI part 6).

Early in this paper I suggested that breeders should work on those strains that they found best adapted to their particular conditions of soil and climate. I gather from Frank Reinelt's correspondence that he has already put this principle into practice, and has selected a comparatively limited number of varieties as the main foundation of his work. He has been making extensive use of the fine tall stemmed golden *St. Issey*, also *Tunis*, *Polindra* and *St. Egwin*, all of which were raised



Hybrid Narcissus—Chinese White (Silver Plane X Silver Coin)

An exquisitely beautiful large flat crowned Leedsii; clear pure white throughout, except a touch of green in center; delicately saucer-shaped crown is nice contrast to wide-petaled, almost circular perianth. Award of Merit, R. H. S.

by P. D. Williams, and of the tall early flowering Australian raised *Jean Hood*. I am particularly interested to know that he has developed a *Tunis* strain: I do not know how *Tunis* was bred, but feel pretty certain that *Maximus*, probably via *King Alfred*, enters into its pedigree. It is not really happy in my cold climate, but I have seen it in fine form in Cornwall and consider it an outstanding plant on account of its fine habit and the substance and durability of its flowers: Its stem is very tall, strong and short necked giving the large flowers a good pose. Its foliage is of the hard type which is resistant to fungoid troubles, and it makes a quite exceptionally hard bulb remarkably heavy for its size. From what Frank Reinelt tells me I think he has already some remarkably fine things amongst its descendants.

Some interesting lines of development remain largely unexplored. P. D. Williams left us a few most attractive and refined things resulting from crossings with *N. Jonquilla*, the small sweet Jonquil; such as *Lanarth*, *Hesla* and *Trevithian*: of these three *Trevithian* appears to be much the best doer, and is likely to become a very popular garden plant: it has the distinctive Jonquil character in its foliage, and habit of bearing one to three flowers on the stem; the clear yellow flower itself is charmingly smooth in quality and refined in form. Quite a lot more hybrids have recently appeared as a result of using the pollen of the small Jonquil on various things; some of these are beautifully neat and attractive in form, and some have quite bright orange red cups; but I have never yet heard of anyone achieving a secondary cross from these hybrids mated again with the large flowering types. I imagine such crosses would be difficult in our climate but should not be surprised if they were found to be quite possible in California. I should immensely like to see crosses between *Trevithian* and such things as *Havelock*, *Trenoon*, *Crocus*, *St. Issey* and some of the best quality red and yellow *Incomparabilis*. I imagine that if a strain of larger flowers could be developed with the blood of the small Jonquils in its pedigree, it would in all probability have distinctive character and much refinement of form, quality and colour. There is already a variety called *Golden Goblet* which I believe originated in Holland, which I think may be a secondary cross from some hybrid of *Narcissus Odorus Rugulosus*. It is an interesting plant, as it comes pretty near trumpet size and form, yet it retains a good deal of distinctive Jonquill character: it is a flower of almost trumpet form and intense self golden colour combined with great and most durable substance. I can imagine it doing much better in California than it does here, and that it might there be used with good effect in breeding. Another most desirable line might be developed from *Cyclamineus*. There have been quite a few small hybrids between *N. Cyclamineus* and Yellow Trumpet varieties that have most distinct and attractive form, excellent texture and fine golden colour: it should be quite possible to intercross them again with our best large garden flowers, such as *St. Issey* etc. and one can imagine a race of very high quality yellows resulting; moreover it might well be possible to get red into their trumpets, as I recollect long ago seeing in a friend's garden

a sport or seedling from *N. Cyclamineus* which was exactly similar to the parent in size and form but had an orange trumpet.

New and unexpected breaks such as the pink crowns will undoubtedly turn up from time to time, but even apart from such breaks with the great amount of material already to hand the possibilities are literally infinite, and the fascination of following them up and developing them is never ending and sufficient to provide Daffodil lovers with interest and delight for all time.