and Sequoia Nursery

A HISTORY OF INNOVATION WITH OLD ROSES

Robert Rippetoe

Rarely is there a window in history wherein factors come together to allow the indulgence of one man's curiosity. Rarer yet is one man endowed with the longevity, wherewithal, loyal friends, family, and truly dedicated employees required to bring his dreams to fruition. We are the benefactors of Ralph Moore's extraordinary life and creativity.

Up until recently visitors to Ralph Moore's Sequoia Nursery in Visalia, California, were transported to what remained of an era of post-war prosperity, innocence, and enthusiasm. As though time stood still, all things seemed possible in Visalia, a little town showered with nature's bounty. Natural resources existed in seemingly inexhaustible abundance. The largest trees on earth, flourishing for tens of thousands of years, were but a half an hour away in some of the most stunningly beautiful scenery on earth. Though gold was discovered to the north, the San Joaquin Valley was and is the recipient of the true wealth of the Sierra Nevada Mountains, its deep fertile soils built up over millions of years from erosion and river deposits. The climate is nearly ideal for the cultivation of roses, nuts, stone fruits, citrus, and ornamental plants from all parts of the globe. Home to some of the greatest horticultural minds and innovators of the twentieth century, California was about to experience a renaissance in American rose breeding, which was in its infancy.

Luther Burbank had led the way, proving through observation that quantification of small changes reinforced merely through selective breeding could produce all

kinds of horticultural miracles. Walter Lammerts built on that tradition. Both influenced the young Ralph Moore and were indeed contemporaries who would provide personal role models. There would be many others. The great legacy of rose breeding still thrived in Europe, but America was virtually a blank slate in comparison. Ralph Moore was poised for horticultural greatness. His keen sense of observation had served him well since childhood. His early experiments gave him the confidence and knowledge to begin experimentation in earnest.

Moore's family were vigorous early pioneers and farmers who had sown the seed for the financial security Ralph would need to allow his fledgling endeavor to grow. His grandmother set the wheels in motion with her collection of some of the best roses Europe had to offer. This alone was an anomaly in an era when most families were scrambling to keep food on the table. Among her roses were ones still offered by Sequoia until recently; in some cases these, such as 'La France' and 'Gloire Lyonnaise', were propagated from the original plants in her garden.

Sequoia Nursery was once very much a nursery of its era, carrying a wide variety of ornamental plants. Ralph Moore had a number of successes outside of the world of roses. The most notable of these include *Thuja* 'Westmont' and cultivars of fruit trees and lilacs, hippeastrum, and gerberas. But what Ralph Moore will always be celebrated for is his work with Miniature Roses. Among his contributions to the class was the use of the 1933 Miniature 'Oakington Ruby' through which many modern roses of all classes can now trace their lineage. There is little doubt that 'Oakington Ruby' would now be long forgotten, and more than likely lost, had it not been transported across the ocean and discovered by this ambitious young American rose hybridizer.

Another great Moore innovation in hybridizing Miniatures was the utilization of the 1956 Floribunda 'Little Darling', bred by Carl Duehrsen. From it came beautiful bud form, vigor, a branching habit, and the floriferousness we value in so many of the Miniatures we treasure. Moore's exploration and development of miniature roses also includes the development of the climbing miniatures, unknown before his time, and the use of new species such as Wichurana, Rugosa, Multibracteata, Roxburghii, and Bracteata. Other less celebrated but no less important Moore innovations came from breeding with old garden roses.

LEFT: 'Oakington Ruby'
RIGHT: *Rosa bracteata (photos by Robert Rippetoe)*

BREEDING NEW MOSS ROSES

Moss roses were the great vogue of the Victorian era and an early Moore fascination. Sadly most of the old Mosses, though considered stalwart garden survivors, were limited in their usefulness as garden plants for the masses. Times were changing. Mosses were virtually ignored by breeders of the day, with the exception of Pedro Dot. As a class they were neither particularly hardy nor particularly disease resistant, which made them a challenge for the hybridizer wanting to produce something acceptable to the rose-growing public.

Taming the Moss rose, figuring out how to use its genes, turned out to be a daunting task. Unraveling the intricacies of Moss rose genetics had never been attempted in any systematic fashion. The Mosses were limited in number and in color range, and not highly remontant. A great many mysteries still persist as to why the inheritance of Moss characteristics behaves as it does. According to Moore, some kind of genetic trigger seems to be involved. Trial and error revealed that certain roses were better at allowing Moss rose characteristics to be expressed. The creation of modern Moss roses in a broad range of colors and sizes is largely a Moore innovation, although Pedro Dot's role cannot be overlooked.

After exhaustive experimentation, Moore discovered that the primary key to creating modern Mosses was the old Centifolia 'William Lobb', the grandparent of 'Fair Moss', the first remontant commercially introduced miniature Moss. Pedro Dot's 'Golden Moss' also figures prominently in many lineages and helps widen the color range. Descendants of these early experiments have created legions of descendants, many of which have no apparent Moss rose characteristics. They have been absorbed in the genome of many of the garden roses we grow today.

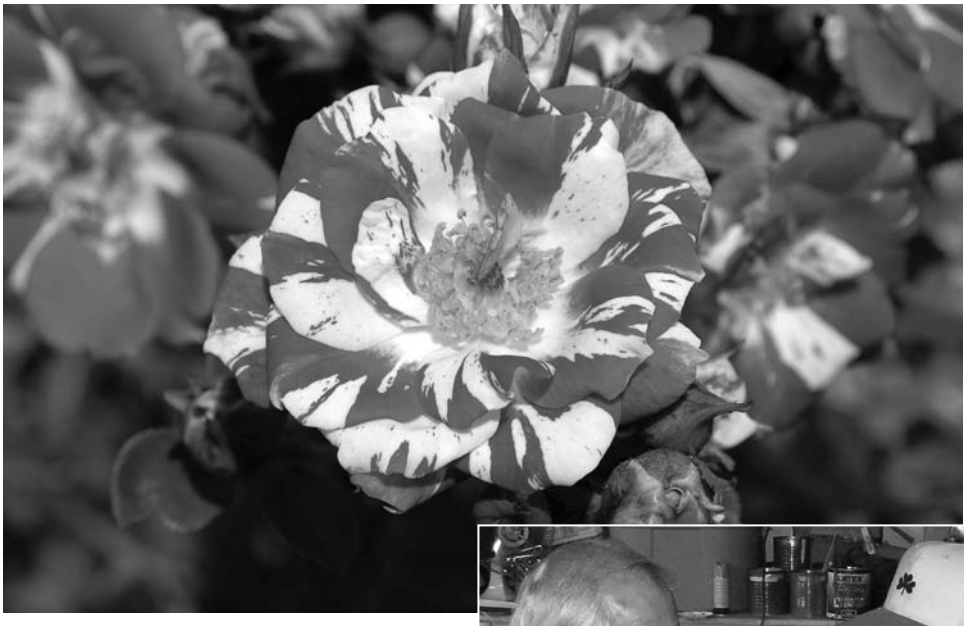
In 1978 Moore recounted the saga of his journey into Moss rose hybridization with the publication of *The Breeding and Development of Modern Moss Roses*, a reference well worth seeking out.

EXPERIMENTING WITH STRIPES

While there is nothing new about stripes—'York and Lancaster' dates from 1551, and 'Rosa Mundi' before 1581—Moore's innovation was nothing less than to prove that stripes could in fact be purposely bred into new cultivars. This was quite a revelation to hybridizers everywhere, and it rocked the rose growing universe.

All modern stripes are the result of a handful of experiments Moore carried out using the 1921 Hybrid Perpetual 'Ferdinand Pichard' as pollen donor with 'Little Darling' as seed parent. All remontant striped roses were originally bred from, and as, Miniatures. The first of these striped Mosses to be introduced into commerce was 'Stars 'n' Stripes'.

As of this writing there are 112 registered descendants from these original crosses. Descendants now include every class of cultivar and even full-sized climbers. Plasticity of the rose genome is truly a marvel. None would exist today had Moore not experimented with old garden roses. We would still be tending those



TOP: 'Stars 'n' Stripes' *(photo by Paul Barden)*

ABOVE: Viru Viraraghavan (left), Ralph Moore (right) *(photo by Jeri Jennings)*

few mostly nonremontant striped roses that were such a rarity in the pre-Moore era. How lucky we are to have the incredible breadth of striped roses now available.

The jury still seems to be out as to whether stripes in roses are a genetic phenomenon or are viral in nature and sometimes passed along through pollen donor and/or seed parent. Whatever the mode of transmission, stripes are with us to stay. As hard as it may be to accept that striped roses as we know them today simply didn't exist before Ralph Moore, it's true. Other hybridizers have taken up the task of refining and morphing the products of his early experiments, but they all lead back to 'Ferdinand Pichard'. Centuries from now we will still have striped roses, but there was only one original innovator, Ralph Moore.

CREATING HYBRID PERSICAS

Jack Harkness broke new ground with his cross of *Rosa persica* with 'Trier' and provided the key to further exploration of *R. persica*. Through this cross a small number of hybrids were created. As is common with such widely different crosses, fertility of the offspring is quite limited. Through much trial and error it was discovered that the use of 'Tigris' as seed parent enabled efforts to go forward. Moore's attempt at creating second generation *R. persica* hybrids was excruciatingly slow and full of disappointments.

Susceptibility to powdery mildew plagued most seedlings. Often the "blotch," so distinctive at the petal base in the species, was lost and the growth habit of many seedlings was rangy and undesirable.

Finally some new and greatly improved Moore Persica hybrids were made available to the public. It's my opinion that on some level Moore considered these hybrids not quite ready for prime time. They need more refining, though they are certainly a great improvement. The hard work needed to establish cultivars as a jumping off point for other hybridizers is done, but there is work left to do. Others have taken up the challenge both in the United States and Europe.

While descendants of *R. persica* are slowly making their way to market across all continents, many breakthroughs are yet to be made. No doubt the groundwork accomplished by Ralph Moore at Sequoia and some of the many beautiful new roses he created will figure prominently in their development.

Those lucky enough to have acquired some of these early creations know the startling effect their blossoms can achieve in the garden. There is nothing in rose world quite like them, or there wasn't until Ralph Moore set his sights on one of the ways he might quantify and or help intensify the blotch at the base of the petals. This time the ef-

CLOCKWISE FROM TOP: 'Muriel', 'Pink Powderpuff', 'William Lobb' *(photos by Paul Barden)*

fect would no longer be called a blotch, for Moore coined a term that was much more esthetically pleasing.

EXPLOITING THE HALOS

While exploring options for breeding material to create Hybrid Persicas, Moore noted a variation within the Miniature 'Anytime'. Specifically, on his travels he came across what appeared to be a sport of 'Anytime', asked for propagation material of it, and based breeding experiments on the hopes that the band of deeper coloration observed at the base of the petals could be used to improve the blotch that is so distinctive in *R. persica*.

Moore was able to recreate the band of deeper coloration observed in *R. persica*. Needing a term to describe this characteristic, he called this new group of roses "Halos." They are not derived from *R. persica* in any way, but are instead a group of roses brought about by selective breeding and exploitation of the natural variation within the modern rose genome. Moore used these fascinating Halos to create some of the most striking of the Persica derivatives released to the public.

If you look closely, you'll see that the halo is present in many roses, though to a much lesser degree. It would be interesting to recreate this effect in other classes of roses.

TAMING THE WILD BRACTEATA

When Ralph Moore was honored by The Huntington as one of the "Great Rosarians of the World" in 2002, he spoke about many of the highlights of his life, describing his work with *R. bracteata* as his greatest achievement.

Although it is one of the most beautiful and disease resistant of the species roses, *R. bracteata* has an invasive, feral nature that makes it unsuitable for many modern gardens. Moore stated that on only one occasion in his long career was he able to successfully use *R. bracteata* in breeding. That single occasion was the combination of *R. bracteata* with 'Guinée', which resulted in 'Muriel', his first Hybrid Bracteata.

Moore was not the first to record a descendant of *R. bracteata*. The first Bracteata hybrid recorded was by Lemoyne in 1829. "Maria Leonida' originated in the Botanical Garden of Nantes, France and is thought to be a natural hybrid. Another chance hybrid is thought to be 'Alba Odorata', recorded by Mariani in 1834. So far both of these roses have been genetic dead ends. The most well known of these early chance Bracteata hybrids and in fact one of the most highly rated roses in the world today, was recorded by William Paul and Son in 1918. It is 'Mermaid', which has on occasion produced a hybrid as pollen parent. It now has several recorded descendants but its fertility pales in comparison to that of 'Muriel'.

'Muriel' turned out to be one of those breakthrough miracle roses that rarely happen in one's lifetime. Sometimes they are epoch making. Once in a great while Mother Nature grants a rose hybridizer a wish. So it was with 'Muriel' that a new race of roses was to be born, or at least greatly expanded and improved upon. Not only is 'Muriel' a Bracteata hybrid but it is also a tetraploid hybrid, which means it can produce fully fertile offspring in the first generation with most modern garden roses.

In 1990 the first of the second-generation Hybrid Bracteatas, the beautiful 'Pink Powderpuff', was introduced. In 1995 came 'Star Magic' and in 1999 came what was to be Moore's most fertile introduction to date, 'Out of Yesteryear'. In 2002 Moore introduced the next in the series: 'Tangerine Jewel', 'Star Dust', and 'Precious Dream'. Efforts are being made now by other hybridizers to expand and capitalize on the fertility of these and more recent Moore Hybrid Bracteatas.

No discussion of *R. bracteata* would be complete without

mentioning the contributions made by Louis Lens, who created several miraculous first generation Hybrid Bracteatas. He was especially adept at integrating other species into the Bracteata genome. At present, no second-generation descendants have been generated from his experiments.

Last but not in any way least, Dr. Viru Viraraghavan has made considerable inroads using *R. bracteata* in his own hybridization, especially in tandem with hybrids created using a near Bracteata relative native to India, *R. clinophylla*. As evergreen roses for Southern climates as well as for future hybridization efforts, these hybrids are well worth searching for.

LEFT: 'Crested Jewel' buds

ABOVE: 'Out of Yesteryear' *(photos by Paul Barden)*

DEVELOPING SUPER CRESTS

If one were to ask what holds Ralph Moore's fascination and occupies his imagination today, "Crests" would be the likely answer. On the eve of his 101st birthday, Dr. David Byrne of Texas A & M, hybridizer Dr. Jim Sproul of Bakersfield, California, Mr. Moore's daughter, Eleanor, and I were honored to be guests in the Moore home, discussing among other things, hybridizing.

Much of what Ralph Moore has accomplished in the way of innovation has been brought about through keen observation. Many of you know the beautiful, famous old Centifolia 'Chapeau de Napoleon', or 'Crested Moss', which was discovered in Switzerland in 1827. One spring morning over 40 years ago, he observed something rarely seen in this cultivar because of the very double nature of the blossom—stamens shedding pollen. Ever inquisitive, he decided to place the pollen on 'Little Darling', one of his most productive seed parents. That was the first step in the development of the Crests.

Out of this first cross came 'Crested Jewel' and 'Crested Sweetheart'. In 1986 'Crested Jewel', which has proven fertile as a pollen parent and sometimes as seed parent, produced the first miniature Crest, 'Chelsea', and in 1994 the lightly crested

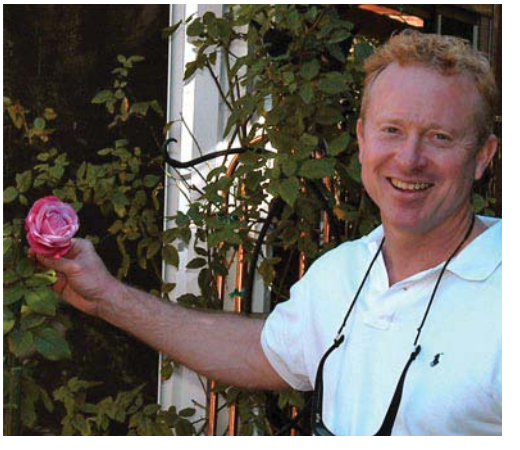
'Crested Sweetheart' *(photo by Paul Barden)*

but nearly smooth 'Elegant Design'.

It occurred to Moore that integrating his previous work with Mosses into his newly created Crested roses was only logical. This is largely where his work has been focused, at creating yet another new group, the Crested Mosses. He has also been working to concentrate the genes for cresting into cultivars with elongated bud form so as to allow a greater canvas for expression of the "Crested Moss" characteristics that he is seeking to create.

Other hybridizers have experimented with the use of 'Crested Moss' in hybridizing, but none has so far been as successful in reproducing the fantastical cresting exhibited in the remontant descendants of 'Crested Moss' created by Moore.

One has to wonder where Ralph Moore would lead us were he to live another hundred years, exploring and exploiting the boundless variations lurking in our heritage roses.



Robert Neil Rippetoe, *who holds a B.S. in Ornamental Horticulture and Nursery Management from Cal Poly San Luis Obispo, has been hybridizing roses for about 10 years. He began gardening at a young age with his grandfather and began studying horticulture in high school. A state champion FFA Horticultural judge in his senior year, he managed a retail nursery at 19 and is an Advanced California Certified Nurseryman. Robert met Ralph Moore while still a teen and has had the pleasure and benefit of his wisdom for over thirty years. He currently resides in Rancho Mirage, California.*