Pygmy Paphs

FRANK FORDYCE

For centuries the miniaturization of certain objects has intrigued collectors throughout the world. In orchids we find that the increasingly popular miniature cymbidiums, equitant oncidiums, the dwarf-growing, primary *Sophronitis* hybrids and others have intrigued avid orchid hobbyists.

This path has led us to seek out and observe dwarf-growing, smaller-flowered paphiopedilums. They are not new to the paphiopedilum world for we find an occasional reference to them by breeders in England during the late 1920s and 1930s. In The Orchid Review of January 1960 the late *Paphiopedilum* authority, Dr. W. Stirling, commented: "I see popularity for the miniature paphiopedilum as they are decorative to wear without ostentation." I am told that early hybridizing work was done in this field in Japan as well; however, I have not been able to trace any of these results to date.

Judging systems tend to steer the popularity or "fashion" of orchids by the awards given. It is human nature to become accustomed to a particular type, and, in the mind's eye, set only that as a goal to perfection, thereby discounting new features in breeding lines. I believe it is important to state that the acceptance of the proposed miniature or "pygmy paph" group should not be based only upon the premise that they are unique. As a type, they must have viable reasons for recognition by the judging system as well as by the hobbyist.

In an endeavor to find a distinct name by which this group might be characterized, my first thoughts were to call them mini-paphs. Upon comparing the several dictionary and botanical definitions of the terms miniature, dwarf and pygmy, we find the following:

Miniature — anything represented upon a greatly reduced scale.

Dwarf — a plant which is much below the ordinary size of its species.

Pygmy — a very small or minute plant having flowers in proportion to its foliage.

Although the terminology mini-paphs might well be used, my personal preference is pygmy paphs because of its euphonious sound.

In my attempts to search out the causes for dwarfism in paphiopedilums, I presented my questions to Dr. Motoo Kimura, an avid orchid hobbyist, and President of the Paphiopedilum Fancier's Association in Japan. Dr. Motoo Kimura is a Japanese evolutionary genetics theorist and honored Foreign Member of the National Academy of Sciences of the United States. Dr. Kimura was most helpful and eager to be of assistance, and it is with his permission that I include herewith his response in the form of a brief paper entitled "The Genetic Causes of Dwarfism."

Genetic Causes of Dwarfism by Dr. Motoo Kimura

"There are three possible genetic causes for dwarfism in plants and animals. They are (1) monogenic, (2) polygenic and (3) chromosomal.

1. **Monogenic:** There are many established cases in which the alternative characters, tall vs. short, are governed by a pair of well-defined Mendelian genes (alleles). Probably the most famous example is tall (6 feet) vs. short (1 foot) characters in garden peas studied by Mendel. In this case, the allele for short plant is recessive. Another example is the recessive gene uz (uzu or semi-brachytic) in barley which reduces plant heights by about 20% in homozygous condition. Also in sorghum 4 recessive genes are known, each causing a definite effect in reducing height in homozygous condition. When combined they can reduce the plant height a great deal. These genes are very valuable for breeding since dwarf barley and

sorghum plants tend to resist the tendency to fall on the ground; also their leaves are short and upright, suitable for economically receiving sunlight. Genes for dwarfism are usually recessive, but there is a remarkable example which is dominant. This is the condition known as *Chondrodystrophic dwarfism* in man, also called *Achondroplasia*. These dwarfs have very short limbs, although the size of the trunk and head is of roughly normal size, and they usually lead otherwise healthy lives. That these characters follow a clear-cut dominant inheritance is a well-established fact.

2. **Polygenic:** What geneticists call "quantitative characters" such as height, weight, I.Q. etc., are controlled by a large number of genes each with a small effect. Since the effect of individual genes is small compared with the environmental effect (such as good or bad nutrition), it is not easy to identify individual genes. Nevertheless, the cumulative effect of them all is significant, and much of the normal variation in human height, for example, is caused by segregation of these types of genes. We call these genes "polygenes." Since the ordinary Mendelian method of analysis cannot be applied, special statistical methods have been extensively developed to analyze such characters. The central concept here is "heritability." This represents what fraction of observed variability comes from segregation of genes rather than from difference of environmental causes. For both height and I.Q. in man, heritability is reported to be roughly 2/3. There are innumerable investigations on quantitative characters both in plants and animals. Polygenic characters usually lack dominant recessive relationships; offspring is intermediate between the two parents. However, if the two parents differ a great deal, the offspring is often nearer to the smaller parent. For example, in eggplant, if we cross two strains, one with a very big fruit and another with a very tiny fruit, F_1 (first generation) has a fruit whose size is not the arithmetic mean of both parents but is near to the geometric mean, so it is nearer to the smaller parent.

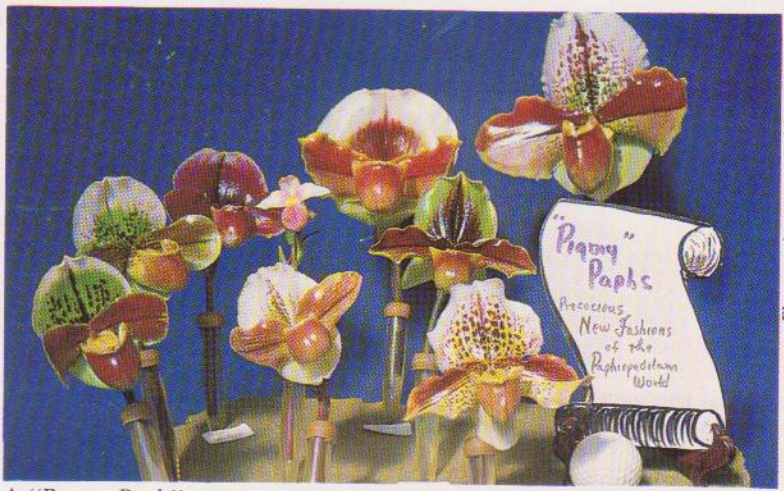
Although polygenes are concerned with the "normal" range of variation found within one population as well as the range of difference between different species, accumulation of "minus" genes by selective breeding can produce "pygmy" individuals.

3. **Chromosomal:** Aneuploidy may cause retarded growth and weakness in development. However, we must keep in mind that the reverse is not necessarily true: small deviation (particularly addition of one or two) in chromosome constitution from regular ploidy often causes no apparent trouble in development. For example, the famous *Paph.* Christopher 'Grand Duke Nicholas' has a diploid chromosome number 27 (rather than the regular diploid number 26). There are cases in which among clones having the same aneuploid chromosome number, say 28, the plant size ranges from small to large. One of the most beautiful examples showing that a certain form of aneuploidy causes dwarfism comes from cytogenetical studies of wheat. *Triticum vulgare,* the common wheat (widely cultivated for producing bread) has 42 chromosomes, and it is a hexaploid whose chromosome constitution is designated by AABBDD, where A, B and D are chromosome sets (genomes) each consisting of 7 chromosomes. Experimentally, a plant can be produced which lacks one of the 7 pairs of chromosomes in D in **homozygous condition.** Such a plant has 40 chromosomes, and despite the fact that one homologous pair of chromosomes is entirely lost, it can grow to reach maturity. In fact 7 types (corresponding to 7 chromosomes in the D genome) of such plants (called "nullisomics") are known. They are all weak and not very fertile, with the height of about 2/3 of the normal plant. If one of the two lost chromosomes is added, then the resulting ("monosomic") plant restores vigor and is almost normal in appearance.

In the ordinary diploid species, nullisomics will die, but in wheat, a hexaploid, they can survive because the function of the lost chromosome is somehow compensated by the corresponding chromosomes in other genomes (A and B).

Addition of one chromosome (leading to "trisomics) is less damaging than the loss of one chromosome. In *Datura* (Jimson weed) with 12 haploid chromosomes, 12 trisomics have been found and each plant has a different morphology as exemplified by difference in the shape of seed pods.

If aneuploidy is the cause of dwarfism, such a plant will be useless for breeding healthy "pygmy" plants. Only when the cause is genic, namely, either monogenic or polygenic, can the plant be used as a breeder, and it should not matter very much whether the plant happens to be aneuploid or not, as long as it is a good grower and is fertile." — *National Institute of Genetics, Yata, 1,111 Misima, Sizuoka-Ken, 411, Japan.*



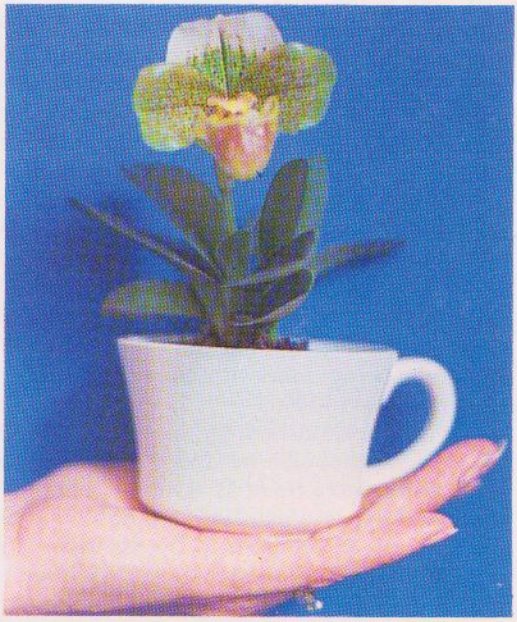
Photography courtesy of Frank Fordyce

A "Pygmy Paph" group — the top right-hand and middle flowers are standard-sized paphs. The remaining 6 paphs are "pygmy paphs," whose size can be realized by referring to the small *Phragmipedium* Sedenii in the upper left and the golf ball at lower right.

With respect to Dr. Kimura's article it would appear that the most logical plants useful for continuing a hybridizing program in this field are the polygenic types. It would appear that the majority of the pygmy paphiopedilums fall into the polygenic group. The majority of these hybrids are intermediate between their two parents and, through concentrated work and selective breeding, may produce the future pygmy population.

An example of this type of breeding is the smaller foliage and flowers of *Paphiopedilum spicerianum* crossed with a standard-size foliage and standard-flowered *Paph.* Crescent Meadows, producing offspring basically intermediate between the two parents. In observing a population one notes that the majority of plants favor the small foliage and flower of the *Paph. spicerianum* parent.

During the past year I have had the opportunity to observe a population of 25 seedlings each of over 150 crosses as they came into bloom. This program was instituted at the suggestion of Dr. Gustav A. Mehlquist as the only logical means of building a meaningful breeding program involving complex modern hybrids, in addition to known genetic traits. It is one of the only practical methods of noting dominant and recessive characteristics of specific parents in combination. During these observations certain genetic characteristics became very apparent. Among them were the apparent chromosomal variations within a specific block of



Paphiopedilum (Puddleham 'Doolittle', HCC/ODC X Burleigh Mohur 'Burnished Gold') contained in a coffee cup.

seedlings, and, because of obvious weakness of development and retarded growth, I would suspect aneuploidy to be the cause. Ironically two crosses that produced almost one half apparent aneuploids were those in which the very fine red *Paphiopedilum* Orchilla 'Chilton,' FCC/AOS combined with *Paph.* John Hanes and *Paph.* Bonheure.

While it is evident that *Paphiopedilum* Orchilla 'Chilton', FCC/AOS is without doubt one of the finest red clones ever to be shown, from all reports to date it has not worked well as a parent. This would lead me to suspect that as hybridizers we may have again let our reason be swayed by a "pretty face," neglecting sound genetic research.

Photography: Ralph Collins

Paphiopedilum Garibaldi 'John', AM/AOS. Notice the split ventral sepal on this delightfully small (7.8 cm horizontal measurement) flower.

It was noted that at least 50 of the 75 seedlings bloomed from the aforementioned two hybrids appeared to grow slowly, had substantially thicker foliage, shorter leaves, and produced sub-standard to pygmy-sized blooms. The blooms were, in most instances, borne on short stems and were of extremely heavy substance. A high percentage of the 50 seedlings had leaves that were noticeably corrugated and grooved. A notable number of these hybrids showed definite indications of dwarfism both in the foliage and flower.

To date very little progress has been made in the hybridizing of the small paphiopedilums. Little or no seed is the usual reward. Perhaps we have been pursuing the wrong set of guide lines. It appears that once again we must return to basics and through polygenic methods breed a continuous line of small-foliage and small-flowered hybrids. Of course there is always the possibility of the stray or lacking chromosome that may shorten our quest for small paphiopedilums. The work now being done with colchicine may open the door to many changes for the inquisitive hybridizer.

We have established the existence and reasons for the dwarf-growing, small-flowered paphiopedilums and must now endeavor to resolve whether or not there is value in pursuing them as a valid type. As a hybridizer, and one who has become fascinated by the small-flowered paphiopedilum group, I felt that any information at hand should be aired to the hobbyist, hybridizers, and reviewed by qualified judges to ascertain whether or not we should recognize them as a valid type and to establish classification for them amongst the judging organizations. With this in mind I am bringing this to your attention and copies will be submitted to the chairman of the Awards Committee for review and possible consideration.

What are the possible beneficial reasons for pursuing a small-flowered, dwarf plant hybridizing program? Certainly, as Dr. Stirling observed, they would be distinctive for 'Milady' to wear without ostentation. They would certainly be considered space savers in our greenhouses, pleasing to the eye and excellent pot plants. They could be a key to the possible extension of our normal breeding seasons. On the other hand, the smaller blooms might not be as saleable as cut flowers. Hybridizing is recognized to be very difficult. Many will have small blooms but unfortunately they may possess standard-size foliage. Many growers will endeavor to identify specific clones as small-growing and small-flowering too quickly and may find that, upon the plant's maturity, blooms are not as small as first thought. There is also the danger of identifying clones as pygmy types much too rapidly when they bloom on poorly grown plants and possess dwarf habit simply because they have been poorly grown.

Having studied a significant group of potential pygmy paphiopedilums, I have found that certain qualifications are needed to identify specific clones as pygmies. They must possess a reasonably vigorous growth habit even though dwarfed in size. Their floral stems must present the blooms either in an aesthetic manner or directly in proportion to the size of the foliage. It would seem reasonable to expect a correlation between foliage size and bloom size. (I believe this is one of the major factors that will determine whether a specific clone fits within the pygmy classification). As a step towards clarification, a study of any existing methods used in other floral crops to determine miniaturization should be pursued. There must be consistent miniaturization of both blooms and foliage. Plants must have regular blooming habits and attractive foliage. Blooms must have a reasonable lasting quality, pleasing color, and most importantly, the form of the blooms should be judged directly in relationship to the parentage.

• As an example it would not seem likely that a direct *Paphiopedilum fairieanum* hybrid would possess the same round form of a *Paph. godefroyae* hybrid, or a *Paph. exul* hybrid the form of *Paph.* Dalla progeny. As they have in miniature cym-

bidiums, type and breeding will continue to dictate judging guidelines but within the framework of recognized pygmy paphiopedilums.

I must again point out to potential breeders of pygmy types that they must not be hasty in identifying specific clones. Far too frequently I have set aside first-bloomed seedlings as possessing either small flowers or small foliage habit and, much to my chagrin, upon subsequent bloomings, the plants produced standard-size blooms or matured into full-grown, standard types.

As we consider possible useful parents in a pygmy breeding program we are immediately attracted to certain species that already possess these traits: *Paphiopedilum delenatii, Paphiopedilum godefroyae, Paphiopedilum concolor, Paphiopedilum charlesworthii, Paphiopedilum fairieanum* and *Paphiopedilum spicerianum* all possess at least a portion of the necessary traits. Certainly there are others but to date these are the most important species that have been noted.

During my study of the pygmy hybrids I have noted that *Paphiopedilum spicerianum* is by far one of the major influences in retaining small-size blooms and foliage throughout the polygenic pursuit of hybridization. Another popular species used generously is *Paph. fairieanum*. However, it must be noted that hybridizing care must be taken with both of these species to prevent the foliage of their hybrids from being out of proportion to the small-type blooms.

Included here is a partial listing of registered hybrids that possess either dwarf foliage, small flowers or a combination of both, for the possibility of inclusion in a pygmy paph program. Inclusion in this list does not indicate that the entire population of the specific hybrid met these qualifications, but individual clones do exist that could meet a portion of any proposed standards.

The following lists of paphiopedilums are familiar clones to the writer and are submitted as a basic guide to pygmy paph hybridizing.

List **A** incorporates pygmy clones that possess both dwarf foliage and small flowers.

List **B** indexes plants that have "smaller than average" foliage with small flowers.

List **C** incorporates plants that have both "smaller than average" foliage and flowers (when compared to standard well-known hybrids).

List **D** outlines hybrids researched that are claimed to have produced smaller type plants and flowers.

LIST A

Baldet 'Atlas' (Garibaldi 'John', AM/AOS X Margaret)
charlesworthii
concolor
Cashmere 'Jungle Mist' (Brownly 'Peking Gold' X Haroun)
delenatii, AM/AOS
Dawn Fairy (Rosy Dawn, AM/RHS X *fairieanum*)
Garibaldi 'John', AM/AOS
Gurkley 'Yellow Green' (Mrs. Eley X The Gurka) X self
Gurkley 'Eleyka'
godefroyae
(Harbur 'Comet' X Huntava 'Woodlands')
niveum 'Sweet Sue'
(Omar 'Rounder' X Cinderella 'Prince Charming) 'Pink Wings'
(Omar 'Rounder' X Cinderella 'Prince Charming) 'Frosty'
(*niveum* X *charlesworthii*)
purpuratum
Primative '1st Child' (Papyrus 'Model' X *barbatum* 'Jung')
Primative 'Munchen' (Papyrus 'Model' X *barbatum* 'Jung')
Plumly 'Aperitif' (Bonheure 'Happiness' X Orchilla 'Chilton')
Rusty Rinaman 'Perky Pixie' (John Dovan 'Alison' X Ravenswater 'Monica')
spicerianum 'Tiny'

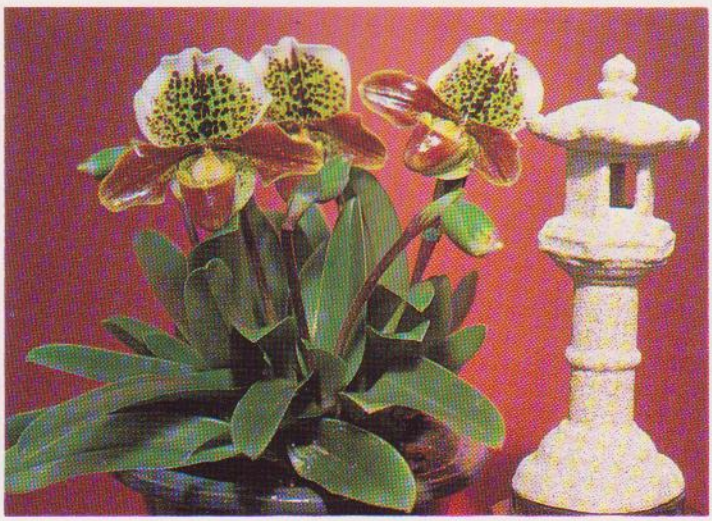
LEFT, **Paph. Garibaldi 'John'**, AM/AOS; CENTER, standard bloom of *Paph.* (Gwenpur 'Symmetry' X Kay Rinaman 'Los Osos', AM/AOS); RIGHT, pygmy *Paph.* Plumly (Bonheure X Orchilla).

Twinkle (*fairieanum* X *appletonianum*)
The Hunt 'Pygmy' (Theresa X Huntava)
Venus (*insigne* X *niveum*)
William Stirling (Juliet X Lucifer, FCC/RHS)
Winters Imp 'Little One' (Cyclops 'Superbum' X Garibaldi)

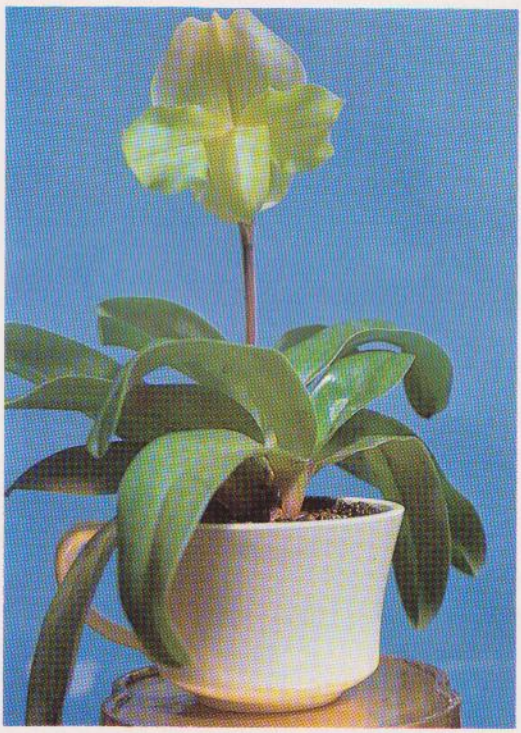
LIST B

(Aureum X Etta)
Albion (Astarte X *niveum*)
Ansun 'Sweet Pea' (Anita X Sunbeam)
Boltonii, FCC/RHS (??)
(Balbus X Trojan)
Besnow (Yerba Buena #3 X *niveum* 'Snowdrift')
Ballet Girl (undoubtedly a Leeanum hybrid)

Paphiopedilum The Hunt 'Pygmy'



Cog (Garibaldi X Gurkley)
fairieanum 'Graceful,' AM/AOS
F. C. Puddle, FCC/RHS (Actaeus X Astarte)
exul
Gigi 'Pixie' (Sheba X Momag)
(Gigi 'Sparkle' X Nightshade 'Broadway') 'Sunset'
Goldtip (Harbur X Santa Margarita)
(Garibaldi 'John', AM/AOS X Bordube)
Greensuds 'Betty James' (Susan Tucker X F. C. Puddle)
(Haroun X Sundown)
(Harbur 'Comet' X Gigi 'Sparkle')
Leyburnense (*charlesworthii* X T. B. Haywood)
Lewoyo 'Brown Elf' (Noyo X Lewis Crampton)
(Lord Wolmer X Garibaldi) 'Tyke'
(Mooreheart X Garibaldi) 'Cocoa Green'
(Mem. Percy Bannerman X Rubeola)



Paphiopedilum Meadow Sprite 'Mini-Sun',
exhibited in a coffee cup.

Meadow Sprite 'Golden Discovery' (*concolor* 'Gold Dust' X Van Ness 'Yellow Doll')
Meadow Sprite 'Mini Sun' (*concolor* 'Gold Dust' X Van Ness 'Yellow Doll')
Meadow Sprite 'Right Light' (*concolor* 'Gold Dust' X Van Ness 'Yellow Doll')
Oro Blanco 'Dainty Lady' (*insigne* X F. C. Puddle, FCC/RHS)
Rubeola 'Pink Pop' (Mme. Albert Fevrier X F. C. Puddle, FCC/RHS)
Rachel 'Desire' (*curtisii* X *charlesworthii*)
spicerianum 'Bostocks'
(*spicerianum* 'Bostocks' X Crescent Meadows 'Snow Top')
Ukiah 'The Elf' (Balafine X Haroun)
venustum
Woodfordense (*charlesworthii* X Cymatodes 'Beechense')
Winters Imp (Cyclops 'Superbum' X Garibaldi 'Little One')
Yerba Buena 'Mini' (Sanacderae X Diversion)

LIST C

barbatum 'Jungs'
Bruno 'Model' (Leeanum X *spicerianum*)
Christopher (Actaeus X Leeanum)
Chapmaniae (Calypso X *fairieanum*)
Canina (Cardinal Mercier X Luna)
Corsair 'Westonbirt' (Niobe X Nitens)
Decameron (Garibaldi X Muriel II)
Dalla (Luna X The Gurka)
Fairhunter (Mildred Hunter 'Ileana' X *fairieanum*)
Gerda 'Magnificum' (Garibaldi X Swallow)
Haroun (Lawrence of Arabia X Lucarola)
Harbur (Burleigh Mohur X Haroun)
Lemanii Ducis (Alcibiades X Curtmanii)
Lord Wolmer 'Westonbirt' (Hera X Leeanum)
Lady Clunas (*delenatii* X Gertrude West)
Minotaur (Hera X Nitens-Leeanum)
Noyo (Paterglen X Haroun)
Papyrus 'Model' (*charlesworthii* X Earl of Tankerville)
The Gurka (*spicerianum* X Bruno 'Model')

LIST D

Aureum (Nitens X *spicerianum*)
Aurobe (Aureum X Niobe)
Aberdonian (Lord Wolmer X Lucifer)
Calpyso (*boxalli* X *spicerianum*)
Columbine (Ballet Girl X Leeanum)
Eos (*charlesworthii* X *niveum*)
Eurybiades (Alcibiades X Hera)
Glowworm (Crusader, FCC/RHS X Nesta 'Westonbirt')
Lucifer (Hera X Niobe)
Leeanum (*insigne* X *spicerianum*)
Niobe (*fairieanum* X *spicerianum*)
Nesta II (Eurybiades X Lord Wolmer)
Regina (*fairieanum* X Leeanum)
Swallow (Satyr X Swallowtail)
Swallowtail (*fairieanum* X M. de Curte)
The God Pan (Lord Wolmer X Satyr)
Thumbelisa (Luna X Warrior)
Roundhead 'Superbum' (Earl of Tankerville X Nitens)

Upon detailed study of *Sander's List of Orchid Hybrids* Table I, it becomes quite apparent that early hybridizers, by necessity, used many of the smaller-flowered types of paphiopedilums in their hybridizing efforts. As time progressed so did the popularity of the larger blooms. Today it appears that in order to capture an award on a standard type hybrid the bloom must have a natural spread of 10-14 cm (4-5½ inches) with a natural leaf span of 30.5 to 61 cm (12-24 inches). From personal experience I have found that the majority of clones that might qualify for the pygmy classification have blooms with a natural spread of 6.5 to 7.5 cm (2½-3 inches) and a natural leaf span from leaf tip across to opposite leaf tip of 20.5 to 25.5 cm (8-10 inches).

It is also interesting to note that in Tanaka and Kamemoto's *Tabulation of Chromosome Numbers of Orchids,* we find that a number of the species are, as we would suspect, diploids with chromosome counts of 26: *Paphiopedilum niveum, Paph. bellatulum, Paph. charlesworthii, Paph. concolor* and *Paph. fairieanum.* However, there are some interesting variations from this, notably *Paph. spicerianum* with a count of 30 chromosomes and hybrids such as *Paph.* Ballet Girl, 28, *Paph.* Leeanum 'Clinkaberryanum', 28, *Paph.* Albion, 39, *Paph.* Bruno, 29, *Paph.* Christopher 'Grand Duke Nicholas', 27, and *Paph.* Niobe-Leeanum, 39.

Certainly the popular opinion is that the miniature-flowered, dwarf-growing paphiopedilum, our pygmy paphs, are indeed a delight. It has been my endeavor to focus your attention upon their potential with the hope that you too will find a tiny niche for what a growing number of people find delightfully enchanting. — *Rod McLellan Company, 1450 El Camino Real, So. South Francisco, California 94080.*

AMERICAN ORCHID SOCIETY, INC.

Notice of Annual Meeting of Members

THE ANNUAL MEETING of Members of the American Orchid Society, Inc. will be held on Friday, October 15, 1976, at the Ala Moana Hotel, Honolulu, Hawaii, at 2:00 o'clock p.m., for the purposes of electing Officers and Trustees pursuant to the Bylaws, and for such other business as may properly come before the meeting.

This meeting is being held in conjunction with the 21st Western Orchid Congress, the Honolulu Orchid Society Show and the Fall Meeting of the Trustees of the American Orchid Society. A full and interesting schedule of activities is planned; all members of the American Orchid Society and its Affiliated Societies are cordially invited to attend. — *Respectfully submitted,* O. WESLEY DAVIDSON, *Secretary.*

CHANGES OF BYLAWS

So that it might more adequately reflect his duties, the Trustees recommend that wherever the title "Executive Secretary" occurs in Articles II, V and VI, it be changed to read "Executive Director."

To assure regional rotation of the Committee on Awards, the Trustees recommend that the last sentence in Article VIII be expanded so that it should now read, "The terms of office of the chairmen of all committees, unless provided otherwise, shall not exceed five successive years, except that in the case of the Committee on Awards the limitation applies to the Judging Region as well as to the Chairman."

REPORT OF THE NOMINATING COMMITTEE

The Nominating Committee respectfully submits the following nominations for Officers and Trustees, to be voted upon at the Annual Meeting of Members of the American Orchid Society, Inc., on October 15, 1976:

		Trustees for three-year terms ending 1979
President	Raymond McCullough	Emerson W. Charles
Executive Vice-President	William E. Farrell	Mrs. Howard W. King
Vice-President	Joe T. Meador	Mrs. John A. McNulty
Vice-President	James M. McWilliams	David J. Nax
Secretary	Dr. O. Wesley Davidson	Dr. J. Woodson Phillips
Treasurer	Paul B. Moore	J. Milton Warne

— *Respectfully submitted,* BRUCE B. MOREHEAD, *Chairman;* DR. ROBERT E. LIDDELL, *Vice-Chairman,* DR. LYLE D. ELLIOTT, MASATOSHI MIYAMOTO, MRS. WILLIAM M. O'NEILL, MAURICE E. POWERS and DR. LAWRENCE L. VANCE.

Dates for Your Orchid Calendar

July 30-August 1 — Orchid Society of Windward Oahu Show, 30th Annual Windward Fair, Castle Memorial High School, Kaneohe, Hawaii.

August 6-8 — 14th Annual Platinum Coast Orchid Society Summer Show, Merritt Square Shopping Mall, Merritt Island, Florida.

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