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Devoted to the Sheltered Garden

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Views expressed in this magazine are not necessarily those of the Editors, the Society or its officers.

ACROSS THE PRESIDENT'S DESK

It has been a real pleasure to receive the meeting notices, the news letters and bulletins from the various Branches. Every one makes me wish I could attend. It is possible for me to attend the nearby Branches and I hope to visit them all during my term of office. To visit many of you is, of course, an impossibility. But I am with you in spirit and your wonderful notices keep me informed of all you are doing. I never cease to marvel at the willingness of members to give of themselves in time, effort, and talent.

Last fall Evelyn Cronin, President of the Buxton Branch, writing from Massachusetts, expressed how she felt about the far away Branches being part of the Society. I can not put it any better so I will quote her.

"The east coast is far removed from the west coast geographically but it need not be spiritually. By this, I mean the same spirit should exist of belonging, of being a segment of a dynamic whole."

As I read of all the work you are doing in your various areas I feel this is true. You are all a vital part of a group of people dedicated to the Aims and Purposes of the American Begonia Society.

Margaret B. Taylor

ROUND ROBIN NOTES

In the large, far-spread family of robins, we realize that some serious accidents and illnesses do occur, as well as household moves and postal mixups. When writing to members, be sure that addresses are perfect. It is important that you send courtesy cards to chairmen of your flights to tell them when flights left you. Whenever a flight is delayed, we can then check where a flight was last seen, without writing to every member to ask.

If you cannot write a letter — perhaps because of houseguests, perhaps because of illness — you will help greatly by sending the letter on with a line of explanation, writing your full letter the next round. A robin may fly around the world in a month, only to sit two months in one state.

Ronald Hambridge of England has been carrying out an experiment to see how long the seed of *B. tuberhybrida* will keep viable. He has kept the seed airtight in a glass jar and it was still viable after four years.

John Scott of Australia writes that he has had some trouble growing *B. luxurians*. Some time ago he read

(Continued on Page 62)

COVER PICTURE

B. Rex 'Marion Louise'

Brilmayer photo.

AIMS AND PURPOSES OF THE AMERICAN BEGONIA SOCIETY, INC.

The purpose of this Society shall be:

TO stimulate and promote interest in *Begonias* and other shade-loving plants;
TO encourage the introduction and development of new types of these plants;
TO standardize the nomenclature of *Begonias* and companion plants;

TO gather and publish information in regard to kinds, propagation and culture of *Begonias* and companion plants;
TO issue a bulletin which will be mailed to all members of the Society; and to bring into friendly contact all who love and grow *Begonias*.

PRUNING CANES FOR BEAUTY

By Irene S. Nuss
Los Angeles, California

Now that many of our cane begonias have lost most of their foliage and have gone through their winter resting period, we need to start our pruning program and prepare them for the coming season. I am referring here to plants grown in open type lath houses. Of course, I am not advocating we attack all our cane begonias with pruning shears just because it is spring, not at all, for there are many types that are slow growing and will need little or no pruning, while others may produce many new canes each season and grow to great heights.

Some varieties, depending on the age of the plant, will hold their foliage all year as seedlings often do. If the leaves are firm and healthy I leave them on, if not I cut them off, forcing new leaves. The variety and age of the plant must always be considered, but by and large most canes benefit greatly by proper pruning. I find there are no set rules in pruning; plants are like people, each one is different.

As a general practice I try not to prune a new growing cane, preferring to let it grow one season and prune the next. One exception is with seedlings, I find it best to let these grow three years or more before pruning. However, some seedlings may need to be tipped if they become leggy. I have had to do this on several occasions and then shared the tip cutting with a friend as insurance against loss.

Before starting to cut your plant,

try to have the end result in mind. If the plant has three or more tall mature canes, cut these in graduating heights; how long or short depends on the plant. On my B. 'Kentwood' each cane is pruned, even the new growth from the past season. This is necessary to keep it in bounds for it can easily top eight feet in one growing season (see photo). If possible, I like to leave at least four nodes, giving the plant four chances to replace the removed top. In some instances you may not have four good growing nodes and will need to consider less. Make your cut about an inch above such a node, keeping in mind the direction the "bud" or node is breaking and use this as a guide in shaping the plant. New growth will be in the direction the bud faces (see photo).

I find most of the small-leaved, shrub-like types with typical cane blossoms such as B. 'Preussen', B. 'Medora', and B. 'Veitch's Carmine' are kept neatly groomed by sharing tip cuttings with friends during the growing season, leaving little need for pruning at this time of year.

Then there are the trailing varieties such as B. 'Florence Carrell' and B. 'Ellen Dee'. These are usually grown in baskets or wall pockets. A mature plant of B. 'Ellen Dee' may produce many new slender canes in one season. Here I find it necessary from time to time to remove completely some of the older canes, making the cut about an inch above the soil line. For this I use sharp shears.



On some of the larger canes like B. 'Kentwood' (in photo), I like to use a very sharp knife, girdling the cane before cutting through. This presents less bruising of the tissue and reduces the chances of fungus attacking. Dust with sulfur if there is a great deal of bleeding. Here I might note, dip your shears or knife in cider vinegar, which acts as an antiseptic.

Most of my canes are pruned in January and February, although it could be as late as March depending on the weather. After a small pot-grown plant has been pruned, the root system should be checked. Gently tap it out of the pot, if root bound, shift it to the next size larger, but do not over-pot.

Next apply one teaspoon of mulch to each pot. The mulch that I like to use consists of 1 pint of Hoof and Horn, 1 pint of Humisite, 1 pint of

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Gene Daniels photos

BEGONIA BASICS FOR BEGINNERS

By Elda Haring

Fertilizing

When you have had but little experience in growing begonias indoors or outdoors, it would be better to choose a simple feeding program until you have learned how to observe your plants and their reactions to plant foods and other factors that affect their needs and habit of growth. Do not expect to see immediate results, however, for although some people like to indicate that immediate effects can be seen from the use of plant foods, this is just not the case. Water-soluble plant foods are taken up quickly by the roots but very few begonias emulate the storied bean vine in "Jack and the Bean Stalk".

Begonias should never be fertilized when they are in a resting period or completely dormant; that is when no new growth is being made. But when new leaves and shoots indicate active growth most begonias are benefitted by a feeding of one of the water-soluble fertilizers. It is important to follow implicitly the directions on the container and to be sure that the soil in the pot is *moist* before applying fertilizer or you may find your plants suffering from "fertilizer burn". A program of feeding a water-soluble fertilizer full strength, as recommended on the container, every other week when begonias are in active growth is a good one for the inexperienced.

A beginner may well ask "What is a water-soluble fertilizer? A good question. A water-soluble fertilizer is a concentrated plant food in powder

form which dissolves readily in water and is obtained usually in a small can or container. There are a number of these on the market and they can be found in garden supply shops or even on the shelves of the supermarkets. Those found on supermarket shelves are often marked "African Violet Plant Food" but these are excellent and also suitable for use on begonias.

When using the concentrated powder fertilizers it is best to use the graduated measuring spoons to be certain that you will use the proper amount. It one teaspoon to a quart of water is called for be sure to make it a *level* teaspoon and not a rounded one. If you do not have a set of measuring spoons you can take up the powder in a teaspoon, use a knife to level it and, with the point of the knife mark off into halves or quarters if necessary and push the extra powder off the spoon so as to make the measurement as accurate as possible. If the fertilizer you have chosen is in liquid form be absolutely sure that the measurement is as correct as possible. Too small an amount can do no harm but too much can damage your cherished plants severely.

After you have become fairly proficient at growing and feeding your plants you might want to try "constant feeding" or "foliar feeding". With "constant feeding" usually about one-eighth the strength recommended is dissolved in a gallon of water and this solution is used to water the plant *each time* it is water-

(Continued on Page 61)

SOME OBSERVATIONS ON BEGONIA SEEDS

By Philip G. Seitner

Over a period of several years, I have examined and recorded dimensions of seeds of numerous *begonia* species, primarily those made available to me through the American Begonia Society's Clayton M. Kelly Seed Fund. Species differences in seed shape and in the cellular pattern of the seed coat often prompted making sketches of typical specimens to record those characteristics as well.

Eighteen of these are included in the illustration (Plate I) which was conceived to display not only the commonly encountered types but the range of forms and dimensions that occurs in the genus. This can not pretend to be exhaustive of major variations, since my observations have been restricted to so few of the vast number of species. However, generalizing from those I have observed, I would describe the typical *begonia* seed as ellipsoidal (or slightly ovoid) and circular in cross section. Typical dimensions and proportions appear to be close to 0.35 mm in length to 0.23 mm in diameter.

Many species produce seeds that differ only slightly from these dimensions and proportions, one way or the other. The smallest illustrated here is the seed of *B. viscida*, the largest is that of *B. eminii*. It is likely that some species may have seeds even more diminutive than those of *B. viscida*; it seems less likely that any *Begonia* species has seeds larger than the remarkable seeds of *B. emini*. In any event, the dimensions of seeds of these two species must represent very nearly the full range

of size of begonia seeds.

In any random sample of seeds form a *begonia* species (or even a sample from a single capsule), the individual mature seeds will vary slightly in size and proportion. For consistency, therefore, the dimensions given here for each species are the maximum or near maximum and are taken of a specimen which appeared to represent proportions typical of seeds of the species under examination.

Also in any adequate sample of seeds of a species, a few may be found misshapen. Due to compression from adjacent developing ovules, a seed may mature with a slight asymmetry, twist, or other irregularity. This is readily discerned as atypical if the great majority of seeds in the sample are regularly symmetrical. Specimens illustrated here were deliberately selected to avoid any major deviation from typical symmetry. On the other hand, there was no attempt to make correction of a minor asymmetry when it appeared in the seed selected for drawing; thus, they are not drawn as idealizations.

With regard to this regularity of form, only one type of *begonia* seed appears to exhibit a distinct and characteristic departure from symmetry, exemplified by *B. caragatatubensis* and *B. solanantha*. Even in these species, the seed symmetry is not through genetically-determined growth differentials, but is imposed on many or most of the seeds as a result of characteristic compressions

from adjacent ovules. Seeds of these two species will be described in detail later.

A conspicuous surface feature of the begonia seed is the network of ridges representing the coherent edges of adjacent cells in the seed coat. These cells, seen while still living on the immature seed (Plate II, Fig. 10), are expanded and relatively transparent. Upon the seed's maturation, when conducting tissues supporting it are disrupted, the cells of this integument dry and flatten to form hard protective plates, each firmly cemented at its edges to the edges of the plates surrounding it. The mature seed coat appears to be constructed solely of this single sheet of cell-plates. In hardening, the outer surface of each plate assumes a concavity which appears to be typically deeper in some species than in others. For example, the seed of *B. manni* has deeply depressed plate surfaces, giving the coat a heavily sculptured appearance. Under slight magnification, highlights and shadows reveal this concave feature of each plate strikingly; the illustration does not attempt to suggest more than their outlines.

The plate-like cells of the begonia seed coat (hereafter referred to simply as plates) are arranged in a basic generic pattern which varies according to the species. The pattern is sufficiently constant and unique in each species that it must be regarded as a significant species character. An effort has been made to record accurately this characteristic pattern on the seed coat of each species shown in the illustration.

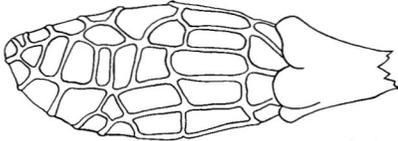
In the following observations on the basic generic plate arrangement

in begonia seeds, it will be convenient at the same time to describe other features of the coat, as well as exceptional features of certain species. Each seed in the drawing has been oriented so that its proximal end (the end nearest the placenta) is on the right. Only in the case of *B. odorata* are there some reservations about the accuracy in identification of the end of attachment and in the drawing's orientation.

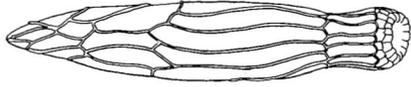
The proximal plates of the coat, immediately beyond the attachment of the seed stalk (the funiculus of the ovule), are invariably small and their outlines are frequently somewhat indistinct. (Refer to Plate I: on each seed, the plates being described are those on the end to the right.) In most species, they are arranged in two concentric rows, the second or distal row being of plates larger than those in the first or most proximal row. In some species, there appear to be three rows (rarely more) and, in others, only one. Together, these particular plates constitute an obviously discrete structure which, in spite of its position at the proximal, attached end of the seed, shall tentatively be referred to here as a cap; for purposes of distinction, the remaining and larger portion can be referred to as the body of the seed coat.

Immediately beyond the cap, the typical begonia seed is encircled by a band of plates which, in almost all species, are much larger than any others in the seed coat and are elongated parallel to the long axis of the seed. These constitute the upper edge or rim of the seed coat body and shall be referred to simply as rim plates. The appropriateness of this

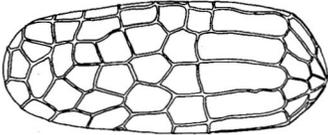
PLATE I
 REPRESENTATIVE BEGONIA SEEDS



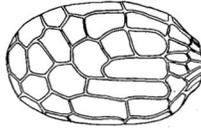
B. mannii
 0.7 x 0.35



B. solanantha
 1.0 x 0.2



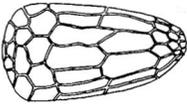
B. herbacea
 0.8 x 0.3



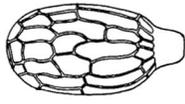
B. versicolor
 0.5 x 0.3



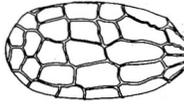
B. caragatatubensis
 0.7 x 0.2



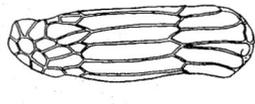
B. vitifolia
 0.45 x 0.25



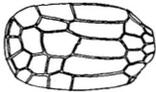
B. pavonina
 0.45 x 0.22



B. evansiana
 0.45 x 0.25



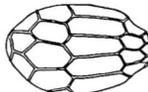
B. odorata
 0.6 x 0.2



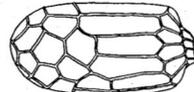
B. philodendroides
 0.37 x 0.2



B. morelii
 0.37 x 0.25



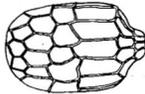
B. megaptera
 0.35 x 0.22



B. listida
 0.45 x 0.25



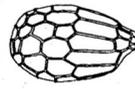
B. franconis
 0.35 x 0.2



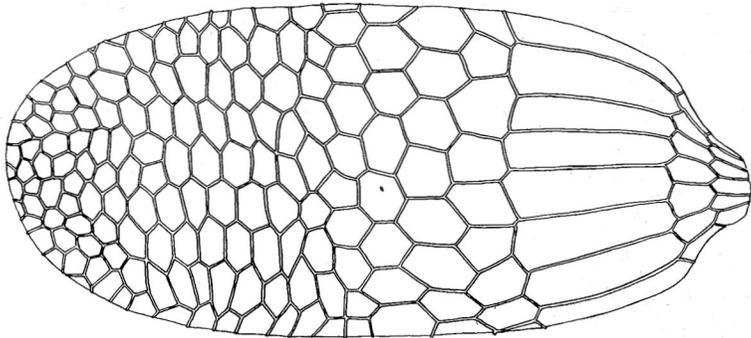
B. paulensis
 0.34 x 0.2



B. cinnabarina
 0.33 x 0.2



B. viscida
 0.3 x 0.18



B. eminii
 1.8 x 0.8

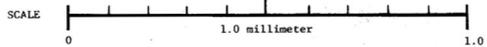
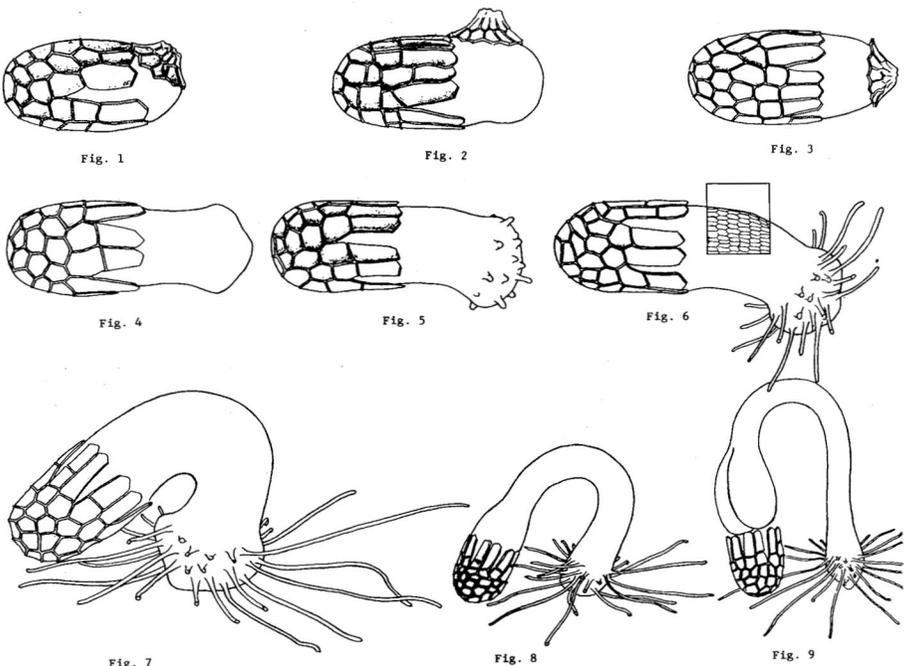
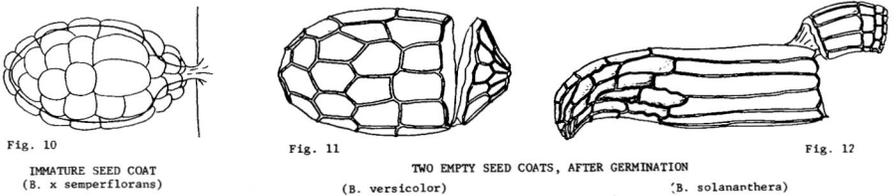


PLATE II
 THE BEGONIA SEED COAT AND GERMINATION



Figs. 1-9: SEED COAT RUPTURE AND DISPOSAL IN GERMINATION (*B. franconis*)



SCALE: 0 ————— 1.0 millimeter ————— 1.0
 (Figs. 8 & 9: $\times \frac{1}{2}$)

PLATE III

BEGONIA SEED DESCRIPTION: THREE SPECIES AS EXAMPLES

Begonia evansiana (Andr.) Irmsch.

Length: 0.45 mm (0.41 to 0.49).

Cross Section Diameter: 0.21 to 0.22 mm.

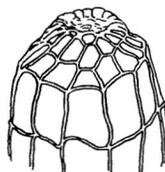
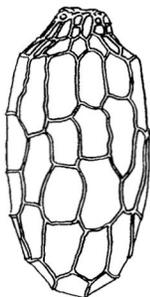
Rim Plates: Average length 0.1 mm; not greatly longer than post-rim plates; 6 visible on a side.

Post-rim Plates: Average 19 visible on a side.

Operculum: 2 rows of plates; apical row variable transversely divided, but never to make a full third row. Rarely one row and an incomplete apical row.

Shoulder: Usually prominent, acute.

Sculpturing: Prominent plate margins with shallow wrinkling.



Begonia bettinae Zies.

Length: 0.36 mm (0.34 to 0.38).

Cross Section Diameter: 0.20 mm.

Rim Plates: Average length 0.15 mm; much longer than post-rim plates. 6 visible on a side.

Post-rim Plates: Average 14 visible on a side.

Operculum: 1 row of plates, rarely divided into two. Plates lie near the transverse plane, often not easily seen in lateral view.

Shoulder: Prominent; acute.

Sculpturing: Prominent plate margins with shallow wrinkling.



Begonia convalliodora A. DC.

Length: 0.34 mm (0.33 to 0.35).

Cross Section Diameter: 0.17 to 0.18 mm.

Rim Plates: Average length 0.13 mm, about twice as long as post-rim plates. 5 or 6 visible on a side.

Post-rim Plates: Average 14 visible on a side.

Operculum: 1 row of plates.

Shoulder: Prominent, acute.

Sculpturing: Prominent, dark plate margins.



designation is more evident after germination, as described later.

At the junction of the cap and this row of elongated rim plates, the smooth curvature of the body of the seed coat is interrupted in many species by an abrupt angle — a shoulder encircling the seed. This is conspicuous in the seeds of such species as *B. paulensis*, *B. listida* and *B. caraguatatubensis*. In other species, it is much less conspicuous, as in *B. cinnabarina*, *B. odorata*, and *B. solananthera*.

Beyond the band of rim plates, the plates forming the remainder of the seed coat body are variously arranged, sometimes tending to lie in sequential rows paralleling the band of rim plates (as in the case of the specimen shown of *B. vitifolia*), but more frequently tending to be typically irregular in arrangement (see, for example, the specimen of *B. versicolor*). It is to be supposed that the tendency away from regular concentric arrangement — i.e., a tendency away from continuous or parallel lines of attachment between adjacent plates — is a tendency toward greater strength of the coat, for resistance to pressures from outside or inside the coat.

Of the examples shown, the following few deserve special attention for one or another unique feature: *B. eminii*, *B. odorata*, *B. caraguatatubensis*, *B. solananthera*, and *B. maninii*.

Begonia eminii seeds are larger by far than those of any other species observed. Inasmuch as the maximum size permitted living cells is governed by the relationship between cell mass and cell surface area, it is not surprising that the plates in the coat of this exceptionally large seed are

not correspondingly greatly larger than plates in other species, but are merely more numerous. It is worth noting, however, that, in spite of the relatively great size of this seed, no concession has been made to an apparently basic begonia trait: the seed coat is limited to a single layer of plates. The coat nevertheless appears to possess, through no obvious specialization, adequate strength. One is tempted to speculate as to whether the extraordinary size of *B. eminii* seeds has any phylogenetic significance — whether it might be indicative of a primitive begonia group or of a more recent or specialized form. It will be interesting to learn the character of seeds of species closely allied to *B. eminii*.

Begonia odorata seeds resemble those of *B. lobata* (not shown here) in that both ends of the seeds of both species appear larger in diameter than their central portions, giving the seeds a shape somewhat dumbbell-like. Structural analogies to seeds of other species were not clear at the time of examination and further observations are indicated. The drawing provides at least a record of its general appearance.

Seeds of *B. caraguatatubensis* and *B. solananthera* resemble each other and are markedly different from the typical begonia seed in several respects. Both are proportionately much smaller in cross section than the typical seed as defined here. Their distal ends (i.e., that end opposite the capped end) are more or less attenuated and rarely remain aligned to the primary axis of the seed but curve to one side, often so sharply as to suggest a hook. The *B. solananthera* specimen illustrated lacks

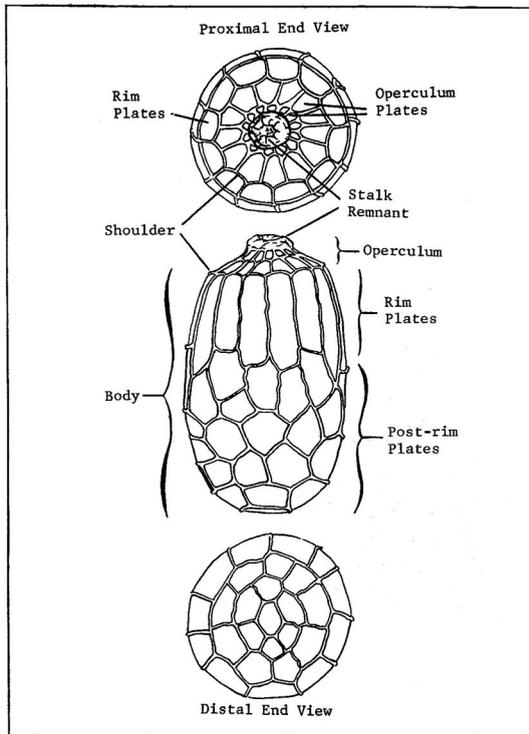


Figure 1. *Begonia* seed structures as defined in the text.

this curvature, although the empty coat of a seed of the species shown in Plate II exhibits it to some degree. Equally distinctive is the cap which is not a simple structure of one or two tiers of plates, but is larger, elongated, and constructed of three or more tiers. This cap terminates as an expanded portion which is cupped. Presumably, the funiculus was inserted within the cup and the cupping is the result of growth of the ovule integument (the eventual seed coat) beyond that point of attachment; if this is the explanation, the structure might better be described as a collar. Probably pressures of adjacent ovules account for the frequent displacement of this

terminal depression from the precise tip of the cap to a position slightly or even entirely on one side. This loss of symmetry has already been discussed. One other example of this general type of seed has been observed: seeds identified only as being of a New Guinea species and distributed by the American *Begonia* Society in November, 1966. There may be many more. Possibly they characterize a distinct subgeneric group.

In the sole portion of *B. mannii* seeds examined, each seed carried at one end a lobed, receptacle-like structure which appeared to be a derivative of the ovule stalk. The drawing includes this, although the ob-

ervation, from this one sample group, can not be taken as conclusive evidence that the adherence of the structure to the seeds after maturation is characteristic of the species. Examination of ovules and seeds of developing and matured capsules would clarify these points.

The seed coat probably has a thickness and degree of permeability to water (cutinization) that is characteristic of each species, a conjecture based on what appear to be characteristic differences in germination times between species. Differences in opacity and apparent thickness of the surface ridges may be evidence of especially heavy or especially thin walls. Water is probably absorbed first through the cap at the site of the severed stalk.

Entry of water through the coat and its consequent availability to the embryo initiates germination. Figures 1-9 of Plate II depict germination, emergence, and early growth of the embryo, solely to illustrate a few final details about the seed coat.

The first visible event of germination, the rupture of the seed coat, discloses the nature and significance of the structure heretofore referred to as the cap of the seed. The junction of the edge of this cap and the bond of large rim plates has already been described as forming an encircling ridge or shoulder on the seeds of many species. The morphological arrangement here deserves a moment's attention. First, it is worth observing that the junction occurs in an almost undeviating line of demarkation between the cap and the body of the coat — i.e., although it follows a shallowly zigzag course, no plates dovetail from the body deeply

into the cap, nor from the cap into the body.

Second, the demarkation is located with all its points essentially equidistant from the peak of the cap; internal pressure applied at the peak would be exerted, as a pulling force, at all those points equally.

Third, the plates of the body of the coat immediately below the line of demarkation are not only the largest plates in the coat, but are oriented with their longest axes perpendicular to the line of demarkation, so that they present the greatest possible resistance to any pulling force exerted from the peak of the cap; this resistance is undoubtedly reinforced in those seeds on which the distal ends of these large plates dovetail to some degree with the plates beyond them in the body.

Finally, but probably not unimportantly, the junction differs from junctions between all other plates in the coat in the acuteness of the angle of attachment (*B. listida* and *B. herbacea* seeds are extreme examples of this and *B. solananchera* is an example of an exception).

Here, then, the structural strength typically imparted by a curved wall (as in a bird's egg) is interrupted. As a summary result of these four factors, the line of juncture is the inevitable line of rupture when the embryo begins to expand, simply because it is a line of least resistance to fracture of the intercellular cementing material. The cap is then demonstrated to be, by design, an operculum, assuring that rupture occurs first at the end of the seed at which lies the tip of the hypocotyl. (the radicle or root primordium) so that there should be no restraint

to the emergence of that organ. The release of the hypocotyl tip is of primary importance; once it has established adequate contact with the substrate for water absorption and for physical anchorage, the mechanics of subsequent events become possible — extraction of the remainder of the embryo from the seed coat and emergence through the soil.

The drawings illustrate that the operculum (cap) may either separate completely and be sloughed off the side or the end of the rapidly elongating hypocotyl (Fig. 3) or it may adhere at a single point of the rim of the body of the coat, like a hinged lid, and remain behind (Figs. 2, 11, and 12.) The expanding embryo also exerts lateral pressure on the body wall, causing long fissures by separating adjacent rim plates.

Withdrawal of the enlarging cotyledons from the body of the seed coat is usually simple, once anchorage of the hypocotyl is established by root hairs. Indeed, emergence of the cotyledons often appears to be accomplished solely through their expansion. Under certain conditions, especially when seeds are sowed on the surface of culture media, the seed coat may adhere to, and be carried up on, one cotyledon. Those specimens of empty seed coats used for the drawings in Plate II (*B. versicolor* and *B. solanathera*) were recovered from cotyledons carrying them in this way.

These observations would seem to argue for including with the description of any new begonia species a description of its seed according to the basic characters illustrated here. Existing species descriptions lacking adequate seed descriptions might well be supplemented with this in-

formation, as time and availability of seeds permit their being studied and the descriptions documented. This should include at least length and cross-section diameter dimensions, general operculum and body characteristics, and descriptions of critical plates—especially dimensions of the rim plates. An expression of the characteristic number of each group of plates (rim, operculum, body) visible on one side might prove useful as a descriptive technique, as well as a description of the impression of relative prominence of the surface sculpturing. A simple drawing, recording the species' coat plate pattern would contribute greatly to the seed's description. This information could prove of significance for confirming relationships within the genus and its sections as suggested by other anatomical features.

A representative collection of seeds of begonia species might become a useful reference, supplementing herbarium material of the species. Submitted specimens, selected to represent the species, could be preserved in balsam on standard microscope slides or by any improved technique of preservation practical for systematic storage and microscope viewing.

ACKNOWLEDGMENT: The author wishes to thank Dr. Donald E. Eggert, Professor of Biological Science, and Dr. Donald G. Lemke, Assistant Professor of Mechanical Engineering, both of the University of Illinois at Chicago Circle Campus, and Dr. Louis O. Williams, Chairman, Department of Botany, Field Museum of Natural History, for their kindness in reading part or all of a manuscript draft for this paper and for their several suggestions. An expression of gratitude is due also to Mrs. Florence Gee, Administrator of the Seed Fund of the American Begonia Society, as well as to the many unnamed generous contributors of seeds to that Fund, without whom the opportunity for these observations, my spark of interest in the seeds' structure, and this paper would not have evolved.

BOTANY CLASS STAGES DISPLAY

The Botany Department of Glendale College volunteered to "stage" the January meeting of the Glendale (California) Branch of the American Begonia Society. Students of the botany class set up fourteen educational displays around the room and then remained at each display to explain the principles and answer questions. Some of the exhibits were prepared at the suggestion of Begonia members and some were volunteered by the students.

The displays included:

- Botanic fruit types
- Plant anatomy
- Plant physiology, photosynthesis, and respiration
- Spectroanalysis, the light used by plants
- Water testing; pH, total salts, and calcium
- Seed travelers
- Terrariums
- Succulents
- Propagation
- Unsatisfactory root types
- Shoji screens
- Bonzai
- Leaves, structure and function
- Pine cone types

Jean Kerlin, vice-president of the Glendale Branch, presented a scholarship of \$50.00 cash to student Don DeLano who, at this meeting, was displaying his hobby, plant terrariums. Don had been elected by the class to be the recipient of this award.

Including several guests from other Branches and forty-one students, either helping or watching, about ninety people attended this busy meeting.



One of the displays in students' plant exhibition. Don DeLano shows his terrariums.

The students from Glendale College thoroughly enjoyed the experience before the Begonia Society. In a brief raise-the-hand survey most of them indicated a willingness (even a desire) to repeat the demonstration in other communities all the way from San Diego to Santa Barbara. Such a trip could include a tour of beautiful gardens and dinner before the meeting. This will be our plan for the fall semester in 1972.

It is possible that many botanists and horticulturists in other communities, if asked, would be willing to summarize their work toward the end of a semester. It might be more convenient to have such a meeting at the school.

Burnell Yarick
*Professor of Botany
Glendale College*

RESEARCH REPORT

Two new members have been appointed to the Research Committee: Mrs. Mae Blanton of Mesquite, Texas, and Mr. Malcolm McIntyre of England.

Mae has been appointed to replace Elaine Wilkerson, to represent the Research Department in the southern tier of states. She is known to many A.B.S. members from her participation in a number of Robins and for her articles in *The Begonian*. Mae will carry on the work that Elaine started, getting people interested in begonias by supplying begonias to universities and colleges.

Mac MacIntyre is replacing Jane Neal of England. He is well known by many of our members. His interest in begonias has been mostly with hybridizing. Ten of the cultivars were described in the April and May, 1971, issues of *The Begonian*. Mac has many important contacts in England, so he should be able to keep us well posted on the activities over there.

Other appointments will be announced in the near future.

Two universities are presently interested in incorporating one of my suggested projects with their departments' research programs. Cornell University is interested in receiving financial aid for a project which they are now researching in begonias. They are working in the field of tissue culture as a means of rapid propagation.

Rutgers University, of New Jersey, has responded favorably to a letter that I sent to them, in which I outlined a project that should be of interest to our members. Rutgers is in-

terested in our desire to support research in begonias and is interested in the project that I suggested, to research the possibility of getting cane type begonias to grow plantlets from leaf cuttings. In recent years, their knowledge of the internal mechanism which controls root and bud initiation has progressed rapidly.

Both of these universities offer research in begonias that could be of interest to our members. However, our research funds are not sufficient to sponsor the projects at both universities.

Professor Burnell E. Yarick, a teacher of botany at Glendale College, California, has been awarded a sabbatical leave to work on root research. Professor Yarick is a member of the Glendale Branch of the A.B.S. He intends to start work immediately on this project. His interest in this project stems from the trouble that many members experience in losing begonia plants without any apparent reason.

The Question and Answer Project

Some answers to the first questions have been received. Let us all show some interest in this project by sending answers to the Research Director.

(10) 10. What is the ideal temperature to accompany high humidity? Is low humidity ever an advantage?

(13) 11. What temperature should water be when watering begonias? Is there any tolerance range in summer and winter?

(23) 12. Is there any data on growth inhibitors or expanders? Or would such procedure produce undesirable competition in the production of show quality plants?

M. Carleton L'Hommedieu
Research Director

CLAYTON M. KELLY SEED FUND

No. 1—*B. pavonina*

Imported from Mayala by Jane Neal of England. A rhizomatous species with smooth, bronze-green leaves which turn peacock-blue when old (hence the name). Flowers large, pinkish. Price \$1.00 per pkt.

No. 2—*B. unidentified Brazil species*

Recently a friend was collecting orchids in Brazil and came across this begonia, describing it as being cane-type. It was found growing near Indaia at 3900 feet elevation, at the edge of a forest swamp. Further investigation by a botanist in Europe states that it probably belongs to the section *Pritzelia* and could be a relative of *B. tomentosa*. The picture shows it to be quite attractive with silver-grey leaves. It is not too tall. Price \$1.00 per pkt.

No. 3—*P. princeae*

Much like *B. dregei* in habit although botanically quite distinct. Comes from East Africa. Price \$1.00 per pkt.

No. 4—*B. morelii* Irmscher

So much has been written about this begonia it is difficult to add anything new except to say that it is beautiful beyond description. It is small and does best when grown in a terrarium or bubble bowl. Leaves are two inches by two inches; leaf stems two and one-half by three inches. Stems are clear, very succulent and free of hairs. New leaves are coppery-brown and have a hairy appearance. Mature leaves are dark glistening green, soft and velvety to the touch, silver-splotted over all the leaves, and with beautiful silver edges. Undersides of leaves are mottled red. Leaves are heart-shaped and

slightly serrate. Flowers are pink, with sparse short hairs on the backs of the petals. Suggest you read the story by Yvonne Wells in *The Begonian* for January, 1972. Price \$1.00 per pkt.

Please note: Seed will be offered again in the near future. If you are too late this time, don't despair.

No. 5—*B. 'Orange Rubra'*

Angel Wing type with plain green leaves, large clusters of orange flowers. May be used as hanging type or staked if upright. One of the loveliest cane type begonias. Price 50 cents per pkt.

No. 6—*B. 'Rubaiyat'*

B. dichroa seedling. Lusty grower, bushy and many-stemmed. Leaves glistening green, occasionally dotted with silver. Large clusters of soft pink flowers. Price 50 cents per pkt.

No. 7—*B. vitifolia reniformis*

'Grape-leaf'. Branches from base. Large, gleaming green leaves finely toothed on the edges, downy beneath. Flowers pink or white. Price 50 cents per pkt.

No. 8—*B. sc 'Cinderella Rose'*

Produces fifty per cent extra large flowers with attractive large bright golden centers. Attractive pot plant. Price 50 cents per pkt.

OTHER GENERA

Amaryllis species

Collected in Brazil above Petropolis, elevation 3700 feet. Growing in thin organic debris and rock joints of one of the huge granite domes in the area. Flowers large, few with white stripes. Two seeds for 25 cents.

Stephanotis floribunda

Madagascar jasmine. Twining plant with opposite, elliptic, leathery leaves

and clusters of very fragrant, waxy white, tubular flowers. Price 25 cents each seed.

Neantha Bella palm

Chamaedora elegans. Dwarf and graceful. Widely used in dish gardens and as house plants. When potting seedlings use a friable loam mixed with peat. Price 50 cents per pkt.

Please note: Perhaps you have never thought of growing cacti from seed. This is an interesting and fascinating hobby. Nice plants may be grown in a reasonable time, some of them reaching flowering size when very young. Many seedlings may be started in a small space. A sunny window is all you need, or you can grow them under lights. We offer the following and trust you will have fun watching them grow:

Echinopsis mixture

Includes Easter Lily cacti from Argentina and other South American countries. Flowers in various colors. Price 50 cents per pkt.

Helocactus mixture

Turk cap. Mexico, South America, and other countries. Mature plants are capped by a hairy cephalium, from which the flowers emerge, followed by scarlet fruit. Price 50 cents per pkt.

Stenocactus mixture

Permanent wave cactus. Very unusual, small barrel types from Mexico, with undulated ribs and candy

stripe flowers. Price 50 cents per pkt.

We have many requests for seed other than begonia but we can't always comply. Therefore, we hope you will enjoy growing cacti from seed and be surprised at the many shapes and sizes of these we offer.

Please send requests for seed to:

Mrs. Florence Gee
Seed Fund Administrator
234 Birch Street
Roseville, Calif. 95678

NOMENCLATURE DEPARTMENT

In *The Begonian*, Vol. 39, No. 7, July 1971, P. 163, appears a description of a newly-proposed begonia subgenera or section written in Latin so interested persons who do not understand English may read the description in the international botanical language.

The first two lines of the Latin diagnosis are incorrect; correctly worded the proposed section is as follows:

LATIN DIAGNOSIS

Begonia Sectio Irmschera Ziesenh. sect. nov. Flores masculinis tepalis 4, staminibus ca. 18, filamentis liberis breviter antheris, antheris cuneatis. Flores femineis tepalis 4, stylis 4, deciduis, bifidis, stigmatibus continuis in speris 1 utrumque ramo; ovario 4-loculato, fusiformi leviter quatuorlateribus, 6-7 longiora quam latiora, placentis 2 non partatis undique ovuliferis. Herba erecta, fruticosa, foliis pinnatinerviis. Species una. Typo Mr. Maurice Mason, #89 Trinidad; in herbario Rudolf Ziesenhene.

Rudolf Ziesenhene,
Director

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A.B.S. JUDGING COURSE

By Ruth Pease
Judging Course Director

The purpose of this Society shall be: To stimulate and promote interest in Begonias and other shade-loving plants.

One of the best ways to do this is to exhibit our plants. We do this in Branch shows, the Eastern Convention and show, and the A.B.S. Annual Show. We also do this when we exhibit our begonias in local Garden Club Shows, wherever begonias are included in show schedules.

Time improves our knowledge of begonias, the ways to grow them, and the ways to show them. It also improves the methods by which we judge them at shows. For this reason, we must continue to teach, to instruct, produce judges for the future.

The Board of Directors of the American Begonia Society has known this need, and a course was taught this past year, combining the information of the 1965 judges course with recent changes and new information. This year we will teach the course but, since there isn't time to rewrite and combine the 1965 and 1970-71 courses, we will continue to teach what we have, bringing any new information to the members as we progress.

The course will cost \$5.00 plus \$1.00 for mailing. Homework will be required. The course will be taught from March 3 through August 4, 1972. For those able to attend, classes will be held at the Western Federal Savings and Loan Building, 355 East Manchester Avenue, Inglewood, 7:30 p.m., the first Friday of each month.

Any member who has the course but who did not complete it is invited to send in his homework and work along with us through correspondence. Homework sheets will be revised to agree with the lessons of the 1970-71 course. If you are interested in doing this, contact the Judging Course Director for these homework sheets.

Those taking the course learn how to judge begonias, judging procedures, use of the point scoring system (this is explained in detail in each lesson covering the various types of begonias), and the way begonias are classified for show purposes and why.

Pertinent cultural questions and answers are also included in the lessons.

When all homework is completed and the application for a judge's card forwarded to the Judging Course Director a Sophomore Judge's card will be issued. This means that the individual will be qualified to judge and knows what the American Begonia Society expects of show specimen begonias. However, it takes many years to become a Senior Judge, and this is only done by actually growing many types of begonias and judging at many shows. We do not wish to mislead in any way by stating that finishing the course produces a Senior Judge overnight. The following breakdown of points to be earned towards a Senior Judge's Card indicates the effort and time involved before this card is earned.

Senior Judge 50 Points
Junior Judge 25 Points

Sophomore

Judge Under 25 Points

Freshman

Judge Prospective Judge

Points accredited as follows:

2 points for each year of judging

1 point for each show judged

3 points for completing a one-year

A.B.S. judging course

1/3 point for each show clerked

We are interested in assisting show personnel in all areas. A Question and Answer column for this purpose will be printed in future issues of *The Begonian*. If you are interested in taking the course or have questions about preparing your plants for shows, preparing show schedules, understanding the scoring system, or classification, write to Ruth Pease, A.B.S. Judging Course Director, 8101 Vicksburg Avenue, Los Angeles, California 90045.

Checks should be mailed to the Judging Course Director and made payable to the American Begonia Society.

BASICS . . .

(Continued from Page 46)

ed. Frankly, I do not recommend this method for beginners but it does produce specimen plants when correctly used and is especially good for use with soilless potting mixes. It would be wise, however, to leave this method for the experts until you are well on the way to becoming an expert yourself. I do not use the "constant feeding" method for my plants.

"Foliar feeding" is another method practiced by many growers. This is accomplished by mixing a solution according to directions of the manufacturer for foliar feeding and ap-

plied by spraying or misting the leaves of the plants. There are "mist-ers" available on the market but if you cannot find one in a garden supply shop or hardware store, you can use a Windex spray bottle or even the clothes sprinkler. Spray or mist the foliage until the material is dripping from the leaves.

When using fertilizers of this sort be sure to read directions carefully and follow implicitly the suggested strength recommend by the manufacturer. Too much can be damaging and too little will be of no value. For the benefit of our beginners, I have listed here a number of fertilizers which I have used myself at one time or another and have found satisfactory. Most of them contain added trace elements, hormones and vitamins so necessary for growing healthy plants.

Powder Form

Plant Marvel

Peters Special for House Plants

Ra-pid-Gro

Miracle-Gro

Stim-U-Plant

Fish Meal

Liquid Form

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Ortho-Gro

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ROUND ROBIN . . .

(Continued from Page 43)

of seed being collected from plants growing in swampy country in Brazil, so he increased the amount of water and is having much better results. He also finds that this begonia does not like to be cut back. The remaining stem seems to die off and die back to ground level.

In his Indiana greenhouse, John Yochum uses cereal bowls under his pots to water his begonias. On the large begonias he adds Schultz Instant plant food each time he waters. On the small begonias (just transplanted) he uses plain water in the bowls.

Anna Dorsey of California has been successful in begonia leaf propagation. She uses plastic-coated Dixie cups, with holes in the bottoms, almost filled with sponge rock (perlite) and places an individual leaf in each cup. In each cup she puts a plant tag, which gives the leaf some support, and covers the cup with a baggie held in place with a rubber band. She moistens the sponge rock with a weak solution of Hyponex before she places it in the cup. Occasionally during the rooting period she places the cups again in a weak solution of Hyponex until the sponge rock feels damp.

Anna places the pots under her lights until new plantlets appear. She has lost a lot of plantlets by removing them before they were big enough to withstand transplanting.

Priscilla Beck of Connecticut feels that she gets bushier begonias much more quickly from rooting leaves than from rhizome cuts. She also finds that new leaves on plantlets are not always like mature leaves. Pris-

cilla likes her plantlets to have several leaves and be at least two inches tall. Sometimes she uses community starting beds and other times she uses individual two-inch by two-inch attached pots. When the roots fill them she just pushes them out by pushing the soft bottoms. Bedding annuals are sold in these soft plastic containers.

Hazel Snodgrass of California finds that she, too, has better luck with starting begonias from leaves than from rhizome cuttings. She agrees that she does best when the plantlets are good-sized before transplanting.

Pat Burdick of Minnesota does not think that a pot is the best container for propagation but likes glass bowls for propagation of begonias. She lets the plantlets get to a good size, depending on the size of the mature plant. If she leaves them longer, she gets more plantlets. She has poor results with group containers, so she has one plant to a pot and separates the plantlets at transplanting time. She feels that leaves and rhizomes root better in spring and summer. Winter propagation is usually not worth the bother.

Ruth Sorensen of California has had lots of luck putting leaves to root in vermiculite, just damp, in small baby-food jars. She cuts the leaves with one-inch to one-and-a-half-inch stems and covers the jars with baggies in which holes have been punched. She puts the jars in a light shady spot. When the plantlets come up and are good sized, she pots them into soil. She leaves the mother leaf on them as she feels it gives them nourishment.

Margaret Benz of Colorado put

two leaf cuttings of the same begonia to root. One she rooted in vermiculite and the other in half peat moss and half vermiculite. They were put to root at the same time and given the same care. The plantlets came up the same day but, after a short period of time, the leaf rooted in vermiculite was about one-half inch high while the one in peat and vermiculite was about two inches high.

Ruth Wills of Oklahoma roots her cuttings in peat moss and perlite. She soaks the mixture very wet, then squeezes out the excess moisture and puts the cuttings in this mixture in a container and covers it with glass or plastic.

To join the robin, write:
 Anita Sickmon
 Round Robin Director
 Route 2, Box 99
 Cheney, Kansas 67025

PRUNING . . .
 (Continued from Page 45)

Magamp (7-40-6) and 1/2 pint of Bloodmeal. Mix this with one quart of begonia mix and apply one teaspoon to a three-inch pot, one tablespoon to a 5-inch pot, increasing the amount according to size, to about 1/2 pint for mature plants in 12 to 16-inch tubs. Water thoroughly, till water runs through the drainage hole. I like to set pots in a container to drain and use this solution diluted with water to feed other begonias. Do not store this mulch to use at a later time, it is best made up fresh as needed.

This is also a good time to inspect your plants for insects and spray if needed. On some canes the stipules turn brown and fall, while on others they remain, providing an excellent

area for mealy bugs. I use one teaspoon of malathion to one gallon of water, and pour this on the plant as well as saturating the soil in the pot or tub. This will destroy any insects that may be in the soil, also will discourage gnats from nesting in the new mulch.

After this final treatment my plants are placed in the warmest location in the lath house. My choice canes are kept in a patio protected by a corrugated fiberglass plastic roof and open to the east, allowing them to receive full sunlight till about noon or later. I try never to let them dry out, but also never over-water creating a soggy condition, especially during the cold rainy reason.

As soon as my plants are covered with new growth, which usually takes several months or more, I start my regular feeding program. I feed every other week, one-fourth strength of any well balanced formula, preferably one not too high in nitrogen. I like to keep a container filled with water to which I have added one teaspoon of vinegar and use this for regular watering. This seems to be beneficial toward producing better blooms.



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THE NATIONAL BEGONIA SOCIETY

The 22nd Annual General Meeting of the National Begonia Society of England was held July 24, 1971. Reports given by the officers showed that the year had been very successful. 157 new members were enrolled, bringing the membership to 644 as of April 30. Most of the new members were obtained at the various shows where the society manned an information bureau.

An encouraging feature of this was the number of exhibitors among the new members, and the standard they introduced was so high that awards for "best pot in show" and "best cut bloom in show" were both won by novices at the 21st Annual Show. There were entries also in the Southport, the Heart of England, and the London Flower Shows.

Officers elected for the coming year included L. A. Simpson as president, Fred J. Martin as secretary-treasurer, with Cliff G. Woolley as assistant. Mr. Martin was commended for his editorship of the Bulletin, which is considered a vital link in holding memberships.

The 22nd Annual Show was held in September, 1971, as usual in conjunction with the City of Birmingham Flower Show. Thirty-nine members staged exhibits and 31 were prize winners. Among these was Mr. Martin, who won first for his entry of six pots of double tuberous begonias, also the Bill Heatley Trophy, plus the D. Clarkson ceramic vase for the "most meritorious exhibit in show".

NEW BRANCH OF A.B.S.

Santa Clara Valley Branch of the A.B.S. has been holding meetings at the home of Hollis and Margaret Lynn in Sunnyvale, California, since October of 1971. The third Thursday of the month is the day; 8 p.m. is the time.

Organization grew out of a need for a meeting place in the San Jose area for shade garden enthusiasts who wish to know more about begonias.

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REPORT OF MONTHLY MEETING OF BOARD OF DIRECTORS

The Board of Directors of the American Begonia Society met on January 24, 1972, in the South Gate Auditorium, with 17 officers and 11 Branch representatives present.

For the period of November 19 to January 18, the treasurer reported receipts of \$1,396.33, disbursements of \$1,345.39, leaving a balance of \$1,211.15. He also reported bank balances of \$3,304.39 in the Life Membership Fund, and \$1,034.68 in the Convention Fund.

The membership secretary reported 77 new members for the same period. Total membership 2,056 as of January 18; last year 2,152.

The judging course director requested Board action regarding another judging class. It was moved that we have another class beginning the first Friday in March.

The librarian reported a balance of \$133.61 after giving a check for \$200.00 to the treasurer.

The round robin director reported 13 flights have come through in the two months of November and December.

The research director's report was read.

The show chairman reported an invitation to hold the annual show in Glendale College, at no cost except custodial salary. A motion was made and carried to accept.

An invitation was also accepted to enter a display in the National Swimming Pool, Garden, and Patio Living Exposition in the Los Angeles Sports Arena March 1 through 5. A motion was passed to transfer \$200.00 to the show account.

The Theodosia Burr Shepherd Branch representative reported the recommendation that the dues be increased to \$6.00 per year, and that the additional \$2.00 be used to:

- (1) enable the Society to send officers to other conventions;
- (2) pay necessary travel expenses for officers;
- (3) increase pay for various officers.
- (4) The Branch members feel it should be budgeted in the yearly budget, but
- (5) they are opposed to setting up a specific fund for a specific purpose.

The public relations director reported his plans to set up study guides for study groups, to assist Branches which have problems in planning programs.

A new Branch has been formed, the Santa Clara Valley Branch. Its by-laws and constitution were approved by the Board.

A motion was made and carried to enter an ad in Sunset Magazine for one month at a cost of \$174.00.

Irene Granell
Secretary



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- Classification Guide Compiled by . . . \$1.25
the Westchester Branch, A.B.S.
- *Platycerium Fern Facts \$4.95
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- *The Tuberus Begonia \$10.80
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CONNECTICUT BRANCH

4th Sunday of each month
Mrs. Priscella Beck, Secy.
R D No. 1, Box 121,
Mystic, Conn. 06355

DALLAS COUNTY, TEXAS, BRANCH

3rd Monday, 10 a.m., Members' Homes
Mrs. George W. Hopkins, Secy.
1619 S. Beckley Ave., Dallas, Texas 75224

EAST BAY BRANCH

2nd Thursday, 7:45 p.m., Willard School
Telegraph at Stuart, Berkeley, Calif.
Miss Carol E. Orpin, Secy.
428 Norvell Street
El Cerrito, Calif. 94530

EASTSIDE BRANCH

4th Wednesday, 7:30 p.m.
590 116th Avenue N.E., Bellevue, Washington
Grace Fisher, Secy.
770 Monroe Ave. N.E., Renton, Wash. 98055

EL MONTE COMMUNITY BRANCH

3rd Friday, Members' Homes
Mrs. Gladys Máttuket, Secy.
1801 Azalea Drive, Alhambra, Calif. 91801

FOOTHILL BRANCH

3rd Thursday, 8:00 p.m.
First Methodist Church, Marshall Hall
3205 D Street, La Verne, Calif.
Mr. Robert I. Wilson, Secy.
544 Fountain Drive
Mira Loma, Calif. 91752

FORT, ELSA BRANCH

1st Saturday, 1:00 p.m.
Miss Lola Price, Secy.
628 Beach Ave., Laurel Springs, N.J. 08044

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HOUSTON TEXAS BRANCH

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Mrs. B. A. Russell, Secy.
5926 Jackwood, Houston, Texas 77036

KNICKERBOCKER BRANCH

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Horticultural Society of N.Y.
128 West 58th St., New York
Miss Margaret Huger, Secy.
505 East 82nd St.
New York, N.Y. 10028

LONG BEACH PARENT CHAPTER

3rd Sunday, 1:30 p.m.
Great Western Savings and Loan Bldg.
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Mrs. Paul E. Powell, Secy.
3031 Shakespear Dr., Los Alamitos, Calif. 90720

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MESQUITE BRANCH

Mrs. Billie Lyles, Secy.
928 Calle Reale, Mesquite, Texas 95149

MIAMI BRANCH

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Simpson Memorial Garden Center
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MISSOURI BRANCH

3rd Tuesday, 11 a.m., Members' Homes
Kansas City, Mo.
Mrs. Lynne K. Wood, Secy.
626 W. Charles, Independence, Missouri 64055

MONTEREY BAY AREA BRANCH

4th Wednesday, 8:00 p.m.
Lighthouse and Dickman Sts., New Monterey, Calif.
Frederick Bell, Jr., Secy.
P.O. Box 527, Pebble Beach, Calif. 93953

NORTH LONG BEACH BRANCH

1st Tuesday, 7:30 p.m.
525 Ocean Blvd., Long Beach
Barbara Welty, Secy.
4741 Hazelbrook
Long Beach, Calif. 90808

ORANGE COUNTY BRANCH

2nd Thursday, 7:30 p.m.
Lions Club, Walnut St. and Garden Grove Blvd.
Garden Grove, Calif.
Mrs. R. L. Nevins, Secy.
1913 Aspen Circle, Fullerton, Calif. 92631

PHILOBEGONIA BRANCH

2nd Friday, Members' Homes
Mrs. Anne Stiles, Secy.
East Delaware Trail, R.D. No. 2, Medford, N.J. 08055

PORTLAND BRANCH

Mrs. Lavene Jenkins, Secy.
9920 S. W. 53rd Ave., Portland, Oregon 97219

REDONDO AREA BRANCH

4th Friday, 7:30 p.m.
R. H. Dana School Cafetorium
135th St. and Aviation Blvd., Hawthorne, Calif.
Mrs. Margaret Buell, Secy.
18500 Mansel Street
Redondo Beach, Calif. 90278

RHODE ISLAND BRANCH

1st Saturday, Homes of Members
Miss Marcella Flynn, Secy.
7 Fairfield Ave., East Providence, Rhode Island 02914

RIVERSIDE BRANCH

2nd Wednesday, 6:30 p.m.
Dales Recreation Center
3936 Chestnut Street, Riverside, Calif.
Mrs. Margaret K. Elmore, Secy.
3935 McKenzie, Riverside, Calif. 92503

ROBINSON, ALFRED D. BRANCH

3rd Friday, 12 noon, Homes of Members
Constance D. Bower, Corr. Secy.
1609 W. Lewis St., San Diego, Calif. 92103

SACRAMENTO BRANCH

3rd Tuesday, 8:00 p.m., Garden Center
3300 McKinley Blvd., Sacramento, Calif.
Mrs. Betty Tillotson, Secy.
3912 Wildrose Way
Sacramento, Calif. 95826

SALINE COUNTY BRANCH OF KANSAS

4th Monday, 2:00 p.m., Homes of Members
Mrs. Jesse Harper, Secy.
Route 3, Salina, Kansas 67401

SAN FRANCISCO BRANCH

1st Wednesday, 8:00 p.m., Garden Center
Golden Gate Park, 9th Avenue and Lincoln Way
Mr. Allen Sweet, Secy.
303 La Serena Way, Sonoma, Calif. 95476

SAN GABRIEL VALLEY BRANCH

2nd Friday, 8:00 p.m.
Los Angeles State and County Arboretum
501 N. Baldwin Ave., Arcadia, Calif.
Mabel Anderson, Secy.
18609 Cypress St., Covina, Calif. 91722

SAN MIGUEL BRANCH

2nd Wednesday, Porter Hall, 7:30 p.m.
University & La Mesa Blvd., La Mesa
Mrs. Maynette Hodgins, Secy.
1829 Granit Hills Dr., El Cajon, Calif. 92020

SANTA BARBARA BRANCH

2nd Thursday, 7:30 p.m.
Santa Barbara Museum of Natural History
2559 Puesta Del Sol
Mrs. Helen Yost, Secy.
888 La Milpita Rd., Santa Barbara, Calif. 93105

SANTA CLARA VALLEY BRANCH

3rd Thursday, 8 p.m.
Member's Home
Elizabeth Sayers, Secy.
309 Ridge Vista Ave.
San Jose, Calif. 95127

SEATTLE BRANCH

3rd Tuesday, 7:45 p.m., Loyal Heights Field House
21st Ave., N.W. and N.W. 77th Street
Virginia Lavel, Secy.
13770 1st Avenue N.E., Seattle, Wash. 98125

SHEPHERD, THEODOBIA BURR BRANCH

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Y.M.C.A. Bldg., 8200 Telegraph Rd., Ventura, Calif.
Mrs. Bernie Crosby, Secy.
231 Bethel St.
Ventura, Calif. 93003

SMOKY VALLEY BRANCH

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Mrs. Henry Flaherty
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TARRANT COUNTY BRANCH

2nd Monday, 10:00 a.m., Members' Homes
Mrs. R. M. Bennison, Secy.
Rt. 2, Box 155 Dickinson, Texas 77539

TEXAS STATE BRANCH

4th Thursday, Sabine National Bank Bldg.
Port Arthur, Texas
Mrs. R. J. Wilson, Secy.
4820 Evergreen St., Port Arthur, Texas 77640

WESTASTAR BRANCH

3rd Thursday, 10 a.m., Garden Center
1500 Herman Dr., Houston, Texas
Mrs. V. O. Harman, Secy.
306 Cody, Houston, Texas 77009

WESTCHESTER BRANCH

1st Thursday, 7:30 p.m., Westchester Women's Club
8020 Alverstone St., Los Angeles, Calif.
Barbara Mack, Secy.
424 Oregon St., El Segundo, Calif. 90245

WESTERN PENNSYLVANIA BRANCH

2nd Wednesday, 11:00 a.m. every other month
Pittsburg Garden Ct., 1059 Shady Ave., Pittsburg, Pa.
Mrs. Irene Fadacko, Secy.
125 Arlington Ave., Butler, Pa. 16001

WHITTIER BRANCH

1st Thursday, 7:30 p.m.
Palm Park Community Center
5703 South Palm Avenue, Whittier
Miss Anne Rose, Secy.
14030 Remona Drive, Whittier, Calif. 90605

WILLIAM PENN BRANCH

4th Tuesday, Noon Homes of Members
Mrs. Murdock Davis, Secy.
258 Broughton Lane, Villanova, Pa. 19085

CALENDAR

March 25-26 — South Bay Orchid Society's Twelfth Annual Orchid Show. Alondra County Park Community Building, Redondo Beach Blvd. between Crenshaw and Hawthorne Blvds. in Lawndale, California. Open free to public Saturday 1 to 10 p.m. and Sunday 11 a.m. to 7 p.m. Photographers' time Sunday 9 to 11 a.m. Show is open to all orchid enthusiasts; entries for judging or for display only.

April 6 — Westchester Branch. Sylvia Leatherman will speak on "Spring Care of Begonias".

April 29-May 21 — Santa Barbara Branch of A.B.S. is sponsoring an Old-fashioned Begonia and Shade Plant Garden in conjunction with a Decorator Showcase House tour, 1732 Santa Barbara Street, Santa Barbara. Open daily 10 a.m. to 4 p.m. Lunch upon reservation. Tickets, information: URC, 777 Camino Pescadero, Goleta, Calif. 93017. May 11 — 32nd Anniversary shared dinner and meeting, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Rd. Dinner 6:30 p.m. Meeting 7:30 p.m. Speaker, Sylvia Leatherman.

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