the BEGONIAN

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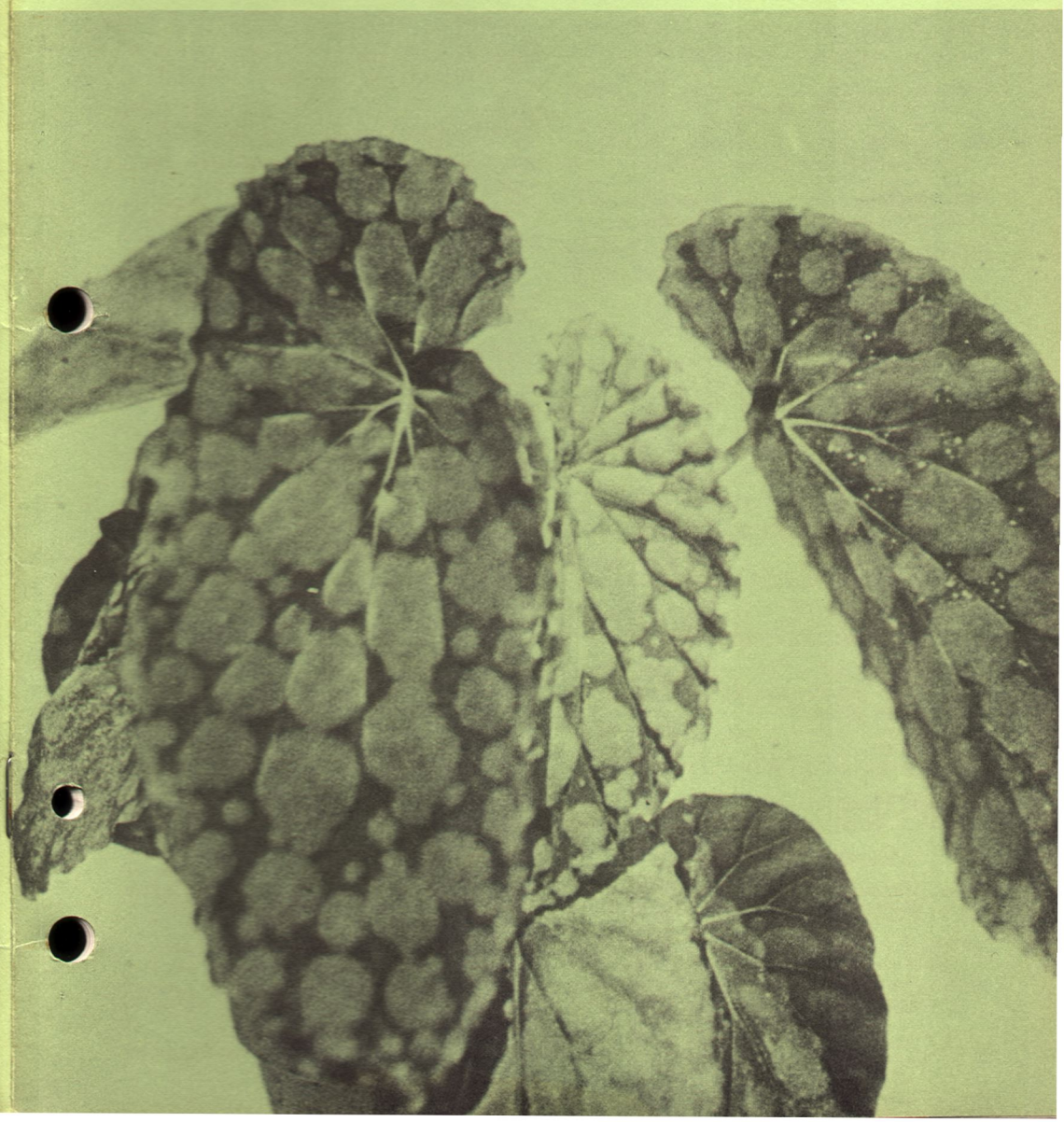

Monthly Publication of the American Begonia Society, Inc.

The BEGONIAN

Founded by Herbert P. Dyckman January, 1932

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CONDENSED REPORT OF THE MONTHLY MEETING OF THE BOARD OF DIRECTORS OF THE AMERICAN BEGONIA SOCIETY November 27, 1972

The regular meeting of the Board of Directors was held on November 27, 1972, in the South Gate auditorium. Thirteen officers and eleven Branch Representatives were present. John Provine, President presided. After the usual opening ceremonies, the minutes of the October meeting were read and approved.

The Treasurer reported receipts $1,650.39; disbursements $1,348.18; leaving a balance on hand as of November 18, 1972, $2,004.13.

The Membership Secretary reported 124 new members; 219 renewals; total membership 2,663; membership last year 2,352.

Circulation Manager reported 2950 Begonians dispersed; total mailing expense $61.98. Advertising Manager reported receipts $31.00; unpaid accounts $37.50. Nomenclature Director reported he is working on a book of registrations of Begonias. The Round Robin Director's report was read; 16 flights came thru; 2 new flights launched. Slide Librarian reported 2 requests for programs received.

Our representative to South Coast Botanic Garden reported work progressing on their Fiesta. They are trying to establish a Begonia area. Public Relations Chairman reported letters had been written to the branches asking for lists of their new officers.

The Special Committee, appointed to count the ballots concerning the amendment to the By-Laws Article VI, Section 1, Annual dues, reported a total of 1013 ballots received: Yes 857; no 156. A motion was made and carried to accept the report.

The Business Manager reported the application for the Position Bond was received and paid ($35.00). The Treasurer reported that the Seed Fund Administrator had sent $65.00.

The letter from the Riverside Branch was brought up for further discussion because the Board's decision to add the amount of $36.29 to the Catalog Fund was questioned at the October meeting. Since the Board had voted to add all profit from the 1972 Show over $1,000 to the Catalog Fund, it was decided to leave the amount of $36.29 in the Fund.

A letter was read and motion made to discontinue paying the dues of $10.00 to South Coast Botanic Garden. Motion tabled and new motion made that any person interested in any arboretum or botanic garden should submit in writing to the Finance Committee reasons why we should continue these memberships.

Motion was made and carried to authorize the Treasurer to sign a contract with the Horticulture Magazine to run our ad for 12 months.

Meeting adjourned at 9:00 p.m.

Respectfuly submitted,
Irene Granell, Secretary

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IN MEMORIAM

Jack Golding's mother passed away December 9, 1972. Our heartfelt sympathy is expressed.

COVER PICTURE

New Begonia species, ex. Kew. Photo courtesy of M. L. MacIntyre.

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;

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*.

WICK-WATERING

By Fausta White

Mr. Wallace W. Wagner's article *"How to Water Begonias"* appearing in the January 1972 issue of *"The Begonian"* was informative and helpful. However, he states "wick-watering has been tried on Begonias but with very little success."

My own experience with wick-watering may be of interest. Eighteen Rex Begonias (standards, compacts and miniatures) were potted into home-made wicked pots. Also about twenty different rhizamatous and eight or ten canes. Enclosed are photographs of three and could send pictures of some of the others.

It made no difference whether clay or plastic, commercial or home-made wicked pots were used. Once a week, one-half strength solution of fertilizer was poured into the reservoir. Each week, one of four fertilizers of different analysis was used in rotation and when the reservoirs needed refilling, plain water was used. The reservoirs were never allowed to run dry.

B. 'Bright Eyes' Thriving in Fausta Waite's home-made wicked pot.

B. foliosa

I cringe every time I see the sopping wet soil but the plants themselves appear jubilant and certainly thriving.

Trial and error proved not all Begonias lend themselves to wicking. Rotting occurred:

1 — with *any* plant in a pot smaller than 3″

2 — if an over-sized wick were used for a given pot size

3 — most fibrous-rooted canes unless in pots over 4″. ("Gloire de Sceaux," "Margaritacea," others of the same type flourished on wicks in 5+″ clay pots)

4 — true miniatures, i.e., the *boweri* series when very young. However, semi-miniatures "Robert Shatzer," "China Doll," etc. did very well.

The trailers of the *pustulata* type ("Dark Imperialis," "Silver Jewel," "Emerald Jewel," "Silver *pustu-*

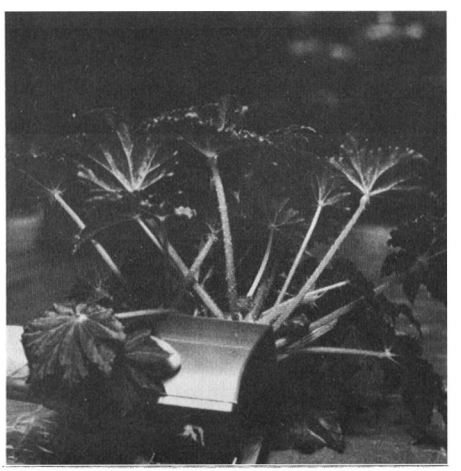
lata") are outstanding successes on wicks.

Wicks are not used in pots of the 10" size (*heracleifolia nigricans,* "Beryl," "Weltoniensis") because the soil mass is large enough to remain sufficiently moist for about eight days and also because so large a reservoir would be heavy and cumbersome.

The most effective wicks are those made of glass fibre, or all nylon. Any rust-proof container large enough to support the plant is all that is needed. If a lid is used, two holes are made — one to insert the wick and the other to pour in the water/fertilizer solution. Labels may be used in lieu of lids, as shown in the photograph of B. "Bright Eyes."

Incidentally, the soil mix used made no difference whatsoever. Some of the rexes were potted in peat moss alone ("Marion Louise," "Can-Can," "Fire Flush"); others in various mixtures.

It should be noted that not a plant in my collection ever sees the light of day, except for exhibit or ornamental purposes. All are raised in a basement plant room under flourescent lights. Whether this contributes to the remarkable success I have had with wick-watering Begonias, I cannot say.



B. 'Green Star' x *B. 'Tatoosch'* #2. Ruth Stanley's unnamed hybrid.

ROUND ROBIN NOTES

Ideas, old and new, are being shared as the Robins make their rounds.

Mildred Swyka, Delaware, did a little research in soil mixtures this past summer. In one bench she used ordinary garden loam and in the other bench she used a three inch layer of leaves, corn cobs and about two inches of a mixture of peat moss, perlite and vermiculite in equal proportions on top of this. Her summary: the garden loam produced plants with more blooms, blooms had more color. The second combination produced larger leaves, darker leaves and held moisture much better but blooms were not as dark.

Tad Debski, Illinois, tried putting wicks in all his pots before going on vacation. He used thin nylon string, pots placed on top of plastic cups of water. He noted it was strange how much difference there is among plants in using the water. Some of them used all of it while others just as big used only a little. However, his gesneriads fared much better than his Begonias. Some of the rhizomatous Begonias did not like the treatment at all and lost many leaves, especially young Begonias. He thinks wicking is better than asking neighbors to take care of plants. Tad said that after about two months of growing rexes from leaves according to the floating method (leaves on styrofoam floating on water with petioles reaching to water through holes in styrofoam) he thinks this method is far better than anything else he has tried. The young plants are about three times as big as the plants grown from wedges in vermiculite.

Evelyn Hurley, Massachusetts, handles cuttings from other plants thus: take a green cutting with about four leaves, get a small sized baggie, put into it some growing medium and soak with water. Place cutting in mix in bag, leaving the top out; just fold bag around and set in empty pot for stability on bench and out of sun. After six weeks, at least before I bother with them, they invariably have good roots. Pot up in same mix.

Elizabeth Schmid, Tennessee, had to do a hurry-up job this year getting her plants ready to return to greenhouse. She drenched each and every one with "Mr. Clean" detergent diluted. It really gets rid of many pests she doesn't want to bring indoors.

Iris Cohen, New York, found that spraying with one teaspoonful of dishwashing detergent to one quart of water cleared up powdery mildew from her plants. She understands they are even using it on roses. Two applications cleared up all her African Violets permanently.

Rosetta White, Kansas, advises: try spraying the mildew on your plants with Lysol spray (for odors). This does not discolor or stain the leaves and it will get rid of the mildew or prevent it if used before mildew strikes.

John Yochum, Indiana, advises he has had good success eliminating white fly pests by setting a pot of green onions and pots of marigolds among the Begonias. John reports that a small plant of B. *kenworthii*

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EPIDERMAL OUTGROWTHS IN BEGONIA

By Harriet B. Creighton
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Wellesley College
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Five years ago I wrote an article for *The Begonian* titled, *"Phyllomania — What? When? and How?"* (Creighton, 1967). As I reread it I realize that the questions are not answered yet, which doesn't surprise me, since they are large questions. Considering begonias only, in the intervening years, many more examples of the production of adventitious leafy outgrowths have come to my attention. Are they all basically alike? If not, what are the differences? One result of the 1967 article was that I was offered so many phyllomaniac rooted cuttings and seedlings that I had to limit the number I could accept to the space available in Wellesley's greenhouses. As a full-time teacher, investigation of phyllomania has to be tucked into "spare" time. So far, I have surveyed about 20 examples and looked carefully at only three, still devoting most of my time to the one I started with, *B. phyllomaniaca* Mart. (Fig. 1). At the risk of being inundated, however, I invite anyone who has begonias exhibiting phyllomania or any other peculiar outgrowth to send me a rooted cutting or a seedling, together with as much information as you have on its history and on the conditions under which it produces outgrowths. I think a survey of the phenomenon might be very useful in trying to get answers to "what? when? and how?".

Figure 1:
B. phyllomaniaca Mart. showing foliar outgrowths after moderate stimulation (see text). Most are at the nodes near stipule scars; a few are on petioles. Note at (A) bilateral symmetry of outgrowth leaf blades. About natural size.

Before you send me plants, however, let us be sure that the concept of an "adventitious outgrowth" is clear. I am limiting myself to those that occur on healthy, intact plants. I have found since I started to talk and write about my research that many people do not understand the words "adventitious" and "outgrowth". First, let me explain the usage of the word adventitious in some detail, including "phyllomania", and then outgrowth.

The word adventitious is most

commonly used in the phrases, *adventitious buds* and *adventitious roots.* The adjective is not limited to biological situations, but one rarely sees or hears it today except among plant scientists and horticulturists. The dictionary definition of it as a biological term is "arising out of an usual place". One botanical glossary says: "A structure occurring in an unusual or unexpected place as, for example, an adventitious root formed from a stem or a leaf". The key word in the definitions is "unusual". Most confusion in the minds of people untrained in botany arises, I think, because they do not know what a botanist means by "usual" with respect to the place of origin, or occurrence, of a plant part. So let me explain "usual", or "normal", as applied to where roots, stems, leaves or flowers arise. First, think of the embryo in a seed like a begonia seed (Fig. 2). Its distinguishable parts are: two cotyledons = "embryo-leaves"; an epicotyl = "embryo-stem tip"; a hypocotyl = "embryo-stem";

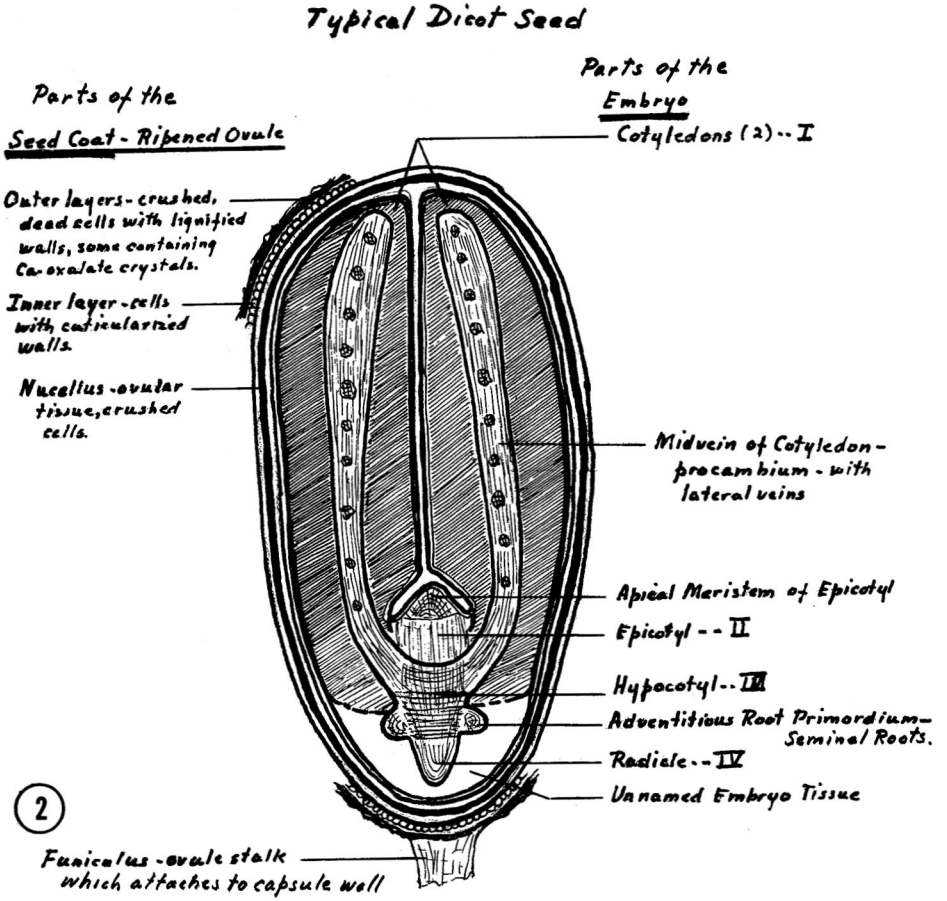

Figure 2:
Diagram of a typical dicot seed with no endosperm when mature. Ovule parts labelled on the left; Embryo parts, numbered I-IV on the right.

and a radicle = "embryo-root tip". These, then, are the four parts of a normal embryo: the epicotyl, the part above (epi-) the cotyledons; the hypocotyl, the part immediately below (hypo-) the cotyledons; the cotyledons (usually the largest part of the embryo); and the radicle, which is below the hypocotyl. The epicotyl, hypocotyl, and radicle together make an elongated cylindrical body, the "axis" of the embryo. The cotyledons are on the sides of the axis. The embryo has grown from a single cell, the fertilized egg, to a many thousand celled structure. In addition, in a seed, there may or may not be, depending on the hereditary nature of the kind of plant, a food storage tissue, the endosperm. The seed coat on the outside has developed from the tissues of the ovule and hardened. A mature, or ripe, seed has been produced, and, in most cases it is dormant.

When the physiological conditions within the embryo are "right", i.e., it is no longer dormant, and when the proper temperature is provided, and water, the embryo resumes its growth. This is germination (Fig. 3). First the radicle grows as a re-

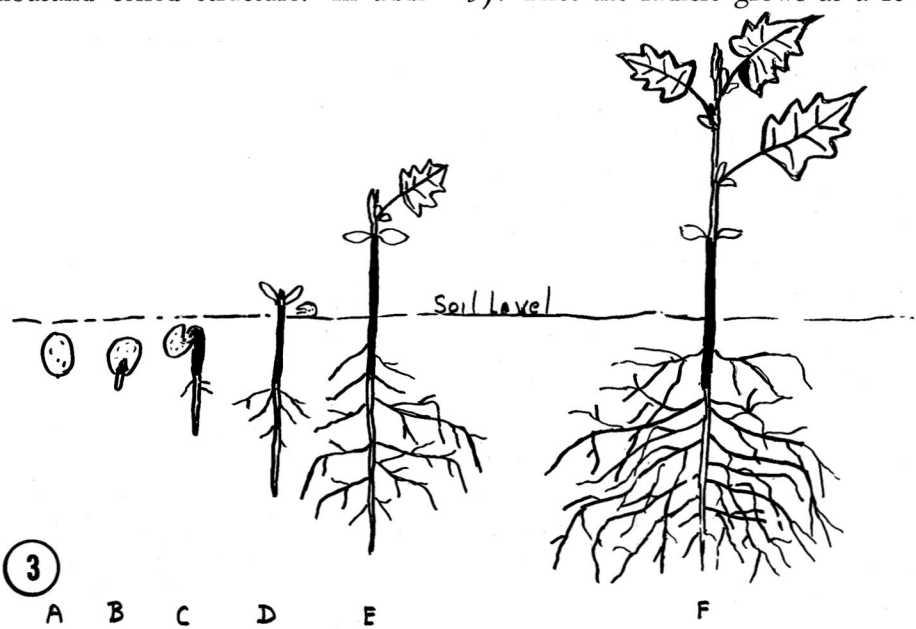

Figure 3:

Diagram of germination of epigeal dicot seed germination. A. Seed. B. Emergence of the primary root. C. Elongation of the primary root with secondary roots; elongation of the hypocotyl (shown in black). D. Elongation of the hypocotyl raising the cotyledons above ground (epi = above; geal = ground); divergence of the cotyledons pushes off the seed coat and exposes the epicotyl. E. Adventitious roots emerge from hypocotyl; first leaf showing stipules, petiole and juvenile form of blade; stipules of succeeding leaves envelop the stem tip. F. Seedling developing fibrous root system; successive leaves of the shoot system change toward the adult leaf form.

sult of cell enlargement and cell divisions that add more cells. As soon as the radicle has emerged from the seed coat it is called the *primary root.* It continues to elongate and soon new root tips grow out of it becoming structurally and functionally just like the primary root. These roots are called *secondary roots,* and so are all the roots that grow out of them. When the primary root grows down into the ground farther and is conspicuously more vigorous than the secondary roots, the plant is said to have a *tap root system.* If the primary and the secondary roots are all about of the same vigor, diameter and length, the plant has a *fibrous root system.* Many begonias, called fibrous, or more correctly, fibrous-rooted begonias, are of this type. The type of root system is being referred to, not whether the individual roots are fibrous or not. All of the root system that develops on a seedling is derived from the embryo-root, or radicle. Botanists consider this to be "typical" root system formation — all roots from roots. Any other roots, no matter where you find them are "atypical", that is, adventitious.

The rooting of a stem cutting is a common horticultural practice that depends on the production of adventitious roots. Soon an independent plant, really a continuation of the original plant, is developed. Since it is a part of the parent plant it has the same hereditary characteristics as the parent. A group of plants produced from one plant is called a clone. When you need a number of individuals with identical heredity so that you may study the responses of this kind of plant to experimental manipulations, you clone the plant. That is, you reproduce it not by seeds, but by some asexual means such as the rooting of cuttings.

When a seed germinates, soon after the radicle has started to grow, the embryo-stem, or hypocotyl, starts to grow, if it is ever going to (Fig. 3). Begonia hypocotyls grow. This is the hereditary pattern of begonias when the seed is planted in the ground where it is dark. Hypocotyls exposed to light, especially the blue wavelengths, do not elongate. Hypocotyls of some kind of plants, peas for example, never elongate. At the base of the hypocotyl, in the embryo of some kinds of plants, there are two or more root tips. They are called "seminal" (in the seed) roots. Other kinds of plants form root tips in the hypocotyl soon after germination. Since both of these types of roots are produced by the hypocotyl, not by the radicle, they are adventitious roots, even though, for those kinds of plants that have them, they are the normal occurrence. Let me stress, the fact that they occur normally and typically in these kinds of plants is not the point. They are adventitious because they did not originate from the primary root or its secondary roots.

The next parts of the embryo to resume growth are the cotyledons, the embryo-leaves. Depending upon the hereditary capabilities of the kind of plant, the cotyledons may or may not increase greatly in size. If the elongation of the hypocotyl occurs, the cotyledons may be raised above the ground level, often before their

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ROUND ROBIN

(Continued from Page 6)

obtained in 1969 never grew more than three leaves at any time until last winter but it finally took hold and now has 26 large leaves plus a number of smaller ones. Recently (September) B. *listida* has been in bloom for him. This plant always bloomed after the first of the year along with most of the rhizomatous Begonias.

Anita Sickmon, Kansas, put her B. *brevirimosa* ('Exotica') and B. *serratipetala* into the sand on the plastic enclosed portion of the middle bench and they really took off. She also put a B. *goegoensis* there and it really has grown. B. *hydrocotylifolia* sulked for her so she set it, still in its 2¼" pot, in the same area and it soon sent its roots down into the sand and is growing.

Claire Roberts, New Mexico, grows her B. 'Exotica' plants in her cutting bench where it has bottom heat and she has a misting system, misting her plants and cuttings. She says she doesn't have them dropping their lower leaves while they are grown under these conditions, but if she takes them out of that atmosphere and puts them on the open bench in the greenhouse, they start dropping their lower leaves.

Grace Schillinger, Illinois, enclosed a picture of the moss wall she made at the west end of her patio beneath a sheltered deck on the north side of her house. The Rock River is sixty feet from this wall. The back of the wall is covered with shake shingles. Picture was taken in June, full of young plants. In August the sphagnum was hardly visible, being hidden by the plants, a mass of bloom. She removes plants for winter, and will try different kinds of Begonias in it next year.

Yvonne Wells, Texas, enclosed pictures of Begonias growing on rocks and logs, most of which had been growing that way for over a year: B. *hydrocotylifolia*, B. 'Silver Jewel', B. 'China Doll', B. 'Norah Bedson', B. *richii*, B. 'Priscilla Beck', and B. 'Bow Chancee' on rocks. She has an unnamed miniature Begonia and B. 'Bow Arriola' on the log and they have done beautifully there. This is an oak log from a tree in her yard. She keeps her planted rocks in some type of old container such as a plastic dish pan, so rocks will stay damp from water in pan.

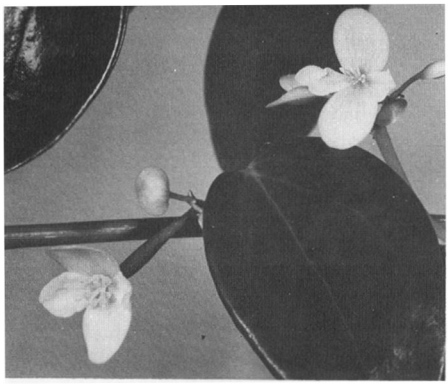
Vivian Stewart, Washington, had her husband make nice containers out of cedar and she painted them green and uses them instead of pots for her plants.

Gordon Lepisto, Minnesota, grows his rex Begonias in a room under lights with a temperature of 72° during the time he has the flourescent lights on and 68° at night during the winter, with the humidity at 95%.

Even if you only grow Begonias on a windowsill, there is a place for you in a Round Robin you will enjoy. Write me soon to join one.

Mae Blanton
Round Robin Director
Rt. 4, Box 159A
Lewisville, Texas 75067

CLAYTON M. KELLY SEED FUND



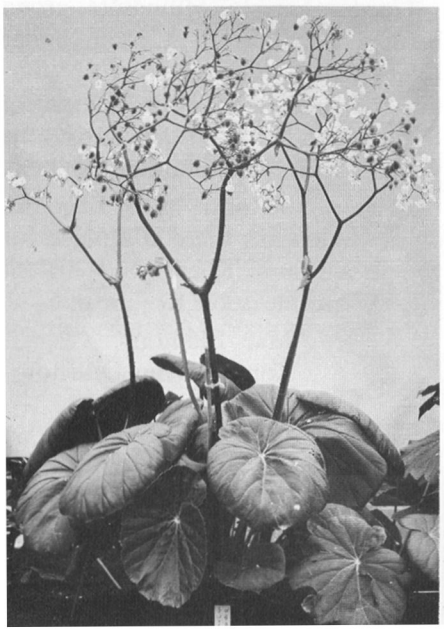
B. molleri

No. 1—B. molleri, W. Africa

Magnificent trailing plant with symmetrical, oval, shiny leaves and flowers the whole year through. See photo. Price $1.00 per pkt.

No. 2—B. J11. Brazil.

Plant that Sylvia Leatherman introduced in 1959 from material brought back from Brazil. It belongs to the section Pritzelia and appears closely related to B. friburgensis which, however, is much smaller. See photos. Beautiful Begonia. Price $1.00 per pkt.



B. J11

No. 3—B. imperialis var. brunnea. MacDougall, Mexico.

Leaves larger than B. *imperialis* and are brown with small areas of green where the main nerve divides. Mature plants send out runners up to a foot long as B. *pustulata* does. Nice plant. Price $1.00 per pkt.

No. 4—B. olsoniae syn. B. vellozoana. Brazil.

Herbaceous, 8 to 12 inches tall, stems short, oblique up to 5½ inches long, rooting at the stipules. Leaves oblique, broadly ovate subauricular, cordate, with a closed basal sinus. Palmately eight-nerved, 4 to 5 inches long, 5 to 8 inches broad; hispid-pilose on both surfaces, with small fimbriate scales on the nerves beneath; green above, with a whitish zone on the veins; paler below and occasionally reddish. Flowers are white, sometimes the outer rosy. B. olsoniae is considered one of the most beautiful species in recent years and is said to rival B. masoniana. Price $1.00 per pkt.

No. 5—B. haullevilleana. De Wild, Africa.

Trailing species from Congo of great botanical interest, mainly because of its peculiar fruits. The flowers are large, white with crimson blotch. See cover picture Nov. 1968. Price $1.00 per pkt.

No. 6—B. rubro-venia.

Caulescent, elliptic, lanceolate, acuminate leaves. Can be easily rec-

ognized by its rose-red veins, especially on the underside, and by the grayish-white, large irregular patches on the upper side of the green leaves. Flowers are borne in axillary peduncles and are white. Price $1.00 per pkt.

No. 7—B. domingensis.

Numerous small flowers, white with crimson centers, with a curious spicy smell. Price $1.00 per pkt.

No. 8—B. pavonina. Malay.

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. 9—B. dipetala var.

Flat, round leaf has red ink-spots where the stem ends; indented red veins give a corrugated effect. Hugging close to the stem, two petaled pink flowers hang loosely. Likes humidity and warmth. Good Begonia. Price $1.00 per pkt.

No. 10—B. macbethii hort.

Classified by Irmscher as a variety of B. suffruticosa (B. 'Richardsoniana' hort.) Lacy-looking dwarf with finest cut maple leaves; flowers white or pink. Price 50 cents per pkt.

No. 11—B. pearcei.

A species, fairly widely grown to-day, which contributed yellow flowers and brown shaded leaves to early and modern hybrids. Price 50 cents per pkt.

No. 12—B. sc 'Organdy'.

Excellent mixture of soft shades of rose, red, pink and white. Predominately green foliage. About twenty per cent of plants are bronze foliage, further enhancing this mixture. Price 50 cents per pkt.

Suggestions for growing fern spores.

Sow at any time of the year. Use bottom heat of about 70 degrees. Soil mixture should be rotted leaf mold and acid peat in equal proportions. Preferred pH range is 5.5 to 6.0.

Sow in shallow clay pans after the soil has been moistened. Spores should be thinly sown. Do not cover them except with a piece of glass or plastic sheet. Keep from direct sun; and water by placing pans in water until tiny drops form on the surface.

In high humidity, germination occurs within three weeks. These embryos should be watered carefully with a fine spray from above, to encourage fertilization. (Spores differ from seed in this respect). Fertilization takes place in six to eight weeks; then small leaves begin to develop.

Plants can be transplanted later when they are large enough to be handled without damage, and placed in two and one-half inch pots. Lower the temperature to about sixty degrees and use the same soil mixture throughout. All that is recommended for good growth is high humidity and a semi-shaded location.

FERN SPORES

Asplenium belangeri.

Very rare fern. It produces small plantlets in very limited numbers along the old frond and are very slow growing. Price 50 cents per pkt.

Adiantum 'Tuffy Tips'.

Choice maidenhair with tips that

fork and crest. Similar to a glorified A. 'Pacific Maid'. Price 50 cents per pkt.

Adiantum cuneatum hybrid.

Compact, low growing. Not deciduous in warm climates—for greenhouse or indoors. Not recommended for outdoors in cold climates. Price 50 cents per pkt.

Polystichum tsu-sinense.

Dwarf and shapely tufted fern suitable for terrariums with small leathery, lanceolate, dark green fronds, bipinnate in the lower part, the segments becoming gradually smaller toward the slender point and sharply toothed. Price 50 cents per pkt.

Adiantum weigandi.

Price 50 cents per pkt.

GESNERIAD

Seemannia latifolia.

Will grow tall or short, robust sturdy stalks which are lax in posture, leaves light green with rough texture, about two and one half inches long. Blossoms are scarlet and golden-yellow spotted. Likes a north exposure with good light, needs moisture at roots at all times. If growing conditions are not right, a heavy growth of aerial-rhizomes are formed instead of blooms. Resembles a fern. Something different and interesting to grow. Price 50 cents per pkt.

Send requests for seed to:

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

PRESIDENT'S MESSAGE

I would like to thank those of you who participated in the administration change. Over 1000 ballots (the most we've ever received) were filled and returned, proving that we are taking an active interest in our society.

Another way we can utilize our interest is by actively participating in our society in the New Year, by supporting our committee chairmen, and by assisting our show committees in any way possible. Interest is always welcomed and cooperation always appreciated.

In the future all correspondence for 'The Begonian' is to be mailed to our new co-editor, Alva Graham, 929 Indiana Ave., South Pasadena, California 91030.

— John W. Provine, President

(Continued from Page 10)

outward expansion pushes off the seed coat. Such plants are said to have epigeal (epi-above, geal-ground) cotyledons. When light strikes the cotyledons of many kinds of plants, among them begonias, chlorophyll is produced and the cotyledons green up. They carry on photosynthesis for some time providing new carbohydrates used by the growing seedling. Experimentally, roots can be induced to form on cotyledons when they are excised from the hypocotyl. Such roots are adventitious. Normally, cotlydons are short lived and eventually fall off.

Meantime the epicotyl, the embryo-stem tip, has started growing. Some kinds of embryos, when they become dormant, have a stem tip that has formed only two or three microscopic leaves. Others, like peanuts or beans, have two or three leaves that are big enough to see when you split apart the cotyledons of a dormant embryo. If the embryo-stem tip has produced large leaves like these the whole structure is called a *plumule* instead of an epicotyl. Once germination starts more new leaves are produced by the stem tip. Note that a leaf is produced by the addition of new cells by the division of cells in one or two layers beneath the epidermis, not from divisions of epidermal cells. Depending on the inherent pattern of leaf position in the particular kind of plant, either one leaf or a pair of leaves develop and then some stem, and then leaves, again. In begonias, one leaf is produced at a time. The place

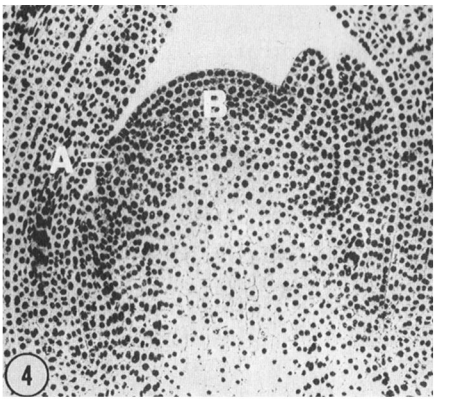


Figure 4:
Longitudinal thin section of the growing region of a stem tip with cell nuclei conspicuously stained. A. Formation of the newest leaf by multiplication of cells beneath the epidermis. B. Dome-shaped stem tip where new cells are produced by cell division. A succession of 6 older leaves on alternate sides of the stem tip are visible, as is the fact that a single layer of epidermal cells surrounds the stem tip and the young leaves. About 1/16 of an inch (2 mm) of the growing region is shown.

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on a stem where a leaf grows is called the node. The stem between successive nodes is called the *internode.* Figure 4 shows a growing stem tip of tulip forming new leaves. A begonia stem tip in longitudinal section would look not too different from this. Botanists have agreed that only leaves formed just below the stem tip are "normal" in origin. Any leaves formed anywhere else are called adventitious leaves. A few kinds of begonias, naturally, produce

large numbers of adventitious leaves. So conspicuous was the expression of this hereditary trait on a species that Martius (1852) was describing and naming, that he called it *B. phyllomaniaca,* leaf-crazy, i.e., possessed of a mania for producing leaves. As far as I know only begonias are phyllomaniacs so the term has limited usage. But it is a picturesque term and handy where applicable.

The growing stem tip produces not only new leaves formed in a pattern around its dome, but also stem tips. In the angle made between each leaf and the stem (the axil), above the leaf base, a stem tip just like the terminal stem tip develops. It may grow to visible size, with leaves, and be called a bud, or it may remain microscopic for a long time. Whenever the axillary stem tip grows it produces more of the shoot system. In fact, this is the way a branching shoot system develops. It is normal, then, for stems to occur in the axils of leaves, and they are structurally and functionally the same as the embryo-stem tip. They are not adventitious, whereas a stem arising anywhere other than from the epicotyl or axils of leaves is.

Stem tips that are adventitious can arise from roots, stems, leaves, or near wounds, in fact wherever many new cells are being formed by cell division. It is common with some begonias and with African Violets to clone a plant with leaf cuttings. Usually the first thing to happen is the emergence of adventitious roots, from the parent leaf. But, if this is all that happens, a new plant is not produced. A stem tip must develop and produce more stem with leaves in the same manner as a normal stem tip. The parent leaf's adventitious roots for a while absorb the required water and minerals for the adventitious stem, but soon, the new stem develops adventitious roots. When this has happened a whole adventitious plant is started. It is adventitious because the normal origin of a plant is from a fertilized egg that grows to produce an embryo.

Several of the begonias I am studying produce adventitious stems on intact leaves and stems. In *B. phyllomaniaca* they originate in the same places as adventitious leaves. Most of the time their appearance is rare, but since they do occur, it may be possible in the future to increase the number of them by proper manipula-

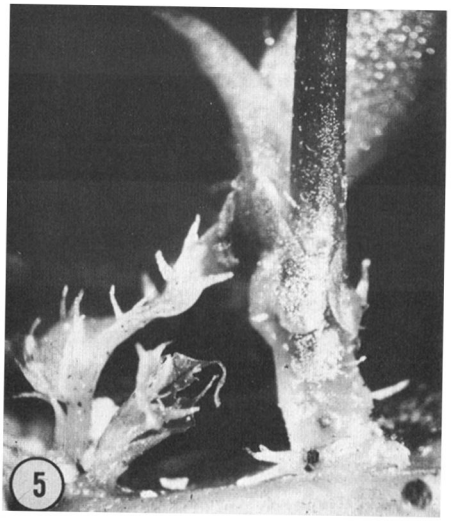

Figure 5.

Adventitious plant growing from a stem of *B. phyll.* Small adventitious roots can be seen emerging from the adventitious stem (see text). At left, two foliar outgrowths, the largest 3/8 of an inch in length (3-4 mm).

tion. They develop producing more stem and leaves in the normal way. Spontaneously, or with the addition of a rooting compound (such as "Rootone" or "Hormodin") adventitious roots may grow out of the adventitious stem. Only when this has occurred is there an adventitious plantlet (Fig. 5). All of these that I have seen on begonias remain attached to the parent leaf or stem. They can be cut off, planted, and will grow into full sized plants. They could be used to clone the parent plant, though the rooting of stem cuttings is easier and faster. Certainly in begonias, in the wild, adventitious plantlets are not an efficient means of natural reproduction of the parent plant.

Are there adventitious flowers? Yes, *B. phyllomaniaca* produces them on the peduncles of its inflorescences (Fig. 6.) Normally flowers are produced at the end of a stem, in fact, a flower terminates a stem tip. A flower produced from any other part of a plant except a stem tip is adventitious. I konw of no other kinds of plants that produce adventitious flowers. If anyone finds other begonias that produce them, I would like to obtain rooted cuttings.

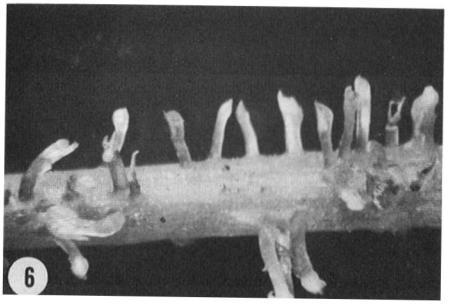

Figure 6.

Peduncle of *B. phyll.* inflorescence showing small male flower outgrowths each about 3/8 of an inch long (3-4 mm).

I hope that I have made clear the point that any root, stem, leaf, or flower that grows out of an unusual, abnormal place is adventitious. I hope I have clearly described what the normal places of origin are, because an understanding of what botanists have agreed is normal is crucial to recognizing what they term abnormal. Horticultural scientists use the same definitions, the same criteria. Many laymen, however, usually because they have not known enough plant anatomy, have misunderstood terms like adventitious. So frequently is the term misapplied that I rarely use it. I used it in the start of this article because the leaves, flowers and stems that I am studying are truly adventitious. To say this does not imply that in all begonias the adventitious outgrowths are all alike in any way, except that they do not arise in the "normal" places where such structures arise. In structure and in function adventitious roots, stems, leaves and flowers are usually just like their normal counterparts.

It will not take many words to define "outgrowths". It is a general term that covers either recognizable adventitious roots, stems, leaves or flowers or shapeless, formless, cellular excrescences. The ones I find on some begonia cultivars result from internal capabilities, not as far as I know from infection by viruses, bacteria, nematodes, nor fungi, all known to be causative agents of outgrowths. The term covers any type of unusual externally visible mass of cells even including the callus that forms where a plant is wounded, as,

for example, the cut end of a stem or a leaf vein or petiole that is being propagated. It is useful as a collective term or when the structure is not recognizable and perhaps never will be as a root, stem, leaf, or flower.

What first caught my interest in begonias that produce outgrowths when they have no bacterial, fungal or viral infection was the unusualness of the phenomenon in plants. The first one I saw was *B. phyllomaniaca* and I thought it must have a dread disease. Then I saw *B. hispida cucullifera* with its little leaves growing up at very regular intervals from the main veins of the leaves. Before long I saw *B. 'Fairy'* with its older stems covered with leafy outgrowths and with occasional outgrowth on the leaves.

Our plant is *B. phyllomaniaca* was in flower with floral outgrowths, so I decided to try to find out whether the production of outgrowths was inherited by self-pollinating it and by crossing it out to a red flowered begonia. Why red flowered? Because *B. phyll.* is pink flowered and if I got offspring with flowers that were either red or a darked pink than *B. phyll.* I would know that I really had hybrids. If they were the same pink as *B. phyll.* and particularly if *B. phyll.* had been the female parent I would not have known whether I had hybrids. This doubt would have arisen because it can happen in plants that unfertilized eggs will develop into an embryo or that some of the ovular tissue will. When this occurs the offspring are exactly like the female parent having received no hereditary input from the pollen parent for it actually contributed nothing. The idea of out-crossing *B. phyll.* was a fine one except for the fact that I soon found that *B. phyll.* is completely male and female sterile. It always has been, probably. In the full description given by de Candolle in the *Flora Brasiliensis* (1861) he said he thought it was infertile. If his plants were, and I think it is very likely, then all plants of *B. phyll.* are a clone. There may have been only one original plant. Even the variegated leaves type, given the cultivar name, Templini, is still a part of the clone, propagated asexually since its origin.

Thwarted in making a genetic study of the penomenon, I could devote all of my time to trying to find out what was causing phyllomania and what these outgrowths really are. I will pass over describing all the attempts that failed while I tried to find out why some times there were many, many foliar outgrowths on stems and leaves and at other times none. The species has been doing this since it was first described. I had noted that Plate 100 in the *Flora Brasiliensis* (1861) shows outgrowths on the lower internodes of the plant illustrated and none on the internodes above them that were formed later. I would guess that the artist cut off the leaves from the lower nodes to save himself having to depict all the outgrowths on the petioles and upper and lower sides of the blades. He shows only leaves with few or no outgrowths. Yet, he had plenty of phyllomaniac leaves to look at for he shows on Plate 99 nearly all of the kinds of leafy outgrowths that are produced.

(To Be Continued in the Next Issue of *The Begonian*)

BEGONIA SHOWS QUESTIONS AND ANSWERS

By Ruth Pease

Over the years we have attended many Begonia shows and during this year have replied to several inquiries about such shows. Depending upon the size of the branch, the number of members who are actually growing Begonias to exhibit and the number of members willing to work, we suggest consideration be given to the following types of shows for your area.

Mini-shows are popular in some of the branches. They may include registration and classification of Begonias according to a show schedule befitting the size of the show and the types of Begonias grown by the members in a given area. Entries are judged by experienced Begonia judges. Clerks are usually members of the branch. Ribbons and trophies are awarded. This type of show is often held during a regular meeting of the Branch.

We have also seen another type mini-show where plants are brought in by the members when they first arrive at each of their regular meetings during the year. Someone is in charge of arranging the plants according to their types. Members with judging experience are asked to judge the plants while the regular meeting is taking place. First, second and third place ribbons are awarded. There is usually one clerk to assist. After the program for the evening is over, a report is given by one of the judges or the clerk naming the winning plants and the exhibitors. These are recorded. At the end of the year, the member who has amassed the most blue ribbons, or the most ribbons depending upon the rules of the particular group, is awarded a trophy.

A few years ago the Knickerbocker Branch held mini-shows at each of their regular meetings, but these were limited to a particular type Begonia for each show. This acquainted the membership with the classification of Begonias according to their growth habits and as listed in the Suggested Guide to Classification of Begonias for Show Purposes. It also served to teach them judging and point scoring procedures.

Non-competitive shows are popular in the Ventura and Santa Barbara area. The Theodosia Burr Shepherd Branch has such a show each year and includes registration, classification and placement of the plants accordingly. There are one or two garden displays. Members work together, have planting demonstrations, a snack bar and plant sales tables. The plants exhibited are well-grown, well-groomed and the show is open to the public for the weekend. There is no admission charged.

The Santa Barbara Branch does something like this also and it is held in the Natural History Museum in a room that is rather cozy when all the plants are placed. They do not classify the plants. They are placed attractively on the floor, in the center of the room, on a stage and around a featherock waterfall.

The begonias are named and where possible the exhibitor, hybridizer, or country is noted. Visitors browse and look at the plants on display. This is a weekend show. There is no admission charged.

The San Gabriel Valley Begonia Branch has held competitive shows for many years at the Los Angeles County Arboretum. Several other branches held such shows in the past but for varying reasons have not done so in the last four or five years.

We learned of a branch that wanted to have a show but didn't know how to proceed although many of its members had been active in other plant societies and shows. In answer to their query, we suggested the following:

Prepare a show schedule including the types of Begonias grown by most of your members. Use the ABS show schedule that appeared in the *Begonian* or the one shown in the Classification Guide and take what you need from these. If you find you have members who grow cane-like Begonias, but not enough to include several classes such as we have in the ABS show schedule, make a division with one or two classes for canes. In the case of rhizomatous, which is our biggest division in the Annual shows, you may want to break down the entries into classes for different shaped leaves and according to their sizes or have classes such as rhizome-like stem erect, rhizome-jointed at or below the soil but with erect stems, distinctive foliage. In the case of the rex Begonias, you may want to have only two classes in the division — one for spiral-leaved and the other for non-spiral leaved rexes.

Show rules may be adjusted to your particular needs, but the ABS rules are good. Check other show schedules in your area and take what you need from them. There is a constant review and improvement of show schedules and rules each year.

As to the show itself, find a location suitable for your size show including space for floor garden displays if desired. Some places do not want such displays on their polished floors. Check to see if there are available tables, an area for a snack bar should you plan to serve sandwiches or cold and hot drinks; a place for a plant sales table; an area for demonstrations of planting, and a place for selling memberships and reference books.

Further, it is suggested that you check to find how much the building or room will cost for the entire time you use the space and whether or not there will be any custodian's fee. Check the fire laws in case there is required fire-proofing of materials used in displays. Find out if there is room for parking not only for visitors to the show but for the members to bring in their entries to the show.

The show committee should meet often to discuss what each chairman needs to do in the way of organizing his part in the show. Depending upon how many members are able to work on the show, there are positions for a show secretary, a show treasurer, classification and registration chairman, chairmen of judging, awards, layout and placement, publicity, demonstrations and lectures, plant sales, and a snack bar if there is to be one. All of these chairmen and any others necessary to have a well-organized show are under the leadership of the show chairman of the branch.

If there are any questions we will be happy to work with show personnel of all branches whenever possible.

An important item to keep in mind is the availability of ABS Cultural Certificates. An article is being prepared by the Awards Chairman and will appear in a future issue of the Begonian. A list of ABS-accredited judges will also be printed.

Naturally we could advise more about the preparation of forms needed for registration and classification and so on, but there isn't enough space to do this in one *Begonian.* We urge all to get your shows off to a good start requiring quality at all times, good-looking, healthy plants in clean containers.

Show procedure information is included in the ABS Judges Course which is available for $6.00.

Send your questions to Ruth Pease, ABS Judges Course Director, 8101 Vicksburg Avenue, Los Angeles, Ca. 90045.

Ruth Pease

BRANCH DIRECTORY

VISITORS ARE ALWAYS WELCOME AT THESE MEETINGS

BUXTON BRANCH
3rd Saturday, Homes of Members
Mrs. F. N. Sinex
34 Thackery Rd., Wellesley, Mass. 02181

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 Friday, 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

GLENDALE BRANCH
2nd Tuesday, 8:00 p.m.
Glendale Federal Savings, 401 N. Brand
Mrs. Katharine Alberti, Secy.
3322 Troy Drive, Hollywood, Calif. 90068

GREATER BATON ROUGE BRANCH
Mrs. John H. McKay, Secy.
5116 Baton Rouge Ave., Baton Rouge, La. 70805

HOUSTON TEXAS BRANCH
2nd Friday, 10:00 a.m.
Garden Center, 1500 Herman Drive
Mrs. B. A. Russell, Secy.
5926 Jackwood, Houston, Texas 77036

KNICKERBOCKER BRANCH
2nd Tuesday, 7:30 p.m.
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.
6300 East Spring St., Long Beach, Calif.
Mrs. Paul E. Powell, Secy.
3031 Shakespear Dr., Los Alamitos, Calif. 90720

LONG ISLAND BRANCH
2nd Wednesday, 8:00 p.m.
Planting Fields Arboretum
Oyster Bay, Long Island, N.Y.
Henry Sweitzer, Secy.
51 Hayrick Lane
Commack, L.I., N.Y. 11725

LOUISIANA CAPITAL BRANCH
1st Friday, Sear's Garden Center
6201 Florida St., Baton Rouge
Mrs. Johnnie L. Tanner, Secy.
1962 Cederdale, Baton Rouge, La. 70808

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

MIAMI BRANCH
4th Tuesday, 8:00 p.m.
Simpson Memorial Garden Center
Mrs. Marie Evans, Secy.
610 63rd Drive, Hialea, Florida 33012

MISSOURI BRANCH
3rd Friday, 11 a.m., Member's Homes
Kansas City, Mo.
Mrs. Glenn Lucas, Secy.
Kansas City, Mo. 64109

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 Cicle, 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

ROBINSON, ALFRED D. BRANCH
2nd Tuesday, 10:30 A.M. Homes of Members
Mrs. Frances King, Secretary
3327 - 28th St., San Diego 92104

RUBIDOUX BRANCH
4th Thursday, 7:00 p.m. West Riverside Memorial Hall
4393 Riverview Drive Rubidoux, Ca.
Dorothy Ansevics, Sec./Treas.
4063 Opal St. Riverside, Ca. 92509

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. Wayne Smith, Secy.
1823 Highland, Salina, Kansas 67401

SAN FRANCISCO BRANCH
1st Wednesday, 8:00 p.m., Garden Center
Golden Gate Park, 9th Avenue and Lincoln Way
Mrs. Louise Eby, Secy.
1137 Hillside Blvd. So. San Francisco, Calif. 94080

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.
16609 Cypress St., Covina, Calif. 91722

SAN MIGUEL BRANCH
2nd Wednesday, Porter Hall, 7:30 p.m.
University & La Mesa Blvd., La Mesa
Mrs. George Bayse, Sr., Secy.
2347 Langmuir St., San Diego, Calif. 92111

SANTA BARBARA BRANCH
2nd Thursday, 7:30 p.m.
Santa Barbara Museum of Natural History
2559 Puesta Del Sol
Miss Gladys M. Grant, Secy.
460 Mountain Dr., Santa Barbara, Calif. 93103

SANTA CLARA VALLEY BRANCH
4th Thursday, 8:00 p.m.
Northern Calif. S & L Assn.
10250 South Sunnyvale-Saratoga Rd.
Cupertino, Ca.

SEATTLE BRANCH
3rd Tuesday, 7:00 p.m.
Calvary Lutheran Church
7002 23rd Ave., N.W.
Mary Sanderman, Secy.
13045 37th N.E., Seattle, Wn. 98125

SHEPHERD, THEODOSIA BURR BRANCH
1st Tuesday, 7:30 p.m.
Y.M.C.A. Bldg., 5200 Telegraph Rd., Ventura, Calif.
Mrs. Hattie Lee Keller, Secy.
510 E. Yucca St.
Oxnard, Calif. 93030

SMOKY VALLEY BRANCH
4th Thursday, 7:30 p.m., Members' Homes
Mrs. Henry Flaherty
606 South Third, Salina, Kansas 67401

SOUTH SEATTLE BRANCH
4th Tuesday, 7:30 p.m., Wm. Moshier Field House
430 South 156th Burien
Sally Harding, Secy.
11632 1st Ave. S., Seattle, Washington 98168

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

TEXASTAR 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.
Ramona Greb, Secy.
441 Hillside Lane, Santa Monica, Ca. 90402

WESTERN PENNSYLVANIA BRANCH
2nd Wednesday, 11:00 a.m. every other month
Pittsburg Garden Ct., 1059 Shady Ave., Pittsburg, Pa.
Mrs. Irene Fediacko, 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.
14036 Ramona Drive, Whittier, Calif. 90605

WILLIAM PENN BRANCH
4th Tuesday, Noon Homes of Members
Mrs. Stuart J. Bracken, Secy.
727 Mt. Moro Rd., Villanova, Pa. 19085

CALENDAR

January 4 — Westchester Branch, 7:30 p.m. Wanda Elin and Ronnie Nevins will give a joint talk and demonstration on "Growing Begonias in Enclosed Containers." Everyone welcome.

This Branch enjoyed its annual "Whoopee Party" in December. At the November meeting President Irene Nuss introduced the new officers for the coming year and Ken Terry installed the following: Jim Somes, president; Walter Pease, vice-president; Ramona Greb, secretary; Barbara Mack, treasurer; Arnie Krupnick, National representative; Stuart Cogan, alternate representative.

During the year Westchester participated in many projects, including the Southern California Horticulture Show, in which a garden display in an oriental theme featuring begonias and ferns was entered. An award was received for an educational display of begonias in the Culver City Garden Show and several awards resulted from the Japanese Teahouse entry and educational tables in the A.B.S. Show in Glendale.

January 11. Santa Barbara Branch. Frank Reinelt, eminent hybridizer of tuberous begonias, delphiniums, and primulas, will show slides of tuberous begonias at the regular meeting in Farrand Hall, Santa Barbara Museum of Natural History, 2559 Puesta del Sol, Santa Barbara, at 7:30 p.m. Aden Clarke, newly installed president, will preside.

January 16, 1973, Seattle Begonia Society—Program "African Violets" Calvary Lutheran Church, 7002 23rd N.W. 7:00 P.M.

SECOND CLASS MAIL
American Begonia Society
10331 South Colima Road
Whittier, California 90604