

# THE AUSTRALIAN ORCHID FOUNDATION

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Essay Competition 2016

2<sup>nd</sup> Prize Winner

## Master, Teacher, Hybridiser

By Daniel Coulton

When I first met Neville Roper at a Sutherland Shire Orchid Society meeting I was 13 had only started high school the year before and knew very little about orchid growing. At the second meeting I attended he came up to me, presented me with a box containing some 20 or so orchid seedlings said 'give those a try' and walked off. I stood there stunned, both at this character, of me at that point in the mysterious orchid world and the amazing generosity that I had just experienced.

Fast forward some years and that one encounter had resulted in a treasured mentor who taught me an amazing amount about orchids, seedlings, flasks and hybridising. He encouraged my passion, resulting in a large chunk of my parent's backyard being turned over to orchid propagation.

Sadly Neville passed away in November 2015 after a long fight with cancer and I miss one of my most treasured mentors greatly. However I learnt a lot from Neville, many lessons that I will never forget and many that have shaped and will shape my orchid growing and hybridising into the future.

I therefore feel that as he can no longer pass on this knowledge to pass it on for him. To write it out and disperse it so that as many as possible might learn from one of the great masters of orchid hybridizing in Australia.

### His Legacy

To attempt to capture the full contribution that Neville made to orchid hybridising would be an effort in itself and I doubt that I could do it justice, nevertheless I will highlight some of those achievements worthy of acknowledgement.



Sarco. Burqundy on Ice 'Vo Vo' FCC/AOC 2009

Receiving the third highest number of awards in Australia so far with a number of FCCs and AMs amongst that list and largely from plants hybridized by Neville himself.

Having achieved without equal recognition in the hybridization of *Sarcochilus* throughout Australia and the world having contributed significantly to the development of new and improved colours in this genera.

Having also been recognised and achieved awards in a number of other and varied genera including *Promenaea*, *Dockrillia*, *Oncidium*, *Restrepia* and native *Dendrobium*.

Being part of an exclusive list of people who have received multiple Award of Special Recognition (ASR) for their hybridizing efforts and one of only a few to do it who are not professional orchid growers.

These achievements reflect the breadth and ability of Neville and his experience and knowledge of orchid breeding. These tips below therefore come from a true master and will be helpful to you whether you are aspiring to breed your own orchids or just be better informed when buying seedlings at your local show.

### Know the basics of inheritance

One of the first lessons that Neville taught me was to understand the very basics of genetic inheritance. By that, he meant understand the basic Mendelian inheritance model of dominant and recessive characteristics.

These simple concepts he taught were not supposed to be the beginning and end of your study into orchid hybridising but simply a solid basis from which to start your thinking or a first tool of your forensic look at a particular cross and why it turned out the way it did. The problem is that orchids have complex genomes that do not have simple characteristics like peas do. In addition as we often cross between distantly related species the genes or 'factors' that Mendel talked about often do not have exact matches between different species.

What it can do though is tell you what shapes and colours are dominant or recessive in certain species. For example the albinistic genes that lead to many of the yellow *Sarcochilus* for which Neville became known have a definite inheritance pattern which reflects the Mendelian dominant recessive model. In fact this knowledge allowed him to make several second generation based crosses in order to improve shape and size in these hybrids while ultimately retaining the desired albinistic yellow tones.

That said there are also examples where exactly the same theories of albinistic inheritance are not applicable, many know that some of the albinistic clones of *Dendrobium speciosum* when crossed produce coloured progeny owing likely (though we don't exactly know) with the albinism being caused by different genes in each clone and therefore essentially cancelling out when they are crossed.

What this teaches the average grower is to give a little more thought to the seedlings they see for sale on the bench, to be aware of certain first generation crosses as they may not give the colour or shape you expect and to do a little research and knowledge gathering from experienced growers and hybridists to find out how certain orchid inheritance patterns work.

Certain species have particular traits they pass on

This is literally a topic in itself and I don't intend to go into this in depth except to say that this is the real experience part of hybridizing. This is the sort of thing you will rarely find in books and the knowledge you can only really learn from looking at countless crosses and in some cases only learn if you do your own hybridising. This is a good part of what you pay for when you buy the Neville Roper hybrids or indeed any other breeders hybrids. It's the experience and knowledge to say that *Paphiopedilum sukhakulii* always passes on its spots while *Dendrobium speciosum* will bleach the purples and pinks out of all but the strongest *Dendrobium kingianum*. Sometimes, as many hybridisers will tell you, these are hard learned lessons but they are certainly something you should note when these little snippets of information are let loose as they will over time improve your seedling selection..

## Keep a genetic mix up

I was once standing at a nursery stall at a major show and overheard a customer asking the nursery person why they were using another nursery's plants in their breeding program. The answer was something along the line of we need new genetics to enliven our breeding program and open new possibilities. At the time I didn't really understand it until Neville, one day explained it to me. You see Neville used to do the same thing, despite having multiple awards and people beating down his door in those days to get a few prized plants he still bought the odd seedling from other hybridisers. What he said is that if you keep using only your own plants to hybridise with everything gets a little inbred. Plants become less reliable growers, the chances for new combinations diminishes, mutation rates go up and the improvement you get out of each successive cross becomes less and less. So even if you have the best of the best he explained (and he politely reminded me that was not him anyway) you still need new genetics or your breeding program will simply run out of steam.

Take for example the line breeding of *Oncidium sotoanum*, although not a hybrid it illustrates the point none the less. After around three generations of improvement Neville noted to me that the plants were not improving in colour and form and were becoming weak growers. I personally experienced this with a flask I received which had some exceptionally temperamental growers in it. He noted to me he had sourced several stock plants from various other growers from around the country to try and reinvigorate this line which he thought still had a lot to give but which as I say had begun to run out of steam. Essentially though this is a lesson in judgment to look at the cross and see why perhaps that awarded plant has been crossed with something from another collection. Is it just a new cross or is it an attempt to bring in some new blood into what are quality but tired genetics.

## Try the odd novelty

There is an old school line of thought to hybridizing and that is, stick to what you know and bit by bit you will improve your breeding lines to get that grand champion or FCC. I respect that line of thinking and certainly after over 150 years of hybridizing orchids it has certainly worked to provide us with stunning classical Cattleyas, standard Cymbidiums and complex Paphiopedilums.. Sometimes just sometimes it pays to go the speculative bet and grab the strange seedling on the bench or to make

that weird sounding hybrid. Often Neville would throw me a flask or point out something on the bench and say 'I know it sounds weird but grab it!' Now to be fair he wasn't always right and sometimes his suggestions turned out to be duds, other hybridizing attempts such as the use of *Sarcochilus spathulatus* created some miniature but nevertheless short lived plants.

However these novelties or weirdos as I like to call them can also produce surprising gems. Many of the yellow *Sarcochilus* you see today which have become very sought after were the result of crosses that at the time were considered speculative and plants that would not lead anywhere. So take a punt and try that thing that sounds a little interesting, of course still look at it critically and what potential may result as there are certainly novelty crosses that are clearly going nowhere but give a few novelties a go.



Sarco. Cherie's Joy 'Wonder Wings'  
AD/AOC 2010

## Hybridising is a numbers game

Have you ever seen a successful hybridist with only a few plants? No, neither have I. Owing to the genetic diversity and the variation in offspring that occurs when two plants are crossed the chances of getting 'a good one' let alone a great or award worthy one even when the cross is top notch can still be pot luck. Essentially it's a numbers game, sometimes you're lucky and that one seedling you bought turns out to be a stunner but often you're best to get a few plants of any cross you like. My personal average is three. That way you at least have something to compare to and can easily tell which of your plants you should keep and which might be better destined for the sales table. Of course if you really like a cross why not buy a flask? This is a cheap way to get lots of potential and you can even sell a few off to fund the price of the next one. Just remember play the odds and while it might take a little while you will find your diamond in the rough.

## Grow your plants well

One thing any successful orchid grower knows is that you can have the best hybrids with the best pedigrees in the world but if you don't grow them well, then you won't have much success. One thing Neville used to tell me when I went around to his setup was that the best plants had pride of place and really its common sense. If you want to do well with your hybrids, to grow them properly and to get the full potential out of the plants you have bred or bought you need to grow them well. I know several growers who are exploring some interesting hybrids but their plants after deflasking linger in the back 'experiment' corner of their shade house a little neglected and worse for wear. These plants even the experimental and novelty crosses should be given the same care and attention of those prized divisions.

Good growing though is about the whole process as in those seeds you potentially have the opportunity for show champions and awards but you have to get it right from flasking to first flowering and beyond. One of the reasons for this, aside from the obvious that healthy plants produce more and larger flowers, is lead time. If you grow plants poorly, the flasks you have don't grow properly and your plants are not cared for, you will be overtaken. Whether you are a hybridiser or just a hobbyist, if it takes you twice as long to flower a plant with half as many flowers you are less likely to win. Your generation time for new crosses will mean improvement happens slower and without growing them well you cannot see the true potential. Trust me only those hybridists who can grow their plants to their potential stick around in the long run.

## If it's a dog it's a dog

With the results of hybridising there's the good the bad and the ugly. The problem is sometimes it's difficult to tell the good from the bad. There is a saying that you can't judge an orchid's potential by its first flowering. While this is true another lesson I was taught is that if it is good as a seedling it might be great at a later flowering when the plant is larger and fully established. Those flowers that were a little small or which could be a little more filled in as a seedling might eventuate in your mature plant. However, if the flowers were tiny, spidery and the colour was all smudged in the seedling, no amount of maturity and wishful thinking will make up for that. In a world where the generation time for hybrids is shrinking and quality is always increasing Neville would have said 'it's a dog sell it'. These dogs are not worth keeping in the hope that they will get better, especially when you can sell that plant and buy another seedling, another chance for next year.

One point of caution I would leave you with in this instance is to be wary of deformity. In some cases it might be the weather or the pesticide you sprayed and in other cases it is a genetic malady. When I

say get rid of your seedlings that are dogs perhaps there is some caution when deformity is the cause. If you suspect some odd weather or a misapplication of fungicide has caused that double labellum or fused petal then perhaps hold off on disposal. If it's a seedling with a lot of potential keep it for another year or two to see if you can't get to the root of the problem. In this particular case the genus *Paphiopedilum*, particularly complex and intervarietal crosses are renowned for such things.

## Flowers aren't everything

When shopping for your latest seedlings or making babies with your toothpick it is easy to get lost in the perfect flower, those new colour variations or what the possibility is when two plants are crossed for the first time. The problem that hybridisers sometimes fail to appreciate is that someone has to grow these plants on. This is a problem in two areas, highly inbred plants and crossings of very distantly related plants, however it can occur in any cross. Essentially it is where the genetics of a plant just don't add up to the environment. Sometimes it is plants that are weak, do not readily multiply or die without warning. Other times they are plants that grow fine if not in some cases excellently, but which never flower owing to some genetic problem inhibiting flowering.

In this case the yellow or yellow and red marked native *Dendrobium* hybrids are the perfect example. When crossed multiple times, resulting in complex hybrids these plants are often known for being far more difficult than their species ancestors to grow. Exhibiting no 'hybrid vigour' they can often take many years to flower and sometimes require odd conditions such as sunlight to the point of horrific burning simply to get a few flowers.

The problem is that outside a few specific and well known examples of 'difficult' hybridising genre or individual plants it is often hard for the average orchid grower buying a few seedlings to tell if they will suffer from this problem. One tip is to of course buy multiple seedlings of the same cross to avoid being stuck with a dud one and of course look at the health and vigour of the seedlings you are buying. Ultimately it is a matter of luck and experience but certainly something you should consider when buying and then later observing the seedlings that you make or buy.

## Conclusion

Neville was a teacher by profession and at heart and what he taught me about hybridising will stay with me forever. I just hope that I can pass on those lessons so others can continue the proud tradition of exemplary hybridising we have in this country. As you can see there are no hard and fast rules with hybridising merely wisdom and a few bendable rules. I hope you get something out of this I hope next time you pick up a seedling or flick through a catalogue just one of these ideas flicks through your head and helps you in understanding the wonderful world of orchid hybridisation.



Sarco. Fizzy Dove 'Pink Cloud' AM/AOC  
2007