

BEGINNER'S SERIES — 20

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Phalaenopsis — Part 1

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MOTH ORCHID is an appropriate common name for the genus *Phalaenopsis*, bringing to mind night in a distant, tropical jungle, the darkness broken only by a cloud of white flowers fluttering in the warm breeze! Even now, when hybridizers have done so much to diversify the flower colors and shapes offered by this genus, the large, full and white *Phalaenopsis* flower, "perfected" decades ago, is still first to come to my mind when "Moth Orchids" are mentioned. But neither the species which have evolved in "nature nor the hybrids produced in flask are limited to the white-flowered species of the genus, *Phalaenopsis amabilis*, or its countless, white-flowered, hybrid descendants.



Grower: Tom Coffey

Photographer: Greg Allikas, Orchidworks.com

Figure 1 – *Phalaenopsis stuartiana* 'Susanna', HCCAOS 76pts.

THE GENUS

Around forty *Phalaenopsis* species exist, according to a recent taxonomic revision of the genus (Sweet, 1980). These species have much the same distribution as *Paphiopedilum* species: from the

Himalayas of northern India, Tibet and China, down through Southeast Asia and into the island countries of Malaysia, Indonesia and the Philippines. Northern Australia and New Guinea, however, are also included in this distribution (Teuscher, 1977). Though with a similar distribution, *Phalaenopsis* species are epiphytic in nature, while *Paphiopedilum* species, as previously discussed in this series, are for the most part terrestrial. Of these *Phalaenopsis* species, only a minority produce long, arching inflorescences with large, thin and rounded flowers reminiscent of butterflies or moths, as the genus name suggests. The majority of *Phalaenopsis* species are characterized by rather short, drooping inflorescences which display star-shaped, waxy flowers fairly close to the plant and its foliage.

In the first two articles of a series on this genus, I hope to emphasize the variation in flowering habit to be found in the *Phalaenopsis* species and hybrids available to the orchid hobbyist today. While their plant habit is quite constant, the way phalaenopsis present their flowers does indeed vary considerably, as do the color and size of the flowers as well. Such characteristics of flowering are understandably the primary concern of anyone purchasing phalaenopsis to grow. Details on the culture of this genus will be provided in future articles.

GENERAL CHARACTERISTICS

All phalaenopsis, whatever their flowering habit, have a number of characteristics in common. While the flower size, color and thickness of segments can vary tremendously, the flower structure of phalaenopsis does not. Unlike *Paphiopedilum* flowers, where the smaller, lateral sepals fuse to form the ventral sepal which counterbalances the larger, dorsal sepal, the three sepals of a typical *Phalaenopsis* flower arc nearly identical in size and evenly spread apart, forming a triangle of sorts. The lateral sepals may vary in coloration from the dorsal sepal, as is the case with *Phalaenopsis stuartiana* (FIGURE 1). Here the lateral sepals arc spotted heavily in brown while the dorsal sepal is only lightly speckled in pink at the base. The two petals of any *Phalaenopsis* flower, on either side of the dorsal sepal, can be larger (FIGURE 1) or about the same size as the sepals, often "filling in" the space between the lateral sepals and dorsal sepal.

Though largely unappreciated, the *Phalaenopsis* lip or *labellum* is the most complex segment of the flower. Positioned between the two lateral sepals, the *Phalaenopsis* lip has three sections, or lobes. The two side-lobes are usually raised at an angle to the central or front lobe. The front-lobe, typically to some degree spade-shaped, juts forward or somewhat downward. *Phalaenopsis stuartiana* has a front-lobe with two tail-like appendages called *cirrhi*, a characteristic for its section of the genus though not for all *Phalaenopsis* species (Figure 1). At the junction of the three lobes of a *Phalaenopsis* lip is a raised area called the lip-callus (bright yellow with two ridges in FIGURE 1). It appears just below the nose-like protuberance which is the column, the fusion of male and female parts, in the center of a *Phalaenopsis* flower.

Phalaenopsis have a distinctive appearance. They are monopodial

orchids with vegetation produced indefinitely from a single, apical growing point. This is in contrast to paphiopedilums, which are sympodial and produce new growths from the base of the previously flowered growth. In theory phalaenopsis would continue to grow taller, year after year. Just the same, only rarely does one see a phalaenopsis in cultivation much over 30 cm (1 foot) tall. The lowermost leaves tend to die after several years, and the plants are then often "topped", with the upper, leaved portion repotted in new mix. Like paphs, phalaenopsis form "fans" or "rosettes", with closely clustered leaves which emerge from the terminal growing point (Figure 2). These leaves are longer than they are wide, in cultivation usually between 20 and 30 cm (8-12 inches) long on mature plants, though the leaves of *Phalaenopsis gigantea*, for example, live up to their name, being up to 45 cm (1 1/2 feet) long in the wild. Like paphiopedilums, some phalaenopsis, such as *Phalaenopsis stuartiana* and *Phalaenopsis schilleriana* (FIGURE 2), have attractive, mottled leaves, while *Phalaenopsis amabilis* displays solid green leaves. Even without mottling, *Phalaenopsis* leaves on a healthy plant present a glossy, pleasing appearance (FIGURE 3).

Phalaenopsis roots, unlike those of paphiopedilums, often seek the open air and ramble out-of-pot. Their growing tips are greenish or reddish-brown, though away from the tip they are often whitish, even silvery in appearance when healthy (Figure 3). The inflorescences of phalaenopsis emerge successively along the stem between the axils of the leaves (Figure 3). How the inflorescence in a hybrid develops after initiation is dictated by the two or more

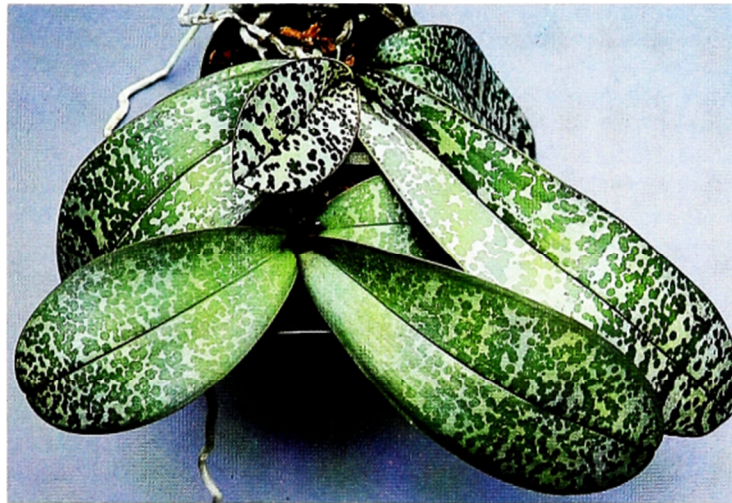


FIGURE 2 — Mottled-leaf phalaenopsis. Above, *Phalaenopsis stuartiana*; Below, *Phalaenopsis schilleriana*. The leaves of the *Phal. stuartiana* pictured measure 30cm (12 inches) long and 8cm (3 inches) wide.

species involved in its genetic makeup.

PHALAENOPSIS SPECIES AND HYBRIDS

As in the first article on paphiopedilums in this series, this limited discussion of *Phalaenopsis* hybridizing cannot cover all aspects in detail. *Phalaenopsis* hybridizing, especially over the past twenty years, has become quite complex and varied. I will deal only with major areas in the modern breeding of phalaenopsis, illustrating only representative species and hybrids. For those interested in greater detail on the

FIGURE 3 — a healthy, young phalaenopsis, with five glossy, solid-green leaves initiates its second inflorescence in October (center). Note the roots trailing out of its 4-inch pot.



subject, the bibliography following this and the subsequent article will include some fine articles which have recently appeared in the AMERICAN ORCHID SOCIETY BULLETIN.

As intimated earlier, possibly all the large, round, white *Phalaenopsis* hybrids now available can be traced back to the species *Phalaenopsis amabilis* (and its various forms) in *Sander's List of Orchid Hybrids* (Moses, 1981). *Phalaenopsis amabilis* produces long, slender inflorescences of flowers "not rarely a meter [over 3 feet] long" (Sweet, 1980, page 21), as do, not surprisingly, many of its modern, hybrid progeny. The flowers of *Phalaenopsis amabilis* are entirely white, with the exception of some yellow in the lip. But while the flowers of *Phalaenopsis amabilis* are up to 8 cm (3 inches) in natural spread, many modern, white *Phalaenopsis* hybrids have flowers up to and at times over 13 cm (5 inches) across. Though the modern, white *Phalaenopsis* hybrid pictured in FIGURE 4 has flowers measuring only 10.2 cm (4 inches) in natural spread, it does illustrate what contemporary growers can expect in terms of flower shape and flowering habit. The broad, overlapping, fairly thick segments of the flowers in FIGURE 4 are a considerable departure from the thinner, more open flowers of *Phalaenopsis amabilis*. Moreover, the plant pictured, with four sturdy spikes each having over a dozen, evenly spaced flowers, is an indication of the

kind of dazzling display modern, white *Phalaenopsis* hybrids are capable of staging.



Grower: F. H. Thelen
Photographer: Richard Clark
Figure 4 – *Phalaenopsis* Betsy Rue
'Haywood', HCC/AOS 75pts.
(Madrid x Sonja) awarded in August of 1979

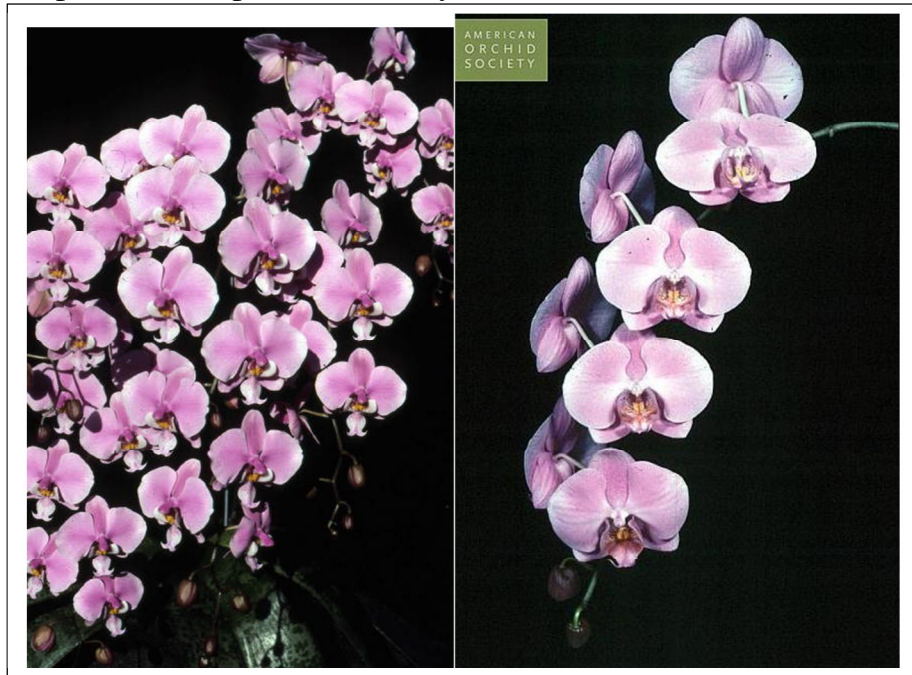
In recent years, *Phalaenopsis stuartiana* (FIGURES 1, 2) has been increasingly used in hybridizing (Freed, 1981). Its floriferousness and mottled foliage make the species itself very desirable for specimen plant culture. Many plants of *Phalaenopsis stuartiana* offered today were produced by selfing a superior cultivar, or by crossing two different, superior cultivars. The resulting progeny often have flowers of better coloration and shape than those found in nature. Such

is the case with many of the *Phalaenopsis* species illustrated in this and the following article for this series.

While the foundation of modern, white hybrids is based predominantly on one species, *Phalaenopsis amabilis*, today's large, round, pink-flowered *Phalaenopsis* hybrids result from an interaction of both white and pink species, for the most part *Phalaenopsis amabilis* with *Phal. sanderiana* and *Phal. schilleriana* (Moses, 1980) (FIGURES 2, 5). Like *Phalaenopsis amabilis* and *Phal. stuartiana*, these pink-flowered species produce long, sometimes branching inflorescences with many flowers. *Phalaenopsis schilleriana* 'Sweetheart', HCC/AOS (FIGURE 5) displayed 32 flowers "larger than typical" (according to the award description) on a three-branched, slender inflorescence when it was awarded in late January of this year. The flowers measured 7.4 cm (3 inches) across.

Phalaenopsis Herbert Hager, registered in 1977, is a good example of a contemporary, pink *Phalaenopsis* hybrid. The white species *Phalaenopsis amabilis* and *Phal. stuartiana* appear in its background, with *Phal. schilleriana* the predominating, pink species contributor. *Phalaenopsis* Herbert Hager 'Rosey Susie', AM/AOS (FIGURE 6), with ten flowers measuring 9 cm (3 1/2 inches) across on one inflorescence at the time of its award, shows considerable improvement in flower color intensity and

shape over its species ancestry.



LEFT, Figure 5 – *Phalaenopsis schilleriana* 'Orchidview', CCM/AOS 83pts.;
Grower: H. P. Norton

RIGHT, Figure 6 – *Phalaenopsis* Herbert Hager 'Rosey Susie', AM/AOS 80pts.
(Flor de Mato x Dear Heart); Grower: Armacost & Royston Inc., Photographer:
Richard Clark.

At this point, a little "historical perspective" on *Phalaenopsis* hybridizing might be helpful. *Phalaenopsis amabilis* was first discovered and described in the mid-1700s. Significant activity in hybridizing with this species, however, did not begin until the 1930's. *Phalaenopsis* Doris, a milestone in white *Phalaenopsis* breeding, was registered in 1940. "In every respect, the twenty-five years between 1930 and 1955 saw the large white phalaenopsis assume ascendancy which they were to retain up to the early 1960's." (Vaughn, 1973, page 234). Good-quality, pink hybrids wore the next, logical goal in *Phalaenopsis* hybridizing. Real activity and progress in pink *Phalaenopsis* breeding first occurred in the 1950's with the registration of *Phalaenopsis* Clara I. Knight (1951) and *Phalaenopsis* Zada (1958) (Vaughn, 1973), though these hybrids were often quite pale in color. The 1950's also saw the beginnings of a diversification in the *Phalaenopsis* and related species used with any frequency in breeding. Among the newcomers in breeding programs during this time were *Doritis pulcherrima* and *Phalaenopsis equestris*. The floriferousness of complex, white or pink *Phalaenopsis* hybrids was increased, and a greater intensity of pink achieved, when they were crossed with *Doritis pulcherrima*, a species of a genus closely related to *Phalaenopsis* but with upright spikes possessing smaller flowers. Bigeneric *Doritaenopsis* hybrids resulted. *Doritis pulcherrima* var. *buyssoniana* 'Malibu Delight', AM/AOS (FIGURE 7) had 22 flowers averaging 4.0cm (1 1/2 inches) across on a "well-formed,

beautifully presented raceme" when it was awarded. *Doritaenopsis*



LEFT, Figure 7 – *Doritis pulcherrima* var. *buyssoniana* ‘Malibu Delight’, AM/AOS 80pts. Grower: Arthur Freed Orchids, Photographer: Jim Henderson

RIGHT, Figure 8 – *Doritaenopsis* Fire Cracker ‘Mor’, AM/AOS 83pts. (Red Coral x *Dor. Pulcherrima*) Grower: McClain’s Orchids, Photography: Jim Henderson.

Red Coral, registered in the late fifties and much used in breeding, was created when the famous *Phalaenopsis* Doris was crossed with *Doritis pulcherrima*. The cross produced plants with tall spikes and many, though smaller (than the typical phalaenopsis) flowers. When *Doritaenopsis* Red Coral was "back-crossed" to *Doritis pulcherrima*, *Doritaenopsis* Firecracker resulted. In speaking of this cross, Hugo Freed makes the comment, "The *Dor. pulcherrima* reduced the size of the flowers but what brilliant color! The cross is well named; indeed . . . The multitude of flowers on a large plant is a real spectacle to behold." (Freed, 1976, page 1014) *Doritaenopsis* Firecracker 'Mor', AM/AOS (FIGURE 8) displayed 52 flowers on a branched spike, each 5-cm (2-inch) flower "Well-held, beautifully spaced and balanced," according to the award description.

Doritaenopsis hybrids, with the influence of *Doritis* predominating in their backgrounds, are famous for the size of the inflorescences they produce. In an A.O.S. BULLETIN article entitled, "Gigantic *Doritaenopsis* Awarded", an account was given of *Doritaenopsis* Memoria Clarence Schubert 'Malibu Dream', HCC-CCM/AOS (*Dor. pulcherrima* X *Phal. Zada*) (registered in 1965) which produced an inflorescence nearly 8 feet (2.4 meters) tall, with five branches, 75 flowers and 29 buds! Individual flowers measured 8.0 cm (3 inches) across (Saltzman, 1975). Subsequent breeding of *Doritaenopsis* seems to have focused on increasing the flower size by increasing the influence of *Phalaenopsis*, but, in so doing, the striking flower color and flowering habit are often diminished.

Today, many *Doritaenopsis* hybrids are indistinguishable from other phalaenopsis.



Figure 9 – *Phalaenopsis equestris* 'Riverbend', CCM/AOS 86pts. Grower: Luba Durisin, Photographer: James E. McCulloch.

Like *Doritis pulcherrima*, *Phalaenopsis equestris* (synonym *Phal. rosea*) has a flower far smaller than those of the white or pink *Phalaenopsis* species used heavily in breeding. Like *Doritis pulcherrima* also, *Phalaenopsis equestris* compensates for its smaller flower size with its

floriferousness. Though the pink flowers with dark pink, spade-shaped lips in FIGURE 9 average only 2.5 cm (1 inch) across, the

attractive, branched inflorescence, 71 cm (18 inches) high, held approximately 75 flowers. This highly desirable floriferousness and branched flowering habit carries through in *Phalaenopsis* hybrids where *Phal. equestris* has a major influence. *Phalaenopsis* Be Glad, registered in 1978, is a contemporary example. *Phalaenopsis* Be Glad 'Laurie Susan Weltz', AM/AOS (FIGURE 10), grown and flowered under artificial light, held 23 flowers and 23 buds in a densely clustered fashion on a heavily branched, sturdy inflorescence. The flowers had a natural spread of 4.5 cm (1 3/4 inches), making them larger than *Phalaenopsis equestris*, but far smaller than more conventional, pink *Phalaenopsis* hybrids.

Phalaenopsis equestris is perhaps better known for the influence of its color in breeding, particularly in the breeding of *Phalaenopsis* hybrids with red lips, and, to a lesser degree, of pink-striped phalaenopsis. (*Phalaenopsis lindenii*, a similar, though striped species, deserves greater credit than *Phal. equestris* for producing striped phalaenopsis. See BIBLIOGRAPHY; Freed, 1975.) The clone of *Phalaenopsis* Hugo Freed (registered in 1973) in FIGURE 11, with its vibrant, red lip and attractive, pink striping, illustrates this contemporary trend. Its flowers, spaced closely on a 60-cm (2-foot) inflorescence, measured 10 cm (4 inches) across. (See also the back cover of this issue for other examples of



Figure 10 – *Phalaenopsis* Be Glad 'Laurie Susan Weltz', AM/AOS 80 pts. (Swiss Miss x Cassandra [*equestris* x *stuartiana*]) Grower: S. Robert Weltz, Jr., Photographer: Charles Marden Fitch

modern, pink-striped phalaenopsis.)



Figure 11 – *Phalaenopsis* Hugo Freed (Ella Freed x Mad Lips) flowering in October.
Grower: Ralph & Chieko Collins
Photographer: Stephen R. Batchelor

Phalaenopsis equestris, as well as *Phal. amabilis* and *Phal. sandieriana*, are in the backgrounds of both *Phal.* Hugo Freed and *Phal.* Be Glad. Contributing to *Phalaenopsis* Hugo Freed, however, is a species quite different in its flower characteristics and flowering habit from these and other species

previously discussed. The influence of *Phalaenopsis lueddemanniana*, and species like it, on many of the *Phalaenopsis* hybrids presently available to the hobbyist, will be considered in the next article for this series.

BIBLIOGRAPHY

- Freed, Hugo. 1975. **Those Spectacular Eye-Catchers — Peppermint-Striped Phalaenopsis.** *Amer. Orchid Soc. Bull.* 44(2): 103.
- Freed, Hugo. 1976. **Famous Doritaenopsis Crosses.** *Amer. Orchid Soc. Bull.* 45(11): 1008.
- Freed, Hugo. 1981. **Phalaenopsis stuartiana. Novelty Phalaenopsis Species and Their Hybrids —7.** *Amer. Orchid Soc. Bull.* 50(12): 1458.
- Moses, John R. 1980. **Phalaenopsis — The Search for Pink.** *Amer. Orchid Soc. Bull.* 49(4): 363.
- Moses, John R. 1981. **Improving on White Phalaenopsis.** *Amer. Orchid Soc. Bull.* 50(7): 796.
- Saltzman, Marvin L. 1975. **Gigantic Doritaenopsis Awarded.** *Amer. Orchid Soc. Bull.* 44(6): 495.
- Sweet, Herman R. 1980. **The Genus Phalaenopsis.** The Orchid Digest, Inc.
- Teuscher, Henry. 1977. **Phalaenopsis, Doritis and Kingidium.** *Amer. Orchid Soc. Bull.* 46(3): 216.
- Vaughn, Lewis and Varina Vaughn. 1973. **An Account of Moth Orchids — The Ascendancy of White Phalaenopsis.** *Amer. Orchid Soc. Bull.* 42(3): 231.



