South Florida Orchid Society's

Orchid Evaluation Course

CATTLEYA • VANDA • DENDROBIUM • PHALAENOPSIS

GOLD MEDAL
•
SILVER MEDAL
•
CERTIFICATE OF
CULTURAL ACHIEVEMENT
•
CERTIFICATE OF
BOTANICAL EXCELLENCE

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C O N T E N T S

Appendix

President's Message

The quest for an improved understanding of principal species characteristics and their breeding influences has been an untiring one, particularly among those who are judges or who aspire to judgeships. This book embodies a compilation of necessarily detailed information concerning major orchid genera grown in this area--facts and accumulated data presented in the late 1950's by members of the South Florida Orchid Society's esteemed Awards Committee to interested orchidists, as well as accredited South Florida and American Orchid Society judges. The course content, together with previously acquired knowledge, established for the students a basis for the evolution of current standards.

The Society is making this information available to all orchidists for the first time. While a few of the opinions expressed by the authors would require modification in light of the experiences recorded since the original presentation, most remain valid.

The retyping of textual material has been accomplished by Mr. and Mrs. Lewis C. Vaughn, while charts and tables were reset through the courtesy of Mr. and Mrs. Joseph Martinez. The Officers, Trustees, and members are grateful for the unselfish efforts of these people, as well as those of the authors. The fruits of their labors can be earned by those who will accept the challenges tendered; this can only be a beginning.

Robert M. Scully, Jr.

January, 1974

CHAIRMAN'S REPORT

A visitor to one of today's extensive orchid ranges or to a major orchid show finds it difficult to believe that all the variety of color, size, and form of blossoms meeting his eye has evolved from the imported species bid upon so feverishly by orchid enthusiasts at the famous English plant auctions conducted little more than a century ago. At that time, and for years to come, devising ways to cultivate these aerial newcomers successfully was sufficient to tax the grower's ingenuity. An extra fillip of excitement was added whenever word arrived of the importation of a new species. Keen competition ensued as wealthy collectors bid for possession of a fine variety - promptly recognized by the Royal Horticultural Society with an A. M. or F. C. C.

Tentative experimentation with hybridization began and, as the vast range of possibilities was glimpsed, the "ascendancy of the hybrid" got under way. Interest in species declined, the desire to grow magnificent specimens was, regrettably, to a great degree superseded by burgeoning interest in man's modifications of Nature's creations.

The fascination of creating hybrids for the sheer novelty of doing so soon passed, but it had become quite apparent that, as hybridization inevitably continued, flowers of certain clones would be possessed of characteristics making them outstanding among their fellows, just as a certain number of species merited recognition. It would, then, be the continuing function of experienced, trained judges to indicate exceptional plants by means of appropriate awards. It would also logically follow that many growers would become interested in acquiring such plants and that many would wish to understand the principles by which they are chosen. Thus the stage was set for the present period of intense interest in the entire system of awards - plants, personnel, and methods.

It was to be expected that, in an organization as large as the South Florida Orchid Society, there would be considerable interest in this phase of activity, as was evidenced by the organization of an Awards Committee in 1949, the original functions of which were to train members in the principles of judging and to provide local judging of specimen plants and flowers at the Society's meetings. As time passed and interest in awards moved toward a peak, it seemed desirable that the Committee expand its activities into the instructional field, offering to all members of the Society an opportunity to learn the basic principles by which orchids may be evaluated as to quality of flower.

This course of action was determined upon immediately after the writer became chairman of the S.F.O.S. Awards Committee and work was begun upon a totally unexplored approach to a problem of increasing complexity. One of the Committee's fifteen members had had wide experience in the educational field so much of the pedagogical aspect of the work devolved upon her. Another member was accustomed to lecturing to adult students - all others were without experience in the instructional field. Nonetheless, everyone

turned to with a will and, from beginning to end, no chairman could have asked for, or received, more complete and effective cooperation.

There was general agreement that the study course to be presented by the Committee should refer to orchid "evaluation" rather than judging to prevent misinterpretation of purpose and that it should be, in every respect, of an introductory nature, readily understandable. An outline of the projected course was submitted to the group and adopted. Each committee member-instructor was to prepare his own material following the general requirements of the outline, this being basically concerned with a study of the influence of species upon the hybrids with which we are familiar. Major emphasis was to be upon the selection of the "good orchid" within the reference of what might be expected from its background of breeding.

Forty-five members of the Society elected to take the course. Of these, nine were commercial growers. One had just entered this field, another had six years experience, the others ten years and more. Nine of the amateurs had grown orchids for five years or less. The largest segment had between seven and ten years experience.

Three amateurs had fewer than 100 plants, the majority owning between 200 and 350. It may be well to mention that in south Florida's favorable climate, the latter are moderate sized collections, not especially large ones, as they might be considered in more northerly latitudes.

It was interesting to note that all but four of the registrants were members of the American Orchid Society and that two of the non-members read the A.O.S. Bulletin regularly. Commercial members subscribed to the greater number of orchid periodicals. After the A.O.S. Bulletin and "The Florida Orchidist," the Hawaiian and Malayan publications appeared most frequently on their lists of regular reading. Climatic similarities explain this preference. Few of the amateurs read orchid periodicals other than the "Orchidist" and the A.O.S. Bulletin.

Two hours of intensive work were presented at each of the eight weekly sessions - so intensive, in fact, that instructors were constantly surprised by the continuing interest of those with limited experience in orchid growing. Obviously, lectures of such length would be wearing upon both speaker and listener so full advantage was taken of visual aids - slides, charts, maps, photographs, lists, outlines, plant material - indeed, everything the ingenuity of the instructor could devise. At the conclusion of each session, the instructor scheduled for the following week assigned outside reading to provide background for his topic. There was, unfortunately, not enough reference material available to give everyone an opportunity to read the entire assignment but a sufficient number of books and periodicals could be found to enable everyone to cover part of the references. Frequent brief, written quizzes enabled participants to determine whether they were making and using notes effectively and were helpful to instructors in evaluating their methods. In all, 640 hours of class work were accomplished by those enrolled, absences amounting to only 80 hours. More than half the class had a perfect attendance record in spite of the fact that all were very busy people.

At the course's conclusion, each participant was asked to express his estimate of content and method. As with all new approaches to a complex problem, there must be much evaluation and revision before a satisfactory outcome can be achieved. Suggestions were constructive and helpful. Committee members were gratified that all participants agreed that the course had achieved its most important objectives. That it had, indeed, served to:

1. Indicate the vastness of the field.
2. Indicate that both a considerable amount of information and experience are necessary before flowers can be competently evaluated.
3. Indicate and, in small measure, give a firm basis for evaluation of flowers through knowledge of the plant's genetic background.
4. Promote interest in further reading and study.

Some of the premises upon which we based our approach had become convictions by the time that our work was finished. One of these is that study courses on a variety of topics are among the most constructive projects that may be undertaken by an orchid society. We are also convinced that the present interest in all phases of the system of awards makes it desirable that factual information be disseminated to those interested, that courses concerned with this system should require effort on the part of the student and should be basic in approach. Many persons are quite honestly unaware that proper judging involves more than a superficial acquaintance with the better modern hybrids.

When the project was first conceived, follow-up courses were envisioned, each concerned with one or a related group of the major genera. Instruction was also contemplated in the fields of cultural achievement and botanical merit. These courses could be prepared and administered with much greater facility, profiting from the first experience.

Papers making up this volume were submitted by the instructors whose names appear. They were not read before the class but written later from notes used by the speakers in preparing their lectures.

A report such as this is primarily useful as reference material for those who participated in the work. It cannot give the casual reader the actual flavor of the course - the colorful slides, the explanations of dry-looking factual material, the interpolations and side-commentaries that the texts do reproduce, above all, the personal rapport between speaker and listener, the friendly atmosphere of studying together a topic of such absorbing interest that personal sacrifices are made in order that learning may proceed.

These comments should not be concluded without a heartfelt word of thanks to those who made the project possible. Our moderator, F. J. Routon, and our secretary, Mary Lott, were present and "on the job" at every session. The unnumbered hours of preparation and the able presentations of Awards Committee member-instructors Tom Fennell, Jr., Roy Fields, Del Flynn, Jack Kasper, Norman Merkel, Dan Reed, Robert Scully, Jack Songer, Hayden Sparks, Varina Vaughn, George Wakasugi, and Bob Wilson, earned the appreciation of partici-

pants in the course and of the Society as a whole - to say nothing of that of a grateful chairman! And without the patience and cooperation of the hard-working students this report on the pilot course in orchid evaluation could never have been written.

Lewis C. Vaughn
Chairman, Awards Committee
South Florida Orchid Society
Miami, Florida

February 25, 1960

GREETINGS BY THE COORDINATOR F. J. Routon

Good evening, ladies and gentlemen. Welcome to the first session of this course in Orchid Evaluation.

This series of lectures has been prepared and will be presented by the Awards Committee of the South Florida Orchid Society of Miami, Florida, with the approval of the Board of Directors. Much credit should go to Mr. L. C. Vaughn, Chairman of the Awards Committee, who has been the untiring mainspring in making this effort possible.

The course will be introductory to the large and complex subject which it concerns. Eight instruction periods of two hours each are scheduled with a ninth period for optional examination. The overall method of presentation will be study of the qualities of the species of orchids that have been most frequently used in breeding and evaluation of hybrids, with reference to "what makes a good orchid flower" in view of its inherited characteristics. Genera to be considered in the course are Cattleya, Vanda, Dendrobium and Phalaenopsis. Coverage of these subjects must be general rather than in minute detail. Instruction will be by lecture, pictures, demonstration, practice and study assignments. Instructors are well qualified in their fields and are working hard to make this a worthwhile undertaking.

We are sure that you understand that this is not an attempt to make flower judges of those who take the course. It would be impossible to present enough information in the short period of these sessions. We shall try to suggest books and other literature which you may use to continue your studies and hope that you will find this subject as absorbing and rewarding as have the members of the Awards Committee.

Members S.F.O.S. Awards Committee 1959 - 1960

T. A. Fennell, Jr.	F. J. Routon
Roy K. Fields	Robert M. Scully
Del Flynn	N. N. "Jack" Songer
Jack Kasper	Hayden Sparks
Mary Lott	Varina W. Vaughn
Norman B. Merkel	George Wakasugi
Dan Reed	Robert C. Wilson

Lewis C. Vaughn, Chairman

INTRODUCTION TO COURSE

Norman B. Merkel

Intensified interest in orchid growing and orchid judging has been the incentive which has brought about the presentation of this course which must, of necessity, be very basic and limited in scope. The subject matter involved is obviously tremendous.

Those who will present this course do so in the spirit of this quotation from "The Prophet" by Kahil Gebran: "A teacher gives not of his wisdom but rather of his faith and his lovingness. If he is indeed wise, he does not bid you enter the house of his wisdom but rather leads you to the threshold of your own mind." Those whose efforts will produce this course are not trained in the art of teaching. Therefore, they will share with you their experiences and endeavor to lead your studies in the development of your own knowledge. The members of the Awards Committee of the South Florida Orchid Society are giving freely of their time and effort that this course may be available. No claim is made that their knowledge is complete. They only hope to aid you on your way, to point out that learning in this field is a daily experience and never ceases as long as you remain interested.

The course is presented, intentionally, as a study of orchid flower evaluation, not as a preface to accreditation as a judge with authority to pass judgment upon the plants of others. However, to evaluate properly quality in orchids, it is necessary that many aspects of judging be introduced.

Criteria for Judging

Recognized qualities of excellence are based upon American Orchid Society standards. These will be found in the "Handbook of Judging and Exhibition", available from A.O.S. headquarters. Possession of a copy is recommended.

For the benefit of those not in possession of a Handbook, we quote from it as follows:

> "There are two different ways of judging orchids and orchid exhibits; in one, the entries in a show compete against each other for first, second, and third place or prize in each class; in the other, exhibits are not compared against one another, but are independently evaluated against an ideal in the mind of each judge. The former is show judging. The latter is award judging."

Qualifications for A.O.S. Judges

Such qualities as are listed are basic qualities of a good judge.

A. Knowledge

1. A judge must have a thorough knowledge of the species and hybrids of those genera most commonly grown.
2. A judge must have a general knowledge of the species and hybrids of the lesser known genera.
3. A judge must have understanding of the potential limits of the species involved in hybridization, of the achievement of the breeder, and of the effects of polyploidy.
4. A judge must have knowledge of aesthetics, particularly composition, in reference to the evaluation of group exhibits.

B. Ability

1. A judge must be able to organize the above knowledge quickly and effectively.
2. A judge must be able to organize his knowledge objectively, recognizing his own personal preferences and prejudices, and must not allow them to influence him unduly.
3. A judge must be able, in the presence of other judges, to formulate his own opinion independently of the other judges.
4. A judge must, conversely, be able to recognize merits of the opinion of the other judges.
5. A judge should have no abnormality in color perception.

In addition to the above, it is obvious that a judge, while judging, must conduct himself in a manner that will never bring his integrity into question.

ORCHID JUDGING THROUGH THE YEARS

Robert M. Scully

Information concerning orchid flower judging is limited but what is available can be found mainly in the publications of the Royal Horticultural Society and the American Orchid Society - the ORCHID REVIEW and the AMERICAN ORCHID SOCIETY BULLETIN, respectively. (There are serveral other sources of information which I will mention as we proceed.) Much of the information which I have to present to you has been obtained by word of mouth from people in the orchid industry. Much of the history of orchid judging has never been written, but one can gather facts from the writing of orchid growers, their comments and criticisms, as they appeared from time to time. Early history is difficult to obtain because the history makers have no idea of the interest that will develop in a given field in years to come. This is certainly true of orchid judging. It is interesting to note, however, that we are celebrating the one hundredth anniversary of R.H.S. Orchid Judging this year, and only a year ago, we celebrated the one hundredth anniversary of the first orchid hybrid, so you can see that judging followed pretty closely with the interest in hybridization.

Orchid flower judging was begun in 1859 by the Royal Horticultural Society's Floral Committee. In these early days the same judging committee judged all flowers. In later years, some of the more specialized crops had separate judging committees specializing in the field, and this was the case with orchids.

Dominey is said to have commenced his hybridizing operations in 1853 with the genus Cattleya and six years later the first flowers appeared. In August of 1859, five seedling plants were exhibited at a meeting of the Royal Horticultural Society by Mr. Veitch, which were noted as extremely interesting and as affording first examples of well-marked and really showy forms of orchids produced by hybridization. They were ultimately named Cattleya Hybrida, but it is unfortunate that Dominey did not carry out Dean Herbert's instructions to keep accurate records, for the parentage of his Cattleya was given first as C. granulosa x C. Harrisoniana, then as C. granulosa x C. Leopoldi, and finally, as C. guttata x C. intermedia. C. guttata x C. Loddigesi are now accepted as the correct parents, but this is the first award given to an orchid by the Royal Horticultural Society. In November 1859, a second Cattleya was exhibited. This was C. Dominiana obtained from crossing C. maxima x C. intermedia. As I mentioned earlier, orchid judging got its start with the appearance of hybrids and the interest in hybridization.

You may be interested to know that the first Vanda to receive an award was Vanda Denisoniana which received an F.C.C. and was given to Veitch in 1869. It was not until 1897 that Lawrence received an F.C.C. for Vanda Miss Joaquim, the second Vanda award given by the Royal Horticultural Society. Vandas have become quite common with us now, but in those days they were rare. Of course, the Vanda Miss Joaquim, being a hybrid, did not make an appearance until a much later date than the species which received the first Vanda award.

It must be remembered that in the early days, orchids in Europe were not plentiful but demand was steadily increasing, which prompted growers and commercial houses to send collectors to all parts of the world in search of new

species. Many of these were sold at exceedingly high prices and as a result only the wealthy class was able to purchase the plants.

In order to give you a clear picture of the English and American systems of judging orchids, I will try to describe both in some detail.

The Orchid Committee of the Royal Horticultural Society functioned under the Royal Horticultural Society, and that committee was appointed annually by the governing body. It usually consisted of eighteen or twenty of the leading authorities of the day. Names of members of the committee are published in the ORCHID REVIEW each year, and it is interesting to note that at that time those serving on the committee varied little from year to year. The first Orchid Committee of the R.H.S. was appointed on March 26, 1889. The first Chairman was Sir Harry J. Veitch; he was succeeded by Mr. Fowler in 1905. Sir Jeremiah Colman was elected Chairman in 1917, and in June 1942, Guerney Wilson took the chairmanship. So, in sixty-two years, there have been only four chairmen! The English valued experience highly - just as most orchid judges do today.

To have an orchid plant judged by the Royal Horticultural Society, there is a stipulated system which one follows. Upon arriving at the judging place, one puts his plant on the table, then, at a given time, the judges assemble. A clerk then passes the plant around among the judges so that each may view it. After each judge has seen the plant, the chairman of the judges asks if there is a vote. If there is a vote, one of the judges rises to propose that the plant in question be given such and such an award. To receive the proposed award this plant must receive a required number of votes of the individual members of the committee, and a stipulated number of votes is required for each award; i.e., a First Class Certificate requires at least three times as many votes in favor as votes against it, and an Award of Merit requires at least twice as many votes in favor as votes against it. This system of granting awards is rather peculiar, but this pattern has been followed for years.

First Class Certificates and Awards of Merit are the two awards which we associate mostly with flower judging, but there are many others. Following are some of the ones which the Royal Horticultural Society gives, as stated in the ORCHID REVIEW of September 1911:

The Certificate of Appreciation is given to those whose work is attended with horticultural scientific interest, or to those whose work may reasonably be expected to assist in the improvement of a strain or in creating a new break.

Culture Commendation is given to growers whose exhibit shows evidence of great cultural skill. As with the Certificate of Appreciation, Culture Commendation is not given to plants, but to individuals in recognition of personal application and skill.

Medal Awards varied from time to time and I do not believe it is worth the time here to go into them in detail because they are so numerous. However, you may be interested in looking at the ones pictured in the ORCHID WORLD for 1910-11; throughout the old publications, many of these medals are pictured. Medals are given by individuals and usually, although not always, carry the name of the donor. A gold medal pictured in the ORCHID WORLD for 1910-11 was first struck by the Society in 1811, so you see, the matter of medals goes back

quite some time. Then there is the Banksey Medal struck in 1920, the Floral Medal in 1836, and the Lindley Medal in 1866. This will just give you some idea of the number of awards that were given by the Orchid Committee of the Royal Horticultural Society.

As mentioned earlier, I cannot give you much information on orchid reference books, and I believe that the only book that most of you would have available is the AMERICAN ORCHID SOCIETY BULLETIN. In Volume 20, page 64, there is an article by Rodney Wilcox Jones, former President of the American Orchid Society, who goes into considerable detail concerning the Royal Horticultural Society's method of judging for orchid awards. I think you would all find this interesting reading.

There is another phase of Royal Horticultural Society judging which I think is worthy of comment: when a plant receives an award from the R.H.S. there is a stipulation that the plant must be presented to their artist so that a painting can be made. (Miss Nellie Roberts has been responsible for doing over 5,000 paintings, as I recall.) These paintings are used as a matter of record so that if another plant of the same variety is brought at a later time for judging, the judges compare the flower to be judged with the painting of the flower which was given an award previously. Since not everyone sees a flower the same way, this method of comparison of flowers for judging has been criticized. It seems that it is the nature of artists to paint orchids the way they should be rather than the way they actually are. Photographs are considerably more reliable, providing the photographer knows how to photograph orchid flowers correctly. There are faults with both types of picture recording, and in the case of color photographs, over a period of years the color may fade. In this country, the cost of paintings of flowers would be prohibitive, although I was advised by Mr. Lowe a few years ago when I requested a duplicate painting of the flower of a plant which I purchased there, that Miss Roberts charged a pound (a mere $2.80) for such a water color. I was also advised that because of Miss Robert's increasing years and her retirement from the R.H.S. that she was really not interested in doing the water colors any longer; incidentally, I never did get the painting. I believe that Miss Roberts has passed away since that time and that the R.H.S. now has another artist who is painting for them.

Although I tried to learn about the awards of the Manchester Orchid Society, I had little success. The Manchester Orchid Society passed a resolution in 1898 to the effect that the Gold and Silver Medals of the Society would be awarded at the end of the Society's year to members who had gained the greatest number of points for exhibits at the meetings of the Society during the year, such points to be calculated according to the following scale: Anyone who received a medal was given 10 points; an F.C.C. was 4 points, an A.M. 2 points; and a Botanical Certificate 1 point; a Cultural Certificate 1 point, and a Vote of Thanks from 1 to 6 points. However, I do not know how they arrived at these totals, whether it was a decision of the judges as to how many points each vote was to count or not, but it would seem that this must have been the case. Although I was not aware of this system of the Manchester Orchid Society at the time the practice was instigated in our local Society; the South Florida Orchid Society has been following along the same lines for a number of years now with an annual award of trophies and the like based on points accumulated by individuals during the year for the awards their plants have received from the S.F.O.S.

The problem of being too generous with awards has bothered me for a number of years, so it was of great interest to me to learn from a comment in Volume 5 of the ORCHID REVIEW FOR 1897 that...

"The Council again express their opinion that there still appears to be a tendency to multiply unduly the awards recommended, and they earnestly request the several committees to consider seriously whether there is not a real danger of impairing the value of these distinctions by such increase in their number; and whether it would not be possible, as well as politic, to be somewhat less generous in the recommendation of awards during the ensuing year." They also announced that, at the unanimous request "of the Orchid Committee, and on certain members of it undertaking to pay a third of the expense, the Council has arranged to have paintings made of all the flowers certified by this Committee. The Orchid Committee...desires to have these paintings as an accurate record of the characters and peculiarities of the plants to which awards are made, finding it practically impossible for their members to bear in mind the details of numerous flowers often seen but once." It is interesting to note that these paintings were started in 1897 by the R.H.S., at which time there were not what we would consider many awards. Even so, the Royal Horticultural Society was much concerned about awards becoming too numerous and of defeating the purpose of giving awards at all by having the finest things lost in the shuffle. One of the most important things the student in this Evaluation Class should remember is that unless awards are made on a truly selective basis they mean nothing and are not worth claiming. When you realize that judges should be giving awards to plants which are outstanding for qualities which may appear once in a thousand or ten thousand plants, depending upon the number of plants grown of that particular hybrid, it is easy to understand how an award that is 'given', not 'earned' will soom come to mean nothing.

In this same issue of the ORCHID REVIEW, "Mr. Dean goes on to define the Award of Merit as a recognition of good average merit in the plant to which it is given and nothing more; consequently, nothing to boast of. He also remarks that it is no doubt often good-naturedly bestowed because it pleases someone and nobody is hurt. Now this is a little too bad." Some of these bits of conversation are a revelation because through them we can understand the feelings of those involved about these awards. "Surely, we have not descended to that level! I have always recognized that the Committee does a great amount of good and useful work, and if I have, sometimes, had to take them to task, it is chiefly because they did not always keep up to their own standards. They must see to it that this idea does not get about generally. And that definition of the Award of Merit, which I believe is generally considered as equivalent to the Second Class Certificate of some years ago. However, we have had a definition of the Botanical Certificate as an award given to indicate the opinion of the Committee that the plant on which it is bestowed is not worthy of commendation for cultural or decorative purpose, and I remember once seeing a poor spike of Catasetum macrocarpum, I think it was, in a ginger beer bottle, or was it in a blackening jar, labeled Botanical Certificate. I hope no one was hurt! The Committee really must be a little more careful in the future - Argus." You can see that there is always bickering back and forth because one fellow thinks judges are too lenient and the next fellow thinks they do not give awards often enough. Looking back over the awards that the Royal Horticultural Society

has made during the past hundred years, you will see that they have made a great many. Although the awards made by the R.H.S., say in 1910, mean nothing today, such awards were worth while at the time because plants which received them were only the best ones to be presented then. Comparing plants of award quality in 1910 with our present-day, modern hybrids makes us more aware than ever of the great improvement in hybrids which has taken place through the intervening years.

In the same volume of the ORCHID REVIEW, there is a bit entitled 'Orchid Certificates'. It says that, "A very important question has come before the Committee of the Manchester and North of England Orchid Societies, namely, whether a First Class Certificate should be awarded to every sufficiently meritorious orchid which is brought before it, irrespective of whether the award has previously been given to the same variety, or not; and as both sides of the question have found adherents we have been invited to offer any suggestions on the subject. It is urged that under the existing system, the member who gets his plant in first runs away with the Certificate to the exclusion of others who may have an equally meritorious plant. While, if it were given for excellence alone, it would be open to every member owning a good thing to get it 'Hallmarked,' and a value would then attach itself to the plant if it were disposed of when out of bloom."

Here I should explain to you a little more about the system which I have taken for granted. If a plant is awarded a First Class Certificate by the Royal Horticultural Society, the next plant of the same cross to be exhibited must be superior to the previous one in order for the cross to receive another award, and, if superior, it, too, could receive a F.C.C. If the first plant received an A.M., and the judges feel that it is worthy of only an A.M., the next plant of the same cross to come before the judges could receive an A.M. or a F.C.C.

Although awards are not generally recorded correctly, the accepted way is to state the name of the plant, and after it the award, whether A.M. or F.C.C., then the initials of the Society which made the award to the plant -- R.H.S., if it was the Royal Horticultural Society -- then the year the award was made. A proper record will, eventually, tell an important story, because the last award made to a given cross will indicate that it was of superior quality to those preceding it, so a record of date sequence is valuable.

In the October issue, 1928, of the ORCHID REVIEW, is a quotation of importance to remember, "No recommendations for a F.C.C. or an A.M. shall be made to the Council unless the number of votes cast in favor of the recommendation is at least double the number recorded against it. No recommendations shall be made to the Council unless at least six members vote in favor of it."

I have already mentioned the two Orchid Societies in England during the nineteenth century, but I was surprised to find that an Orchid Society was formed in Moscow in 1912. Although it was not generally known to exist until 1917, at that time it was reported to have made considerable progress during the preceding year, had held twenty-three meetings at which many fine orchids were exhibited. Three diplomas were awarded for the best groups with 20 First Class and 17 Second Class Diplomas for varieties; also 3 diplomas for good culture.

In the material from which I gleaned this information, it stated that "the President congratulated the Society on its progress and expressed his pleasure that notwithstanding the severe trials and sad losses in the unforseen fight for the highest ideals of humanity" (this was the time of World War I, you will recall), "the Society had found the example of their valiant allies and continued its activities." With 23 meetings in one year, apparently the Moscow Orchid Society was meeting twice a month; such practice was common in England at that time as well.

The judging systems covered so far bring us up to the approximate time that the American Orchid Society entered the picture. In the English ORCHID REVIEW for May-June 1920, there is this announcement:

"American Orchid lovers, enthusiasts, growers, took advantage of the occasion to organize an American Orchid Society. A meeting was held in the Horticultural Hall, on March 25th, when a temporary organization was effected and plans were made for a permanent body. Thomas Roland was chosen President..."

To my knowledge, this is the only record announcing the formation of the American Orchid Society, although there may be a similar one in the records of the Horticultural Society in Boston, Massachusetts, for even then this was a very active Society, and is, today, a large organization.

In the July issue of the ORCHID REVIEW of 1924, reference is made to the American Orchid Society, not for itself, but for the fact that, "The American Orchid Society at their orchid show started to judge according to Points of Scale." To my knowledge, this is the first record of Point Scale Judging. The following scales of points were used for judging at the recent Boston Show of American Orchid Society for two different classes--Group of Orchid Plants and Single Plants:

GROUP SCALE		SINGLE PLANT SCALE	
General Arrangement	20	Size of Plant	25
Culture Perfection	20	Culture Perfection	20
Quality of Flower	20	Rarity	15
Rarity	15	Floriferousness	10
Variety	20	Quality of Bloom	20
Correctness of Label	05	Color	10

I always wondered where 'Correctness of Label' came from, but, as you see, it dates back to early New England orchid history. This stipulation in Point Scale is a good thing, but it really should go without saying.

You will agree that the Single Plant Scale is interesting. Here we have 15 points for Rarity, and Size of Plant rates 25--a total of 40 points for only two categories. Actually, it would seem that an award based on this scale amounted to a Cultural Certificate for rare botanicals. Undoubtedly, this was due to the fact that there were but few quality hybrids at the time, so species were about all there was to consider for awards.

In the first of its quarterly issues published in 1932, the American Orchid Society lists in the BULLETIN, Volume I, the plants which received a Vote of Thanks at the quarterly meeting of the Board of Trustees on February 24, 1932, as follows: Slc. Anzac 'Orchidhurst' and C. Trianaei 'Mrs. Warren Hook', exhibited by Mr. F. E. Dixon; and a Group of Fourteen Hybrid Cymbidiums, shown by Mr. Joseph Manda.

In the BULLETIN, under date of April 29, 1932, is listed the names of those on the "Orchid Committee"--actually, those serving on the Board of Trustees of the A.O.S. At that time, the group was comprised of: "Mrs. W. K. duPont, Chairman; Mr. David Lumsden, Secretary; Mr. Walter H. Jewell, Mr. Joseph Manda, Mr. John Lager, Mrs. Pierre S. duPont, Mr. George Baldwin, Mr. John W. Slaughter, Mr. Oliver Lines, Mr. Harry J. Haskell, and Mr. David Holmes. The visiting members present at this meeting were: Baron and Baroness deShaunesee, Mr. Edwin H. Lincoln, Mr. George Butterworth, and Mr. Robert H. Jewell." Actually, this was but a small meeting of people interested in orchids, but here originated the beginning of judging by the A.O.S. with a few Votes of Thanks which eventually culminated in the coveted A.O.S. awards of today. An interesting sidelight to this is that because at the time the A.O.S. was formed, there were but few orchids grown in the United States, and those which were grown were in the New England, New York, and Philadelphia areas, and it might be said that the A.O.S. was really formed for and by the people in the Boston area. (Mr. A. C. Burrage, of Beverly Farms, Massachusetts, took a very active part in the Society and was the first president of the permanent American Orchid Society.)

In the early days of the A.O.S., following the close of the business meetings, the president selected the judges from the group present, based on what he considered the ability of the individuals present to judge the exhibits before that particular meeting. This method of selected judges was used until immediately after the War. By this time, of course, interest in orchid growing in the United States was rapidly increasing, but the A.O.S., itself, had grown but little because it was held in the hands of the small, New England group.

Measurement of flowers, instigated by the American Orchid Society, will probably go down in history as being one of its greatest accomplishments. (Up until this time, the only records kept of awards were the paintings by the Royal Horticultural Society's artist of awarded plants.) Of interest is a letter, published in the January 1942 BULLETIN, from Helen H. Adams to the president of the Society, Mr. Rodney Wilcox Jones, and she says:

> "I have something on my mind, and as you told me you have read almost everything available and particularly the publications recording the meetings of the English Society, I think you are the person to take it up with.
>
> "I use this literature constantly and find it as an invaluable mine of information and on many subjects, not the least, I assure you, the full descriptions of cultivated orchids for 48 years. Plants die and growers die, and that is the only record that the hybridist has to guide him on for historical information. Of course, it has not the detail that scientific records ought to have, but it is all

that we have, and very helpful too, especially when measurements were given.

"My point is, that although unconsciously perhaps, an invaluable historical record has been left to us through the monthly accounts of the English Society meetings.

"I think that the American Orchid Society should strive to do likewise. Who knows what it will be in forty years? Besides, it would add much more interest for the readers who are not at the meetings. At present, the Exhibition Table, as presented, can have little meaning--for new members especially. Suppose we took pictures of these things that awards are given to, as well as recording the exact measurements of the flowers. It would not only heighten interest for the reader and ambitious amateur, but would, in the end, make a record that was educational for judges.

"I hope you will think this over a little and tell me your ideas at the next meeting."

When Mrs. Adams wrote that letter, I do not believe she realized how valuable her suggestion would become, for I do not think anything as far as awards are concerned--paintings, photographs, or anything--would be more helpful to people in their ability to visualize flowers than to have their measurements. Some novice orchid enthusiasts may not understand the importance of this, but those of you who are interested in award flowers will learn more by studying the measurements of awarded hybrids as they appear in the A.O.S. REGISTER OF AWARDS than anyone can ever tell you.

At a previous lecture, Mr. Merkel spoke to you about show judging versus award quality judging, and there is always a great deal of mixup in these two methods of judging. They are not related to each other, and are completely different. The following letter, written by a member of the A.O.S. and published in an issue of the 1946 BULLETIN, may help to clarify this:

"My understanding of the purpose of most Point Systems is to set up a common factor or a number of factors to define the quality of material judged and the keenness of the competition encountered. However, the actual awarding of prizes offered by the sponsors of any show or exhibition is usually on the basis of the relative merits of whatever entries have been admitted to the immediate competition; be it fair, good, or indifferent..."

The individual, obviously, has confused the two separate kinds of judging as he mentions both but does not distinguish between them.

About the same time that the A.O.S. started to go into what might be considered a revolutionary method of judging flowers, Mr. R. Bruce Hogg, of the Australian group, wrote the following, and I quote from the September 1946 A.O.S. BULLETIN:

"In a most recent copy of your BULLETIN, I note that your Orchid Society is adopting a point system for issuing awards. This has been a most controversial subject in Australia, and both the New South Wales and Victorian Societies have adopted a point system.

"The attached criticism of this method will be published in the September issue of the AUSTRALIAN ORCHID BULLETING REVIEW, but if you feel that the criticism is likely to be constructive and helpful to your Society, you are quite at liberty to publish it.

"The Royal Horticultural Society in London does not disclose their method of judging, but I think it is where a committee of undoubted experts view a flower and decide whether or not they approve of it being granted an award, and what award. This has much to commend it, and I feel that a point system might discourage breeders in the most desirable section of their work, that is, the introduction of new colors." Mr. Hogg continues to say in his article:

"The New South Wales and Victorian Societies are to be commended for having set standards for the issue of awards, for such action indicates a rapid growth that has taken place in Australia in orchid culture in recent years. Naturally, we will expect the various committees which ajudicate to be very conservative in their judging and to adopt a policy of when in doubt, no award...

"I feel that the use of a measuring stick will never adequately judge anything whose popularity and value is dependent on its beauty and I think that this is one of the worst faults of this system of judging. There are so many variables in beauty that a points system must be devised which is sufficiently flexible to allow some special feature to receive about the limit points. I will enlarge upon this later. I have not yet forgotten the article in the REVIEW following the last Sydney Society's Show where the author took a number of ladies 'round the Show and studied their reactions to the various plants. We really grow our orchids to decorate those ladies and their opinion should carry weight, and strangely, they did not select the varieties likely to get a F.C.C. or an A.M., but they selected the flowers which in their opinion were the most lovely, perhaps visualizing the contrast with a frock of this or that color."

Now I think that is more or less immaterial because we all have our likes and dislikes in colors as with other things, but I think it is important to realize the fact that there are many qualities in flowers that should not be scored according to a scale of points, or can be used as a measuring stick to determine their value. I think we realize this but we don't know what to do about it at the present time.

There was some agitation in the American Orchid Society about a point score, but the need of a measuring stick for judges--so that judging could be held throughout the country was recognized. In 1945, the matter was passed on to a group headed by Mr. R. H. Gore, of Fort Lauderdale, Florida, for study,

and came to be known as the Gore Committee, its reports as the Gore Reports, and so on. You will find throughout the BULLETINS various references pertaining to the point score under the Gore Committee. The duty of the committee was to devise a method of scoring plants so that a given figure could be attached to an award so that anyone would know the range in which a plant scored to receive an Award of Merit or a First Class Certificate rather than having the award based on a haphazard decision by the judges. At the September 1945 Trustees' meeting--and I quote from the minutes:

> "The President said that the most important subject before the Trustees was the report of Mr. Gore's Committee on judging and he hoped definite action, one way or another, would be taken today. That the way to try a thing out was to start and even if the thing wasn't perfect at the beginning the air holes would soon be discovered and the method changed or the project discontinued. But it was important that definite action be taken and said that it was Mr. Gore's project and that Mr. Gore should step forward and present the matter to the Trustees.
>
> "Mr. Gore then took over the discussion and said that his committee had formulated for the presentation at this meeting a card rating system as an experiment. This system was made up after the Committee had digested all the information contained in correspondence between the Orchid Society and from letters from outstanding orchid growers in England justifying the rating of orchids by a system which he would submit to the meeting.
>
> "Mr. Gore said that what was wanted was a symposium of opinion to investigate the merits of the card rating system and said the committee was adopting the same principle as the other flower societies were using. He felt sure that the Society would inaugurate such a system of rating as soon as possible and would ask the judges first to use the cards experimentally, then all other Trustees and also the members, each judging one or more plants and signing their names and addresses on the back of the cards. The cards used at the meeting would be gone over and a final report made at the next Trustees' meeting of the American Orchid Society when the Trustees will be asked to vote on the system. Mr. Gore said that he was not asking for a vote at this meeting but simply wished to present the idea, put it to actual test, and hear the comments."

You all know the result of this report. Today, we use the point score system of judging. I believe that many of the people in England realize, too, that this system has a great deal of merit, as well as theirs, although we all realize that it has its shortcomings. It must be remembered, too, that our judges must cover the United States, an area considerably larger than the limited territory of English judges. Also, that not all orchid judges in the United States are able to be present each time that judging takes place in the regional judging program, although judges in England can be present each time plants are judged so know of previous awards first hand, as well as from the records of paintings.

To acquaint judges throughout the country with the workings of the point score system, in 1949 the first edition of THE AMERICAN ORCHID SOCIETY HANDBOOK ON JUDGING AND EXHIBITION was published to cover such matters in considerable detail. This was really a most important little book, for it started a world of shows all around the country, and probably did more to stimulate interest in orchid culture than any other one thing in recent years. People everywhere who were interested in quality flowers found in the book many of the answers on how to determine the quality of flowers or of an exhibit, so the book was truly an inspiration.

Backtracking here for a bit, I think it is interesting to know that the South Florida Orchid Society played an important part in formulating many of the rules which were laid down in the HANDBOOK. Bob Doig, of Fort Lauderdale, was a member of the A.O.S. Committee on Affiliation back in 1946 when the Gore Committee was delving into the matter of a point score system for orchid judging, and Dr. Norman C. Yarian of Cleveland, Ohio, was Chairman of the Committee on Affiliation. When the independent orchid societies were invited to affiliate with the A.O.S., naturally, the Cleveland Society was the first to join, and the South Florida Orchid Society was the second to affiliate. However, the S.F.O.S. has always played a prominent part in the orchid world while the Cleveland Society has remained rather small--its membership now approximately 100--but, of course, we in our semi-tropical climate have the opportunity to grow orchids more freely.

To continue with the matter of the HANDBOOK, even as far back as the First World Orchid Conference, held in St. Louis, the Awards Committee realized that there were many shortcomings in the first publication, so questionnaires were sent out to all of the judges in the United States at the time; a list of this small group will be found in the first edition of the HANDBOOK. (May I remind you again that at the early meetings of the Society, judges were recognized as such more or less because they were considered to be authorities on certain of the orchidaceae, or because they grew great numbers of orchids and, therefore, considered to be qualified judges.) All of these individuals were requested to be present for a meeting to precede the meetings of the First World Orchid Conference. Most of these judges were on hand the afternoon of this special meeting, as well as a great number of other people who were interested in quality flowers. As an outcome of the discussion that afternoon--and many hours spent by various individuals for many an afternoon and evening thereafter--the HANDBOOK ON JUDGING was revised, and a second edition published. The main cry of the multitude of orchid enthusiasts throughout the country during the period between the first and second editions of the HANDBOOK was for a definition of the various point scores given in the first edition.

One of the most difficult things about judging is to try to define 'color', so this point was taken as an example. As a result of this matter of defining 'color', it was decided it would be necessary to break the orchidaceae down into genera, and break genera down into separate classifications for scoring. Some of the judges were opposed to such a system, forseeing ruination of the system because the fine-line scoring would make judging more difficult, and it was feared that a lot of plants would be granted awards that were not deserving. An important counter-attack to this was that judges were not--and are not--recognizing new color breaks in hybrids, and not giving enough

attention to oddities. Such observations could not be taken into consideration, however, under the old point score system. It is regrettable, however, that we have seen so little change in judging even since this scale has been put into effect. In my own mind, I feel that judges still determine whether or not a plant is worthy of an award when they first look at its flower, then check the score card according to their first opinion. As a result, the Awards Committee is not too well satisfied with the second edition of the HANDBOOK ON JUDGING, either, and is, at the present time, working on the material in preparation of a third edition.

Since the time of the first edition of the HANDBOOK, the Awards Committee has become quite active, and is now one of the most important committees of the American Orchid Society because of the tremendous interest in orchid judging throughout the country. The Committee meets every month in New York to discuss the various problems that come before it for consideration, and it is their duty to recommend policy on awards to the Trustees for decisions. In the new HANDBOOK, the functions and purpose of the Awards Committee, as recently approved by the Trustees, will be outlined as follows:

> The Committee on Awards shall be charged with the supervision of the American Orchid Society judging. The Committee on Awards shall receive all nominations of new candidates for judges and shall present to the Board of Trustees at their bi-annual meetings recommendations concerning judges' appointments. The Committee on Awards shall be responsible for keeping the list of judges up to date. The Committee on Awards shall be responsible for the day-to-day interpretation of the American Orchid Society judging rules and regulations in practice.
>
> The Committee on Awards shall have the right to disqualify on technical grounds any award which either in error or through lack of knowledge is granted in violation of the established procedure or requirements.
>
> The Committee on Awards shall have the authority to issue any Bronze Medal for Meritorious Display of Orchids in Use, or Bronze Medal for Meritorious Orchid Flower Arrangment when such award has been duly recommended by the American Orchid Society judges. The Committee on Awards shall, from time to time, make recommendations to the Board of Trustees with regard to the future development of the American Orchid Society judging. The Committee on Awards shall be responsible, under the direction of the Board of Trustees, for the preparation and revision of the Society's HANDBOOK ON JUDGING AND EXHIBITION.

In the early days of judging by the A.O.S., a simple point scale was followed whereby a plant was judged for color, form, etc., but later the category of color, for instance, was broken down so that the color of sepals, color of petals, color of labellum had to be scored under the general heading. This breakdown was instigated by the Cymbidium Society in California and they have tried to standardize it. For Cymbidiums, they still use the extreme

breakdown system for it is their opinion that Cym. Alexanderi 'Westonbirt,' for example, which is a shy bloomer, should have so many flowers to a stem to be worthy of an award. Consequently, if a well-flowered plant should have sixteen flowers but the plant under consideration for an award actually has only eight, it would score only 50 per cent for floriferousness. By using this breakdown system, it can result in scores recorded to the fraction.

It is the general feeling of judges throughout the country, however, that the complicated breakdown score system was a mistake, and the third edition of the HANDBOOK will carry the simple point scale once again. Judges may, at their discretion, use the more complicated system, however. This system has merits for educational purposes, and new judges will find it of great help, for it will pinpoint in their minds the individual parts of the flower which must be considered and the importance of each in arriving at the total score in a given category.

Since no one can possibly know first hand the 19,000 species of orchids, through American Orchid Society Regional Judging in South Florida, an important change has stemmed in regard to Certificates of Botanical Merit. Henceforth, when a plant is under consideration for such an award, the judges--having examined the specimen--will have the right to withhold the award and grant it at a later date after they have had ample time to do reference work in regard to that particular species. Some of you may have considered it amusing to see a clerk going around with judges at South Florida Orchid Society meetings carrying a basket of reference books, but if the judges have never seen a species to be considered, it is likely they do not know what a <u>good</u> specimen of that particular plant should embrace, and readily-available, good orchid literature is invaluable to them. And, in our South Florida area, probably more than any place in the country, with the possible exception of Hawaii, we stand the chance of having more unusual plants to judge which the judges have never seen.

Because it fits in with the evolution of rules and regulations of the A.O.S. Awards Committee, I think a discussion of Regional Judging is in order here. Because the activities of the A.O.S. were centralized in the Boston-New York-Philadelphia area during its early history, judging was limited to plants presented at the regular meetings of the Society, or to those exhibited in shows held in these cities. Of course, transportation facilities at the time had not reached the present standard, and it was nearly useless to try to ship plants to be considered for awards; more likely than not, the flowers would not be in any condition for judging once they arrived. As an outcome of what seemed a one-sided opportunity for orchid fanciers, regional judging was brought about. The original intention was that on a given Wednesday, once during each month, that regional judging be conducted in the four locations set up by the Awards Committee to give everyone, no matter where he lived, an opportunity to have his flowers judged for an award, and, with present-day, superior air facilities available, this became a feasible matter.

There have been unforeseen difficulties in scheduling regional judging, probably because the American Orchid Society has not seen its way clear to foot the bills to pay rental for judging places and has depended upon its affiliated societies to handle the judging in the given areas. As a result,

some judging takes place on Tuesdays and some on Wednesdays, simply because the affiliated groups have not considered it worth while to set aside a particular time and place for the exclusive purpose of conducting regional judging. The A.O.S. is of the opinion that regional judging should be conducted as an independent function and not in conjunction with the regular meetings of any local society, for interested individuals should realize that regional judging is strictly a meeting for the judging of quality flowers. It is hoped that in the near future arrangements can be made so that all judging will be scheduled according to the original intention. Some progress is being made, and it is the hope of the A.O.S. that other affiliated societies will see fit to separate regular monthly meetings from the time of the regional judging and set up special meetings for the latter, as our South Florida Orchid Society does so successfully.

As a result of regional judging, a tremendous number of awards have been granted to orchids, and in the past six months alone, there have been 189 awards made by the A.O.S. Better than half of these, as I recall, were Highly Commended Certificates; flowers so awarded fall into the 75 to 79 category. There have been some Botanical Certificates, Awards of Merit, and I believe, one First Class Certificate, as well as various other awards; all in all, a marked increase over the number of awards previously made in a given time. Now, everyone has an opportunity to present flowers for judging when they are at their prime without having to wait, perhaps years, for a similar opportunity.

EVALUATION, PARENT PLANTS, SPECIES CHARACTERISTICS

Norman B. Merkel

Careful study of the sections of the Hnadbook on "Criteria for Judging the Major Genera" and "Point Scales for A.O.S. Awards" will be very instructive. We quote from the sections concerning the criteria for judging Cattleyas:

> Cattleya and Allied Genera: "The general form of the flower of fine varieties is toward fullness and roundness, that is, a circumscribed circle drawn with the base of the column as the center would touch the tips of the petals and sepals and the margin of the lip, while the flower would fill the greater proportion of the area of the circle. The sepals should arrange themselves almost in an equilateral triangle while the petals and lip should do likewise, but inverted, the sepals being broad and filling in the gap between the petals and the lip. The petals should be erect (but not too stiff) to slightly arching (but notdrooping), broad and rounded, frilled or undulated at the margins according to variety but not crumpled and folded. The lip should be proportionate to the petals, according to variety. Brassocattleyas, for example, generally have lips larger than the petals. Most Cattleyas, Laelias and Laeliocattleyas have lips slightly larger to slightly smaller than the petals, depending on the ancestral species used, with a rounded, flattened, symmetrical and crisped or frilled trumpet, but closed toward the base and more or less rolled around the column. The entire flower should be fairly flat when viewed from the side, the lip curving down and not jutting out at right angles to the plane of the petals and sepals."

Further quotation from this section will be omitted but should be studied, covering the subject's size, substance, texture, floriferousness and stem; likewise, the factors involving bifoliate Cattleyas, Sophronitis and Laelia hybrids with Cattleya.

The point scale for Cattleyas is as follows:

Cattleyas

Form of flower		
General form	(15)	30
Sepals	(5)	
Petals	(5)	
Labellum	(5)	
Color of flower		
General color	(15)	30
Sepals and petals	(7)	
Lebellum	(8)	

Other characteristics		
Size of flower	(10)	40
Substance and texture	(20)	
Floriferousness (and stem)	(10)	
	Total Points	100

or the alternate scale of points may be used:

General Point Scale

Form of flower	30
Color of flower	30
Other characteristics	
Size of flower	10
Substance and texture	10
Habit and arrangement of inflorescense	10
Floriferousness	10
Total Points	100

The general point scale may be used whenever judges elect to do so, this especially when type to be judged is of normal or frequently seen variety. The specific scale of points is suggested for beginners and for new forms infrequently seen.

Further consideration of the other descriptive criteria and appropriate judging scales are to be pursued by the student.

Another helpful feature of the Handbook is the page of drawings of the various genera, with the flower parts indicated by name. These should be very carefully studied.

Characteristics of a Good Parent Plant (Cattleya)

I. Shape

A. Years of breeding have proven the need for choosing the best shaped flower available. This factor will breed true to a great extent, but good shape will virtually never occur when poor forms are used.

II. Color

A. Clear, bright and strong
Contrast between lip and other segments
Even color throughout
Lip should be prominent and color rich

B. Color types are nearly endless
Choice of colors depends on desired result
Limitations are encountered with the species available, particularly in the yellow group

III. Size

A. Large types

In species, numerous variations occur. Therefore, when increased size is desired one should select a large variety, providing a reasonable number of other desirable qualities are evident. Large size will generally dominate over small size.

B. Small types

If size is not important, then the other factors should outweigh any consideration of size.

IV. Substance

A. Substance has a part in keeping quality, shape, and general carriage of the flower. Weak flowers generally breed the same. They never appear healthy or robust, but droop and deteriorate rapidly.

V. Texture

A. A surface feature of the flower which will enhance its appearance either as a reflective surface or iridescence or a nap or pile giving a velvety appearance.

VI. Habit of Growth

A. Growth characteristics can be very important. A compact plant is very desirable, as is a robust and free growing plant. This factor frequently contributes greatly to good flower production.

VII. Stem and Flower Production

A. A flower to look well must have an adequate stem to support it. If several flowers are produced, then the stem must be sufficient to display all the flowers. The number of flowers produced is of great importance. The value of the plant can be directly proportionate between the room taken to grow it and the number of flowers produced.

VIII. Season

A. The season of bloom and the color are perhaps the most important factors. Each species contributes its share to the determination of the flowering season of the hybrid. Careful study here is paramount. An understanding of light control and temperature variations also enter into the result.

CHARACTERISTICS OF SPECIES WHEN USED IN BREEDING (First Generation)

N. B. Merkel

CATTLEYA	SPECIES – COLOR	USE AS A PARENT	IMPORTANCE AS PARENT	COLOR INFLUENCE	Effect on Shape SEPALS & PETALS	Effect on Shape OF LIP	FLOWER PRODUCTION	SEASON OF BLOOM	GROWTH HABIT	FLOWER SUBSTANCE	Some Named Varieties in Use
DOWIANA	Yellow s & p red suffused Lip–Dark red-lav., gold veins	Not too frequent	Not too important	Lavender S & P Red lip	Fair to poor	Good	Fair to good	Summer to Fall	Fair	Fair to poor	'Rosita'
DOWIANA AUREA	Yellow S & P Lip same as above	Very frequent	Very important For yellow & White/color. Lip	Yellow S & P (white S & P) Red lip	Fair to poor	Good	Fair to good	Summer to Fall	Fair	Fair to poor	
GASKELLIANA lav.	Lavender	Moderate	Moderate	Lavender	Fair to good	Good	Good	Summer and Various	Fair to good	Fair	
GASKELLIANA white	White Yellow throat	Frequent	Important	White	Fair to good	Good	Good				'alba'
LABIATA lav.	Lavender	Very frequent	Very important	Lavender	Good	Good	Very good	Fall	Good	Good	'Westonbirt' etc.
LABIATA wht.	White	Very frequent	Very important	White	Good	Good	Very good	Fall			'Harefield Hall' 'Charlesworthii'
LABIATA w-c-l	White/color. Lip	Seldom	Moderate	White/color. Lip	Good	Good	Very good	Fall			'Prince of Wales'
LUEDDEMANNIANA lav.	Lavender	Seldom	Seldom	Lavender	Good	Fair to good	Fair to good	Summer	Good	Fair	
LUEDDEMANNIANA wht.	White	Moderate	Moderate	White	Good	Fair to good	Fair to good	Summer			
LUEDDEMANNIANA w-c-l	White/color. Lip	Frequent	Moderate	White/color. Lip	Good	Fair to good	Fair to good	Summer			'Stanleyi'
MENDELII lav.	Lavender	Moderate	Moderate	Lavender	Good	Good	Good	Spring to Summer	Good	Fair to good	
MENDELII wht.	White	Moderate	Moderate	White	Good	Good	Good				
MOSSIAE lav.	Lavender	Very frequent	Very important	Lavender	Fair to poor	Fair	Good	Winter to Spring	Small size but Good	Fair to good	'R.E. Patterson' 'Oliver lines'
MOSSIAE wht.	White	Very frequent	Very important	White	Fair to poor	Fair	Good				'Wageneriі'
MOSSIAE w-c-l	White/color. Lip	Very frequent	Very important	White/color. Lip	Fair to poor	Fair	Good				'Reineckiana'
PERCIVALIANA lav.	Lavender	Moderate to Seldom	Not Important	Lavender	Fair to good	Poor	Fair	Winter and Various	Fair to Good	Fair to good	
PERCIVALIANA wht.	White			Lavender up to now	Fair to good	Poor	Fair				
SCHROEDERAE lav.	Lavender	Seldom	Not Important	Weak lavender	Good	Fair to good	Fair to good	Spring and Summer	Good	Fair to good	
SCHROEDERAE wht.	White	Seldom		White	Good	Fair to good	Fair to good				
TRIANAE lav.	Lavender	Very frequent	Very important	Lightens color	Good	Poor	Fair to poor	Winter	Good	Fair to good	Too many to name
TRIANAE wht.	White	Very frequent	Very important	White	Good	Poor	Fair to poor	Winter			'Bromhills'
TRIANAE w-c-l	White/color. Lip	Seldom	Moderate	White/color. Lip	Good	Poor	Fair to poor	Winter			'Reineckiana'
WARSCEWICZII lav.	Lavender	Frequent	Very important	Lavender	Good	Good	Excellent	Winter to Spring	Large but Good	Fair to good	'Sanderiana' 'Meteor'
WARSCEWICZII wht.	White	Seldom	None	Lavender	Good	Good	Excellent				'Firmin Lambeau'
WARSCEWICZII w-c-l	White/color. Lip	Very frequent	Very important	White/color. Lip	Good	Good	Excellent				'Frau Melanie Beydrot'

CHARACTERISTICS OF SPECIES WHEN USED IN BREEDING (First Generation)

N. B. Merkel (CONTINUED)

SPECIES	SPECIES – COLOR	USE AS A PARENT	IMPORTANCE AS PARENT	COLOR INFLUENCE	Effect on Shape SEPALS & PETALS	Effect on Shape OF LIP	FLOWER PRODUCTION	SEASON OF BLOOM	GROWTH HABIT	FLOWER SUBSTANCE	Some Named Varieties in Use
CATTLEYA WARNERII	Lavender	Not frequent	Moderate	Lavender	Good	Good	Good	Fall to various	Good	Good	Many Varieties
	White	Not frequent	Seldom to mod.	White	Good	Good	Good	Fall to various	Good	Good	
	White/col. Lip	Not frequent	Seldom	White/col.Lip	Good	Good	Good	Fall to various	Good	Good	
LAELIA CINNABARINA	Orange Yellow	Moderate Best source of yellow in Laelia	Important for dark yellow to orange	Yellow to Orange	Very narrow Segments	Narrow Lip	Good	Spring	Small & Thin	Fair	
FLAVA	Yellow	Not frequent	Very moderate	Yellow	Small	Fair but small lip	Moderate	Fall to various	Small	Good	
HARPOPHYLLA	Yellow to dark yellow	Not frequent	Very moderate	Yellow	Very narrow Segment	Narrow Lip	Good	Various Summer & fall	Small & Thin	Fair	
Lav. TENEBROSA	Lav. bronze	Not frequent	Seldom	Bronze (lav.)	Narrow Segments	Good	Fair to good	Fall to winter	Good	Fair to good	
Yellow	Yellow/ Purple Lip	Fairly frequent	Moderate	Yellow	Narrow Segments	Good	Fair to good	Fall to various	Good	Fair to good	'Walton grange'
XANTHINA	Light yellow purple lip	Not frequent	Not important	Yellow	Fairly narrow	Narrow	Fair to good	Spring & various	Fairly small	Fair	
PUMILA	Shades of Lavender	Not frequent today	Important as a background parent in today's hybrids	Lavender	Fair to good	Good	Fair to poor	Summer, fall & various	Small	Very good	'Danaya' 'praestans' and others
Lav. PURPURATA	Lavender	Moderate	Important	Lavender	Curl back	Very good	Very good	Winter to spring	Good	Good	Several
White	White	Very new	Possibly will be	Lavender	Curl back	Very good	Very good	Spring	Good	Good	'alba plena'
W-C-L	White/col. Lip	Frequent	Important	White/col.Lip	Curl back	Very good	Very good	Winter to spring	Good	Good	'Orchidknoll'
BRASSAVOLA DIGBYANA	Greenish White	Frequent	Important	Tends to lighten color put with it	Narrow	Very large fimbriated	Poor	Various	Fair to good	Good	'Ohm Paul Kruger'
GLAUCA	White lip green tint to sepals & petals	Not frequent (will be used)	Not very important (may become)	Helps make green & yellows	Narrow	Very nice broad lip	Poor	Various	Small but good	Very good	

Fig. No. 1

CATTLEYA CROSSED WITH CATTLEYA FIG. NO. 1

P = Purple
Y = Yellow

		COLOR OF CATTLEYA PARENT			
		PURPLE	YELLOW	WCL	WHITE
COLOR OF OTHER CATTLEYA PARENT	PURPLE	P			
	YELLOW	P	Y		
	WCL	P	WCL	WCL	
	WHITE	P	P	P	W P

CATTLEYA CROSSED WITH LAELIA FIG. NO. 2

Fig. No. 2

		COLOR OF CATTLEYA PARENT			
		PURPLE	YELLOW	WCL	WHITE
COLOR OF LAELIA PARENT	PURPLE	P	P	P	P
	YELLOW	Y	Y	Y	Y
	WCL	P	WCL	WCL	P
	WHITE	P	P	P	W P
Brassavola Digbyana		P	Y	WCL	WCL W P

OUTLINE OF BIFOLIATE CATTLEYAS

Dan Reed

In a survey of this type it is difficult to attempt any degree of coverage of the subject group. The original presentation consisted of about 75% Kodachrome slides and 25% commentary on same. Large slide libraries allowed almost complete coverage of important species in color with illustrations of hybrids derived from most of these species.

For the printed page, it would seem that I could only hope that a brief outline of more important bifoliates, with a few notes to attempt to arouse your interest to further investigation, could be of some value.

C. aclandiae - Brazil - Summer - Slender pseudobulbs are 6-8" high. Flowers three inches across are olive-green, blotched with purplish-brown. Sepals and petals are of almost equal width, tips pointed. Overall effect of these segments is "cupped". Lip of lavender-purple is "banjo-shaped". Side lobes of the lip enfold the column. Striking contrast is noticed between the dark burgandy-red column and the white to cream rostellum. Texture of sepals and petals is polished, appearing waxed or varnished. Early hybridizers made use of this species, crossing it with species varying from B. nodosa to Sophronitis grandiflora. Used as a parent over thirty times before 1920, it is interesting to note that its usage was not registered once in the succeeding decade.

C. amethystoglossa - Brazil - Spring - Sturdy, though slender, pseudobulbs attain a height of 24 to 36 inches. Four-inch flowers are borne in clusters ranging from 4 to 20. Bright rosy-lavender sepals and petals are spotted to varying degrees with purple. Substance of flowers is heavy; waxy texture. Selfing results in an interestingly varied range of spotting. When crossed with other species and/or hybrids the tendency to transmit the potentially interesting purple spots appears to be recessive. Another species little used in hybridizing since the early days.

C. aurantiaca - Guatemala - Spring - Pseudobulbs, about 12" high, bear clusters of 6 to 12 bright orange flowers. Individual flower spread varies considerably--from little over an inch to nearly 2½ inches, depending on whether the petals achieve a wide-spread position when fully open or remain somewhat "forward". Mention should be made of small, dark spots in the labellum, for they are usually transmitted to the progeny. Flower color is overall orange, which varies considerably in its brilliancy and in the intensity of the hue.

Unfortunately, the majority of collected plants are found to be cleistogamous, i.e., self-pollination occurs so quickly that some flowers hardly achieve the open state. Such plants can be identified by the fact that they are heavily laden with partly developed seed pods. However, plants that do

not self-pollinate are still brought in from collecting areas. The latter type should be selected for hybridizing for obvious reasons.

Information as to breeding characteristics of this species is still somewhat scanty. It is being used in hybridizing at the present time and perhaps seedling populations will be large enough to give better statistical information as to color inheritance.

Bred with C. Henrietta Japhet, seedlings flowered were intermediate in size. Shape, particularly of the lip, appeared more greatly influenced by C. aurantiaca progeny. Of about a dozen plants observed at first flowering, all opened in more or less orange tones with yellow lip. Orange tones gradually became suffused with lavender as the flowers reached maturity. This makes it a matter of conjecture as to which factors are primarily responsible: the dominant color transmission pattern of C. aurantiaca progeny; influence of the combination of varied albino types combined in C. Henrietta Japhet; and what pattern would gradually evolve if a considerable number of siblings were flowered.

C. bicolor - Brazil - Summer - Slender pseudobulbs reach a height of 15 to 30 inches. Flowers are borne 4 to 6 to the stem, reaching a spread of about 4 inches. Bronzy-green sepals and petals are almost equal. The lip is of velvety rose-purple--is unusual in that the side lobes are entirely absent.

Much used as a parent, particularly in earlier breeding of yellows, the influence of the lip pattern may often be seen to the sixth and seventh generations.

C. bowringiana - Central America - Fall - Pseudobulbs are 18 to 30 inches tall, with a distinctive knob-like protuberance forming the base of each. Two to three-inch flowers are borne 5 to 20 to the spike. Sepals and petals range from light to medium lavender, this same color extends throughout the tube to a darker front lobe of the lip.

A number of varieties have been selected through the years. Among the best known are var. coerulea, with a distinct bluish cast as the name suggests. This unusual color tone has carried through to some of the progeny. Var. splendens is noteworthy for its excellent roundness of form and warmth of color tone. Petals are wide, overlapping and of a pleasing crystalline texture. This clone was for years considered to be a tetraploid, but repeated failures to breed as would have been expected resulted in a recount of the chromosomes, which I understand showed it to be a triploid.

While the poor keeping quality of the species flowers was a drawback, hybrids such as C. Portia and C. Porcia demonstrate its worth as a parent for showy cluster-flowering types.

C. elongata - Brazil - Summer - Pseudobulbs one to two feet high. Flowers are about 4 inches across, borne in clusters atop tall peduncles. Sepals and petals greenish, petals with undulated margins, lip lavender-purple. Substance quite heavy.

This species is very seldom seen in cultivation and has become the subject of interest due to the characteristics of its pentaploid progeny, C. Rembrandt.

Clusters of medium-sized flowers are borne on a stout, upright, elongated peduncle.

C. forbesi - Brazil - Spring and Summer - Twelve to fifteen-inch pseudobulbs bear two to six-flowered spikes. The flowers are 3 to 4 inches across. Sepals and petals are yellowish; the lip is yellow, curiously lined with red inside the side lobes. Var. aurea has a stronger, clearer yellow than the type.

Hybrids from this species have demonstrated its dominance for shape and general recessiveness for color transmission.

C. granulosa - Brazil - Summer - Paddle-shaped leaves surmount 15 to 30 inch pseudobulbs. Spikes 3 to 18 flowered; flowers of heavy substance and waxy texture are about 4 inches across. Sepals and petals are green tinged with olive, spotted to varying degrees with brown. Small front lobe of lip is whitish, lined and asperated with crimson.

Several varietal forms are well known to cultivation. Of greater interest is the fact that attempts to transmit the green color of sepals and petals has not been very successful--most often resulting in varying shades of lavender. Bred with lavenders and yellows it has produced rich bronzy-lavenders to reddish-bronzes to yellow and tan types. However varied the color may be, the granulosa shape influence is readily seen in its seedlings.

C. guttata - Brazil - Summer - Diphyllous pseudobulbs range from 15 to 36 inches tall. Spikes 6 to 18 flowered or more, two to four-inch natural spread. Sepals and petals are yellow-brown to yellow-red base color, with varying degrees of reddish-mahogany spotting. Substance heavy, texture varnished.

A revival of interest in this with other bifoliates during recent years is evidenced by numerous novelties appearing on the scene today. C. guttata tends to produce brown to reddish tones in sepals and petals; shape is a dominant factor. Several distinct varieties are known to cultivation.

C. intermedia - Brazil - Summer - Slender bulbs are 12 to 24 inches high. Flowers are borne in clusters of 3 to 8; individually about 3 to 4 inches across. Sepals and petals are generally light lavender-pink. Side lobes of lip flare outward to surround the column; the front lobe is abbreviated, ruffled at the margin with yellowish area in the throat.

Var. alba is popular, having been much used by hybridists in producing medium-sized, cluster-type whites of heavy substance. The most triangular shape of the sepals and their geometric arrangement give the flower an overall "star-shaped" appearance. This shape remains evident for several generations.

C. loddigesi - Brazil - Summer - Habit is similar to C. intermedia. Flowers 3 to 4½ inches across remind one more of the preceding species than

any other--but the segments are broader, their tips blunt instead of pointed. Color is a pale levender-pink with yellowish throat in the short, compact lip.

Var. harrisoniae bears flowers of rich lavender-purple. Correctness of this designation is a matter of controversy among the taxonomists, some giving it specific rank--but mention of it suffices in calling our attention to a dark form. Var. stanley has been much used in breeding pure while cluster types.

C. o'brieniana - Brazil - Summer - Pseudobulbs reach a height of about 8 inches. Flowers are borne one to three on short stems. Natural spread is about four inches, color is rosy-lavender with darker front lobe of lip. The colored form is quite rare to cultivation.

Var. alba has taken part in producing whites of good color purity and heavy substance. Unfortunately, there is some tendency for petal crippling during warmer months; this trait seems to be passed on to its hybrids--some cripple consistently, others are entirely free of defect, i.e., in different plants of the same cross.

C. schilleriana - Brazil - Summer - Height of pseudobulbs usually about ten to twelve inches. Four-inch flowers are usually borne in pairs. Sepals and petals are of almost equal width with undulated margins. Color is brownish, overlaid with lavender. Lavender side lobes of the lip hide the tip of the column; front lobe flaring, reddish-purple with a lighter border. Substance is quite heavy.

Considerable primary hybridizing was done with this species in the early years of hybridizing. The species was not represented in many collections ten years ago. Present interest in the species will probably result in interesting hybrids during the next decade.

C. skinneri - Guatemala - Spring - Clusters of three to a dozen flowers are borne from the tops of ten to twelve-inch pseudobulbs. Natural spread 2 to 3 inches, petals generally only slightly wider than the sepals. Color is light to medium lavender with darker lip. Free branching habit makes this plant and its hybrids favorites with hobbyists. In southern climates, two sets of growth are made annually, sheaths on the earlier set almost invariably turn brown and appear to offer very poor prospect of flowering--but almost always do. A good color phase of C. guatemalensis (the natural hybrid between C. skinneri and C. aurantiaca) is worthy of a place in any collection.

White forms include var. alba--with or without a purple mark high in the base of the lip. Not a great deal is known about their breeding characteristics, though seedling populations of recent selfings of certain clones should soon help clarify the situation.

C. superba - Brazil, and recently from adjacent countries - Summer - Depending on the area of collection, pseudobulbs vary from 6 to 12 inches high. Three to five flowers of fairly heavy substance are borne to the stem. Five inches across, color is rich mauve with deeper crimson-purple lip, marked with yellow near its base. Side lobes enfold the column with the anterior margin

reflexed, front lobe is shovel-shaped. Shape and color seem to be transmitted variously to its hybrids.

C. velutina - Brazil - Summer - Slender pseudobulbs are 15 to 18 inches tall, bearing flowers four to five inches across. Sepals and petals are nearly equal, petals being somewhat club-shaped. Base color is yellowish-brown spotted with reddish-purple. Side lobes of lip enfold the column with rostellum exposed; front lobe is flared, shovel-shaped. Lip whitish, veined with maroon, tinted yellow around apical margin. Another species that has become a collector's item.

Consideration of this group of orchids today naturally leads to thoughts of what may be produced by hybridizing with them. Present high interest in "novelty" hybrids prompts one to think back briefly to genetic considerations. Currently "chromosome" is a much used word and considerable attention is given by some hybridizers to the advantageous usage of plants of known polidy. Visible, subject to being counted under magnification of the microscope, chromosome numbers are often listed in connection with specific cultivars. On the other hand, genes, bearers of hereditary characteristics, are still the subject of questioning and search. While we cannot map them accurately yet to say much regarding their physical properties, some knowledge has been gained through the years. Unfortunately, failure to keep records in many instances has resulted in only one individual or firm gaining some valuable knowledge. Indeed, if rumor be true, earlier hybridizers were very jealous of hard-earned knowledge; and on occasion led competitors astray by means of subterfuge.

The article "Genetics and Orchid Breeding" by Dr. Gustav A. L. Mehlquist (from his talk given at the second World Orchid Conference) is an excellent introduction to the subject. The work of Dr. C. C. Hurst published in 1925 is still much referred to in discussions of albinism and color inheritance in orchids. One not familiar with these and other available literature would do well to make use of such background information in planning breeding selections.

It seems quite certain to me that today's renewed interest in bifoliates will result during the next decade in outstanding new types with diversity of color, excellent keeping quality and range of form to merit the approval of all.

BIFOLIATE CATTLEYAS, SOPHRONITIS, AND HYBRIDS

Roy K. Fields

The bifoliate Cattleyas comprise a group of seventeen or more species and are distributed through Mexico, Central America and Brazil. They vary in size from the small C. aclandiae, which is about six to eight inches in height, to the tall amethystoglossa, which often reaches a height of three feet.

The majority of the bifoliates grow well here in Florida. Some of the smaller types such as C. aclandiae, C. schilleriana and C. superba are sometimes rather difficult to get started, but once established they do fairly well.

The bifoliate Cattleyas were used for crossing quite often in the early days of orchid hybridizing, but seem to have lost a great deal of their popularity soon after the turn of the century, however, they are now becoming quite popular again, as they take to bigeneric crossing more readily than do the labiata type of Cattleya.

I am listing here eighteen species of bifoliate Cattleyas and the number of crosses that have been made with them, together with a few of their outstanding progeny.

This count was taken from "Sander's List of Orchid Hybrids" and includes crosses registered to 1954 only.

C. Aclandiae (Brazil) - 31 crosses. Outstanding are: C. peckhaviensis and Slc. Diana.
C. Amethystoglossa (Brazil) - 19 crosses. Outstanding are: C. Loddiglossa and Lc. Pittiana.
C. Aurantiaca (Mexico, Guatemala) - 12 crosses. Outstanding: C. guatemalensis, C. Wolteriana, Bc. Daffodil.
C. Bicolor (Brazil) - 50 crosses. Outstanding are: C. Iris, C. Mrs. Mahler, Lc. Hawaiian Sunset, Slc. Medea.
C. Bowringiana (British Honduras) - 78 crosses. Outstanding are: C. Porcia, C. Portia, Lc. Mrs. W. N. Elkins, Sc. Eximia.
C. Citrina (Mexico) - 10 crosses. Outstanding are: C. Canary, Lc. Canary.
C. Dolosa (Brazil) - 10 crosses. Outstanding are: C. O'Brieniana.
C. Forbesii (Brazil) - 24 crosses. Outstanding are: C. Dayana, C. Peer Gynt, Lc. Yvonne.
C. Granulosa (Guatemala, Brazil) - 52 crosses. Outstanding are: C. Pittiana, C. Antigo, Lc. Belmont, Lc. Eugene Casey.
C. Guatemalensis (Guatemala) Natural hybrid between C. skinnerii and C. aurantiaca - 2 crosses. Outstanding: Lc. Pixie.
C. Guttata (Brazil) - 14 crosses. Outstanding are: C. Hybrida, C. Resplendens, C. Taboo, C. Beloit.
C. Harrisoniana (Brazil) - 74 crosses. Outstanding are: C. Browniae, C. Mrs. Pitt, C. Bertii.

C. Intermedia (Brazil) - 60 crosses. Outstanding are: C. Claesiana, C. Suavior, C. R. Prowe, C. Undine, C. Louise Georgiana.
C. Loddigesii (Brazil) - 54 crosses. Outstanding are: C. Armstrongiae, C. Auditor, C. Snow Song, C. Henrietta Japhet, C. David Fairchild, C. Marian Fairchild, C. Loddiglossa.
C. Schilleriana (Brazil) - 42 crosses. Outstanding are: C. F. W. Wigan, C. Robert de Wavrin, Lc. Orpheus.
C. Skinnerii (Guatemala, Costa Rica) - 19 crosses. C. guatemalensis, Bc. Rose.
C. Superba (Brazil) - 29 crosses. Outstanding are: C. Charlesworthii, C. Argosy, Slc. Salamander.
C. Velutina (Brazil) - 30 crosses. Outstanding are: Lc. National Vélvet, Lc. Clotilde.

SOPHRONITIS

A small genus of dwarf growing plants that are grown and used for hybridizing, chiefly for their brilliant coloring.

Soph. cernua (Brazil) The smallest flower of the genus, it produces 4 to 8 flowers about ½ inch across, and cinnabar red in color. No hybrids listed to 1954.
Soph. coccinea (Brazil) This species is also quite small (3 inches in height) but has a large flower in comparison to the plant. The single flower is a brilliant rosy-red color and about 3 inches in size. No hybrids registered.
Soph. grandiflora (Brazil) This species is considered the finest of the genus. It bears single flowers of deep crimson-scarlet color about three inches in size. This species has been used extensively in hybridizing, seventy-two (72) crosses having been registered up to 1954. There have been many outstanding hybrids from this species and among them are: Sc. Doris, Sc. November, Sl. Psyche, Sl. Cardinal, Slc. Falcon, Slc. Sunburst and many others.
Soph. violacea (Brazil) A very small species with creeping rhizome. Flowers about 1 inch in size, violet to violet-magenta in color. Only one hybrid listed: Epiphronitis Orpetii.

During the next decade, many more crosses involving bifoliate Cattleyas will be registered. The multi-flowered inflorescence is a beautiful sight and the small to medium, crisp, and often brilliantly colored flowers give a corsage the charm of the unusual. Interest in such breeding is high in our area, among others, and we may look forward to interesting developments in the near future.

Note: Slides of the species and of a number of the hybrids were shown and commented upon.

VANDAS

William H. Sparks

STRAP-LEAF VANDAS

Judging of the vandaceous genera is fairly new and as such, somewhat controversial, but certain standards have been set. It is our purpose in this lecture to stimulate your knowledge and thinking on this subject and to bring to your attention as many of the aspects of good judging practices as is possible in the time this class allows.

The vandaceous group has been divided into two classes by the Awards Committee and tonight Mr. Flynn and I will discuss the strap leaf family-species and hybrids-and possibly touch on intergeneric Vanda hybrids. In neither this session, nor in the next on terete Vandas, will the subject of Phalaenopsis be discussed, since Phalaenopsis are, in the true sense, vandaceous, but are given separate ranking due to their popularity.

As you have been told in previous classes, good judging practices on all genera are based on a sound knowledge of the basic species and all its flowering characteristics, as well as all of the stud stock being used in the hybrid being judged.

I think at this point it might be well to note and consider the point scale for Vandas as set up in your "Handbook on Judging" by the Awards Committee of the A.O.S. This point system has been developed after a great deal of thinking and discussion by many well-qualified people from all parts of the country and while, in the opinion of some, it is not a perfect scale for all lines of breeding in the vandaceous family, it is the best scale that has been developed at the present time. It is being constantly reviewed by qualified judges from all five of our regional judging areas and their views are sent on for consideration by the Awards Committee of the A.O.S.

First on our scale comes color, with a total of 32 points out of a possible 100, subdivided as follows: all subdivided points for Vandas are for judges' reference only and are not necessary for separate scoring.

1. Over-All Color -		20
a. Harmony	(8)	
b. Brilliance & Purity	(8)	
c. Rarity	(4)	
2. Parts of Flower -		12
a. Dorsal sepal	(2)	
b. Petals	(3)	
c. Ventral sepals	(5)	
d. Labellum	(2)	
		32 points

Form of flower allows a total of 30 points, subdivided as follows:

1. Over-All Form -		14
2. Parts of Flower -		16
a. Dorsal sepal	(4)	
b. Petals	(4)	
c. Ventral sepals	(5)	
d. Labellum	(3)	
		30 points

Flower characteristics allow a total of 19 points:

1. Flower size -	10
2. Substance -	5
3. Texture -	4
	19 points

Stem characteristics also allow 19 points, bringing the total point score to 100, and subdivided as follows:

1. Habit of stem -	5
2. Arrangement of flowers on stem -	6
3. Number of flowers on stem and floriferousness -	8
	19 points
TOTAL	100 points

At this point, it will be well for us to return and consider each section in order to understand better the terminology used and the points allowed for each item.

First - color of flower:

a. Over-all color harmony (8 points). Has breeding endowed this flower with an agreeable blend of colors and keyed them together harmoniously with one hue? In Newton's spectrum, red has long wave lengths and blue, short ones; yet to the eye, red and violet seem to be related and may be brought together with red-violet between, or as we call it in our orchid terminology, purple or magenta. Some closely-related colors are pleasing - autumn colors, for instance, blend through green,

yellow-green, yellow-orange, brown, red and violet. All of these are found in Vandas and these hue arrangments are pleasing to the eye.

The next principle of color harmony is with opposite colors, such as the orange and yellows in lip colors against the blue or violet of petals and sepals. Combinations of opposite colors can be very pleasing to the eye. I seem to have drifted into this color harmony a little deeply, but feel that it may help you in your understanding of differences of opinion judges have on this controversial subject. This is a quality that can not be taught in class.

b. Brilliance and purity of color (8 points). Does the flower have a sparkling, clear intensity of color? Purity of color can best be described, I think, by lack of greyness.

c. Rarity (4 points). Is the color of the flower outstanding by having the quality of being uncommon - different from what you would expect from that line of breeding, or is it different from the average of the cross?

Now that we have considered the over-all color of the flower, let us go back to the individual parts of the flower and consider, in turn, the color in the dorsal sepal (2 points), the petals (3 points), the ventral sepals (5 points) and last, and least, the labellum (2 points). Now we have covered the 32 points allotted for color and broken down into the values on all parts of the flower. As Bill Kirch told us in Hawaii, geographic location may influence a judge's taste as to color and he used as an example the bright, flamboyant color of dress and countryside of the Islands, tending to make the judges there partial to the soft browns, beiges and tans as the desirable colors of strap leaf Vandas, while judges from areas where browns, beiges and tans are common colors of the country lean toward brighter colors - pinks, reds and blues. However, color appreciation in many people requires a great deal of training and there are many that cannot distinguish between even the primary colors. Color blindness and geographic location cannot change the qualities of harmony, purity and rarity that contribute the majority of the 32 points for color.

As we have noted, there are 30 points allotted for shape, of which 14 are awarded for the over-all form of the Vanda. It is extremely important for one to be familiar with the background of the flowering plant in order to point fairly a strap leaf Vanda, as the shape varies considerably. Roundness in all strap leaf Vandas does not necessarily suggest perfect form, but in Vanda sanderiana and its hybrids roundness is expected, while hybrids using coerulea or tricolor may vary considerably from the perfectly round form.

Sixteen (16) points are divided among the parts of the flower, using as a guide 4 points for the form of the dorsal sepal, 4 points for the petals, 5 points for the ventral sepals and 3 for the lip. In evaluating the form as to the various parts of the Vanda, try to appraise the proportions of each flower segment to the over-all flower, considering the parentage. You

see that parentage keeps popping up in every phase of this talk, so to appreciate the true qualities of any given cross one must have a sound knowledge of the species involved.

We now come to the flower characteristics, with 10 points for flower size which, again, is relative and calls for considerable knowledge and experience on the part of the judge. Appraise Vandas for size in their proper class according to breeding. A little later in this talk, I will give you some comparative sizes from the awards records on strap leaf Vandas. These will serve as a guide to you in your thinking. Substance allows 5 points. Substance is the thickness of the tissue of the flower and is not to be confused with texture that allows 4 points. Texture is the desirable feature of the flower surface which enhances the appearance. It is the manner in which the particles or small constituent parts of the flower surface are united to give the qualities of finish that reflect in a pleasing manner. Substance and texture are qualities that are more universally accepted as uniform in the degree of perfection aimed for in quality crosses.

Stem characteristics are important in all spray type orchids. In the strap leaf types, generally, the stem is upright. The stem should be adequate to support the head of flowers, long enough to clear the foliage and to allow the individual flower to open on the stem without deforming. Judges' reference for habit of stem allows 5 points, while arrangement of the flowers allows 6. Arrangement of the flowers is not too difficult to judge. Any pleasing arrangement of the flowers, well and evenly spaced so that the over-all effect of the flower head gives the feeling of good design is all that is expected.

The number of flowers on the stem and floriferousness (8 points) again goes back to the basic species and I think my charts a little later will give you a good idea of what is expected in some of our award quality strap leaf Vandas.

Now I think it might be good for you to note some of the characteristics of awarded strap leafs and we will refer to these charts made from the records of the American Orchid Society award files. I found a total of 111 A.O.S. awards: 9 First Class Certificates, 74 Awards of Merit and 28 Highly Commended Certificates.

Now I think we should touch on polyploidy in Vandas and my sources of information are the Proceedings of the 2nd World Orchid Conference, the A.O.S. Bulletin, the Orchid Journal, Na Pua Okika Hawaii Nei and the Pacific Orchid Society of Hawaii. The authors are Drs. Kamemoto, Mehlquist and W. B. Storey and Messrs. Bill Kirch and Oscar Kirsch. Vanda groups have been the subject of intensive hybridization in Hawaii for some time but, until the past few years, little has been known concerning polyploidy of this group and, consequently, the following questions have been raised:

1. Do polyploid Vandas exhibit desirable characteristics?

2. To what extent has polyploidy developed in this group?

3. If polyploidy represents desirable characteristics, how can they be reproduced?

Storey, working at the University of Hawaii, was the first to recognize polyploid forms in Vandas, recording a plant of Vanda Cooperi to be tetraploid along about 1953. A few years later, a plant of V. Manila was exhibited in Hawaii with large flowers, heavy substance and good form - so good in fact that the judges were reluctant to score it, believing it was mis-identified. Subsequent investigation into chromosomes revealed it to be pentaploid. Other siblings were found to be tetraploids and triploids, all superior to the diploid plants in such aspects as size, substance and form of flower. Thus, the question of desirable characteristics can be answered by pointing out the plants I have just mentioned.

Vandas have only recently been intensively hybridized with interest on the polyploidy and we have just noticed, in the last couple of years, the development of polyploid forms. Sanders shows, up until 1940, 50 Vanda hybrids; 164 hybrids from 1940 to 1951; and in the next 3 years, 1951 to 1954, 135 hybrids were registered. The A.O.S. Bulletins since 1954 list a total of 158 Vandas registered over a 5 year period.

Kamemoto tells us that, up until the Conference in Hawaii, in the spathulate or strap leaf group, 22 plants had been exhibited as polyploids, 14 of which were tetraploids. Triploid, tetraploid and pentaploid V. Manila; tetraploid V. Rothschildiana and triploid V. Clara Shipman Fisher, to mention a few, all show desirable characteristics and, therefore, have been used in the breeding program.

Diploids, on occasion, have been found to produce characteristics in their progeny comparable to that of tetraploid parents and, although such diploids may not, themselves, have the horticultural characteristics of tetraploids, they are still valuable in breeding.

I think at this point I might as well explain, very fundamentally, polyploidy in spathulate and strap leaf Vandas.

The gametic chromosome number in Vandas is 19. Gametic numbers come from the pollen mother cell or microspore division. The somatic chromosome number in Vandas is 38. Somatic count is generally made from the root tip.

Since diploid simply means two sets of chromosomes (gametic) and most forms of animal and plant life are diploid, the average strap leaf Vanda is diploid with a count of 38 chromosomes.

Triploid is 3 times the gametic count, or 3 x 19, so the triploid Vanda has a count of 57 chromosomes; tetraploid, 76; and the pentaploid, 95. Anueploids are plants with one or a few chromosomes more or less than the balanced diploid, triploid or other polyploid.

While we are on polyploids, I might as well finish what I have to say on this subject and I will say this: as an amateur orchid enthusiast, I find cytology, in all its phases, as difficult to understand and absorb as

anything I have run into. Plants take half the chromosomes from one parent and half from the other. For example, if a cross was made of a tetraploid Vanda, having a count of 76 chromosomes and a diploid having 38, the hybrid would have 57 and be a triploid, taking 19 from the diploid parent and 38 from the tetraploid parent. Usually such a hybrid would strongly resemble the parent having the greater number of chromosomes. It could be sterile. Fertility depends on the similarity of the chromosomes contributed by the two parents. Complex hybrids resulting in partially-sterile plants usually produce more viable seed when used as pod plants. This is particularly true in tetraploids.

Maurice Restrepo says he agrees with the noted Ceylon Vanda pioneer, Ernst de Saram, that in Vandas, the pollen parent has a greater influence on the floral merit of the hybrid and the seed parent on the vegetative development. Storey says if sterile or partially-sterile forms are used in hybridization, chances are best if the sterile form is used as a seed parent and a highly fertile form used as the pollen parent.

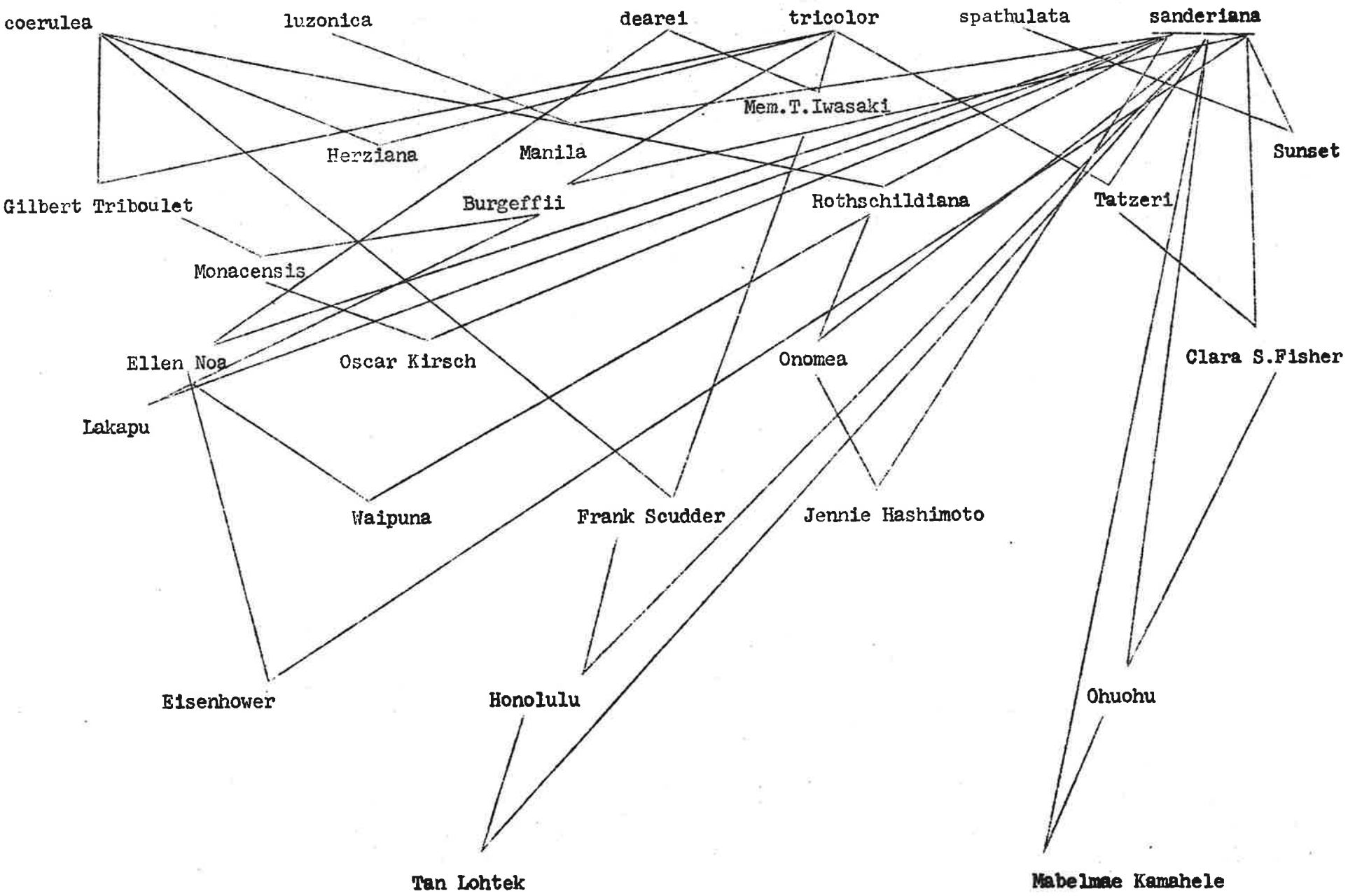
Tetraploids crossed with tetraploids will continue to produce exhibition material. Tetraploids crossed on diploids will produce better cut flowers. In most plants, occasional polyploids will occur through accidents in cell division as Mr. Merkel pointed out a couple of weeks ago. Storey also tells us triploids in Vandas are superior in the form, texture and keeping qualities we are looking for in award material. There are about 45 botanically described Vanda species, most of which fall into the spathulate or strap leaf group. The representative species are: V. sanderiana, V. coerulea, V. luzonica, V. tricolor and V. spathulata.

Vanda sanderiana was first collected in 1882 by a Mr. Roebling for the Sanders and was named for them. It was considered the greatest horticultural find of its time and in strap leaf Vanda breeding has certainly proven to be the finest parent species to date. It is difficult to find an awarded strap leaf Vanda without sanderiana in its background. In fact, I find only 2 in the entire list of awards, both species V. coerulea. Vanda sanderiana first bloomed in England in 1883. At the time, it was called Esmeralda (Reichenbach) Euanthe (Schlechter), but all practicing horticulturists think of it as Vanda sanderiana.

Vanda coerulea, noted for its varying depths of blue color, is considered by some hybridizers to be the best strap leaf parent. In a few minutes, we will look into the breeding habits of the two.

Certain Vanda species usually pass along certain characteristics to their hybrids: V. coerulea its blue color, V. sanderiana its large flat shape, no twisted petals, V. tricolor and its variety suavis pass along their spots, and V. spatulata endows its hybrids with excellent vegetative growth and larger flowers generally than itself. The first primary hybrids of V. sanderinana did not reach their parent in beauty, but taught the hybridizer the lesson that perfect shape was modified by other parents unless the other parents had equally good shape. It did seem to hold its flat form. V. sanderiana has a recessive color factor as proven by crosses such as V. Sunset

PEDIGREES OF SOME VANDA HYBRIDS



(sanderiana x spathulata), a clear yellow, and V. Mary Foster (sanderiana x merrillii) shows the lacquer red of merillii. In Renantanda Jack Warne (Renanthera storiei x sanderiana), we find a brick red color. Even with terete Vandas, sanderiana gives a good flat flower of fine form but has little or no influence on the color.

Second generations produced flowers as good or better than sanderiana, such as V. Ohuohu, and bloomed at a much better time, under proper cultural conditions almost perpetual-blooming. Many other secondary hybrids were very good, V. Onomea (sanderiana x Rothschildiana), V. Honolulu (sanderiana x Frank Scudder) and many others.

The size of flower in later generations seemed to be in proportion to the percentage of sanderiana blood. The color range is extreme in many instances, with sanderiana contributing its share in these later crosses. Just now, we are seeing the results of V. sanderiana in bi-generic breeding with such genera as Renanthera, Trichoglottis, Phalaenopsis and others. Trichovanda Ulaula (Trichoglottis brachiata x sanderiana) we have seen at our regional judging. We have also seen Renantanda Jack Warne (sanderiana x Renanthera storiei). Bill Kirch tells us V. coerulea as a parent seems not to be constant as far as shape and color inheritance, although, as I said before, it is considered by some breeders in other parts of the world as the top Vanda stud. Well known is V. tricolor, easy to grow, free flowering, small flowers compared to our modern hybrids. V. tricolor x V. coerulea makes V. Gilbert Triboulet with blue color from coerulea and a shape controlled by tricolor. Now cross V. tricolor with V. sanderiana and we get V. Tatzeri, one of the oldest sanderiana hybrids. It has inherited size, shape, habit of flower from sanderiana and color influence from V. tricolor. V. Tatzeri is a superior flower to V. Gilbert Triboulet. Cross V. Tatzeri back on sanderiana and we get V. Clara Shipman Fisher. This hybrid comes close to the size and shape of sanderiana but still shows some of the tricolor. Still a compact grower, free flowering and considered one of the best cut flowers yet produced in Hawaii. It still does not have the perfect shape, so we will again cross it back on sanderiana and make V. Ohuohu. Some of the V. Ohuohus are hard to beat. Now I hope you see what 15 or 18 years of breeding with V. sanderiana have done on back crosses. V. luzonica as a species is a neat plant with handsome foliage and is free flowering. V. luzonica makes a good parent, crossed with C. coerulea it makes V. Flamerolle that is superior to both V. Herziana and V. Gilbert Triboulet, based on the fact that the flowers are better in shape, about the same size and have a good distribution of color. V. luzonica x V. sanderiana makes V. Manila that has the best shape of all primary hybrids yet shown and a good even pink color inherited from V. luzonica.

V. dearei x V. coerulea makes V. Lester McCoy, thought by Kirch to be the second best primary hybrid to date. It has size, shape, substance and good keeping qualities.

V. dearei x V. sanderiana makes V. Ellen Noa, a very fine hybrid but one which has inherited the short stem from V. dearei.

A. O. S. AWARDS STRAP LEAF VANDAS

F.C.C.	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
1. V. coerulea 'Blue Jay'						
2. V. Rothschildiana (coerulea x sanderiana) 'Aridine'	90			1–3/4 X 1–13/16	1–13/16 X 2–1/4	
3. V. sanderiana 'Country Acres'	92		1–3/4 X 1–7/8	1–1/2 X 1–3/4	2 X 2–1/4	8
4. 'Janice K'	90	4–1/8 X 5	2 X 2–5/8	2 X 2–1/4	2–5/8 X 2–5/8	23
5. 'Emogene'	93		2–3/16 X 2–3/8	1–3/4 X 2	2–1/2 X 2–1/2	17 + 3
6. 'Hawaii'	91	4 X 4–3/4	2–3/16 X 2–3/16		2–3/8 X 2–3/8	14
7. 'Kilinehi'	98		2–1/4 X 2–3/8	1–3/4 X 2–1/8	2–5/16 X 2–5/8	16
8. 'Kono'	91		2–1/16 X 2–1/4	2 X 2–1/16	2–3/8	16
9. 'Kono No. 3'	94		2–3/16 X 2–1/4	1–7/8 X 2	2–1/2 X 2–5/8	20 + 3

A.M.	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
1. V. Carol Hirano (Gilbert Triboulet X sand.) 'Mrs. Tsurugo Oda'	81					
2. 'San Francisco'	85	4 X 4–1/4	1–3/8		1–5/8	11
3. V. Jennie Hashimoto (Onomea X sanderiana) 'Dawn Nishimura'	82	3–1/2 X	1–5/8 X 1–7/8	1–5/8 X 1–7/8	1–3/4 X 2–1/8	9
4. 'Clara M. Hogan'	81	3–3/4	1–3/4	1–5/8	2	22–2
5. 'Leona'	83	3–1/2	1–1/2 X 1–7/8	1–1/2 X 1–3/4	1–3/4 X 2–1/16	12
6. 'Mildred Merkel'	83	4	1–1/2 X 2	1–3/4 X 1–1/2	1–3/4 X 2	14
7. 'Patty'	83	3–13/16 X 5	2 X 2–3/8	1–3/4 X 2	2 X 2–3/8	18
8. V. Clara Shipman Fisher (Tatzeri X sand.) 'T. Ota'	80	4	2 X 2–1/2	1–3/4 X 1–7/8	2–1/2 X 2–1/2	
9. 'Ota'	86	3–3/8 X 3–3/4	1–1/2 X 1–3/4			
10. 'Karen'	81	4	1–7/8 X 2	1–3/4 X 1–7/8	2 X 2–1/8	
11. V. coerulea 'John W. Slotter'						
12. V. Eisenhower (Ellen Noa X sand.) 'Apogee'	87	3–1/2 X 3–3/4	1–3/8 X 1–3/4	1–1/4 X 1–5/8	1–1/2 X 1–7/8	
13. V. Eisenhower 'Buckskin'	81	3–5/8	1–3/4 X 1–1/2	1–3/4 X 1–3/4	2 X 2–1/8	13
14. 'Silver Medal'	81 & 86	3 X 3–3/4	1–1/8 X 1–1/2	1–1/8 X 1–1/2	1–5/16 X 1–1/2	
15. 'Dunsriver'	83	3–1/2 X 3–1/2	1–3/8 X 1–3/4	1–3/8 X 1–5/8	1–3/4 X 1–3/4	10
16. 'Mary Lou'	82	3–3/4 X 4–3/8	1–7/8 X 1–7/8	1–5/8 X 1–3/8	2–1/2 X 2–1/2	8
17. V. Ellen Noa (sand. X dearei) 'No. 2 Charlene'	81	4–1/4 X	1–3/4 X 1–1/2	2 X 1–1/2	1–1/4 X 1–7/8	11
18. V. Frank Crook (Honolulu X sand.) 'Diana'	80	3–7/16 X	1–1/2 X 1–5/8	1–1/2 X 1–5/8	1–5/8 X 2	11

A.M. (con't.)	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
19. V. Gertrude Miyamoto (Mem. G. Tanaka X sand.) 'Wisenauer'	81	3–7/8 X 4–3/8	1–1/2 X 2–3/8	1–3/8 X 2–1/16	1–3/4 X 2–1/8	9
20. V. Iwalani (coerulea X Ellen Noa) 'Nakagawa'	81	4	1–3/8 X 2	1–1/2 X 2		8
21. V. Jack Walker (Mary Foster X Ohuohu) 'Del Ora'	82	3–1/2 X 3–3/8	1–1/2 X 1–3/4			10
22. V. Jamie Leong (Ellen Noa X Clara S. Fisher) 'Vaughn'	82	3–7/16	1–3/8 X 1–3/4	1–5/16 X 1–3/4	1–1/2 X 1–3/4	18 + 2
23. V. Kinau (Azur X sand.) 'Ora'	80	5 X 5–1/2	1–3/4 X 2–3/4	1–3/4 X 2–1/2	2 X 2–1/2	11
24. V. Lynn Sugihara (Piihonua X sand.) 'Violet'	84	4–5/16 X 4–15/16	1–15/16 X 2–1/2	1–7/8 X 2–1/8	2–3/16 X 2–1/2	18 + 5
25. V. Mabelmae Kamahele (Ohuohu X sand.) 'Judy'	83	4 X 4–3/8	2 X 2–1/8	1–5/8 X 2	2–1/8 X 2–1/2	27 + 2
26. 'Blue Moon'	81	4–1/8 X	2 X 2–1/16	1–13/16 X 2	2–5/16 X 2–3/8	12
27. 'Monterey Bay'	83	3–5/8	1–7/8 X 2	1–1/2 X 2	2–1/8 X 2–1/4	13
28. 'Lois'	82	3–3/4	1–7/8 X 1–7/8	1–5/8 X 1–3/4	2 X 2	12 + 2
29. 'Fair King'	82	3–5/8	1–1/2 X 2	1–1/2 X 1–3/4	2–1/4 X 2–1/8	14
30. V. Manila (Luzonica X sand.) 'AM'						
31. V. Ohuohu (Clara S. Fisher X sand.) 'AM'	88	5				13
32. V. Ohuohu 'Hirose'	86	4–1/4 X 3–3/4				15
33. 'Toyomi Nanaki'	82	3–3/4	1–3/4 X 2	1–3/4 X 1–7/8	1–7/8 X 2	12
34. V. Onomea (Rothschildiana X sand.) 'Hayakawe'	84	3–3/4				11
35. 'Houston'	82		1–5/8 X 2	1–5/8 X 1–3/8	1–7/8 X 2–1/8	14
36. 'Nevah Michell'	83		1–3/8 X 2	1–1/2 X 2	1–7/8 X 2	16
37. 'July'	82	3–1/2 X 3–3/4	1–5/8 X 1–3/4	1–1/2 X 1–3/4	1–5/8 X 1–3/4	6
38. 'Miami'	84	3–3/4 X 4–1/2				12
39. 'Red Sands'	85	4–1/2 X 5	2 X 2–5/16	2 X 2–1/8	2–1/8	10
40. 'T. Ogawa'	81	4 X 4–1/2	1–3/4 X 2–1/4	1–3/4 X 2		
41. 'Hilo'	84	3–5/8 X 4–1/2	2–1/8 X 2–1/8	1–7/8 X 1–7/8	2–1/2 X 2–1/2	13
42. 'Doris'	81	4 X 4–5/8	1–3/4 X 2–3/16	2 X 2–1/4	1–5/16 X 1–3/4	12
43. V. Rothschildiana 'AM'	87	4–7/8 X 4–1/2			2–3/16	12
44. 'Blue Moon'	81	5–1/2	2	1–7/8	2–5/16	9

A.M. (con't.)	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
45. 'Chee'	85	4–1/8 X 4–1/2	1–3/4 X 2–1/4			
46. 'Monterey Bay'	85	4–1/16 X	1–3/4 X 2	1–3/4 X 2–1/16	2 X 1–3/4	6
47. 'Ogawa'		5–1/2 X 4–3/4				
48. 'Richard N. Tanaka'	88	5 X 4–3/4	2 X 2–1/4	2 X 2–1/4	2 X 2–1/4	13
49. 'Sue'	81	4–1/2 X 5	2 X 2–1/2	2 X 2–1/4	2–1/4 X 2–1/2	13
50. 'T. Ota'	87	5	2–1/8		2–3/8	
51. 'West Deal'	80	4–3/8 X 4–1/2	1–7/8 X 2–1/2			15
52. 'Blue Boy'	81	4–1/4 X 4–1/4	1–3/8 X 2–1/8	1–3/4 X 2–1/8	2–1/8 X 2–1/4	16–3
53. 'Claire Nakagawa'	80	4–1/8	1–5/8 X 2–1/8	1–3/4 X 2	2 X 2–1/4	10
54. 'Earl M. Suyama'	84	4–5/8	2 X 2–1/4	1–7/8 X 2–1/4	2–1/8 X 2–1/4	12
55. 'No. 28'	80	4–1/8 X 4–7/16	1–3/4 X 2–1/8	1–11/16 X 2–1/16	2–3/16 X 2–7/16	12
56. 'Nakagawa'	81	4–3/4				10
57. 'Joy Nakagawa'	84	4–3/4	2 X 2–1/2	2 X 2–3/8	2–1/4 X 2–1/2	11
58. V. Sanderiana 'AM'						
59. 'Carbone'	80	3–3/4 X 4–9/16	1–3/4		2	12
60. 'Fireball'	87	4 X 5	2 X 2–1/4	1–3/4 X 2	2–1/8 X 2–1/4	19
61. 'Joe Dew'	84	3–3/4 X 4	2 X 2–1/8	1–5/8 X 1–7/8	2–1/4 X 2–3/8	13
62. 'Kiesewetter'	81					
63. 'Kono No. 2'	81	3–7/8 X 4–1/4	1–7/8 X 2		1–7/8 X 2	
64. 'Kono No. 4'	85	3–7/8 X 5	2–1/8 X 2–5/16	1–13/16 X 2	2–3/8 X 2–1/2	17
65. 'Kono No. 6'	81	4 X 5	2–3/8 X 2–1/2		2–1/2 X 2–3/4	
66. 'Miami Shores'	87	3–5/8 X 3–7/8	2 X 1–7/8	1–3/4 X 1–11/16	2–1/4 X 2–3/16	
67. V. Sanderiana 'Pride'	81	3–5/8 X 4–1/4	1–3/4 X 1–1/2	1–1/2 X 1–7/8	2 X 2–1/4	12
68. 'Round'	87		2–1/8 X 2–1/8	1–13/16 X 1–3/4	2–1/2 X 2–1/2	48–3
69. 'Terry'	86	4–5/8 X 4–7/8	2–1/8 X 2–3/4		2 X 2–1/4	14
70. 'Lady Marian'	80	4	2 X 2–1/4	1–3/4 X 2	2–1/4 X 2–3/8	21
71. 'Mrs. Alexander Bowman 8'	86	3–3/4 X 4–3/4	2 X 2	1–1/2 X 1–13/16	2–3/8 X 2–3/8	14
72. 'Little Peggy'	84	3–7/8	2 X 2–1/4	1–1/2 X 2	2 X 2–3/8	14
73. V. Tan Lohtek (sand. X Honolulu) 'Gertie'	82	3–3/16	1–7/16 X 1–1/2	1–5/16 X 1–1/2	1–5/8 X 1–3/4	10
74. V. Waipuna (Ellen Noa X Rothschild.) 'Kodama'	80	3–1/2	1–5/8 X 1–3/4	1–3/8 X 1–5/8	1–3/4 X 1–3/4	10

H.C.C.	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
1. V. Eisenhower 'Scott Kong'	79					
2. 'Tomiyasu'	76					
3. V. Laukapu (sand. X Burgeffii) 'Blooms No. 1'	79					
4. V. Oscar Kirsch (Monocensis X sand.) 'No. 1'	79					

H.C.C. (con't.)	Pt.	Over All	Dorsal Sepal	Petals	Lateral Sepals	# Fls.
5. 'Monterey Bay'	76					
6. V. Rothschildiana 'Leona'	78					
7. 'Blue Mist'	77–79					
8. 'Kunia'	76					
9. 'Reddington'	79					
10. 'Joe'	76					
11. 'Hightide'	78					
12. 'Billie'	79					
13. V. Mabelmae Kamahele 'Flowerland'	76					
14. 'Ruby'	78					
15. V. Onomea 'Allen H. Kondo'	75					
16. 'Amethest'	77					
17. 'Diana Ogawa'	77					
18. V. Onomea 'Wayne Ogawa'	77					
19. V. Jennie Hashimoto 'John Thomas'	78					
20. 'Sailboat'	78					
21. 'T. Himora'	78					
22. 'Nehoa'	78					
23. V. sanderiana 'Charlene'	76					
24. 'Maui Beauty'	77					
25. 'My Aloha'	75					
26. 'Orchid Hill'	75					
27. '81'	79					
28. V. Kuhio' (Tatzeri X Onomea) 'Peacock'	77					

The best all-round primary hybrid to date is V. Rothschildiana (coerulea x sanderiana). Large flowers, good growers, good color and free flowering, in some strains freer flowering than their parents.

In summary:

1. Vanda sanderiana is the best species to date.
2. V. coerulea - 2nd best species parent.
3. V. coerulea tends to produce blue color.
4. V. sanderiana tends to give good shape to its progeny.
5. After V. sanderiana and V. coerulea would be V. dearei and V. luzonica, tied for 3rd place.
6. V. tricolor and its variety suavis, in 4th place.

We find that Vandas will breed with many other genera and over the years many bigeneric crosses have been made.

We find Vanda will breed with Aerides, Phalaenopsis, Arachnis, Renanthera, Vandopsis, Ascocentrum, Trichoglottis, Saccolabium and Luisia.

With Aerides, Vanda makes	Aeridovanda
Phalaenopsis	Vandaenopsis
Arachnis	Aranda
Renanthera	Renantanda
Vandopsis	Opsisanda
Trichoglottis	Trichovanda
Saccolabium	Saccovanda
Luisia	Luisanda
Ascocentrum	Ascocenda

The only trigeneric I find is Aerides x Vanda x Phalaenopsis called Tanakara Honolulu (Aeridovanda Ruth x P. schilleriana). The following is a list of the few Vanda bigeneric awards to date:

Aeridovanda Pamela 'Schotzi'	A.M.	(V. Ellen Noa x Aerides quinquevulnerum)
Aranda Daniel Sato 'Fiddler's Green'	A.M.	(Arachnis flos-aeris x V. Emily Notley)
Daniel Sato 'Red Sails'	A.M.	
Aranda Punctata 'Brightman'	A.M.	(V. sanderiana x Renanthera storiei)
Opsisanda Helen Miyamoto 'Gwen'	A.M.	(Vandopsis lissochiloides x V. sanderiana)
Renantanda Violet 'Pearl Ono'	A.M.	(Renanthera storiei x V. amoena)
Violet 'Regal Queen'	A.M.	
Renantanda Moanalani 'Mona'	A.M.	(Renantanda Mona Lisa x V. sanderiana)
Renantanda Jack Warne 'Brightman'	A.M.	(V. sanderiana x Renanthera storiei)
Trichovanda Richard Emery 'Burgundy'	A.M.	(Trichoglottis brachiata x V. Rothschildiana)

STRAP-LEAF VANDAS

Del Flynn

We shall now turn our attention to Vandas, a large genus, consisting of approximately 45 botanically described species. These may be divided into three groups when the type of leaf is taken into consideration: spathulate or strap leaf, terete, and semi-terete.

This session will be devoted to the spathulate, or strap leaf, group into which about 40 of the species fall.

It is obvious that I will be unable to cover the characteristics of each species' hereditary influence when used in hybridizing. Therefore, only a few that have produced some of the most outstanding hybrids to date will be considered.

Due to the wide range of colors in Vanda, knowledge of the species in the background of each flower is of utmost importance when evaluating a flower. As an example, what would be your reaction if you saw a plant with yellow flowers bearing the label Vanda Honolulu? Your first reaction might well be that the plant was erroneously labeled. Let us, however, look into the background of V. Honolulu.

V. Honolulu

v. sanderiana x v. Frank Scudder

v. coerulea x v. Mem. T. Iwasaki

v. dearei x v. tricolor

So there we have it, with V. dearei in its ancestry, V. Honolulu could be yellow.

Now let us look into the influence a few of the species have when used in breeding. Since V. sanderiana has been the chief contributing factor in the size and form of so many present day hybrids of exhibition and award quality, it is natural that much time will be required to discuss its influence in breeding, therefore, I will start with V. sanderiana and go into some of the other species as time permits.

As in other species, V. sanderiana varies both in color and form. The form of the flower is most important in breeding, as the hybrid will usually take on the color of the other parent. This is true in primary hybrids and most secondary hybrids. Hybrids with two or three generations of V. sanderiana breeding frequently will produce some pinks, variable from light to very dark, some almost strawberry, as in V. Onomea.

In the October, 1954, issue of the Bulletin of the Pacific Orchid Society of Hawaii, an article written by Mr. Robert Warne, entitled "Vanda Sanderiana," was published. Mr. Warne not only traced the history of the species but also discussed its influence in breeding quite thoroughly. I should like to quote Mr. Warne's remarks concerning V. sanderiana hybrids.

> "Let us now consider the hybrids from V. sanderiana. The primary hybrids flower quite uniformly in each cross and all seem to take the color chiefly from the other parent. V. Ellen Noa (V. sanderiana x V. dearei) has the yellow color similar to V. dearei but not as clear a yellow; V. Rothschildiana has the blue color of coerulea but perhaps a little on the purple side and V. Henrietta Ho takes the brown and greenish brown color from the V. sumatrana parent, etc. V. sanderiana is one of the few Vanda species that does not have its petals twisted around and this flat shape fortunately is inherited by the primary hybrids. The size in these primary flat-petal hybrids comes intermediate between the two parents, often nearer the smaller parent. The width of the petals follows more the sanderiana parent, so most of the primary hybrids have a full round flower, but not as full as the V. sanderiana parent unless the other parent also had wide petals like V. dearei or V. coerulea. The primary hybrids are more vigorous growing and faster grwoing than V. sanderiana and more free flowering. This free flowering quality varies with different crosses and with different plants in the same cross. Some V. Manila may flower fifteen times a year and some V. Henrietta Ho may only flower twice per year.
>
> "Closely related to the primary hybrids are crosses having Vanda sanderiana for one parent and a hybrid from two other species for the other parent. In this case, the offspring have most of the characteristics of the primary hybrids in size, shape of flower, free flowering habits, etc., but the color varies, with some taking after one of the other species and some after the other but none after the V. sanderiana parent. For instance, V. Honolii (V. Herziana x V. sanderiana) comes in pinks and blues and shades in between. V. Ernest Fujinaga (Caroline Robinson x sanderiana) produces pink, brown, yellow and gray flowers, as you might expect from Caroline Robinson, which is V. roxburgii x tricolor.
>
> "When one of the primary sanderiana hybrids is crossed back on V. sanderiana again, large, fine-shaped flowers are produced, but at times some of the vigor and free flowering characteristics of the primary cross are lost. Some of them resemble the V. sanderiana in color and markings, but most follow the other parent making up one-fourth of the parentage. V. Onomea (V. sanderiana x Rothschildiana) produces fine, large flowers and they may be pink, blue or in between and a few resemble the sanderiana parent in having the lower sepals brown and the upper parts of the flower on the pink side but do not quite look like the V. sanderiana parent. Some of the V. Bill Suttons (Manila and sanderiana) look enough like V. sanderiana to be mistaken for it at first glance but most follow the Manila parent for color.

However, in this group are found some of the finest shaped and best Vanda hybrids.

"What happens when one of the V. sanderiana hybrids is selfed? Here we get much more variation then in the first cross. Although all the V. Rothschildianas in primary hybrids are blue, as far as I know, some of the offspring from V. Rothschildiana selfed come pink and retain the V. Rothschildiana shape. One of the finest Vandas I have seen is the plant of V. Clara Shipman Fisher, selfed, owned by Mr. T. Ota of Hilo, which recently won an A.M. award from the American Orchid Society. This one plant came with fine shape and good colored flowers while many of its sisters were quite ordinary. Certainly, some of the show plants of the future will come from these two last mentioned groups.

"In hybrids having only one-fourth V. sanderiana blood, we see very little of the V. sanderiana influence, except a little in size. V. Joan Swearingen (Rothschildiana x luzonica) comes in pinks and blues but most twist the petals some. V. Tita Marks (Rothschildiana x Mem. T. Iwasaki) usually has the twisted petals also. In this case, we have V. sanderiana, V. coerulea, V. dearei, and V. tricolor each making one-fourth of the parentage and, as you would expect, almost every color is produced. Although some are bright and pretty, many of the flowers are muddy or washed out in color and poor in shape."

We may summarize the influence of some of the other species found most frequently in our present day hybrids as follows:

V. COERULEA: Blue. The petals are twisted 180 degrees. When used in hybridization it is fortunate that this characteristic does not carry over into its progeny. The influence of color is quite dominant, usually darker and on the purple side, as in V. Rothschildiana.

V. DEAREI: Yellow. Influence of color strong, sometimes showing up in hybrids two or more generations removed, as mentioned in V. Honolulu. Substance heavy and passed on to the hybrid.

V. LUZONICA: White with streaks and splashes of crimson. Substance heavy. Breeds various shades of pink in the primary hybrids and quite frequently pinks are produced when it is bred with other hybrids, such as V. Joan Swearingen (V. Rothschildiana x V. luzonica). V. Manila is one of the best known primary hybrids (V. luzonica x V. sanderiana).

V. MERRILLII: Yellow background with red blotches on all segments. The texture makes the flower take on the appearance of having been lacquered. Influence of color quite strong, even in many second generation hybrids.

V. SPATHULATA: Yellow. Small sized. Extremely influential both in color and size. Even when crossed with V. sanderiana, the hybrid (V. Sunset) is but slightly larger than V. spathulata.

V. SUMATRANA: Brown and greenish-brown. Breeds brown and greenish brown tones as in V. Henrietta Ho.

V. TRICOLOR: Variable, as there are nine or more sub-varieties. Some of the more familiar varieties are suavis and planilabris. V. tricolor var. suavis when crossed with V. sanderiana produces a better primary hybrid in V. Burgeffii than V. tricolor x V. sanderiana makes in the primary hybrid, V. Tatzeri. However, when V. tricolor var. planilabris is crossed with V. sanderiana a "V. Tatzeri" far superior to the usual V. Tatzeri is produced, from the standpoints of color, form and substance. Another case where V. tricolor var. planilabris is superior to V. tricolor is seen in V. Trisher (V. tricolor x V. Clara Shipman Fisher).

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Also correspondence and personal contact with many of the outstanding hybridizers of Hawaii.

TERETE, SEMI-TERETE VANDAS

Del Flynn

This evening we will discuss the Vanda species in the terete and semi-terete groups, also terete and semi-terete hybrids.

I will confine my discussion to the terete species and hybrids and the semi-terete species. Messrs. George Wakasugi and Jack Kasper will discuss the semi-terete hybrids.

I might mention here that, in preparing the two lessons on the genus Vanda, only some of the more pertinent information is being covered, for it would require much more time than that alloted to all eight lessons to cover the genus thoroughly.

Now, let us consider the Vanda species in the terete group. The leaves are cylindrical with a very slight groove on the top or upper portion, running the full length. A cross section would appear circular with a small indentation on one side. For years there were only three known species in this group. They were V. teres, V. hookeriana and V. tricuspidata. In 1950, two additional terete-leaved species from Indochina were described by Gagnepain. They are V. masperoae and V. simodii.

V. teres needs no description, as I am sure everyone here is quite familiar with the species. However, there are several sub-varieties, such as:

V. teres var. andersonii

> Dorsal sepal and petals magenta-rose, almost white marginally; lower sepals whitish with a few red spots; front lobe of lip deep purple-rose apically.

V. teres var. aurorea

> Sepals soft white, petals white, faintly suffused with rose-purple; lip light rose, spur buff yellow.

V. teres var. candida

> Sepals and petals white, side lobes of lip and spur pale yellow, front lobe of lip white with a faint, central light rose flush.

V. hookeriana

> Since the natural habitat and growing conditions of this species are somewhat unusual, a few words injected here concerning V. hookeriana may explain why it is a little more difficult to grow under cultivation.

It was discovered sometime prior to 1856. It is common in North Borneo along rivers and brackish swamps. In Borneo it is epiphytal, found growing on a species of pandanus above water or mud fully exposed to the sun. It has since been discovered in the district of Kinta, in Perak, in a long valley formed by limestone hills, and watered by Perak river. The district is thickly-studded with marsh. These marshes are full of thick low jungle, not more than five feet high. In some of these marshes V. hookeriana is found creeping over the jungle growth. The stems rest on the bushes exposed to the sun and the aerial roots cling to the bushes. The rainfall in this area is in excess of 150 inches annually. V. hookeriana is so common in the district that it is called "Kinta Weed".

The growth of V. hookeriana is more slender than that of V. teres. The flowers are about 2½ inches across, sepals white, flushed with light purple, the lateral sepals often wholly white, the broader petals white, flushed with light purple, with deeper purple dots, the side lobes of the lip amethyst-purple, with paler striation, front lobe broad, fan-shaped, white, thickly spotted and marked with amethyst-purple, margin crenulate, spur short. Some sub-varieties are:

V. hookeriana var. gigantea

Flowers larger and more richly colored than the type.

V. hookeriana var. alba

White form.

V. tricuspidata

The sepals and petals are rather narrow, light rose. The outstanding characteristic of this species is the lip, the side lobes are somewhat spreading, the mid-lobe shield-shaped.

V. masperoae

One of the later additions to the terete group. The flowers are about 2 inches in diameter, borne in racemes of about six. The sepals and petals are purplish-rose, the lip large, brownish-purple, dark brown and pale yellow.

V. simondii

Is the other more recent discovery, producing 9 or 10 flowers, slightly more than an inch across. The flowers are inverted on the spike. They are greenish-rose in color with a rose lip margined with purple.

V. teres and V. hookeriana have produced many terete type hybirds, superior to either species, probably the best known being (V. hookeriana x V. teres) - V. Miss Agnes Joaquim. V. Miss Joaquim has been crossed

back with both V. hookeriana and V. teres, producing such hybrids as V. Cooperii (V. hookeriana x V. Miss Joaquim) and V. Miss Van Deun (V. Miss Joaquim x V. teres).

More recently, V. Cooperii was crossed back on teres, (V. Poepoe). Bear in mind that V. hookeriana x V. teres makes V. Miss Joaquim, and V. hookeriana x Miss Joaquim makes V. Cooperii and V. Cooperii x V. teres makes V. Poepoe. So, here we have a background of V. hookeriana twice and V. teres twice. It is interesting to note that many plants of this cross (V. Poepoe) have been counted for chromosome number and all have been 4N, or tetraploid.

Many of you have heard of the so-called polyploid strain of V. Miss Joaquim. This strain was developed by Mr. Jack Warne in Hawaii by selecting for breeding two flowers of superior color, size and form. From the progeny of this cross several generations of sib-mating followed, selecting the flowers each time. The results, large flowers 4 to 4½ inches in diameter, of intense color, the lip wide as in V. hookeriana, deep purple with darker dots, the spur short. Of course, there is still a wide variation.

I do not want to get over into the semi-terete hybrids, but might mention that most primary hybrids using V. teres or V. hookeriana do not bloom too well and usually have to be rather large plants to flower. This is not the case when the sub-varieties andersonii and aurorea are used.

V. teres var. candida will breed white when crossed with terete type white hybrids. When crossed with V. hookeriana var. alba, the lovely V. Miss Joaquim 'Rose Marie' is obtained. There is no terete hybrid registered under the name V. Rose Marie. V. hookeriana var. alba also breeds white when crossed with other white terete type hybrids.

V. tricuspidata

There are only two registered hybrids. V. tricuspidata x V. hookeriana makes V. Amy and V. Miss Joaquim x V. tricuspidata makes V. Hommage A. Segovia. In both hybrids the flowers are small. The outstanding feature is the odd form of the lip passed on by V. tricuspidata.

To date, no hybrids have been registered using either V. masperoae or V. simondii as a parent.

Now, we shall discuss the two semi-terete species. The leaves of this group are half-round, with a grooved face; a cross section would appear crescent-shaped.

V. amesiana

The leaves are semi-terete, seven to twelve inches long. Its habitat is Burma at an elevation of 4,000 to 5,000 feet, growing mostly on rocks, sometimes on trees in partial shade. It flowers in December and January. The temperature at that season ranges from 36 degrees F.

to 65 degrees F. in the course of twenty-four hours. The ground is quite white with frost at times from 4:00 to 6:00 a.m. The flowers are fragrant, about 1½ inches across, scapes 18 to 30 inches long, sub-erect, often branched; sepals and petals white with a flush of light rose-purple; lip amethyst-purple or deep rose, with a paler margin. The coloring of the flowers is quite variable, no two plants producing flowers exactly alike in this respect. A sub-variety is V. amesiana var. alba.

I have been unable to find any Vanda hybrid registered with V. amesiana in its background.

V. kimballiana

Leaves semi-terete, 6 to 9 inches long, deep green with a purplish bronzy hue; peduncles slender, scarcely longer than the leaves, with a small sheath at each of the joints, and a small brown, acute bract at the base of ovaries, 8 to 12 flowers; pedicels (with ovary) 1¼ inches long, obscurely grooved, very pale purple. Flowers 1½ to 2 inches in diameter; dorsal sepal and petals shortly clawed, white sometimes faintly flushed with pale purple, and with light purple nerves; lateral sepals longer than the dorsal sepal, oblong, falcate, white; lip three-lobed, the side lobes ovate-triangular terminating in an incurved, horn-like cirrus, yellowish spotted with red-brown on the inside, the middle lobe broadly ovate, crisped at the margin, with three paralled keels in the middle, amethyst-purple, spur incurved, nearly an inch long, pale purple, column white.

Its habitat in southern Shan starts at 4,000 to 5,000 feet elevation, where it is associated with the allied V. amesiana, growing under the same conditions.

V. kimballiana is involved in only a few hybrids; V. moorei is a natural hybrid between V. coerulea and V. kimballiana. V. kimballiana crossed with V. Miss Joaquim gives V. Any F. Restrepo, with V. hookeriana the resulting hybrid is V. Ann Kirsch; a cross with V. teres gives V. Ballet Girl and with V. tricolor, V. Trikimball.

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Plus list of references Lesson 5

SEMI-TERETE VANDAS

George Wakasugi

Semi-terete Vandas are relatively new in the orchid world. It has been only for fifteen years or so that they have received the attention merited by their outstanding characteristics.

In Florida, as in Hawaii, they are proving to be excellent landscaping subjects for background plantings in rock gardens, for decorative work in patios and for general growing in sunny spots. For these orchids, no greenhouse or lathe-house installation is necessary. In our latitude, the plants suffer little from the infrequent cool spells, although flowering is checked.

The more advanced crosses are, for the most part, free flowering. They bloom almost constantly and will produce two or more spikes simultaneously. The flowers are better in shape and color is intensified, with the mottling effect characteristic of many primary hybrids largely overcome. Many bloom very early, sometimes within three years from seed. On the other hand, some plants will attain great height before blooming.

Semi-terete hybrids which show much promise have been made with V. Maurice Restrepo, V. Mevr. L. Velthuis, V. Nora Potter, V. Governor Guinn, the polyploid V. Miss Agnes Joaquim and V. Josephine van Brero.

The term semi-terete refers to any hybrid having both a strap and terete parent in its ancestry. It has been suggested that this be used to designate a hybrid having equal proportions of chromosomes from strap and terete-leaved parentage, while those having unequal proportions might be referred to as "strap-terete". V. Nellie Morley and V. Tan Chay Yan are well-known examples of the latter. When such plants possess one genome from terete and two from strap-leaved Vandas, they are triploid. If they have two genomes from terete and three from strap-leaved, they are pentaploid.

Due to the lack of chromosome homology between the parental species, the semi-terete hybrids are generally of low fertility. However, when the chromosome number is doubled, fertility is restored. The first recognized tetraploid semi-terete is V. Emma van Deventer which, upon being crossed with V. sanderiana, makes an outstanding V. Nellie Morley. An exceptionally large flowered strap-terete, V. Nora Potter, had previously been determined to be pentaploid (Storey, 1953). It was also established that the relatively infertile diploid semi-terete, V. Mevr. L. Velthuis, produced a limited number of pentaploid offspring.

The greatest number of polyploids is found among the advanced generations of semi-terete hybrids. Future progeny of these crosses will show improvement in growing habits, floriferousness, harmony of colors, possibly a lessening of the degree of sterility in the plants.

TERETE, SEMI-TERETE VANDAS

Jack Kasper

Mr. Kasper's presentation of terete and semi-terete hybrids was illustrated by slides which showed clearly the influences of the various species found in the backgrounds of the hybrids.

This type of presentation is extremely effective, but it does not lend itself readily to written reporting. We shall, however, quote from Mr. Kasper's commentary as, even without the appropriate pictures, there is information of interest.

Slides were shown as follows:

1. First we will start out with one of the oldest Vanda hybrids, if not the oldest, Vanda Miss Agnes Joaquim, a primary hybrid of Vanda teres and Vanda hookeriana.

2.-3. Now to Vanda Miss Joaquim we will add Vanda sanderiana. This cross produces Vanda Mevrouw L. Velthuis. Crossing Vanda sanderiana with Vanda Miss Joaquim has improved the shape and the size of Vanda Miss Joaquim.

4.-5. Now we go once again to Vanda Miss Joaquim - this time to breed with Vanda Burgeffii. This gives us Vanda Pride O'Lanka. Flowers produced by this cross are not of too good shape, but there is improvement in the color. The second slide shows a better color pattern.

6. Here is a cross of Vanda Mevrouw L. Velthuis and Vanda coerulea which gives us Vanda Nora Potter. The color has been changed somewhat, and the shape has also been improved. This is the pink form of this hybrid, and I might mention that its flowering period is quite seasonal.

7. Vanda sanderiana has been crossed with Vanda hookeriana to produce Vanda Princess Elizabeth which we now see. It does not flower too freely.

8. Here we see a cross of Vanda teres alba and Vanda dearei which produces Vanda Amelia Noa - almost pure white with a golden lip.

9. This is Vanda Madame Dinger, crossed with Vanda coerulea. Vanda Madame Dinger is a hybrid between Vanda Miss Joaquim and Vanda tricolor. It is evident that in this plant the Vanda coerulea was dominant.

10. Here we take Vanda Madame Dinger and cross it with Vanda sanderiana; this results in Vanda Roberta Chun. In this first slide the Vanda Roberta Chun takes more after the Vanda Madame Dinger.

11. In this second slide Vanda Roberta Chun takes more from the Vanda sanderiana.

12. This is Vanda Pastel, a cross of Vanda Herziana and Vanda teres. It does not show much color or shape.

13. Now we have Vanda Mauna Kea, a hybrid between Vanda Memoria G. Tanaka and Vanda teres alba. This is the pink form. There are also white forms of this hybrid.

14. Here we have Vanda Kona, Vanda Princess Beatrix (V. coerulea x V. Miss Joaquim), crossed with Vanda sanderiana. It is a large flower with the size coming from the Vanda sanderiana, and the color coming from the Vanda coerulea in its background.

15. Next we will study the cross between Vanda teres alba and Vanda Rothschildiana which gives Vanda Punch Bowl. The Vanda Rothschildiana has put a little color in the sepals and petals and has dominated over the twisting effect of the petals so characteristic of Vanda teres.

16. Here again we see a cross of Vanda teres - this time it has been crossed with Vanda tricolor and the result is Vanda Emma van Deventer.

17. Now by taking Vanda Emma van Deventer and adding Vanda sanderiana we come up with the well-known Vanda Nellie Morley. This is a picture of one of the triploid Vanda Nellie Morleys made with a tetraploid Vanda Emma van Deventer and a diploid Vanda sanderiana.

18. This is a pentaploid Vanda Nellie Morley made with a diploid Vanda Emma van Deventer. The reason for the diploid Vanda Emma van Deventer producing pentaploid progeny is covered fully in an article called "The Cytology of Vanda Nellie Morley and Vanda Emma van Deventer" by H. Kamemoto in the American Orchid Society Bulleting of April, 1956.

19. Now for one of the newer hybrids, we will take Vanda Nellie Morley and Vanda sanderiana. Again, here we have good color, shape and substance and some awards should come from this hybrid.

    Next we have a few slides of the American Orchid Society awarded semi-terete Vandas, but, first, I would like to give you a little background on these awards.

    The first award to a terete or semi-terete Vanda was a Botanical Certificate given to a very fine form of Vanda teres (candida) at our own South Florida Orchid Society show in 1951. It was not until 1955 that another terete or semi-terete Vanda was awarded - this time it was a Vanda Nellie Morley which was given an Award of Merit in New York. To date, there have been given by the American Orchid Society ten (10) Highly Commended Certificates, 8 of which were given to Vanda Nellie Morley, and 15 Awards of Merit, 10 of which have been given to Vanda Nellie Morley.

20. This is Vanda Nora Potter 'Bloom's Ideal'. It received an Award of Merit in 1955. Vanda Nora Potter is a hybrid between Vanda coerulea and Vanda Mevrouw L. Velthuis. The flowers were 3 7/8 inches wide and 4 inches high and had very heavy substance, and it is the blue form.

21. Now we have Vanda Maurice Restrepo 'White Ruffle' which was given an Award of Merit in 1958. The parents of this plant are Vanda teres and Vanda sanderiana. The flowers were 3 3/4 inches across. The lower half of the lateral sepals were described as being lime green.

22. Now we have Vanda Leilanie 'Annie' with an Award of Merit given in 1958. This is a hybrid of Vanda Nora Potter and Vanda sanderiana. It had a natural spread of 3½ inches, a nicely closed flower with the petals overlapping both the dorsal and lateral sepals.

23. Next we see Vanda Walter Oumae 'Del Ora' which received an Award of Merit in 1959. This is a hybrid of Vanda Mevrouw L. Velthuis and Vanda sanderiana. The flowers measured 3 3/4 inches across, and as I recall, the flowers were a darker pink than they show in this picture. This plant was just a seedling with 4 pairs of leaves, flowering for the first time.

24. This is Vanda Nellie Morley 'Del Mar'. This received a Highly Commended Certificate in 1957. The flowers do not have a good closed form and the color pattern is weak and uneven.

25. This picture is of Vanda Nellie Morley 'Biscayne', which carries a Highly Commended Certificate. We still have an open flower where the segments do not overlap, but this time we have a better color pattern.

26. Now we see Vanda Nellie Morley #2, which received a Highly Commended Certificate in 1957. This flower shows good form, but the color pattern is broken and uneven. This is known as color break and shows up to a greater or lesser extent in many of the Vanda Nellie Morleys.

27. Vanda Nellie Morley 'Penn Valley' received an Award of Merit in 1958. The stem carried 9 flowers - the natural spread of these flowers was 3½ inches. It shows good closed form, but here again color break shows up on one of the petals.

28. This is Vanda Nellie Morley 'Red Chief' which received an Award of Merit in 1957. There were 11 flowers on the stem, the natural spread of the flowers was 4 inches. The color pattern is quite pleasing and color break is almost non-existent.

29. Vanda Nellie Morley 'The Princess' was given an Award of Merit in 1958. There were 10 flowers on the stem, and the natural spread was 3 3/4 inches. The color is quite good, but there is some color break on the tips of the segments. The form is not quite as good as that of some of the others we have seen.

30. Here is Vanda Nellie Morley 'Redland' which received an Award of Merit in 1959. There were 7 4-inch flowers on the stem. This flower shows a good closed form and a good dark even color pattern.

DENDROBIUMS

HISTORY AND NATURAL GROUPING OF THE GENUS DENDROBIUM

R. G. Wilson

This genus is one of the largest in the orchid family. After an early period of popularity, interest in the group declined and has only recently been revived with the introduction of new species, especially in the macrophyllum section, and an intensified breeding program has ensued.

Up to 1840 the introduction of Dendrobiums, as well as other oriental orchid species, was an occasional and haphazard procedure as the plants were brought in by government officials and other non-plantsmen, who seeing them, liked them well enough to bring them back to Europe on their return. The earliest record in England is that of Dend. pierardi in 1815, followed by D. speciosum, D. moschatum and D. secundum before 1830. D. nobile was recorded in 1830 and D. aggregatum and D. aureum in 1837.

There was a definite surge in the introduction of these plants shortly after 1843 when Thomas Lobb was sent by Veitch to Java and later to Borneo and the Philippines. He was such an avid collector that, to quote an early work, "It is not saying too much to assert that, during the long period Lobb collected in the East, British gardens were enriched by more beautiful plants of Indo-Malayan origin than by any single collector of his own or any other time." Possibly because of Lobb's success, the enthusiasm for oriental orchid species was high and there were several major expeditions set up for collecting throughout the Orient.

Although this genus contains species which have been known to orchidists since 1815, the hybridizing of them did not get underway until about 1864. The early breeding was done with D. nobile and its close allies. It is interesting to note that there is a Dendrobium hybrid listed in Sander's "List of Orchid Hybrids" between D. aureum and D. nobile (nobilius) reputed to have been flowered in 1849! Don't believe a word of it, as the first known orchid hybrid was Calanthe x Dominyi which flowered in 1856.

As we have already inferred, the Dendrobiums are oriental orchids found in an area circumscribed by Japan, the Philippines, New Guinea, Australia, Java, Ceylon, India and South China. As may well be expected of such a large group, Dendrobiums are found under very varied conditions in the wild. In cultivation, of course, the plants do best when an attempt is made to duplicate the temperature, light and moisture conditions of their natural habitat. Those from the nothern range, the extreme southern range, and the high altitudes need cool growing conditions, while those from the low altitude tropics are definitely tender to frost. Other types fall between these extremes and there are Dendrobiums tolerant of deep rain forest conditions, desert conditions, and even species from areas near the sea which withstand salt spray.

In such a large and diversified genus as this, the natural relationships defined by botanists help to set up smaller groups containing plants with similar attributes. And, although many people cringe when asked to study plants from the botanical angle, some of the horticultural aspects are more easily understood when approached from this point of view. Since the genus is so large, the classification which follows has been cut down to cover only the species of horticultural interest.

CLASSIFICATION OF THE GENUS DENDROBIUM
According to R. Schlechter

Family - ORCHIDACEAE
  Tribe - KEROSPHAEREAE
    Sub-Tribe - DENDROBIEAE
      Genus - DENDROBIUM - 4 pollinia, approx. 900 species
      Genus - ERIA - 8 pollinia, approx. 400 species
      Genus - PORPAX - 6 species, of botanical interest only

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Genus DENDROBIUM

Divided into 20 sections by their botanical characteristics; of these seven sections have almost all the species of horticultural importance. The name of each section is followed by the species best known in that section.

SECTION 6 - LATOUREA (D. macrophyllum) - 3 important species from a total of 35.

SECTION 7 - CALLISTA (D. aggregatum) - 5 very desirable species.

SECTION 8 - EUGENANTHE (D. nobile) - 9 species widely cultivated out of many sp.

SECTION 9 - NIGROHIRSUTE (also called OXYGENANTHE) (D. formosum) - 4 commonly grown species out of 35.

SECTION 10 - PHALAENANTHE (D. phalaenopsis) - 4 most desirable species (possibly a few more species).

SECTION 11 - CERATOBIUM (D. stratiotes) - more than 30 species of which 6 have reached importance in recent years.

SECTION 13 - PEDILONUM (D. sanguinolentum) - 2 species of some importance out of the many in this section.

The following are the seven important sections of Dendrobium, each one followed by the most horticulturally important species. Included are notes

to indicate cultural requirements. These notes are mostly taken from "Orchids of Malaya" by Holltum, but several other orchid publications were used to supplement this information. Although you probably all realize that references to full sun in one part of the world do not necessarily apply to another part, I wish to remind you that this is particularly true in reference to South Florida. Burning can occur here, especially during the summer months, to plants that in other parts of the world stand full sun without damage.

Section 6 - LATOUREA - 35 species from New Guinea and neighboring islands and east to Java.

D. macrophyllum - from hot tropics of Java and New Guinea. Light shade, needs to rest but must have perfect drainage.

D. spectabile - New Guinea, Solomon Islands. Needs temperature drop to bloom, grow very bright, drying off helps flowering.

D. bifalce - tropical - needs bright exposure, treat like D. macrophyllum.

Section 7 - CALLISTA - Burma and neighboring countries, south to Malaya, east to Southern China. Also Nepal, Assam and Moulmein.

D. aggregatum - low hills of Burma and south China. Grows very bright and dry. Needs drying off and temperature drop to bloom best; this is probably true of the rest of this section, except possibly D. farmeri.

D. densiflorum - foothills of Himalayas in Nepal and Assam, 2,500 to 3,500 feet. Grow damp and shady; needs cooling to bloom well.

D. chrysotoxum - lower Burma and Moulmein, 2,500 to 3,000 feet. Likes half day full sun.

D. farmeri - low elevations of eastern Himalayas, Moulmein. Light shade; moist when in growth, light drying to flower well.

D. thrysiflorum - northern Malay, Moulmein and lower Burma, 2,500 to 3,500 feet. Light shade.

Section 8 - EUGENANTHE - the most important group horticulturally. Also has widest distribution of any section of Dendrobium. From Burma extending to Ceylon, New Guinea and northeast China, Philippines and Japan.

D. pulchellum (D. dalhouseanum) - lowlands of Burma, Assam and Tenasserim. Nearly full sun; dry in winter to set flower buds.

D. moschatum - plains of lower Burma. Almost full sun; dry in winter to harden for flowering.

D. fimbriatum - Nepal and Burma and Khasia hills. Grow in bright but filtered light; needs temperature drop and drying somewhat to induce blooming.

D. chrysanthum - lower Himalayan valleys, tropical grower. Almost full sun; dry in autumn.

D. parishii - Moulmein, Tenasserim and Burma. Warm conditions, strong filtered light, dry grower.

D. anosmum (D. superbum) - Sumatra, Philippines, New Guinea, Borneo and Malaya. Best varieties from Philippines. Tropical, dry through most of winter, but do not allow to dry completely; nearly full sun.

D. pierardi - northeast India to Malaya and upper Perak. Tropial conditions, low altitudes, sometimes found in mangrove swamps over salt water.

D. primulinum - lower Himalayan zone, Nepal to Sikkim, medium elevations. Dry in winter; bright filtered light.

D. lituiflorum - Assam and upper Burma. Dry in winter, bright filtered light.

D. nobile - northeast India to south China - found on northern slopes of Khasia hills; medium elevations (4,000 feet). Needs cool conditions with long drying out period with just enough water to keep the leaves from wilting in order to develop flower buds properly.

D. loddigesii - Hainan, China. Needs a good chill for several weeks in midwinter to flower well.

Section 9 - NIGROHIRSUTE (Oxygenanthe) - Distributed from Himalayas and south China through Malaysia to the Philippines.

D. dearei - Mindanao and other Philippine Islands, above 4,000 feet. Cool grower, best in moist cool atmosphere, but fairly dry at roots in winter.

D. schutzei - Mindanao, Philippines. Culture probably same as for D. dearei, cool grower.

D. formosum - peninsular Siam, eastern Himalayas. Best forms found wild on mangrove trees over salt water, get their hottest temperature (110°F) Feb. to April. Needs to be grown with hardly any rest, well watered but with perfect drainage.

D. sanderae - northern Luzon, Philippines, above 4,000 feet. Culture as for D. dearei.

D. lyonii - Bataan, Luzon, Philippines. Low forest 1,000 to 5,000 feet. No culture found, recommend trying same as D. formosum but somewhat more rest in winter.

Section 10 - PHALAENANTHE - Center of distribution in New Guinea, also found from Moluccas to north Queensland. Few species.

D. affine - Moluccas and Timor. Wants long rest when dormant.

D. phalaenopsis - Java, Moluccas and north Queensland. Tropical conditions. Dry, but not too severe when dormant; grow in strong light. Same conditions apply to the following three species.

D. phalaenopsis var. Schroederianum - from Moluccas - larger and more variable than D. phalaenopsis from Queensland.

D. bigibbum - north Australia, Cape York and New Guinea. Tropical, warm grower. (Midlobe of lip notched instead of pointed as in D. phalaenopsis.)

D. superbiens - thought to be a natural hybrid of D. phalaenopsis and D. undulatum, grows like D. phalaenopsis, comes from same area as D. bigibbum.

Section 11 - CERATOBIUM - Thirty or so species, center of distribution New Guinea, extending north to Philippines, south to Queensland, west to Java and east to many Pacific Islands. All lowland tropical plants, sun or nearly full sun lovers, being found on rocks or trees in exposed places, some being found very near the sea.

D. stratiotes - Celebes and Sunda Islands, low altitudes, tropical. Needs to be grown perfectly drained in nearly full sun.

D. taurinum - Philippines and Amboyna (near New Guinea), low altitudes, tropical. Found mostly on mangrove, submitted to salt spray on occasion.

D. gouldii - Thursday Island, low altitude, tropical.

D. schulleri - north New Guinea, low altitude, tropical.

D. undulatum - north Queensland and New Guinea, low altitude, tropical.

D. veratrifolium - north coast of New Guinea, low altitude, tropical. Flowers heavily at beginning of dry season and produces a scattering of flowers at other seasons.

Section 13 - PEDILONUM - Many species from Malaya, etc.

D. sanguiolentum - Ceylon, Borneo, Sumatra, Malaya; medium elevations. Grows well at sea level but flowers sparsely.

D. secundum - widely distributed, Cochin China, Malaysia, Sumatra, Philippines, often found on exposed places near the sea.

Many other (but unfortunately rare) species in this section are beautiful flowered Dendrobiums, but because of their rarity seldom cultivated.

DENDROBIUM SPECIES

T. A. Fennell, Jr.

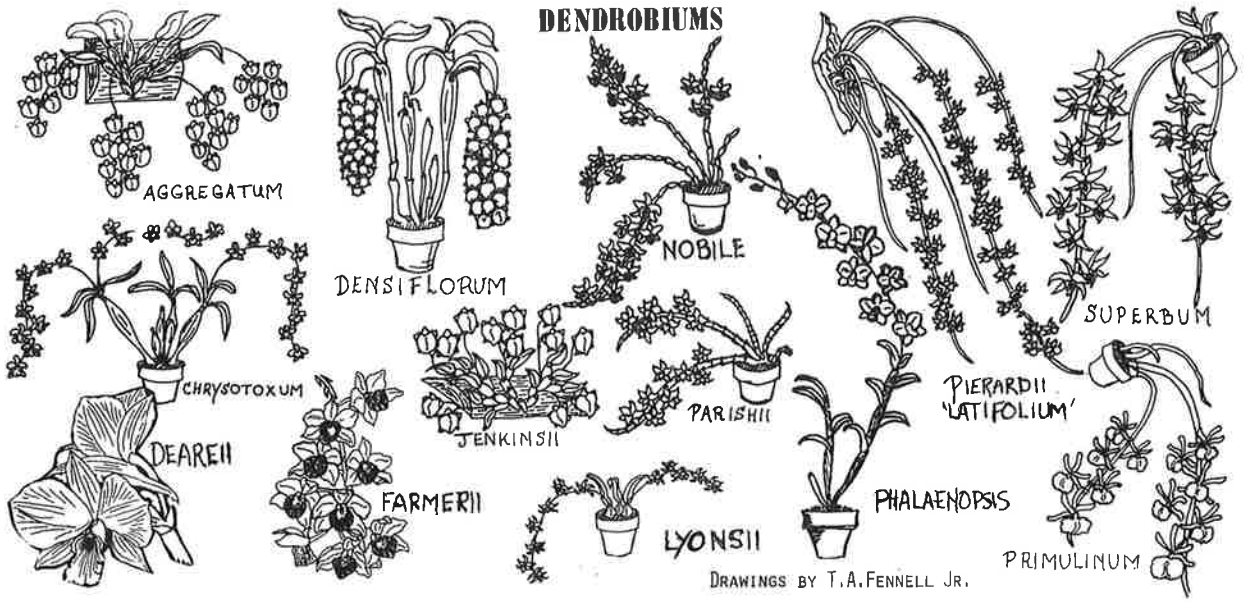
The genus Dendrobium is the largest of all orchid genera. Some botanists list over 1,200 separate species. These species are segregated into from 20 to 30 some groups by the various botanists working in this field.

From the standpoint of the horticulturist, many of the species are much too insignificant to deserve notice. The hybridists so far have found only a relatively few worthy of use in hybridizing, and many of these have resisted their best efforts to cross-breed them. Therefore, when we evaluate the Dendrobium species themselves, from the standpoint of judging as horticultural entities, or from the standpoint of their importance in the background of hybrids to be judged, we have only a few of the 1,200 to be considered.

These to be considered all come from the 6 groups listed below.

It should be pointed out, however, that Dendrobiums are just beginning to come into their own from the standpoint of horticulture and hybridization. Most of the early work in this field was done in England and on the continent from 1900 to 1930, principally by Sir Jeremiah Colman and was restricted almost wholly to the Eugenanthe (nobile group). Almost all of the subsequent work has been done in Hawaii, in Malaya and here in Florida since World War II. Undoubtedly this interest will continue to grow and the next 10 to 20 years should be the most important in Dendrobium history. So far only a beginning has been made. Any predictions of the future at this point would be premature, but it can be said safely that we should learn a great deal more about Dendrobiums, their culture and breeding potential, in the next few years.

The following brief resume of the Dendrobiums and the 6 subdivisions now of major importance is only an introduction. The "Day of the Dendrobium" has yet to come!



GROUP	NOBILE-PENDANT EUGENANTHE
Flower type Shape	Full – well held 2" to 4" of star shape
Stem – type No. of flowers	Short – at nodes along top half of cane 2–5 per stem
Color	White to lavender Yellow – maroon in lip darker at tips – s & p.
Substance Lasting quality	Good 2–5 weeks
Season	Mostly spring
Culture	In Growth – wet – half shade Dormant – dry – sun
Plant size	Small to medium – few long pendants
Plant type	Semi-pendant to pendant Deciduous 2nd year leaved whole cane
Origin	India to Philippines
Most Intensely hybridized – mostly in England and Europe, almost all before World War II.	

SPECIES	OUTSTANDING CHARACTERISTICS	NO. OF CROSSES UP TO 1955	NOTABLE HYBRIDS
Aureum (Heterocarpum)	pale yellow-maroon eye – warm	24	X Nobile = Ainsworthiae
Crassinode (Pendulum)	semi-pendant Nobile type	5	Imparts sturdy compact growth
Chrysanthum	Pendant – warm yellow-orange – summer		Should be bred
Falconeri	Branched stems Pendanti – Nobile type	3	X Nobile = Venus
Findlayanum	Semi-Pendant Nobile type Warm	17	fine parent X Euosmum = Jupiter X Nobile = Cybele X The Gem = Lady Coleman
Lituiflorum	Pendant – Warm floriferous – Lavender-blue	2	Should be used more
Loddigesii	Cool – miniature		Should be bred
Moniliforme (Japonicum)	Cool – miniature	15	
NOBILE 'Cooksonii' 'Virginale' 'Harefield Hall' 'Rotunda'	fine parent – ease of growth heavy flowering peloric petals like C. Intermedia 'Aquinii' Pure white Large extra fine Round and full	59	X aureum = Ainsworthiae X Cybele = plumptonense X Lady Coleman = Gatton Monarch X Queen of Gatton = Merlin X Thwaitsiae = variablis
Parishii	Pendant – compact – vigorous sturdy – extra floriferous	2	Should be fine parent
Pierardii 'Latifolia'	Pendant – large plant, extra floriferous – warm. Larger, finer var.	3	X Superbum = Adrasta
Primulinum 'G' ganteum'	Pendant – warm large, round flower	3	Should be used more
Superbum 'Gigantea' 'Burkei' 'Dearei'	(Anosmum) Large flower fragrant – warm White–purple lip–fall Pure white – extra large	8	Should be used more finest of group
Victoria-Regina	Very rare – blue – cool Nobile type		
Wardianum 'alba' 'gigantea' 'lowii"	Large plant & flower Nobile type – heavy	14	Good parent X Merlin = Ronaele
Xanthocentrum	yellow – cool	6	

GROUP	YELLOW – PENDANT BLOOM STEM (Not really one group but I feel they should be grouped together horticulturally and from hybridists standpoint, because both cultural requirements and growth and blooming habits are so similar).
Flower type Shape	Round – flat Lip often pouched 1–1/2" to 4"
Stem type No. of flowers	From tip of canes – pendant 6–20 flowers per stem
Color	White - yellow - peach - pink – lip orange, often with dark center
Substance Lasting quality	Looks good 1–2 weeks
Season	Spring – early summer
Culture	half to full sun – like Cattleyas, Drier when not in growth
Plant size	Medium to large
Plant type	Upright – evergreen or deciduous 2nd year – leaves at top of cane
Origin	Mostly India

YELLOW with pendant flowers GROUP – very few crosses – seldom produce seed.

* Several crosses across groups – It seems doubtful to me that these were actual crosses, as the progeny that I have seen do not exhibit hybrid characteristics, but if any are true hybrids they could be of great importance as they are the first break-through in breeding across the groups.

SPECIES	OUTSTANDING CHARACTERISTICS	NO. OF CROSSES UP TO 1955	NOTABLE HYBRIDS
Bronckartii	Rose S & P's, orange lip 1" flowers	1	X thyrsiflorum = Mousmee
Chrysotoxum 'Suavissimum' 'Superbum'	Heavy – lasts better, waxy texture Gold S & P's, orange lip Larger – purple in lip Larger finer	3	X Jane Warne – *
Dalhousianum	Largest flower – pink or white waxy – purple lip Large Plant 3–6' –fine grower –blooms freely	9	X Chrysotoxum = illustre X Illustre = Gotton Sunray X Nobile – ? X Superbum – ? X Hawaii – ?
Densiflorum	Compact stem – many flowers yellow S & P's – orange lip		
Farmeri	Pink or white S & P's orange lip – small plant	1	X thyrsiflorum
Moschatum 'Calceolaria' 'Cupreum'	Peach - Maroon - pouch – tall plant larger flower orange – shorter	3	X Phalaenopsis = – Kukui ?
Fimbriatum 'oculatum'	yellow & orange – frilly lip Maroon eye in lip	3	X Dalhousianum = 'Hanbury' X Thwaitesiae ? X Nobile ?
Thyrsiflorum	White or pink orange lip – large plant 2–3'	4	X Bronckartil = Mousmee X Dalhousianum = Triumph

GROUP	HIRSUTE (nigrohirsutae-Oxygenanthe)
Flower type Shape	Round large – 2" to 5" Wide petals – wide spreading
Stem type No. of flowers	Cluster – top of cane 2–5 / short stem
Color	White – some green or purple in lip
Substance Lasting quality	Seems light Lasts for months
Season	Spring to fall
Culture	Like cattleyas – Drier when not in growth
Plant size Plant type	Small to medium – compact Upright – compact – black hairs on canes
Origin	India to Philippines

HIRSUTE: Few Crosses until recently – *May be intermediate parent between other groups, because hybrids are listed both with Latourea and Eugenanthe groups.

SPECIES	OUTSTANDING CHARACTERISTICS	NO. OF CROSSES	NOTABLE HYBRIDS
Dearei	White-green lip 2" flower plant 2–3' tall	4	
Formosum 'Giganteum'	White-orange in lip 3–4" flwr. Larger flower 4–5"	4	X Dearei = Nellie Sander X New Guinea – ? *
Infundibulum	2–3" flower – white	1	
Lowii	Yellow, lip veined purple 1–1/2 to 2" flower	2	
Sanderae 'Major'	Largest plant in group white blush in lip 3–4" flower	3	X Dearei = Isabel Sander X Schutzei = Thomas Warne X Nobile = Snow White
Schutzei	White-green throat, 2–3" flw.	3	X Dearei = Jane Warne

GROUP	PHALAENOPSIS (Phalaenanthe)		
Flower type Shape	Large – Round 2 to 4 inch Simple – soft outline		
Stem type No. of flowers	Long – gracefully arching 6–20 flws/stem at or near tip of cane		
Color	White – light or dark lavender, some red purple		
Substance Lasting quality	Good Long – 1 to 2 months		
Season	Mostly fall, some winter		
Culture	Warm – above 60° F. Dry when not in growth		
Plant size	Medium to small		
Plant type	Upright – evergreen		
Origin	Austrailia		
SPECIES	**OUTSTANDING CHARACTERISTICS**	**NO. OF CROSSES**	**NOTABLE HYBRIDS**
Affine	Small plant, many flowers white – round		Should be bred
Biggibum 'Hololeucum'	Round – lavender Pure white	11	X Sander's Crimson = Diamond Head Beauty X Roger Sander = Garnet
Compactum May be variety of Biggibum	Miniature plant full size flowers & stem		Should be bred
Phalaenopsis May be variety of Biggibum 'Alborescens' 'Bedfords' 'Dixons' 'Mauna Kea' 'White Foam'	Round – lavender easy to grow & flower White-purple lip Pure white – F.C.C. Very dark and round Pure white Pure white	47	X Orchid wood = Lady Constance X Pauline = Liliha X Pompadour = Anouk
Schroederianum actually variety of Phalaenopsis 'Ruby' 'Giganteum'	Larger – more variable than Phalaenopsis –both plant and flower Dark – 4 N 4 N	26	X Louis Bleriotz = Pompadour X stratiotes = Caesar X Superbiens = Louis Bleriot X Taurinum = Sander's Crimson
Superbiens (Natural hybrid?) (Biggibum X) (Undulatum)	Large, strong growth Dark lav-purple 2–3 times a year	13	
Williamsianum	New and rare – waxy substance light S & P's – dark lip		Should be bred

GROUP	CANE STEM–EVERGREEN (Ceratobium)		
Flower type Shape	Narrow, erect petals, often twisted of undulant – S & P's complicated – bold shapes		
Stem type No. of flowers	Long, arching or upright 10–30 flowers/stem at or near tip of canes		
Color	White or blushed lavendar – yellow–green–brown, red or blue		
Substance Lasting quality	Good Usually long lasting		
Season	Year round – often 2–3 times/year		
Culture	Like Cattleyas – many like full sun		
Plant size	Medium to large		
Plant type	Upright evergreen		
Origin	Australia, New Guinea and South Seas		
SPECIES	**OUTSTANDING CHARACTERISTICS**	**NO. OF CROSSES**	**NOTABLE HYBRIDS**
Aeries	Green and yellow	12	X Taurinum = Janet Tagawa
d'Albertsiae	White sepals & lip long-twisted green P's	6	X Antelope = Roi Albert
Goldiei	Dark red-purple, long lasting	11	
Gouldii	Intense color, yellow, brown or blue – compact, sturdy plants tremendous vigor & flower production	44	X Hawaii = Guadal canal X Phalaenopsis = Jaquelyn Thomas
Robustum	Pale yellow – veined amethyst	14	
Schulleri	Large flowers, very floriferous brown-green	26	X Hawaii = May Neal X Pauline = Beach Girl
Stratiotes	Fine substance, last months twisted petals	36	X Schroederianum = Caesar X Undulatum = Salak X Tokai = Stratokai
Taurinum	Floriferous, red-brown, compact on stem, large flowers & plants	22	X Schroederianum = Sander's Crimson X Undulatum = Taurus
Toftii	Large flowers – wide lip white-veined violet	3	X Phalaenopsis = Colin Potter
Tokai	Dark green	18	X Phalaenopsis = Hawaii
Undulatum 'Broomfieldii'	Yellow-tan, chartreuse. Big, heavy plant. Vigorous. Long sprays Many flowers	36	X Hawaii = Hula Girl X Phalaenopsis = Pauline
Veratrifolium	Long arching sprays, many small flowers, pale lavender	32	X Hawaii = Lester McCoy
Violacea-Flavens	Yellow-spotted violet	5	

GROUP	MACROPHYLLUM (Latourea)
Flower type Shape	Bizarre – bristled – speckled often undulant edges – 1–1/2 to 3"
Stem type No. of flowers	Terminal upright clusters 4 to 15/stem (resemble Schomburgkias)
Color	White–yellow–green, usually spotted red, brown purple speckled or striped purple lip, veined red or violet
Substance Lasting quality	Good – stiff and waxy 1–2 months
Season	Fall and winter
Culture	Like cattleyas
Plant size	Small to medium, compact
Plant type	Upright, evergreen – leaves at top of cane
Origin	Mostly New Guinea
New to culture and hybridists. All work done since World War II – mostly in last 5 years – Hawaii.	

SPECIES	OUTSTANDING CHARACTERISTICS	NOTABLE HYBRIDS
Atro-Violaceum	Cream white, purple-violet spots	
Forbesiae	White, large violet lip	
Johnsoniae	White-violet lip	
Macrophyllum	Yellow-spotted red-brown	X Spectabile = New Guinea
Spectabile	Cream-purple veins	X Atro-violaceum = Woodlawn

All are good parents – will be used more because:
- Short compact plants
- Willing growers
- Under cattleya conditions
- Floriferous
- Long lasting qualities
- Bizarre – new – shapes
- New color patterns . . . spots – stripes – speckles

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DENDROBIUM HYBRIDS, OLD AND NEW

Dan Reed

The preceding papers, presenting classification of the genus according to Schlechter and discussion of most important species by section, bring us to consideration of the hybrids. This resume will consider hybrids of the sections of horticultural importance as subdivided by Schlechter.

Section 6 - LATOUREA - Often spoken of as the Macrophyllum group, sometimes as the New Guinea group - after the hybrid bearing that name as it was the first hybrid seen in any quantity in this area.

(D. antroviolaceum x D. Forbesi praestans) - Nellie Slade
(" x D. macrophyllum) - D. New Guinea
(" x D. spectabile) - D. Woodlawn

D. macrophyllum, D. spectabile, D. Forbesi and D. Johnsoniae are other species of the group. Base color of hybrids to date is cream with spotting, speckling and mottling in purple to brownish tones. Lips vary from the elaborately lined with reddish of New Guinea to the dark purple of D. Woodlawn. Flowers are of heavy substance, good size and excellent keeping quality. Plants tend to branch freely and thereby are easily grown into nice specimens which are quite showy in full flower. Hybridization with the Ceratobium group has been accomplished and opens a wide new field of interest.

Section 7 - CALLISTA - These species belong to the group we often refer to locally, for cultural purposes, as the semi-evergreen group. It is regrettable that more hybridization has not been accomplished with this group. The fact that it has not taken place is not evidence of lack of effort, rather due apparently to lack of some factor or factors necessary to the development of viable seed. It would be interesting to know what could be accomplished under the climatic conditions of the natural habitat. The naming of the hybrid Triumph by Armstrong in 1914 may very well be in honor of accomplishing a difficult feat.

Even so, the yellow to fiery orange color tones of the showy racemes warrant still further efforts. Future knowledge may effect the break through. D. aggregatum, D. densiflorum, D. chrysotoxum, D. farmeri and D. thrysiflorum are among the showier species of the group.

(D. chryxotoxum x Dalhousianum) Illustre (Illustre x Dalhousianum) Gatton Sunray.

Section 8 - EUGENANTHE - Most common in this section are species and hybrids generally known as the "nobiles." Other distinct types are well known.

(D. Dalhousianum (pulchellum) x Illustre) Gatton Sunray

It seems very fitting that this doubly rare (in that it is a secondary hybrid) hybrid should have been created by that grand gentleman, Sir Jeremiah Colman, one of the most renowned figures of the orchid world in his day. And today a review of his hybrids of the Eugenanthe section brings us to a startling realization that hybrids developed since his day show no real improvement over those he developed. Those fortunate enough to have read his book on the orchids at Gatton Park realize that he was a man of excellent understanding of principles of selection and that he produced a phenomenal number of hybrids.

(D. superbum x Pierardi) Adrasta - The result of crossing these species is so satisfactory that it would seem as though further efforts with D. primulinum and the "nobiles" could be very worthwhile. Failures with "nobiles" directly might possibly be circumvented through a D. primulinum hybrid.

(D. nobile x Lady Colman) Gatton Monarch
(" x Queen of Gatton) Merlin
(" x Ainesworthiae) Thwaitesiae

Species and hybrids in this group are too numerous to mention; the three hybrids above will serve as a reminder. Aureum, signatum, Wardianum, Findlayanum, Falconeri, and crassinode are reminders of the varied species that have been mated within this group. Recollection of the profusion of brilliant-hued, early spring flowers should excite in us the urge to create further improvements with the best clonal selections from earlier efforts.

Section 9 - NIGROHIRSUTE - Although these species are all native to fairly high altitude, around 4,000 feet generally, most of the hybrids grow fairly well in this area.

(D. dearei x formosum) Nellie Sander
(" x Schutzei) Jane Warne
(D. Schutzei x Sanderae) Thomas Warne

The four species of this group which have been used in hybridizing are listed in connection with the three hybrids listed above. Considerable similarity is found in various hybrids between these species, as would be expected. Size and throat markings and coloration vary predictably. Flowers are large, papery white and of good keeping quality to be of such generally light substance.

D. Lyoni (earlier called acuminatum) - Flowers of heavy substance, up to three inches across. Segments are pointed, creamy at the tips shading to rich burgundy at the base. One can only speculate as to the outcome should seed be set between it and the four preceding species of this group. It would seem to me to offer much greater potential for interesting hybrids.

Section 10 - PHALAENANTHE - Commonly known locally as "Dendrobium phalaenopsis types," we can take pride in the fact that Florida hybridists have developed excellent innovations. Size, shape and color developments have been very worthwhile. Indeed, it is common knowledge that some of the excellent dark hybrids produced recently in the islands made use of selections from some of the best developed here.

Considerable work has also been done in improving white strains. Greater vigor than was inherent in the var. Hololeuca or Bedford's variety has been obtained by crossing with other strains; heavier substance has been achieved at the same time.

Hawaiian growers have been interested in developing white with dark lip strains, white or blus sepals with lavender petals and dark lip and other novelty combinations. D. phalaenopsis alba, Lyon's type (which is not a true 'alba' in the strict sense of the word) is a means of further investigation for those interested in further trials along this line. I feel that novelty combinations in this group have excellent possibilities for bringing forth new patterns that can maintain interest in the group at a high peak.

Use of this section in hybridizing may be summed up in this manner--
D. phalaenopsis types have been crossed with just about all possible groups, resulting generally in larger size and rounder shape.

(Dendrobium phalaenopsis x Orchidwood) Lady Constance
(" " x Lady Constance) Helen Fukumura
(" Dixon's var. x Madam Pompadour) Anouk
(" 'Ruby' x Diamond Head Beauty) Lady Hamilton
(D. bigibbum x Sander's Crimson) Diamond Head Beauty

Listing of just the five hybrids above calls our attention to the large amount of hybridizing that has been done since they first appeared on the scene, as they are today the parents of the finest new seedlings.

(D. superbiens x D. phalaenopsis) Louis Bleriot (Pauline syn.)
Regardless of the controversy as to whether D. superbiens is the the natural hybrid between D. biggibum or D. phalaenopsis and D. undulatum, the fact remains that D. Louis Bleriot (or D. Pauline, as you prefer) is a hybrid whose excellent qualities point the way for future breeding. Flowers are large, heavy, shapely, of rich color and plants have the pleasant habit of flowering a good part of the year. An excellent local form of this hybrid received an Award of Merit in 1957. Of special interest is the fact that a superior form of D. superbiens is represented in several collections in this area. Perhaps it is the very form which European hybridizers used in making their superior, triploid D. Louis Bleriot, for the plant arrived here from Europe by a circuitous course.

D. affine is a most interesting species belonging to the section. Small white flowers are produced in profusion. This plant has been exhibited on the west coast of Florida during the past few years. Just think about it a few moments. Flowers a little over an inch across, round form, long arching spikes--don't you think some interesting hybrids might be accomplished through its use?

Section 11 - CERATOBIUM - This section of hybrids is often referred to as Hawaiian Dendrobiums, and fittingly so. For Hawaiian hybridizers explored the possibilities of this group back-crossed, searched for further color combinations, sought to modify flower size and spike and flowering habits.

Color tones developed are beyond description and are not fully realized by those who have not visited in the islands. Taste in colors varies and a review of awarded Hawaiian Dendrobium slides indicate their appreciation of strong colors, combinations of hues that are somewhat different from our preferences. Our tastes seem to run to dark crimson-purple, light clear colors with no "muddiness" and generally larger flowers. Mainlanders seem to think more of the individual flower. Hawaiians, on the other hand, have developed many of these hybrids with special consideration as to usefulness of the cut sprays in vases and arrangements.

This sun-loving group can be adapted to outdoor culture in south Florida and some gardens in this area take advantage of their landscape potential. Such plants offer year round cut flowers for the home with a minimum of effort. That is, of course, by proper selection of free-flowering types--for some hybrids flower only once a year. Although these plants do not like cold weather, they usually make it through the winter with little more damage than a heavy leaf drop. Let's consider very briefly a few hybrids of the most used species:

(D. gouldi x phalaenopsis) Jacquelyn Thomas - Dark lavender to white forms. This hybrid is well known in south Florida. Back-crossing to D. phalaenopsis has resulted in larger, shapelier flowers but also loss of freedom of flowering and heavy substance.

(D. gouldi x Sander's Crimson) Joan Tani - varied colors, depending on which form of D. gouldi is used.

(D. Schuleri x Hawaii) May Neal - Yellow to bronze.

(D. Schuleri x Pauline) Beach Girl - Rich reds to bronze and yellow. Flowers are large; borne on long spikes. Some beautiful green tones are achieved by selective breeding with types such as Janice Tanaka and stratiotes.

(D. stratiotes x phalaenopsis) Caesar - Large, heavy, lavender to white.

(D. stratiotes x gouldi) Lum Goo - Yellows or blues depending on color phase of D. gouldi used.

(D. stratiotes x undulatum) Salak - Golden-brown antelope types.

(D. stratiotes x Hawaii) Mildred Kazamura - Lavender to yellow, salmon, bronze. This species has a strong influence on shape, producing antelope types, color is mainly regulated by other parent.

(D. taurinum x Hawaii) Agnes Ann - Dark lavender to yellow to bronze.

(D. taurinum x aeries) Janice Tanaka - Some nice yellows and greens have come from this cross. This species is valuable for its ability to transmit large flower size to heavily flowered upright spikes.

(D. undulatum x shibata) Ethel Kawamoto - Some choice yellows from this cross.

(D. undulatum x Sander's Crimson) Owen - Deep, almost "sophro" red colors.

(D. undulatum x Hawaii) Hula Girl - Wide color range, bronzes and excellent darks. This species tends to transmit long spray habit and medium sized flowers whose segments have undulated margins.

(D. veratrifolium x taurinum) 442nd Infantry - Various.

(D. veratrifolium x Hawaii) Lester McCoy - Gamut of colors. The species transmits the tendency to small flowers, borne on arching sprays; plants many spiked.

One of the larger genera of orchids, Dendrobiums include many species and varieties that are almost unknown to cultivation.

EVALUATION IN A PERIOD OF CHANGE

Lewis and Varina Vaughn

By 1900 most of the Phalaenopsis species we know today had been brought into England. As new species appeared, they were honored by awards from the Royal Horticultural Society. This continued as the first Phalaenopsis hybrids made their appearance, beginning with P. Harriettae in 1887. Little did these early experimenters anticipate the flood of hybrids in all genera that would one day be released, the foreshadowings of which changed this early R.H.S. practice to the English judging system with which we are familiar.

During the 45 years following registration of P. Harriettae 27 Phalaenopsis hybrids were made. Of these, only four had large flowered varieties for both parents. Beginning about 1930, the number of hybrids increased sharply and interest in the small species decreased - indeed, it all but disappeared. Phalaenopsis became ever whiter, ever rounder, ever larger.

The A.O.S. Register of Awards begins its listing in 1932. A variety of genera received 76 awards before the first was achieved by a Phalaenopsis in 1934, followed by 14 during the next 15 years - an average of about one per year, which ranked it well below the other major genera. Twenty years succeeded the date of the first A.M. awarded to a Phalaenopsis by the A.O.S. before any appreciable number of awards were given: 10 in 1954, 15 in 1958 and, in 1959, the astonishing number of 52, with 30 awarded the following year.

The flower awards to which we refer are the F.C.C. (90-100 points) A.M. (80-89), H.C.C. (75-79). The first named has been awarded to a Phalaenopsis only five times. The Award of Merit has gone to 73 plants during the 27 years which have elapsed since the first award (1934-1960). The A.O.S. Register lists the first H.C.C. awards to Phalaenopsis in 1957. From that time through 1960, Phalaenopsis have received 69 Highly Commended Certificats.

And now, with the assistance of the "A.O.S. Handbook on Judging", let us determine what qualifications are required of a Phalaenopsis of superior quality.

We find that a value of 30 points is given to form, another 30 to color and 10 each to size of flower, to substance and texture, to habit and arrangement of inflorescence, and to floriferousness. It should be noted that form and color each accounts for almost 1/3 of the total score and that size, which we often consider of paramount importance, actually rates only 1/10th of the total score.

As to form, desirable attributes are roundness, fullness, and flatness. The Handbook states: "The sepals should arrange themselves almost in an equilateral triangle, the dorsal sepal tending to be somewhat larger and broader than the lateral sepals. The petals should be broad and flat,

filling in the gap between the sepals, and mid-veins preferably horizontal. The lip will vary according to variety and breeding."

The Handbook states that "color, when present on petals and sepals, should be definite and clear and markings, when present, should be pleasing. The lip should be distinctively marked or colored." These qualifications will be considered in greater detail when the several lines of breeding are discussed.

As to size, the flower should be larger than the average for the variety. It should be noted that knowledge of the background of breeding is necessary before "average for variety" can be determined. Size is the only characteristic that can be ascertained mechanically, but even this apparently simple decision must be judiciously arrived at upon the basis of breeding. Even in white hybrids, where background is most familiar, certain factors of form should be considered in their relation to measurement. For instance, a flower may have, to an unusual degree, the desirable quality of roundness, being almost circular in shape, petals measuring the same, or nearly so, in width and length, sepals and petals completely overlapped. Another flower may be closed in form but more oval in shape, with petals greater in length than width. If the overall measurement (natural spread of flower) alone is considered, the rounder flower is at a disadvantage. We cannot set a certain arbitrary number of inches as required natural spread, nor should we forget that size accounts for only ten per cent of the total score. This matter of size is emphasized here because many amateur growers tend to consider this the sole criterion by which they should evaluate their flowers.

Substance is the thickness of the tissue of a flower. It should be greater than that of the general run of the species, or of the average for the variety. Time was when lack of this quality was a frequent fault of this genus. Not so, now, however, since more frequent breeding with polyploids has increased substance markedly. So excellent is this quality in some plants that we must remind ourselves that substance and texture combined are valued at only ten per cent of the total score. The term texture refers to that almost indefinable quality of surface beauty - in a white Phalaenopsis, the satiny sheen or almost crystalline sparkle that pleases the eye.

To again quote the Handbook: "The inflorescence should be gracefully arching, according to breeding, with the flowers well spread and well displayed."

The Phalaenopsis is a spray-type orchid and a spray is defined as being an arching multi-flowered inflorescence which may or may not branch. Ideally, this spray arches gracefully and the flowers are neither packed closely together nor are there unpleasing gaps between them.

Exact requirements as to floriferousness cannot be laid down, as this again varies in accordance with breeding.

Now that we have reviewed the qualities which, in proper combination, make a "good" Phalaenopsis, we may think together concerning the application of this measuring device to some of the varieties found in our collections. The great majority of all awards have gone to white Phalaenopsis - and not without reason.

Nature was more generous to the white species in the matter of size and form than to any other and, quite naturally, most attention of hybridizers has centered here. The best forms of P. amabilis, the "basic white", can still hold their own in several respects with many of their modern hybrids. Found principally in the Malayan Archipelago, its arching inflorescence may be branched, and carries many three to four-inch flowers. Indeed, five-inch flowers are occasionally found. Substance is not particularly heavy, but that is not the case with the variety Rimestadiana, which, due to its good qualities, became a commercial flower for shipping use. This species is found in the background of the vast majority of hybrid Phalaenopsis, particularly today's fine white hybrids which result from the selective crossing of varieties and forms of P. amabilis and its close allies.

Nearest to P. amabilis is P. Aphrodite, from the Philippines, with smaller flowers, usually measuring about 2½ to 3 inches across. The shape is fuller than that of P. amabilis and the flowering habit the same. A delicate flush of pink is sometimes found on the flowers of these white species, the beauty and grace of whose long, arching sprays prompted early writers to refer to P. amabilis as "Queen of Orchids".

Combinations of these two species, with an occasional admixture of the small flowered P. Stuartiana, white with small red-purple spots on labellum and the inner half of lateral sepals, together with the pink P. Schilleriana and Sanderiana have resulted in our modern white hybrids. Among both species and hybrids, polyploid forms have from time to time been chosen as parents, sometimes without recognition of their unusual chromosome numbers, and have imparted their qualities to their progeny, notably heavy flower substance.

With good natural material and constant attention from hybridizers, it is not surprising that the very conformity of so many white hybrids to the judge's ideal makes their evaluation difficult. Size is quite commonly greater than the average species, awarded white flowers measuring 4 to 5 inches, with an average of about 4½ inches. Observation of photographs of awarded flowers shows that the 4 3/4 and 5 inch flowers are frequently of oval shape, with petals longer than wide.

Color in this instance does not require detailed consideration. Distinctive marking and coloration of the lip is resulting from some lines of breeding. This often adds greatly to the attractiveness of the flower and, in time, will probably be of greater consequence in evaluation.

The previous general discussion of substance applies particularly to white hybrids. Heavy substance, so important to the commercial dealer, is no longer a rare characteristic, since chromosome counts have identified certain plants as polyploid and these have been used as parents.

The majority of white crosses fulfill acceptably, or better, requirements for the gracefully arching sprays. Many of the polyploids produce thick, upright stems that do not arch. Other characteristics often rate so high, however, as to overcome this lack of grace.

P. Elizabethae, Gilles Gratiot, Katherine Siegwart, Doris, Thomas Tucker, Winged Victory, Summit Snow, Chieftain, Grace Palm, Snowbird, Serenity, Joanna Magale - these familiar names, and many others, make up a roll of fine white hybrids that have evolved through the years of development into the superb types of today. Phalaenopsis amabilis has traveled far.

You probably have a smaller number of pink Phalaenopsis in your collections than white ones. Many of you may have experienced difficulty in locating really good pink hybrids and, when found, have often been unable to persuade the owner to part with them. In view of this scarcity of quality pink hybrids, we would expect a smaller number of awards. As a matter of fact, out of 158 granted to this genus, the small number of 22 went to pink Phalaenopsis. We need only refer to the pink species to understand this. P. Schilleriana, the "basic pink" makes 3 or 4 foot loosely-branched inflorescences that, on a specimen plant, may carry hundreds of flowers. These are 3 to 3½ inches across or less when many flowers are present. Sepals and petals are light rose-purple, suffused with white, fading toward the edges, lateral sepals dotted with purple on the inner basal half. The lip, too, is dotted. The front lobe of the lip is broadly trowel-shaped with the apex forking into two appendages. Most flowers are open in form and lacking in substance. The entire spray opens at once and is not a good cut flower in consequence of lack of substance.

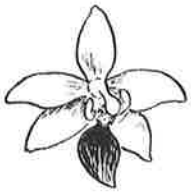
P. Sanderiana, the other pink species (occasionally referred to as a natural hybrid), is often of a deeper color than Schilleriana but is no larger and not notable for substance. The color in sepals and petals is not even and generally fades toward the edges.

Until a few years ago, pink hybrids consisted of combinations of these two species, with limited additions of P. amabilis, Aphrodite, Stuartiana and their primary hybrids. Known pink-flowered polyploid plants are at a minimum and there is little indication of their accidental use in former years. It is obvious that the pink species are not endowed with the characteristics that judges seek to the same degree as are their white relatives and that hybridizers have done much less work in this area. We realize, then, that when the point scale upon which we have just commented is applied to pink hybrids, modified applications result from understanding the varying hereditary factors.

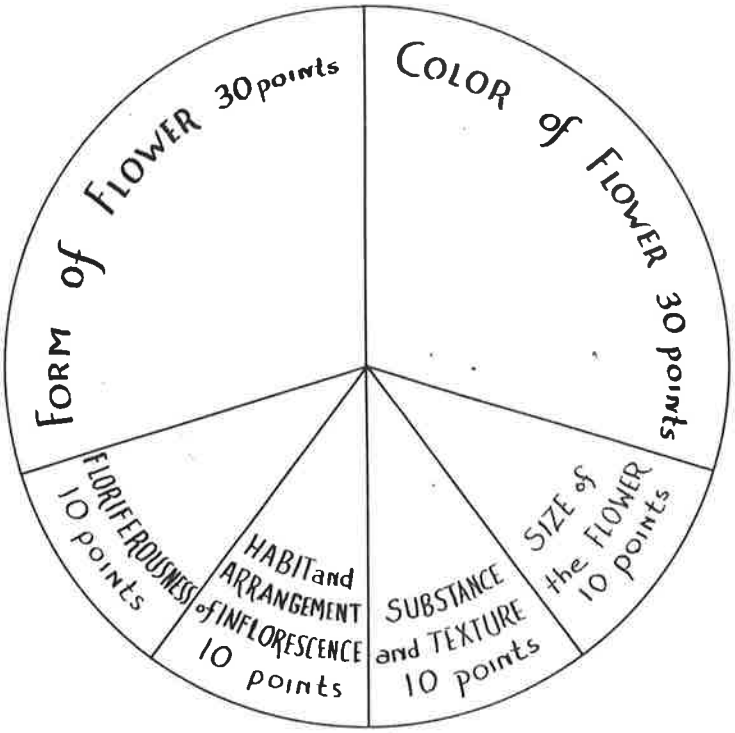
Where flower form is concerned, selective breeding has given us some pink varieties every bit as good as their white relatives.

Attainment of the goal of an even, clear, deep color on sepals and petals is still largely in the future - so far as uniformity within crosses is concerned. This is not to say there are no good pink hybrids. Quite the contrary is true. We are merely comparing general results in the two major areas of Phalaenopsis hybridization. Two presently developing directions in breeding for pink offer great promise and will be referred to a little later. With reference to color, we seem to be unintentionally making a great deal of progress toward producing labellums "distinctively marked or colored". This is the same tendency observed in certain white hybrids, though here the colors and patterns are even more striking.

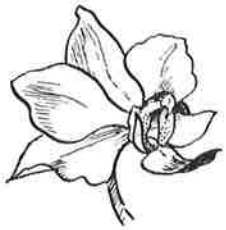
PHALAENOPSIS POINT SCALE



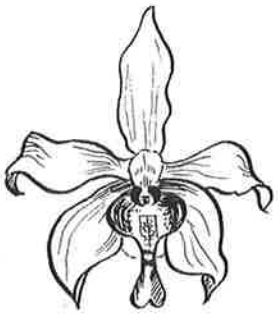
P. EQUESTRIS (ROSEA)



P. LINDENII

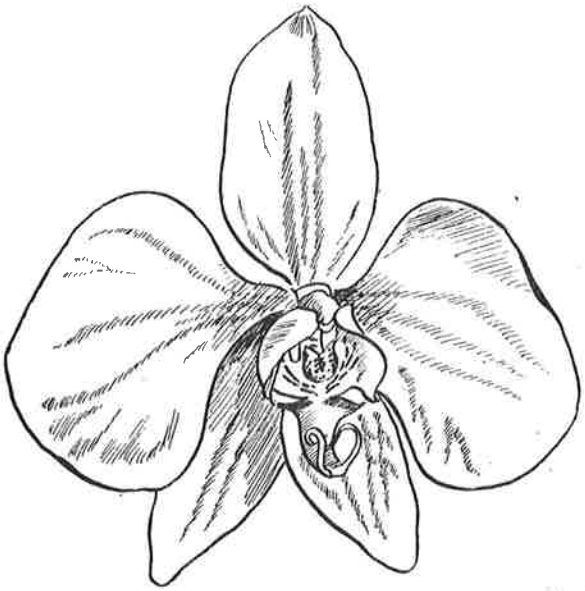


DORITIS PULCHERIMA
(P. ESMERALDA)

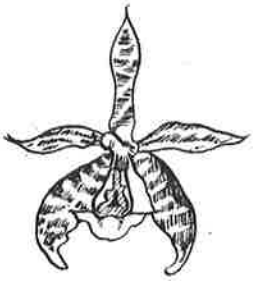


P. DENEVEI

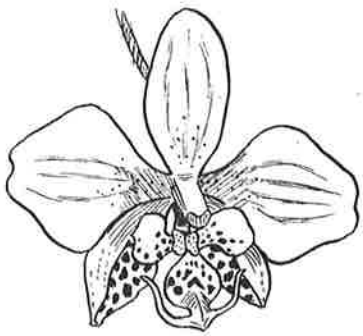
P. CORNU CERVI



P. AMABILIS

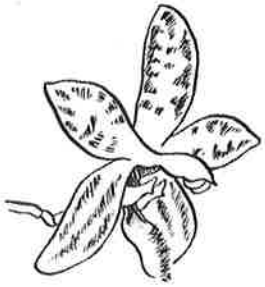


P. MANNII

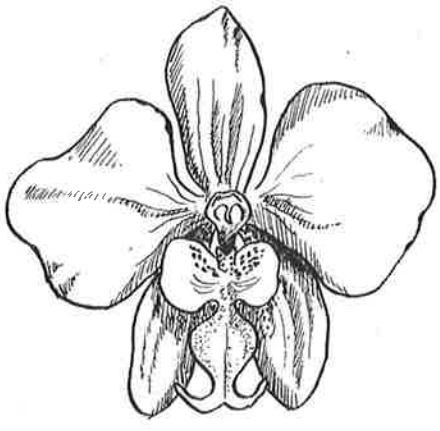


P. STUARTIANA

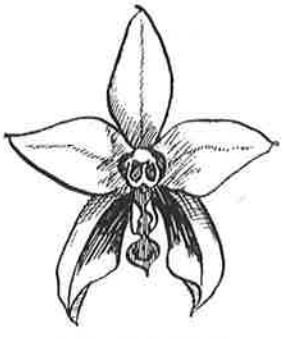
P. LUEDDEMANNIANA



P. SUMATRANA



P. SCHILLERIANA



P. VIOLACEA

Familiarity with the species indicates that pink hybrids can be required, in size, to "exceed the average for the variety" but cannot be expected to equal the best whites.

We have referred to lack of substance in the species. A good pink hybrid may well exceed this norm but will generally fail to measure up to white standards, as would be expected.

The inflorescence will be gracefully arching, often heavily branched and, in spite of the tendency to wide flower spacing in the species, hybrids are frequently well-spaced and displayed. In this category they often exceed the white varieties in beauty.

The foregoing comments apply particularly to those pink hybrids bred along "conventional" lines - principally from P. Schilleriana and P. Sanderiana. Prominent among these hybrids are many bred by Vacherot-Lecoufle, in France, such as P. Alger, Grande Conde, Reve Rose, and Marmouset.

Within recent years, a good P. Doris (white) and an equally fine P. Marmouset (pink) were combined by a member of our society to make P. Clara Knight. These flowers, and those of similar blood lines, borrow form, substance and size from the white parent and some add the good color of the pink parent. Thus, a limited number of such pink flowering plants will match the fine white hybrids on the scale, with a little lower size requirement. This one cross, the original and subsequent re-makes with other parents, accounts for the greatest number of awards given to pink Phalaenopsis. This same type of breeding is continuing, P. Zada being a local example.

Almost all other awards to pink Phalaenopsis have gone to a hybrid inheriting its deep color from its P. Lueddemanniana ancestry - P. Alice Bowen. Here we have a consistently open flower, much smaller than the white hybrids, with heavy substance, deep color distributed through veination and tiny spots. An attractive flower, but altogether different from what we have come to consider standard. A review of the characteristics of P. Lueddemanniana will serve to illustrate the necessity for knowledge of a plant's heredity in order that the progeny of less frequently used species be evaluated properly.

P. Lueddemanniana, native to the Philippines, has leaves six to nine inches long, inflorescence prostrate or trailing, hardly longer than the leaves, flowers 2 inches across or less and few in number. Substance is uniformly good. Color and size are very variable. Typically, sepals and petals are whitish, beautifully marked on the lower halves with transverse amethyst bars and marks, and on the upper portion with cinnamon brown. Other forms are cream or pale yellow, barred and marked with brown or with brown and amethyst, still others are solid red-purple, sepals and petals edged or tipped with white. So variable are the flowers of this species that a definite color pattern cannot be laid down within which the progeny will fit. P. Alice Bowen is an example of the best that may be expected from breeding with the larger pink hybrids. Bred with large white hybrids, sepals and petals may be white or cream, according to the variety of Lueddemanniana used. There may be an over-all pattern of small dots, or there may be a concentration of larger spots near

the base of sepals and petals or there may be very little transmission of color. It is interesting to note that when a very old cross, P. John Seden (amabilis x Lueddemanniana), was re-made with two forms of P. Lueddemanniana, the majority of the flowers of one cross had brown dots and yellow lips, the balance combining brown and purple dots. The other cross resulted in red-purple dotting, a minor portion combining purple and brown. Here the lips varied from a pale pinkish to yellow, to light red-purple. In both crosses, sepals and petals varied from white to off-white. Little is yet known concerning color transmission of the varieties ochracea and Boxallii but, with the present interest in yellow, we shall soon determine this. Judging from the performance of other forms, the greater percentage of the progeny will probably be cream, some white suffused with cream, with a small number a good yellow. Spotting may be light and, in some flowers, entirely absent.

When bred with large white hybrids, P. Lueddemanniana reduces size, tends to open shape, imparts good substance and reduces number of flowers on the spray. This and P. equestris (syn. rosea) are the two small species that have been used fairly consistently for Phalaenopsis breeding, regardless of whether large or small flowers were ahead in popularity. The early P. John Seden has already been mentioned, others will be named by Mr. Songer in his discussion of this species.

A percentage of certain crosses have white sepals and petals with solid red lips. These flowers have been small to medium in size, but knowledge of the characteristics of P. equestris (syn. rosea), usually found in the background, explains this.

P. equestris, common in the Philippines, has leaves six or more inches long with an arching inflorescence that slowly lengthens and opens a small number of 3/4 to 1½ inch flowers in succession for months. Sepals and petals are broad, pointed, and white, flushed in the center with rose-purple. The lip is three-lobed, light rose-purple with dark purple streaks, rather long and pointed in appearance. Hybrids of which the species is one parent tend to reproduce the form of this lip and its light to deep rose-purple color. Sprays are long and branching, flowers numerous, small and lasting. Successive generations, selectively bred, result in improved flower shape and somewhat larger size. This is the background of the white, red-lipped type mentioned previously, a few equivalent small pink hybrids, and an occasional "striped" form, the veination pink in an otherwise white flower. Among the colored-lip crosses are P. Oscar Kirsch, Sally Lowrey, Judy Karleen, New Era and Overture.

Both P. Lueddemanniana and P. equestris have been used for many years. But what of the others? For we are witnessing now the beginning years of another cycle of interest in breeding with the small species and it will be no simple matter to learn their characteristics in order to determine what may be expected. Even more difficult will be the designation of flowers of superior quality.

P. violacea, native to the Malay Archipelago, is an instance. It is a distinctive species, with shining green leaves up to nine inches long, short inflorescence and variable flowers. Parent of the first Phalaenopsis hybrid,

its cream or greenish-colored sepals and petals, its small size, the clear purple of the splashes at the base of its segments - these combined to make of P. Harriettae a beautiful introduction to the list of Phalaenopsis hybrids. Reluctance to breed, coupled with loss of interest in small species, combined to prevent further use of P. violacea until recently. We shall soon, however, see a number of such hybrids - and measuring scales must be formulated, based upon knowledge of the species. Incidentally, an indication of the resurgence of interest in breeding of this type was the awarding of P. Harriettae by the A.O.S. in 1958 - after 70 years!

Very recently, a new color has been added to the "Phalaenopsis spectrum" through use of the rather unattractive species, P. Mannii. Found in Assam, this is from the outer fringe of the Phalaenopsis geographical range and was largely unknown to growers and to judges when the first yellow hybrid, P. Golden Louis, flowered. Within the short space of three years, P. Mannii has become as widely distributed as the familiar P. Lueddemanniana and much more widely used. Since P. Golden Louis, Golden Chief, Gold Coast and Gold Star were all produced by a member of this society, we have more than average opportunity to develop standards for evaluating P. Mannii's progeny. P. Golden Palm (Mannii x Grace Palm), made a short time later in California, has spurred interest in that area.

P. Mannii has leaves 6 to 10 inches long. The inflorescence, a little longer than the leaves, is shortly branched. Flowers are small, usually under two inches, sepals and petals yellow, heavily barred and blotched with chestnut-brown. All segments are narrow, petals a little shorter and more narrow than the sepals, lateral sepals somewhat incurved. The three-lobed lip is shorter than the other segments, side lobes small, erect, the mid-lobe anchor shaped. The column is yellow, stained with red. This latter probably indicates the source of the rose suffusion which often appears at the base of sepals and petals of P. Mannii hybrids.

Observation of this species would lead to expectation of a high percentage of flowers of small size, barred and blotched with brown, very open in form, with narrow segments, the lateral sepals "bow-legged". Some have the expected incurving sepals, which is generally considered an undesirable characteristic when present to an extreme degree. The P. Mannii lip is a dominant feature in the hybrids. In form, then, those flowers with wider, flatter segments would be considered desirable. Knowledge of breeding indicates that they cannot be required to be round and closed as we think of the meaning of these terms.

The first two crosses named are, in color, characterized by the excellent percentage of yellow and golden flowers they produce. A few are cream or tan and some fade in high light, as do many other colored flowers. Oddly enough, barring is not present but some have faint, rosy-brown spots in regular patterns on sepals and petals, not unpleasing in effect. Other flowers are clear yellow or gold. Most have a rose suffusion around the column. In general, lips are either solid dark rose, bordered with white or yellow, or are marked to a greater or less degree with this color, although some are clear yellow or golden. Choice here is a personal preference as both types are harmonious with the flower color.

Size varies, and over-all measurement alone would be a poor guide to flower quality. A few have measured 3 3/4 inches but these have had long, narrow segments, giving an extremely open, "sprawling" appearance. Obviously, quality in color and form in crosses such as these are of paramount importance.

Substance is consistently good and lasting qualities excellent.

The inflorescence of P. Mannii is short, branched, and stiff in appearance. Flowers are spaced apart and not numerous. Consequently, these crosses, to a considerable degree, lack the grace of the typical Phalaenopsis spray, flowers are farther apart, and fewer. It is to be noted, however, that as the plants grow older and stronger, length of spray increases, as does the tendency to arch and to branch freely.

P. Gold Coast and P. Gold Star, of P. Hymen (Mannii x Lueddemanniana) parentage, share many of the characteristics of the yellow hybrids previously considered. A smaller number than expected evidence P. Lueddemanniana influence. Here, knowledge of two small species is necessary, in addition to the white hybrid parent.

This is a fascinating field for experimentation and the market will soon be filled with P. Manii crosses. Among all these a limited number of plants will be of outstanding quality. Let us hope that some of these will produce seed - for only succeeding generations will demonstrate the dominant or recessive character of the yellow color introduced by P. Golden Louis.

The four smaller species that we have discussed are by no means all. The following have either not been used at all in hybridizing, or used only occasionally: P. cornu-cervi, P. fuscata, P. Lindenii, P. Lowii, P. Mariae, P. Parishii, P. speciosa, P. sumatrana, P. tetraspis. A few of the hybrids made from the small species will have the qualifications to become progenitors of fine things; some will be worthy of recognition on their own account, many will soon be forgotten.

The grower needs to acquire at least a "speaking acquaintance" with such as these for, judging by the past, it will probably be some years before the large flowers again occupy the center of the stage. And it is safe to predict that, when they do, they will bear the marks of their passage through this period of exploratory breeding.

The small species that we have mentioned are not the only source of the problems that beset those who evaluate Phalaenopsis. There are a few species, P. Denevei, P. serpentilingua and P. Laycockii, that resemble terete Vandas in growth. Flowers are small, of subdued coloring, and very open in shape. In 1938, Atherton, in Hawaii, registered Vandaenopsis Jawaii (P. Denevei x V. insignis). Since that time, P. Denevei has been used periodically, principally with Vandas, the resulting flowers having the appearance of the last named genus. Vandas have at times been combined with other Phalaenopsis, often with indifferent results.

The few hybrids of Renanthera and Phalaenopsis are striking. Plants share growth habits of both genera and are attractive in appearance. Sprays

are long and branching and the Renanthera influence is much in evidence in the flowers, necessitating judicious application of the point scale with Renanthera characteristics clearly in mind. Among red to coral-flowered varieties are Renanthopsis Kamehameha and Coral Star. Renanthopsis Jan Goo and R. Chiquita are small gems.

Doritaenopsis (Doritis x Phalaenopsis) is, save for an occasional earlier cross, a promising newcomer. Floriferous, lasting, flowers small to medium, colors ranging from near white to deep pink, we are coming to know Doritaenopsis Dorette, Dor. Red Coral and Dor. Charm - with several others to look forward to in the immediate future.

There is a limited number of other bigeneric crosses and, as time passes, there will be many others. The task of learning to evaluate such material is not easy, but gradually standards will evolve for each group that merits lasting consideration.

In conclusion, we should like to emphasize the role that culture plays in producing quality flowers in Phalaenopsis. The speakers know of no genus in which this factor is of greater importance. Size of flower, form, floriferousness, all are improved or reduced by the vigor of the plant. This you can prove to your own satisfaction. Note the exact qualities of the flower and the size and condition of the plant on a label attached to pot or plant, then follow up the next year and the year after that.

The genus Phalaenopsis is a rewarding one to those who study it and strive to grow it well. We hope that each of you will become a member of that orchid fraternity of interest.

Note: The lecture was illustrated throughout by slides. Many comments are omitted from this paper as they would lack significance without proper illustration.

Charts which follow were distributed and used as supplementary material.

A. O. S. PHALAENOPSIS AWARDS 1934 – 1959

Year	Total No. Awards	F.C.C.	A.M.	H.C.C.	Other	White Phalaenopsis	Pink Phalaenopsis	"Novelty" Phalaenopsis
1934	1		1				1	
1936	1		1			1		
1937	1		1			1		
1939	1	1				1		
1940	1		1			1		
1941	1	1				1		
1942	1		1			1		
1943	2	1	1			2		
1947	2	1	1			2		
1948	1		1			1		
1949	1		1			1		
1950	3	1	2			3		
1951	5		5			5		
1952	4		4			4		
1953	3		3			2		1
1954	10		9		1 J.C.	8	2	
1955	4		4			3	1	
1956	7		7			3	2	2
1957	10		4	6		9		1
1958	14		5	9		7	*4	3
1959	35		12	24		20	*8	9

*5 of these 10 are P. Alice Bowen

A. O. S. AWARDS – PHALAENOPSIS
1934 – 1959

	Award	Points	Date	Over All	Dorsal Sepal	Petals	Lateral Sepals
Gyp	A.M.		1934				
Katherine Siegwart	A.M.		1936				
Amabilis, var. rimestadiana 'Helvetia'	A.M.		1937				
K. Siegwart 'Katherine Slotter'	F.C.C.		1939				
Doris	A.M.		1940				
Mary Pierson	F.C.C.		1941				
Katherine Siegwart	A.M.		1942				
Doris	A.M.		1943				
Doris	F.C.C.		1943	4–5/8	1–1/4 X 3–1/4	3–1/2 wide	
Doris 'Orchidglade'	F.C.C.		1947				
Rimestadiana 'Helvetia'	A.M.		1947				
K. Siegwart 'Improved'	A.M.		1948				
(Confirmation X Doris)	A.M.		1949				
Chieftain, Curson's var.	A.M.	83	1950	4–3/8	1–3/8 X 2–1/8	2–3/8	
Doris	A.M.	84	1950		1–3/8 X 2–1/4	2–3/8 X 2	
Venustus 'Hilltop'	F.C.C.	94	1950		1–7/16 X 2–3/16	2–7/16 X 2	
Cast Iron Monarch 'Roslyn'	A.M.	85	1951	4–3/8	1–3/8		
Chieftain 'McLellan'	A.M.	80	1951	4–1/2 X 4	1–1/4	2–1/2 wide	
Doris 'Rebecca'	A.M.	82	1951	4 X 3–3/4			
Thomas Tucker	A.M.	84	1951	4–1/2	1–3/8 X 2–1/4	2–1/2 X 2–1/4	
Winged Victory 'Faith'	A.M.	84	1951	4–5/8	1–3/8 X 2–1/8	2–1/4 X 2–3/8	
Doris 'Angel'	A.M.	89	1952	4–1/2	1–3/8 X 2–1/4	2–9/16 X 2–3/16	
Penn Valley 'Hilltop'	A.M.	86	1952	4–1/2	1–1/4	2–3/4	
Summit Snow 'Proebstle'	A.M.	86	1952	4	1–3/8	2–3/8	
R.H. Montgomery 'Snow White'	A.M.	88	1952	4–1/2 X 3–1/2	2		
Doris 'No. 100'	A.M.	85	1953	4–5/8	1–1/2 X 2–1/4	2–11/16 X 2–1/4	
Mannipam 'Larkin'	A.M.	85	1953	2–1/2			
Miss Muffet 'No. 175'	A.M.	89	1953	4–1/2	1–3/8 X 2–1/4	2–5/8 X 2–1/4	
Chieftain	J.C.		1954				
Clara Knight 'Judith'	A.M.	86	1954	3–9/16	1–1/4 X 1–5/8	2–1/4 X 1–5/8	
Clara Knight 'No. 3'	A.M.	85	1954	4	1–1/2 X 1–7/8	2–3/8 wide	
Doris 'Fetzer'	A.M.	84	1954	4–3/8	1–3/8 X 2	2–1/2 X 2–1/2	
Dr. Henry O. Eversole 'Opal Cliffs'	A.M.	85	1954	4–1/2 X 4–3/4		2–3/4 wide	
Grace Palm 'Vallemar'	A.M.	87	1954	4–1/2			
Margaret Bean 'Sunland'	A.M.	80	1954	4–9/16	1–7/16	2–3/4 wide	
R.H. Montgomery 'Monterey Bay'	A.M.	83	1954	4–1/4 X 4–1/4	1–1/4 X 2–1/4	2–1/4 X 2	
Thomas Tucker 'Sequel'	A.M.	82	1954	4–1/2 X 4–1/4	1–1/2 X 2	2–3/4 wide	

	Award	Points	Date	Over All	Dorsal Sepal	Petals	Lateral Sepals
White Cloud 'Cry'	A.M.	88	1954	4–1/4	1–3/8 X 2–1/4	2–3/8 X 2–1/8	
Clara Knight 'Wright'	A.M.	86	1955	4 X 3–3/8	1–1/4 X 1–3/4	2–3/8 X 1–7/8	
Grace Palm 'Butterfly'	A.M.	80	1955	4–7/8	1–3/8 X 2–7/8	3 X 2–1/4	1–1/4 X 2
Grace Palm 'Pajaro'	A.M.	80	1955	4–3/4		2–3/4 wide	
Thomas Tucker 'Monarch'	A.M.	81	1955	4–3/4		3	
Chilly Dawn 'Lake Merritt'	A.M.	82	1956	4	1 X 1–3/4	2 X 2	
Clara Knight 'Karon'	A.M.	80	1956	3–3/4	1–1/4 X 1–7/8	2–5/16 X 1–3/4	1–3/16 X 1–3/4
Clara Knight 'Rebecca'	A.M.	83	1956	4	1–7/8 X 1–5/16	2 X 2–1/2	1–1/8 X 2–1/8
Grace Palm 'Kenter'	A.M.	82	1956	5	1–1/2 X 2–1/4	2–7/8 X 2–1/2	
Grace Palm 'No. 15'	A.M.	82	1956	4–1/2	1–1/2 X 2–1/4	2–1/2 X 2–1/4	1–1/4 X 2–1/4
*John Seden 'Southern Star'							
Nuel N. Songer 'Miami Herald'	A.M.	86	1956	4	1–1/16 X 2–1/16	1–1/2 X 2	1–1/8 X 2
*Subsequently registered as P. Star of Rio							
Doris 'Connie'	H.C.C.	76	1957				
Doris 'Leedja'	H.C.C.	76	1957				
Dos Pueblos 'Vallemar'	A.M.	84	1957	4–3/4	1–1/2 X 2–1/4	3 X 2–1/2	1–1/4 X 2
Grace Palm 'Monterey Bay'	A.M.	83	1957	4–5/8	1–3/8 X 2	2–3/4 X 2–1/8	1–1/8 X 2–1/4
Grace Palm 'Santa Cruz'	A.M.	82	1957	4–1/4	1–3/8	2–5/16 X 2	
Margaret Bean 'Goleta'	H.C.C.	76	1957				
Pasadena 'Point Dune'	H.C.C.	76	1957				
Star of Rio 'Malibu'	H.C.C.	79	1957				
Vallemar 'Price'	H.C.C.	76	1957				
Vallemar 'Phoebe'	A.M.	82	1957	5–1/8	1–5/8 X 2–1/2	2–3/4 X 2–5/8	1–1/4 X 2–1/2
Winifred Prahl 'Juanita May'	A.M.	85	1958	5	1–1/2 X 2–1/4	2–3/4 X 2–1/2	1–1/4 X 2–1/4
Arcadia 'Signal Crest'	A.M.	83	1958	5–1/8	1–3/8 X 2	3–1/4 X 2–7/16	1–1/4 X 1–3/4
Juanita 'Fascination'	H.C.C.	78	1958				
Vallemar 'Alice'	H.C.C.	79	1958				
Vallemar 'Cher Don'	H.C.C.	78	1958				
Ronnie Wilson 'Pink Pearl'	A.M.	80	1958	4–1/4	1–1/4 X 1–7/8	2–1/2 X 2	1–1/4 X 1–7/8
Leah 'Julie'	H.C.C.	76	1958				
Alice Bowen 'Laverne Paulette'	A.M.	80	1958	3–1/2	1–1/8 X 1–1/2	1–1/4 X 1–5/8	1 X 1–1/2
Dos Pueblos 'Lundell'	H.C.C.	76	1958				
Juanita 'Jewel Box' Maile'	H.C.C.	75	1958				
Harriettiae 'Louis'	A.M.	85	1958	2–7/16	11/16 X 1–5/16	1–1/4 X 1	3/4 X 1–3/8
Moonglow 'Orchidglade'	H.C.C.	77	1958				
Golden Louis 'Sunset'	H.C.C.	77	1958				
Shocking Pink 'Rosemary'	H.C.C.	76	1958				
Alice Bowen 'Midnight'	A.M.	80	1959	3–1/2	7/8 X 2	1–5/16 X 1–3/4	1 X 1–3/4
Clara I. Knight 'The Bride'	H.C.C.	75	1959				
Vallemar 'K'	H.C.C.	79	1959				
Clara Knight 'Alice'	H.C.C.	75	1959				
Grace Palm 'Sandoro'	H.C.C.	78	1959				
Star of Rio 'Malibu'	A.M.	83	1959	3–7/8	3/4 X 1–7/8	1–1/4 X 1–3/4	1 X 1–7/8

	Award	Points	Date	Over All	Dorsal Sepal	Petals	Lateral Sepals
Ramona 'Purity'	H.C.C.	79.5	1959				
Moonflow 'Freckleface'	H.C.C.	75	1959				
Rosy Pam 'Vaughn'	H.C.C.	76	1959				
Juanita 'Jewel Box's Rodney'	H.C.C.	79	1959				
Ann Fisher 'Dee Zee'	H.C.C.	77	1959				
Grace Palm 'Dee Zee'	H.C.C.	76	1959				
Moonglow 'Miami'	A.M.	81	1959				
Alice Bowen 'Gertie'	A.M.	81	1959	3–7/8	1–1/16 X 2	1–3/8 X 1–13/16	1 X 1–11/16
Texas Star 'Gertrude'	A.M.	83	1959	4	1 X 2	1–3/8 X 2	1–5/16 X 1–3/4
(Not named) 'Christine'	H.C.C.	77	1959				
Vallemar 'Lil Reese'	H.C.C.	77	1959				
Alice Bowen 'Varina'	A.M.	80	1959	3–5/8	15/16 X 1–5/8	1–1/2 X 1–3/4	15/16 X 1–5/8
Moonglow 'Lipstick'	A.M.	81	1959	3	7/8 X 1–5/8	1–1/4 X 1–3/4	7/8 X 1–5/8
Summit Snow 'Snow Sheen'	A.M.	80	1959	4–1/2	1–1/4 X 2	2–1/2 X 2	1–1/4 X 2
Snow Bird 'Palm Beach'	A.M.	83	1959	4–1/4	1–1/2 X 1–7/8	2–1/2 X 2–1/16	1–3/16 X 2
Pacifica 'Easter'	H.C.C.	77	1959				
Vallemar 'Charles'	H.C.C.	78	1959				
Vallemar 'Henry'	H.C.C.	77	1959				
Grace Palm 'Lyndalia'	A.M.	82	1959	5	1–5/16 X 2–1/2	2–1/2 X 2–3/4	1–1/2 X 2–5/16
Snow Bird 'McCoy'	A.M.	81	1959	4–1/2	1–1/2 X 2–1/8	2–1/8 X 2–1/2	1–1/4 X 2
Gladys Lovelace 'Chad'	H.C.C.	79	1959				
Sally Lowrey 'Lucile'	H.C.C.	75	1959				
Sunrise 'Rose'	H.C.C.	79	1959				
Vallemar 'Santa Barbara'	A.M.	81	1959	5	1–3/8 X 2–3/8	2–1/2 X 2–7/8	1–1/4 X 2
Alice Bowen 'Susan'	H.C.C.	79	1959				
Texas Star 'Alixe'	H.C.C.	77	1959				
Gloriosa 'Herbrita'	H.C.C.	76	1959				
Moonglow 'Sparks'	H.C.C.	77	1959				
Joanna Magale 'Wilmington'	H.C.C.	78	1959				

P. LUEDDEMANNIANA AND ITS HYBRIDS

N. N. Songer

It is quite an honor to be called upon to discuss with this class one member of the Phalaenopsis family and to appear on the same program with Mr. and Mrs. Vaughn. As you may know, I work for a living at the Miami Herald and orchid growing is a hobby with me as it probably is with most of you. I can lay no claim to vast knowledge or scientific research but am glad to share with you information collected from reference studies and my personal experience and observations.

You will find at your tables two typewritten sheets (#1 and #2). Number 1 is headed "Phalaenopsis Lueddemanniana" and Number 2 "Hybrids of Phalaenopsis Lueddemanniana." These will be sufficient for my discussion because "Awards Made to Phalaenopsis Lueddemanniana" are included in the table of awards which Mrs. Vaughn will supply and more detailed descriptive matter will be developed by Mr. Vaughn when picture slides are shown at the conclusion of our meeting.

Suppose you follow with me as I read from sheet number 1 to prepare for the few remarks I have in mind to share with you:

PHALAENOPSIS LUEDDEMANNIANA - #1

Native - Philippine Islands

"P. Lueddemanniana of the section ZEBRINAE is an extremely variable species as far as the color and size of flowers is concerned...The leaves of P. Lueddemanniana are a shiny pale green about four to six inches long and 2½ to 3½ inches wide...The flower spikes are short, two to six inches long, unbranched and few-flowered (two to five flowers). Sepals and petals are similar and spreading, so that the flower is about 2 to 2½ inches across the petals... The background color is white to yellowish, marked with transverse bars of light purple...The labellum is three-lobed and fleshy; the middle lobe appearing white or pale purple with a greenish tip and innumerable hairs along its length... Its flowering habit is to open one at a time and each flower lasts for about two weeks. The plant flowers from November through February and often up to July. This species was dedicated to Lueddemann, an orchidist who resided in Paris during the late years of the last century." (Philippine Orchids - Reg. S. David - Mona Lisa Steinner, pp. 183-184.)

"P. Lueddemanniana, Rchb. f. - A very pretty dwarf species allied to P. sumatrana. The plant is very similar to P. rosea in general appearance...This species produces young plants on flower spikes more freely than any other kind..." (The Orchid Grower's Manual - 7th Edition - Williams, pp. 667-668.)

VARIETIES (Veitch's "A Manual of Orchidaceous Plants")

DELICATA - Gar. Chron. 1865, Page 434 - Clustered stripes on sepals and petals. Narrow amethyst-purple confined to base.

HIEROGLYPHICA - Gar. Chron. 11 S 3. 1887, Page 586...Sepals and petals cream white covered with small cinnamon spots.

ORCHRACEA - Gar. Chron. 1865, Page 434. Stripes on sepals and petals light ochre yellow.

PULCHRA - Gar. Chron. IV 1875, Page 36...Upper part sepals and petals port wine color. Inferior part as well as lip and column amethyst-purple. Transverse bars nearly obliterate.

BOXALLII - (Mentioned in 'Philippine Orchids' - No description.)

PURPUREA - A lacquer-red form (mentioned by Kirsch in A.O.S. Bulletin, October 1959, Page 726).

Many of you may have the reference books mentioned here and can go to them for amplified information if desired or, if sufficiently interested, you may want to get copies of these books for your library. Before we leave this sheet I would like to call attention to the variety PULCHRA because it is the opinion of Mr. Scully, (and my limited knowledge would lead me to agree) that most of our P. Lueddemanniana crosses made locally have been with different plants of this variety, even though these have been extremely variable. Now, let us consider sheet #2.

HYBRIDS OF PHALAENOPSIS LUEDDEMANNIANA - #2

P. Lueddemanniana
x amabilis - John Seden (Veitch, 1888)
**x Stuartiana - Hermione (Veitch, 1889)
x Mannii - Hymen (Veitch, 1900)
x Sanderiana - Mrs. J. S. Veitch (Veitch)
x violacea - Luedde-violacea (Veitch)
---**********---
x Schilleriana - Regnier (Regnier, 1922)
x Irridescens - Malama (Sideris, 1949)
x Eustathia - Lora Keller (Sideris, 1949)
***x Fontainebleau - Dr. George N. MacDonell (McDonell, 1950)
***x Doris - Nuel N. Songer (Wright, 1952)
x Bataan - Star of Rio (Burgeff, reg. by Morgenstern, 1956)
x Rothomago - Pink Star (Vaughn, 1957)
x equestris syn. rosea - Mahinhin (Miller, 1957)
x Evening Star - Texas Star (Lawrence, 1958)
x Pink Pamela - Star Chief (Small, 1958)

P. John Seden
x Elisabethae - Waldo Swearingen (Swearingen, 1953)
x Schilleriana - Long Jim Barnes (Manda, 1958)

P. Luedde-violacea
x Schilleriana - Mme. Charles Mattan (Mattan, 1926)

P. Regnier
x Hawaii - Dark Hawaii (McCoy, 1948)
x Schilleriana - Purple Queen (McCoy, 1948)

P. Hymen
x amabilis - Valentine's Day (Vaughn, 1958)

P. Dark Hawaii
x Rothomago - Sundown (McCoy, 1954)
x Hawaii - Fantasy (McCoy, 1957)
x Pink Cloud - Alice Bowen (McCoy, 1957)
x Monique - Princess Rose (McCoy, 1957)

P. Purple Queen
x Monique - Pink Lace (Kodama, 1957)

This is more or less a table of hybrids which can be studied later, but maybe these observations should be made at this time. The first cross of record, you will observe, was made by Veitch in 1888 and between then and 1900 he is credited with 5 crosses. Is it worth noting that no one else tried it until 1922 when Regnier used P. Lueddemanniana with Schilleriana. We can only guess at the reasons but perhaps my experience can supply some basis for logical conclusions. Maybe they did not appear to get any seed or were unable to carry the cross into a second generation. My experience is limited to 4 crosses in the P. Lueddemanniana group:

*** - one cross of Dr. George N. MacDonell
*** - one of Nuel N. Songer
** - two of Hermione

Three stud plants of P. Lueddemanniana were used. Dr. MacDonell's plant was a gift from Rodney Wilcox Jones with flowers much superior in size and color to the other two, but it was a slow grower and shy bloomer. It was the parent of both P. Dr. George N. MacDonell and P. Nuel N. Songer. Mrs. Marshburn's P. Lueddemanniana was in unhealthy condition and she offered it to me if I could save its life. I did! Its roundish leaves and color of flowers are almost identical with that of a plant which comes from Oliver Tucker, and could be from the same source. The other stud plant used was one which was claimed to be a kiki from a plant in Dr. Walter Jones' collection. This plant had more conventionally shaped leaves, as did Dr. MacDonell's plant, but the flowers were smaller and had more of a brownish tint. Pollen from the Marshburn and Dr. Jones' plant was used on two different P. Stuartiana plants to make the two Hermione hybrids.

At that time, I was a rank beginner and had no idea what the results would be. I did the flasking. There was a fair amount of good looking seed in the P. George N. MacDonell pod. I had to be satisfied to sterilize the cotton from the P. Nuel N. Songer pod and both the P. Hermione pods produced ample seed.

Dr. MacDonell had bad luck with both his share of flasks and the community pot I shared with him...I had a fair number of plants coming along, but to insure success I gave Roy Fields a couple of little plants and he proved his more expert growing ability by 'beating me to the bud'. He telephoned and said, "That plant you gave me has the strangest looking bud and if the way it looks now is any indication, the flowers will be as speckled as a spotted pup!" I believe Roy was as excited and pleased as I was, and he was kind enough to agree to name it for Dr. MacDonell. Those of you who may have known that fine gentleman can appreciate how well this cross is named because Dr. MacDonell could be as perky and gay as his namesake and was happiest when he had one of the flowers in his lapel.

Harold Wright and I had worked together on the P. Nuel N. Songer cross. I had P. Lueddemanniana pollen and he had P. Doris. We agreed if it turned out to be worth while he would get credit for making the cross and it would be named for me. Having P. Nuel N. Songer plants coming along, after seeing P. Dr. George N. MacDonell bloom, you can imagine how eagerly we awaited the first of the new cross. Next to my babies, they were the greatest thrill I can remember. Some of them were breath-taking.

The two crosses of P. Hermione were something of an anticlimax but were charming in their own right. The flowers from the Marshburn pollen had reddish dots and from the Dr. Jones pollen were more of a brownish shade.

Plants and flowers of P. Dr. George N. MacDonell were somewhat variable in size, shape and color. Flower spikes showed a tendency to branch as the plants grew larger. Those of P. Hermione branched freely but those of P. Nuel N. Songer seldom branched at all.

Plants of P. Nuel N. Songer were most variable, some monsters and some midgets, and the flowers were most variable in size and shape. Plants of P. Hermione were more uniform as to size, as were the flowers in shape.

Plants of all the crosses had a tendency to throw kikis on old bloom spikes. All the flowers I observed had lost their fuzzy lips in the first generation of hybridization. All crosses produced plants much more robust than the P. Lueddemanniana species.

I was able to make a cross of P. Nuel N. Songer with P. Clara Knight but was not successful in attempts to cross the other hybrids. But with studies now being made in chromosome counts I believe we can expect great progrsss will be made in developing the P. Lueddemanniana potential in the Phalaenopsis family in the way of substance, lasting quality and other desirable features.

Recent A.O.S. awards indicate the importance P. Lueddemanniana influence is assuming in producing award quality hybrids.

The slides which will be shown by Mr. Vaughn will convey many of the things I have tried to tell you much more clearly. Some of them just must be seen to be appreciated.

A P P E N D I X

ANNOUNCEMENT September 18, 1959

The Awards Committee, with the approval of the Board, proposes to conduct an introductory course in the principles of evaluating orchids if there is sufficient interest. The course would be open to all members of the S.F.O.S. who wish to enroll.

The course would be of limited duration with each lesson planned and prepared by the Committee, then presented by qualified members. Instruction would be by lectures, visual aids, practice and tests, with research and study on the part of the participants. A fee would be charged to cover expenses. Purposes of the course would be (1) to promote knowledge of qualities that characterize orchids of superior quality, (2) to add interest to the growing of hybrids through knowledge of plants' background of breeding. It should be clearly understood that no one would be accredited as a judge as a result of taking this course.

Such a project would involve a great deal of work on the part of the Committee members, but this seems to be a way in which everyone who is seriously interested in extending his knowledge in this field can profit from the training and experience of the best qualified members of the Awards Committee. In order that the Committee may have some idea of the number of persons who might enroll in such a course, please tell the secretary, Mrs. Morgan, at the close of this meeting, if you are interested. No definite plans will be made until the amount of interest has been determined.

INTRODUCTORY COURSE IN ORCHID EVALUATION
Sponsored by
Awards Committee, S.F.O.S.
L. C. Vaughn, Chairman

Coordinator F. J. Routon — Secretary Mary Lott

Lesson I — Introduction to Course
- A. Purposes of Course
  1. To promote knowledge of qualities that, according to present standards, characterize orchids of superior quality.
  2. To encourage up-grading through knowledge.
  3. To add interest to hybrids through the grower's knowledge of the plant's background.
- B. Qualifications of a judge (A.O.S. Handbook)
  1. Necessary information
  2. Necessary experience

Instructor Norman Merkel — Nov. 17, 1959

Lesson II — Orchid Judging Through the Years
- A. Reasons for judging - benefits and pitfalls
- B. History of orchid judging
- C. Systems in use
- D. Evolution of standards

Instructor Robert Scully — Nov. 24, 1959

Lesson III — Cattleya and Allied Genera
- A. Characteristics of good parent plants
- B. Characteristics of species and their uses in hybridization
  1. Cattleya - labiata group, Laelia, Brassavola
- C. Present day hybrids (combination of Cattleya, Laelia and Brassavola)
  1. Breeding - evidence of species influence
  2. Judging standards - related to flower's background

Instructor Norman Merkel — Dec. 1, 1959

Lesson IV — Cattleya and Allied Genera (continued)
- A. Characteristics of species and uses in hybridization
  1. Cattleya - bifoliate, Sophronitis
  2. Epidendrum and others involved in bigeneric crosses
- B. Present day hybrids (bifoliates, sophro-hybrids, Potinara, Epicattleya, additional Cattleya, Laelia, Brassavola combinations as needed)

Quiz on Lessons I, II, III, IV (required)

Instructors Roy K. Fields and Dan Reed — Dec. 8, 1959

Lesson V Vandas

A. Strap leaf Vandas
   1. Characteristics of species and uses in hybridization
      a. Sanderiana, coerulea, tricolor - suavis types
B. Present day hybrids - strap leaf and bigeneric
   1. See Cattleya section (III, B. 1)
   2. See Cattleya section (III, B. 2)

Instructors Hayden Sparks and Del Flynn — Dec. 15, 1959

Lesson VI Vandas (continued)

A. Terete, semi-terete Vandas
   1. Characteristics and uses of species
      a. teres, Hookeriana
   2. Present day hybrids (terete, semi-terete, bigeneric)
      a. See Cattleya section (III, B. 1)
      b. See Cattleya section (III, B. 2)

Quiz on Lessons V, VI (required)

Instructors Del Flynn, George Wakasugi, and Jack Kasper — Jan. 5, 1960

Lesson VII Dendrobiums

A. Characteristics and uses of species
   1. D. Phalaenopsis types
   2. Nobile types
   3. Cane types
   4. Hirsute types
   5. Others
B. Hybrids, old and new

Instructors Dan Reed, Tom Fennell, and Bob Wilson — Jan. 12, 1960

Lesson VIII Phalaenopsis

A. Characteristics and uses of species
   1. amabilis
   2. Schilleriana
   3. Small species
B. Present day hybrids

Quix on Lessons VII, VIII (required)

Instructors Lewis Vaughn, Varina Vaughn, and Jack Songer — Jan. 19, 1960

Lesson IX Examination (optional)

Instructors Jack Kasper and Mary Lott — Jan. 26, 1960