the BEGONIAN

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Begonia 'Maphil' (syn. 'Cleopatra')

Photo by Brian Halliwell

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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

Margaret Taylor, President
Photo by Gene Daniels

The President's desk happens to be a breakfast room table. On the table are *Begonias* in bubbles, outside the window is a patio, and beyond the lawn a shaded growing area. This sets the scene for you and is to tell you she loves plants but also she is no expert. It will be inspiration for the months ahead for here in Southern California it is a green growing scene all the year through.

Every organization has to be headquartered some place. Because the American Begonia Society was founded in Southern California the headquarters are here, but you, everywhere, are the Society.

We wish all Branch representatives and representatives from the Members-at-Large could meet with the Board. This would be ideal but not practical because of the great distances. For the same reasons, in order for the Board to function, the members must be more or less local.

The Board gives of its time, working with limited income for the times, and with varying degrees of business ability. We welcome your suggestions and ideas and will try to follow through. Each incoming Executive Board has great expectations and this one is no exception. We hope to serve you, the members of the Society.

This has all been said before but it bears repeating because somehow the thought persists that the Board is a separate organization. We are your Executive Board.

Greetings and best wishes as we all begin another year in the American Begonia Society.

Margaret B. Taylor, *President*

REPORT OF THE RESEARCH DIRECTOR

Jane Neal of England reports some good news in regards to our rhizomatous *Begonias.* Blackmore and Langdon, plant breeders and growers in England, are taking an interest in *Begonias.* Other than plant specialists, very few growers outside of the ABS know what a rhizomatous *Begonia* is.

It was decided to discontinue the project on artificial media due to the long delay and lack of communication in starting the project.

Dr. Doorenbos of Wageningen, The Netherlands, has forwarded a list of *Begonia* species comprising approximately 2,000 true species compiled by him; giving the name, author, year of publication, section and habitat. He states that it was compiled for personal use and should not be regarded as a scientific publication.

M. Carleton L'Hommedieu
Research Director

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.*

BEGONIA 'CLEOPATRA' IN ENGLAND

by Brian Halliwell, *England*

Begonia 'Cleopatra' is a hybrid, having *Begonia bowerae* as the seed parent but whose pollen parent is unknown. It was raised in 1953 by Mae and Phillip Baker and registered with the American Begonia Society in 1957 under the name of B. 'Maphil', derived from a combination of the christian names of the raisers. 'Cleopatra' first seems to have been used in publications of this Society in 1958 and whilst it may be a more popular name (at least in Britain), it is doubtful if it is valid.

This is a rhizomatous *Begonia* similar in habit and growth to its known parent but having more vigor, is easier to grow and is generally more attractive.

Leaves are produced on long red-flecked stems. These continue to elongate after the leaf is fully developed so that the older leaves come to droop below pot level. Leaves vary in size according to growing conditions but are about 6 inches in length, 2 to 3 inches wide, obliquely oval, usually having 5 pointed lobes which are lined with hairs. The under surface is a dull red, or blotched with red, whilst the color of the upper surface depends on the amount of light received. In deep shade this is a dull bronze, but in half-light, this bronze is overlaid with patches of light green and in full light the entire leaf is a light yellowish-green, having a few dark blotches along the veins. Flowering takes place in springtime when a profusion of pink flowers will last for several weeks. These are at first a dark pink but fade as they age. The lasting qualities of the flowers depends on the temperature at which the plant is kept.

Grow the plant in a well drained soil compost well supplied with organic matter such as peat. These proprietary soiless composts which are on the market make an admirable substitute. Provide a growing temperature of about 65°F, light shade and a moderate humidity, but once the plant is established in its container, it will tolerate lower temperatures, lower humidity and full light.

Propagation can be most easily done by cutting up the rhizome into pieces and potting each with its attendent roots singly. A more satisfactory method, where propagation facilities exist, is to increase the plant by leaf cuttings. Detach a mature leaf with a portion of stem and insert into a rooting medium of equal parts peat and sharp sand using the stem as an anchor. Keep in a warm humid atmosphere in a glass case or under a polythene tent in a temperature of about 70°F. Roots should have formed after about two weeks and two weeks later small leaves will have appeared from below soil level; once these have developed, lift carefully and with the original leaf, pot singly.

B. 'Cleopatra' is usually grown for its attractively patterned leaves and home growers will be fascinated by the different coloring which will appear by increasing or decreasing the light. It is a delightful addition to any glasshouse display as a pot plant or as ground cover when planted out in a border.

Because of its toleration of adverse conditions, it makes an excellent plant for the home being able to withstand neglect. Include it when planting up an urn or trough and remember it associates well in most forms of modern decor.

In the milder parts of the United States, where frosts are unknown, it makes an attractive addition to the mixed border. It is better when planted in light shade and it should never be allowed to become dry at the roots. For those who are less fortunate and have cold winters, plant out in the garden during summer months and it will always provide you with a talking point. (In Britain it is included either alone or in association with other plants in summer bedding schemes.)

Because of the habit of the stems continuing to grow even after the leaf is fully developed, this plant is a suitable subject for growing in a basket. Line your basket with black polythene or moss and fill with your growing medium. Firm this and plant a single plant from a five inch diameter container in the center. Place in a glasshouse in light shade in a temperature of 65° and in six months the drooping leaves will completely hide the basket

from view.

Whilst the prime use must be as a foliage plant, there is an added bonus in its profusion of pink flowers. If a feature is to be made of these, your plants will need a little more attention. Containers of about 8 inches in diameter should be used and your plants established in these no later than October. When the plants have filled their containers with roots, apply chemical feed at regular intervals. Because of the drooping habit of the leaves, it is desirable to raise the plants to clear them from the bench. Where the leaves touch the bench, dead patches will occur which will spoil the appearance of the plants. During the winter allow maximum light, maintain moderate humidity and a minimum temperature of 60°.

'Cleopatra' is a *Begonia* with so many good points and scarcely any faults that it is deserving of much greater popularity.

My thanks to Mr. Rudolf Ziesenhenne who provided the information about parentage and registration.

(Editors note: Begonia 'Maphil' was propagated by a commercial nursery and renamed 'Cleopatra'. Unfortunately other well known Begonias have been renamed by nurseries from time to time. This has led to confusion in the nomenclature of Begonias. To be sure the plants you purchase are true to name, patronize the advertisers in The Begonian.)

6th ANNUAL EASTERN CONVENTION

The 6th Annual Eastern Convention and Show, hosted by the Buxton Branch of the ABS, is to be held October 7th, 8th and 9th, 1971 at the Sheraton Motor Inn in Lexington, Massachusetts. Included in the convention will be a talk by Mrs. Joy Logee Martin. Her lecture, "Kinds and Culture of Rex Begonias" will be held following lunch Saturday afternoon at the Northeastern University greenhouses in Woburn, Mass.

Mrs. Martin is the daughter of William D. Logee who established the Logee Greenhouses in Danielson, Conn. in 1892. She and her late husband, Ernest Martin, her sister Faith and her brother Richard have shared in the operation of the greenhouses which have long been known for rare and exotic house plants, particularly *Begonias.* Their extensive *Begonia* collection includes many species as well as their own splendid strains and introductions.

Mrs. Martin, a charter member of the Buxton Branch, is an excellent speaker and has the ability to project her love of plants to others. She is nationally accredited instructor for the National Council of State Garden Clubs and has done much to further their knowledge of *Begonias.* It is always a privilege for the Buxton Branch to meet at Joy's and to accompany her on a tour of the greenhouses. Her contribution to the world of *Begonias* cannot be measured.

The flower Show Chairman, Mrs. Orpha Fox, has been growing *Begonias* long before there was a Buxton Branch. She has been a member of the Branch since 1946 and was privileged to know Bessie Raymond Buxton. Mrs. Buxton exerted a great influence on Orpha's hobby through constant encouragement and sharing her love and knowledge of *Begonias.*

Orpha has served as President of the Buxton Branch on two different occasions and has been Secretary of the Branch for twelve years. Most of her extensive collection of 600 *Begonias* is grown under lights. She laughingly comments that her family forced her into the basement with her ever growing collection. Her greatest interest is species *Begonias* which she grows mostly from seed. At one time she concentrated on cane *Begonias* and became quite expert with this division.

As Flower Show Chairman for the 6th Annual Eastern Convention, Orpha has been conducting a monthly workshop for the Branch to prepare our many young new members for the show. One of her many delightful assets is her ability to share and communicate with others.

CLAYTON M. KELLY SEED FUND

BEGONIAS FROM SEED — SOWING AND GROWING — Gives step-by-step, easy to follow instructions and encouragement for beginning seed growers. Price 25¢.

No. 1 — B. convalliodora A. DC.

Formerly offered as B. Venezuela sp. No. 1003 but properly identified as given here. *B. convallidora* has been found growing in various countries and is said to be one of the most beautiful *Begonias* in cultivation. See cover picture July 1967. Price $1.00 per pkt.

No. 2 — B. friburgensis

Fairly new species from Brazil. Rhizomatous, red, thick, leathery leaves, shiny and dark green on top, red underneath. New leaves show only red and are folded like a cockscomb. Tall flower stems bear heads of white and pink flowers. Choice and beautiful but requires greenhouse or protected place. Price $1.00 per pkt.

No. 3 — B. micranthera var. foliosa

Much branched, medium plant with white flowers. Dioeceous (i.e., plants either male or female). Price $1.00 per pkt.

No. 4 — species

From Hydrystyles section. Unidentified and probably undescribed. A vigorous plant with large inflorescence with small flowers which are brick-red on the outside. A very distinct species. Price $1.00 per pkt.

No. 5 — B. parvifolia

A species of the Begoniastrum section with deep pink flowers. Would be quite nice if the internodes were not so long. Price $1.00 per pkt.

No. 6 — B. "pleiopetala"

Note from collector in Europe: "Received from the U.S. (not Seed Fund) under this name; which had been wrongly applied, however. The present plant has rather small smooth leaves and long internodes. The flowers are white. It belongs to the Knesebeckia section". Price $1.00 per pkt.

No. 7 — B. cathcartii India

Rhizomatous with large cordate leaves and white flowers. Price $1.00 per pkt.

No. 8 — B. cinnabarina

Tuberous, fragrant orange flowers. Price 50¢ per pkt.

No. 9 — B. veitchii

Tuberous, large vermillion flowers. Not seen often today. Price 50¢ per pkt.

No. 10 — B. olsoniae syn. B. vellozoana

From Brazil. Herbaceous, 8 to 12 inches tall, stems short, oblique up to 5½ inches long, rooting at the stipules. Leaves oblique, broadly ovate subauriular, cordate, with a closed basal sinus. Palmately eight-nerved, 4 to 5 inches long, 5 to 8 inches broad; hispid-pillose 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* in beauty. Price $1.00 per pkt.

No. 11 — B. masoniana syn. 'Iron Cross'

From Maylaya, seeds produced in Europe. Plant introduced by Mason in 1952. Leaves are large and puckered; nile green; marked with contrasting bold pattern of brown-red resembling an iron cross. Stems are white-hairy and reddish. Flowers are waxy, greenish-white, maroon bristles on back. Sometimes seed are slow to germinate, therefore, conditions should be carefully watched and seed pans should not be allowed to become too dry. Price $1.00 per pkt.

PLEASE NOTE: As anticipated when we offered seed of *B. rajah* recently, there were not enough to fill all requests and the usual disappointments, plus accusations of the Seed Fund playing favorites. I no longer pay attention to such statements and as I explain each time *B. rajah* is offered, it is a sparse seed setter and seed are only offered because we want this plant more widely distributed. It is

the only fair way I know how to do it. We hope to have more seeds as soon as someone will make the effort to produce them but there will never be large quantities of them. I do not know many of the people personally who write to the Seed Fund for seeds so it would not seem likely that I would set aside all of the rare seed just for a few. I cannot do the impossible and I do appreciate all of the wonderful people who support the Seed Fund but PLEASE do not expect me to perform miracles. Also, I want to apologize for some times being late in getting your seed in the mail. I am doing all of the work alone and like other people, I have other responsibilities. I live in a warm section of California and the dozens of hanging pots and containers sometimes have to be watered several times a day in summer. Then there are five felines that live with me who require as much attention as the plants so again, I am sorry when I can't always get the seed out promptly. Your patience and kindness is appreciated.

Please send request for seed to:

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

BEGONIA BASICS
for Beginners

by Elda Haring, *Greenwich, Connecticut*

Propagation:

With all the different methods set forth for propagating *Begonias,* beginners are often reluctant to attempt to root cuttings. Propagation of *Begonias* is really quite easy. There are only a few that are difficult. Rules for propagation might seem tedious to the inexperienced but they need not be. Sophisticated and expensive containers are used by hobbist such as plastic shoe boxes and bread boxes or terrariums. Frankly, I have never used these being content to make use of what I have around the house. Containers for propagation can be flower pots, aluminum foil loaf pans, market-paks, cottage cheese cartons, plastic ice cream containers or even tin cans. The one pound Crisco can is a good size to use for propagation. For the beginner, it is wise to punch holes in the bottom of the container for drainage. Containers should be at least two inches or more in depth. While cuttings of *Begonias* will root in water, the tender roots are damaged when the cutting is potted. A rooting medium to which roots will cling is preferable. If you must root cuttings in water do use a shallow bowl and cut stems so that they will be no longer than 2 inches. If the stem is long you will have a leggy plant. Cuttings of *Begonias* will often root right in your usual potting soil but there are a number of rooting mediums that produce few failures even with those plants having the most exacting requirements. For my own use, as my readers know, I prefer a mixture of 1/3 milled sphagnum moss, 1/3 horticultural vermiculite and 1/3 perlite (also known as Sponge Roc. Ed.) Peat moss can be substituted for the sphagnum moss and sand can be substituted for perlite. A mixture of ½ peat and ½ sand is also a good rooting medium. The various packaged potting mixes are excellent to use as are the soiless mixtures known as "Jiffy-Mix" and "Reddi-Earth" which are based on the famous "Cornell peat-like Mix". A mixture that was formulated at Cornell University especially for commercial growers who are now finding it difficult to obtain large quantities of soil for greenhouse use. This mix is excellent to use not only for seed sowing and propagation but for potting as well. Contrary to a popular notion, the Cornell-Mix does not contain any perlite. The receipe is really very simple. Use 4 quarts of screened peat moss, 4 quarts of horticulture vermiculite, 1 level tablespoon of agricultural

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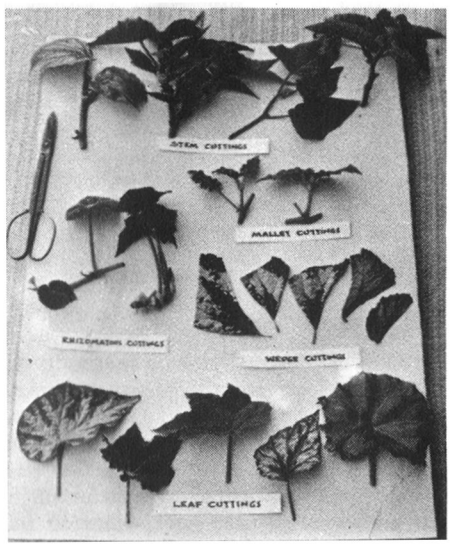
limestone and 2 tablespoons of a commercial fertilizer such as 5-10-5 or 6-6-6. Place mixture in a large plastic bag and shake it up well so that all the ingredients are thoroughly mixed. Add 2 quarts of warm water and mix again letting this mellow in the bag for at least 24 to 48 hours. This latter step is most important for every bit of the mix must be thoroughly moistened before using. Many failures have resulted because there was dry material in the mix when cuttings were inserted and this important point cannot be emphasized enough.

When you plan to do any propagating, fill containers leaving about ½ inch space at the top. Place them in a laundry tub or sink or other shallow vessel with water to a depth of 2/3 the height of the container. Let the pan soak over night. If the pan seems quite heavy, the mix will likely be moist enough; if the pan seems light, let it soak until it does feel heavy and you can be certain that there is no dry material in the medium. Containers with cuttings should be placed in good light but not in the sun or where drying winds will damage the leaves or dry out the mix. Although I have a home greenhouse where it is easy to start cuttings, I often have pans of cuttings on a chest at the window in my workroom or in the cellar windows, under fluorescent lights and I must admit, often on my kitchen counters. If cuttings must be placed out-of-doors for rooting, they should be placed out of the sun in a shady place and protected from drying winds. If you live in a semi-arid area, the containers should have a tent of plastic over them but prop up the tent to be sure the plastic does not come into contact with any part of the cutting.

Ideally, spring is a good time to take cuttings but may be taken at any time of the year. Choose good sturdy shoots, firm rhizomes or in the case of leaf cuttings be careful to choose the firmest ones on the plant. Old leaves on the outside are not a good choice nor are the newest most tender ones. Place the stems in water overnight before inserting them into the rooting medium. This is especially important if you have obtained cuttings through the mail or have begged them from another hobbyist and transported them out of water. After cuttings are inserted into the mix, water the medium again to settle the mix around the stem. Make sure medium is moist at all times but never sopping wet.

Stem Cuttings:

What we call stem cuttings are the ends of the branches whether they are horizontal or straight. Cut about three or four inches of stem depending upon the growth of the plant as illustrated in the photo. The stem should be inserted ½ to



From Top: Stem cuttings, Mallet cuttings, Rhizome cuttings, wedge cuttings, leaf cuttings.

Photo by Walter J. Haring

2 inches in the medium, removing the lower leaves only if they will be buried in the mix. Experts tell us to remove flowers but I often ignore this advice and my cuttings produces buds and blossoms while it is rooting. However, pinching out the flower buds will often force the cutting to produce side branches which eventually makes a nice well branched plant.

Rhizome Cuttings:

Rhizomes are thickened root stems some being quite large and rope-like as on the "lettuce-leaf" types and others quite slender as those on the *pustulata* group. Choose a rhizome with a leaf or two on the end and plant slantwise in the mix, in-

serting it to a depth of ½ to 1 inch and if it is too heavy to stand up, let the leaf end simply rest on the mix. Some rhizomes are naturally upright. This kind can be inserted into the mix in an upright position.

Mallet Cuttings:

These cuttings are easy. If you have a spreading plant like B. 'Catalina', B. 'Richmondensis' or *B. cubensis* you will note that beside leaves and flowers on the tips, the long stem will have developed a few branches along its length. Cut the shoot so that there will be ½ inch of stem on either side of the newly developing branch. Push this "mallet" into the soil so that the leaves stand upright.

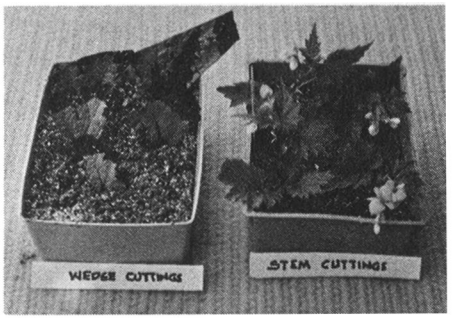
Leaf Cuttings:

Take leaf cuttings with about 1½ inch to 2 inches of stem, inserting the stem upright in the mix. If the leaf tends to fall over, prop it up with a tooth pick. If you have taken leaves from *Begonias* with velvety or hairy leaves, do not allow any portion of the leaf to rest on the mix for there may be danger of rotting. Single leaves can be planted in rows in your container or placed directly into mix in 2 or 3 inch pots as you see in the photograph.

Stem cuttings ready for potting. Leaf cuttings rooted in pots.
Photo by Walter J. Haring

Wedge Cuttings:

Wedge cuttings are usually used for rex *Begonias* or some of the large leaved ones like 'Ricky Minter'. Cut the leaf with wedges as illustrated in the photo and insert pointed end in the mix about ¾ inch. Beginners, I believe, would be more likely to succeed with single leaf cuttings



Wedge cuttings and Stem cuttings.
Photo by Walter J. Haring

but you may want to try the wedge cuttings.

Depending on conditions where you live, cuttings should be well rooted within 2 to 3 weeks. If on giving a gentle tug to your cuttings it gives a firm resistance, you may be sure that adequate roots have formed. At this point cuttings may be potted into individual pots. Use 2 or 3 inch pots depending upon the size of the cutting and the root ball. Place a thin layer of soil in the pot, positioning the cutting in the center and fill in around the stem. For a compact plant, the crown or lower leaves should be at soil level not up high out of the pot. Soil should not be level with the top of the pot but a space of at least ¼ inch left for watering. The soil used for potting should be slightly moist, not bone or dust dry. Water the newly potted plant making sure that it drains well so that the roots will not be water logged. Then do not water again until the soil in the pot is approaching dryness. That is, it should still seem a little moist. Never let the potted cutting dry out completely for you may lose your new little plant. After 8 to 10 weeks, knock the plant out of the pot to determine if it needs more root room. If all the soil clings to the roots, retaining the shape of the pot, it should be shifted to the next larger size pot. If, however, there is still a layer of soil in the bottom of the pot, replace the plant and wait until the pot is filled with roots before shifting to a larger size.

(The containers with drainage holes in the bottom should be set aside for a time to allow the excess water to drain before inserting cuttings. Ed.)

ROUND ROBIN NOTES

Growing under lights:

Joanne Yunghans of Kansas has been experimenting growing different plants under Gro-Lux, wide spectrum Gro-Lux, and cool white tubes. She finds that mature African Violets bloom heavier but the foliage seems to bunch and distort, similar to mite infestation, under Gro-Lux tubes. In order to counteract the distortion, she feeds the plants more often to keep up with the accelerated growth process which was stimulated by the Gro-Lux light. Wide spectrum seems to over stimulate the growth process almost as much as Gro-Lux. Under cool white tubes she doesn't have the growth distortion and does have good bloom and doesn't have to fertilize as much. She also has found that plants that need high light intensitites to bloom, such as geraniums, gloxinias, *Smithanthias* and *semperfloren Begonias,* bloom better under Gro-Lux and wide spectrum lights. Ferns do better under cool white lights for her. She has also found that when the temperature is extremely high or low, the lights do not have to be on as many hours because the extremes in temperatures slows the growing process in the plants. Joanne has better germination on the *Begonia* seeds if she gives them the light at the end and sides of her tubes, especially those that don't have to have absolute dark for their germination.

Flight No. 9 Florida:

Members of this Florida flight compiled a list of *Begonias* and their time of bloom. The most constant bloomer on their list was a German seedling B. 'Preussen' ('Preusen?).

B. 'Brooks':

Jay Neal of England describes her B. 'Brooks' (provisional name given to an unidentified Mexican species that is also sometimes called 'Checkerboard') as a small creeping plant with waxy, angled rather than lobed leaves. The leaves are olive green, marbled with lighter veining, red-backed with green veins. Stems are red and shiny and flowers white, so far all male. The plant rests after flowering and is slow to restart. But her old plant started up from three separate centers of rhizome, instead of just one.

B. squarrosa:

Thelma O'Reilly of California was surprised at the change in her *B. squarrosa* (syn. *hepatica maculata)* as it matured. From what had been a small plant for some time, the rhizomatous species from Mexico was carrying three leaves that measured 6 x 8 inches. Gorgeous!

B. bowerae:

Sharing and comparing has made Thelma aware that some wrong versions of the small leaved "eye-lash" Mexican species, *B. bowerae,* was circulating throughout the world. The species is a wee plant, the tiniest rhizomes of any she has seen. It is becoming very scarce in cultivation and she hoped that members would not let this wee gem disappear. Two of Jay Neal's hybrids were nearly as small after a year of growing.

B. bulbillifera Link & Otto:

Another Mexican species, this time a tuberous one, *B. bulbillifera,* was described by Thelma as having an unusual habit of growth. It throws off bulbils from the leaf axils like a penny machine. Hers awakened from dormacy very late and then took off like a firecracker. Others have noted that this *Begonia* takes a bit of sun to bloom. It is one that was accidentally introduced into cultivation, germinating in the soil on plants sent by Dr. Scheide from Mexico to the Botanical Gardens of Berlin in the early 1800's.

Hybridization:

Seedlings from Thelma's cross of *B. incarnata* x *B. pearcei* (crossing a pink-flowered, stemmed, and bushy species with a yellow-flowered tuberous one) grew to 4 inches tall with striking markings from *B. pearcei* on the velvety green leaves. Then one by one they died from the soil line as if they were gassed. Jay Neal had the same experience with seed shared with her. Lethal genes, they both suspected.

New flights on *Begonia* propagation and growing *Begonias* from seed have been launched. If you want to be part of a flight, write to:

Mrs. Anita Sickmon
Round Robins Director
Route 2, Box 99
Cheney, Kansas 67025

CORRECTION

In the Latin Diagnosis on page 163 of the July 1971 "Begonian" please correct the first sentence to read: *Begonia (sectio Irmscheria* Ziesenh.) **mauricei** Ziesenh. *sect. nov,* etc.

R. Ziesenhenne

CORRECTION

This article corrects errors on page 156 of the July "Begonian". Walter J. Barnett has been Treasurer of the ABS since 1966.

I am a graduate of the college of the city of New York, with a B.B.A. degree in Accounting. I was a senior accountant on the staff of a large national accounting firm for several years prior to, and after two years of service in the U.S. Navy during World War II. During my Navy service I was stationed at Port Hueneme, California for ten months before I went to the South Pacific.

I returned to California in 1947, and was licensed by the State of California as a Public Accountant. I established my own accounting practice in 1957.

Walter J. Barnett

FROM AUSTRALIA TO THE EDITOR

(From the Department of Botany, Lae, New Guinea to John Scott, Australia)

"*Symbegonias* are usually found from 5,000 feet upwards. They are delicate little plants of semi-shaded creek banks, usually growing close to water and where there is fairly regular water run off. Another habitat is alongside walking tracks in light undergrowth where there is broken sunlight and ample water.

"We find them impossible to keep alive on the coast but they transfer very readily to shaded gardens in our high altitudes. There are some very fine plants growing in mixed foliage beds in areas such as Mt. Hagan (6,000 ft.). There are several leaf colors, ranging from vivid light green to dull red and the flowers are white through shades of pink. The plants are clump forming and less than 10 inches high. The leaves are about 1 inch in length and up to 1 inch across at the widest part.

"This genus has some 12 species, all native to New Guinea. Our experience indicates that the supposed species are very closely related and may not really be distinct. No detailed study has been made of the species of this genus".

MORE ON SYMBEGONIA

(From J. Doorenbos, *The Netherlands)*

The first *Symbegonia* bloomed white and had bronze green foliage. The second species is purplish brown throughout with soft brown hairs on stems and petioles and bristly hairs on the upper side of the leaf. The leaves are oval, very oblique at the base, of a somewhat crinkly appearence because of the sunken veins, with denticulate margins. The flowers are bright red. This may be *Symbegonia strogosa* Warb. (although flowers and fruits are more like those of *S. sanguinea* Warb., but this has lanceolate, almost smooth leaves.)

In 1911 a plant flowered in England and was pictured in the Botanical Magazine (tab. 8409) as *Symbegonia fulvovillosa* Warb. Irmscher pointed out that it does not tally with the description of this species and named it *S. mooreana* Irmsch. Apparently it disappeared from cultivation long ago.

GLOSSARY OF TERMS FOR THE BEGONIANIST:
Plant Anatomy

by Fred A. Barkley and Kamil B. El Tigani[1]

One of the major groups of terms and concepts with which the begonianist needs to become familiar, concerns the development and structure or anatomy of the *Begonia* plant. While much has been studied and written concerning anatomy of plants, there is much that yet needs to be studied about the particular anatomy of the various types of *Begonia.*

All plants are composed of cells (*see* Plate I figures 1 and 2). New CELLS always arise only from the division of previously existing cells. From a very early stage all of the plant cells are covered with a wall of cellulose (the primary cell wall). Inside the wall is the living PROTOPLAST, consisting largely of CYTOPLASM and NUCLEUS. Inside of the cytoplasm is a liquid VACUOLE which contains various dissolved substances; the vacuole is not considered to be alive. From time to time, other substances may be added (inside) to the primary cellulose wall, after it has attained its adult size and shape. One of these substances is lignin, which is very hard, and its deposit on walls of cells make the cells of wood and the cells of the shells of nuts, tough and hard. Such hardened cells are termed SCLERENCHYMA. The commonest type of cells in plants are the thin walled, equal diametered (isodiametric) cells called PARENCHYMA. These parenchyma cells are so abundant and in so many parts of plants that they are called collectively "GROUND TISSUE".

Upon germination, the *Begonia* SEED produces an EMBRYO which has a RADICLE, two COTYLEDONS and a PLUMULE. Since the seed is microscopic all of the parts of the SEEDLING (*see* Plate I, figure 3) are extremely small, and all develope very considerably in size as germination proceeds. As the radicle developes into the ROOT, the embryonic seed leaves (cotyledons) are pushed upward by the growth of the HYPOCOTYL, the stem-like portion between radicle and the cotyledons. The only opposite "leaves" in *Begonia* are the cotyledons! Connecting the cotyledons and the plumule is the EPICOTYL. The plumule grows rapidly producing the first true LEAVES and the BUD that gives rise to the STEM. (The region in the hypocotyl where the root and stem join is called the CROWN.)

The stems are divided into INTERNODES, the portion of the stem between the attachment of the leaves, and the NODES, where the leaves are attached. *Begonia* has ALTERNATE (one leaf at a node) and DISTICHOUS (two rows of leaves on the stem), arrangement of its leaves.

The leaves of dicotyledonous plants internally are rather sterotyped in general. Passing through the PETIOLE or leaf stalk, is a vascular strand or vascular strands with the xylem above and the phloem below, with thick-walled supporting cells, called sclerenchyma, surrounding them. These in turn are embedded in a mass of parenchyma "ground tissue". On the outside is a layer of rather rectangular cells, the EPIDERMIS. In the LAMINA or blade of the leaf is an epidermis above and below, composed of one layer of cells (or in some *Begonia* composed of two to several layers**). In the center of the leaf is a green MESOPHYLL or CHLORENCHYMA, consisting usually of a layer of closely packed, elongated PALISADE PARENCHYMA above, and below very loosely packed cells, the spongy parenchyma, in which there is much air-space between the cells. The lamina is supported by a 'skeleton' of VEINS which are a branching continuation of the vascular tissue of the petiole. The outside wall of the upper epidermis usually has a covering wall layer of waxy substance, the CUTICLE. The lower surface may have a thinner layer of cuticle, and has a number of specialized paired cells called the STOMA (plural stomata) or special pores through which gases pass into and out of the

1. Department of Biology, Northeastern University, Boston Massachusetts 02115.
The writers are grateful to Miss Barbara Ratti for her preparation of the diagrams used.

2. **See: Barkley, Fred A. & Kalil S. Boghdan. BEGONIA LEAVES. The Begonian 35: 64-67. 1968.

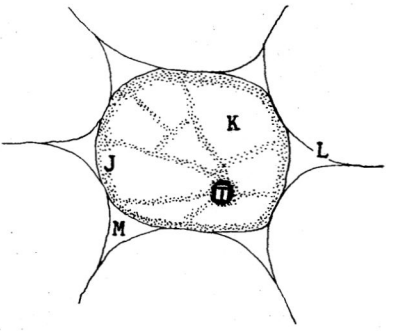


Figure 1

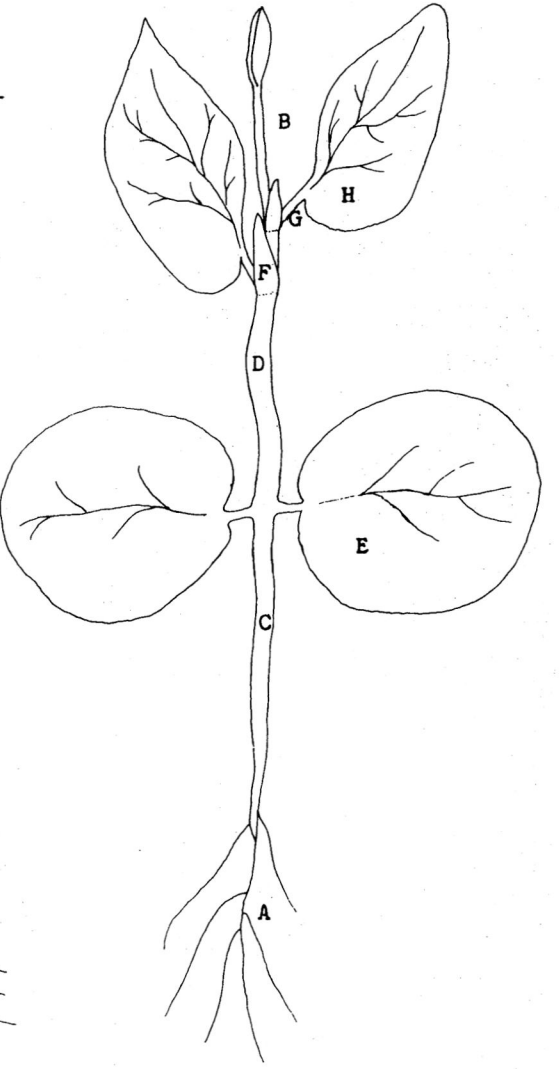


Figure 3

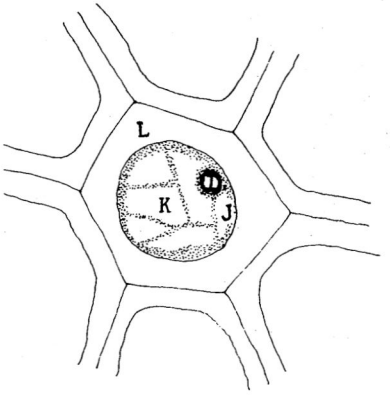


Figure 2

PLATE I

leaf, a movement as necessary to the life of the plant as breathing is to mammals. (The grouping of the stomata in *Begonia* is rather unusual and needs to be studied from various sections of the genus.)

Various types of glandular and non-glandular TRICHOMES (hairs) and SCALES are found on leaves, inflorescences and stems of many species of *Begonia.*[***]

Growth in length of the stem and root is due to the activity of a group of embryonic, rapidly dividing cells at their tips called the growing-point or MERISTEM (*see* Plate II "A"). In the case of the root, the meristem not only produces increases in length of root, but produces a group of cells that form, over the end of the root (with its delicate meristem), a protective covering, termed the root-cap (*see* Plate II "B"). The delicate apex of the stem in many plants is protected by the bud scales, but in *Begonia* (which lacks bud scales) by the stipules of the developing leaves!

Ordinarily branches of the stems and roots are produced in a particular manner peculiar to each. The lateral roots are produced deep within the root (*see* Plate II "M") by a division of the parenchyma cell of the pericycle to form a root growing-point from which the lateral root developes, while the lateral branches are produced by divisions of parenchyma cells in the axils of the leaves just inside of the epidermis. (In *Begonia,* in addition to the 'normally' produced roots and stems, ADVENTITIOUS stems and roots are very common. (These are roots, stems, or buds or even leaves produced on the lamina or petiole of leaves.) Any plant organ produced in a position unusual and not produced by the meristems of stem or root, are termed 'adventitious'. The ease with which these are produced in *Begonia* is used to advantage for vegetative reproduction. In many species of *Begonia* a cut leaf-stalk either dipped in rooting harmone or not, placed in water or in soil will not only produce adventitious roots, but also adventitious EMBRYOS which will develope into new plants. Plate IV shows the first initiation of such an embryo with the divisions of parenchyma cells near the surface of the cut petiole of a *Begonia* leaf.) The success of CUTTINGS is due to the formation of adventitious roots on cut stems which are planted in soil or placed in water.

In both stem and root, the cells cut off by the meristem cells all look alike at first: small, more or less cubicle, cells, However, as they enlarge they specialize, so that a short distance behind the meristem, the cells are larger and of various shapes. The particular type of cell which develope seems to be due to the particular region of the plant in which they mature.

In *Begonia* the diameter of the root is almost invariably very much smaller than that of the stem. In the center of the root (*see* Plate II) as it is laid down at the stem tip, is a tissue-system of thick-walled, elongate XYLEM cells that function to carry water and minerals (but which function only after they are dead!) Just outside of this is a layer of parenchyma cells, which will have importance in further growth of the root. The xylem usually has longitudinal furrows and ridges.

(Since the maturing of tissues of a growing root appear very different as one goes back from the growing-point, (*see* Plate II) has three diagrammatic cross sections placed just below the places where the sections would have been cut.)

In the furrows of the xylem are laid down (by the meristem) strands of elongated and rather thin-walled cells, the PHLOEM. The phloem cells have very thin areas in their end-walls which allow for the passage of dissolved food material. They function only when alive. Outside of the Phloem is a layer of parenchyma cells, usually several cells in thickness, called the PERICYCLE. (As already noted, it is in the pericycle of the root that lateral or secondary roots normally originate.) Outside of the pericycle is a single layer of cells, the ENDODERMIS, which cells are isodiametric and thin-walled except for their much thickened end walls. These tissues and tissue-systems collectively constitute the STELE of the root. The two other regions of the root are the single layer of thin-walled cells at the outside of the root, the epidermis, and the many layered cortex between the stele and the

3. ***See: Boghdan, Kalil S. Pubescence in Begonias. Northeastern University Thesis. (Unpubl.) 1967.

Barkley, Fred A. & Kalil S. Boghdan. Begonia Trichomes. The Begonian **36**: 130-132. 1969.

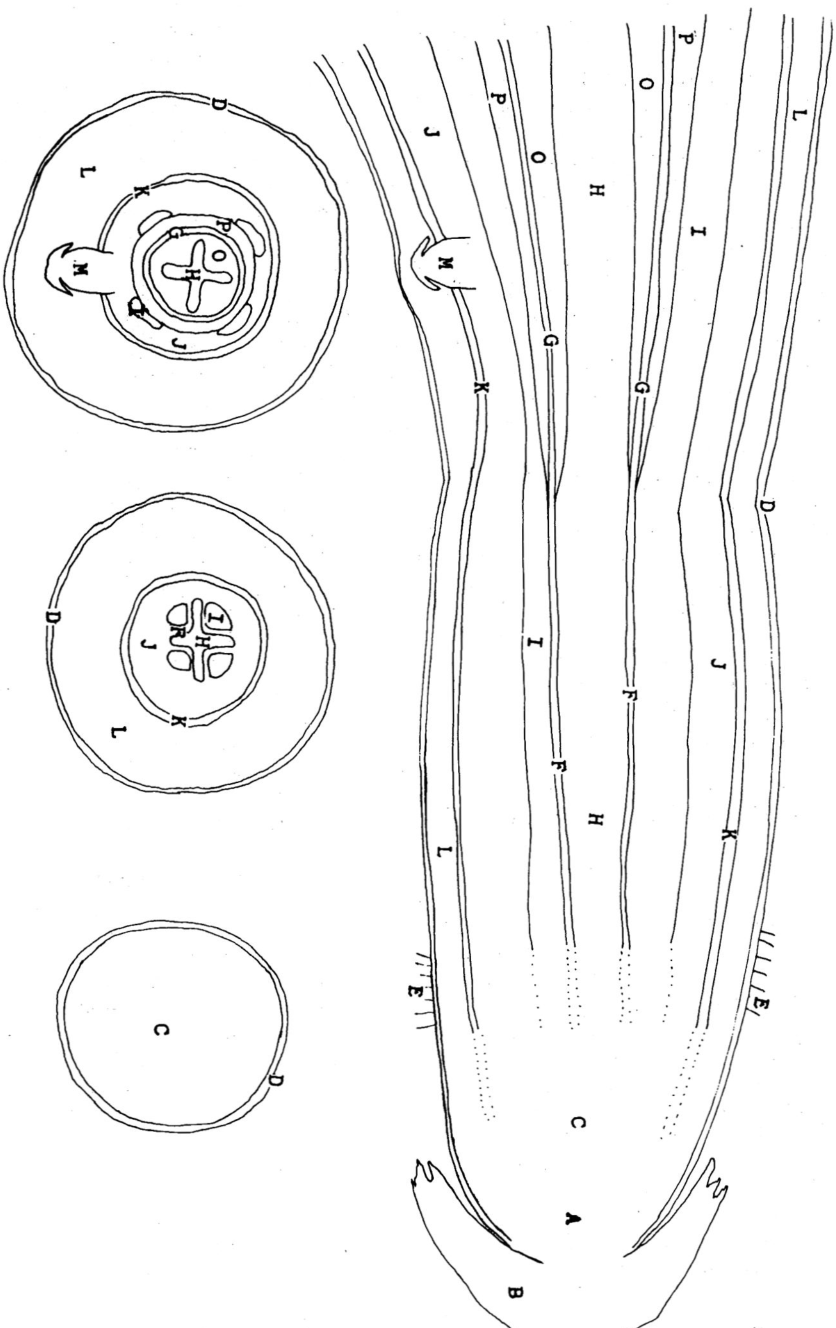


PLATE II

epidermis. Ordinarily in the root, the cortex is composed solely of parenchyma.

A short distance back of the growing point, the cells have attained their full size and mature shape. Then the epidermal cells send out long tube-like extensions, called ROOT-HAIRS, which function in the absorption of water and minerals from the soil. The root-hairs function for some time, but eventually disappear as more are formed nearer the meristem.

That describes the common condition of the root of flowering plants as it is produced by the root meristem. The root so constituted is the PRIMARY GROWTH of the root, and contains the PRIMARY TISSUES. Further growth of the root is in diameter only and initially is due to the division of the parenchyma cells in the layer between the primary xylem and the primary phloem. This layer begins to divide and produce cells toward the inside and then to the outside, and it itself produces the VASCULAR CAMBIUM. The tissue the cambium produces are SECONDARY VASCULAR TISSUES. Thus with growth from the vascular cambium the secondary phloem becomes a continuous cylinder of tissue around the xylem, whereas the primary phloem was isolated strands. (In herbs the secondary growth of roots and stems is usually limited as contrasted to trees where the secondary tissue may be hundreds of diameters more than the primary tissues.)

Growth from the apical meristem of the stem is very much like that of the root, except that it produces a great deal more parenchyma than is produced in the root. In the stem the vascular tissue (xylem and phloem) is laid down as strands, with the phloem strands external to those of the xylem (*see* Plate III), and in the center of the stem is a pith (of parenchyma cells), sometimes the pith is only half of the diameter of the stem and sometimes much greater (as to be found in rhizomatous *Begonia*). There are 'rays' of parenchyma between the vascular strands leading to the parenchyma of the cortex. In most plants there is a strand of long, slender sclerenchyma cells, called BAST or PERICYCLIC FIBERS, just outside of each strand of phloem, but in most *Begonia* stem bast fibers are inconspicuous or absent. In the stem, the cells of the endodermis are scarcely differentiated from the parenchyma of the rays and cortex. The cortex is comparatively thinner in the stem than in the root. The inner portion of the cortex is composed of large parenchyma cells, which there is a narrow cylinder of collenchyma cells just inside of the epidermis****. These cells are elongate and thick-walled. The outermost layer of parenchyma of the cortex in *Begonia,* just inside of the collenchyma, is sometimes crowded with chloroplasts. The cells of the growing point produce the parts of the stem mentioned above, the primary tissues of the stem.

A single layer of cells in the vascular bundles between the xylem and phloem begins divisions and becomes the vascular cambium of the stem, producing secondary growth in the stem (compare figures 1 and 2 of Plate III). The cambium produces xylem to the inside and phloem to the outside. In *Begonia* the secondary xylem production is very limited, and in some species there is no production of cambium in the PITH RAY which lies between the primary vascular strands as there commonly is in the stem of dicotyledons.

In many plants patches of parenchyma cells of the cortex begin to divide near the surface to produce cork. These dividing cells are termed PHELLOGEN or CORK CAMBIUM. In most species of *Begonia* there is little or no production of cork and in those which do have cork production, a continuous layer is produced around the stem, so that the stem rarely becomes split and furrowed as the "bark" of many plants.

When a leaf or inflorescence prepares to fall, cells divide to produce an ABSCISSION layer***** and cork covering over the area of attachment of the leaf. When a stem, root or petiole is injured, similar

4. ****The collenchyma of the stems of Begonia need further study, since they do not appear as typical collenchyma, but more like the cells of the multiple epidermis of many Begonia leaves. Mr. Y. S. Lee will probably be able to answer this question in his comparative study of stems of Begonia.

5. *****See: El Tigani, K. B. Anatomy of Stem and Leaf Abscission in two species of Begonia. Northeastern University Thesis (Unpubl.) 1969.

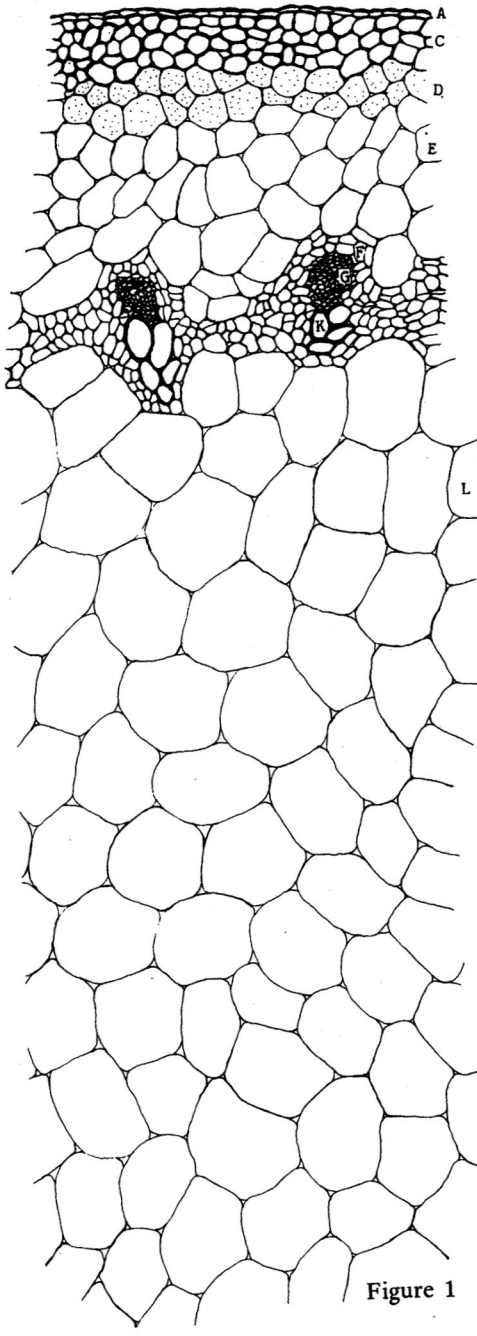


Figure 1

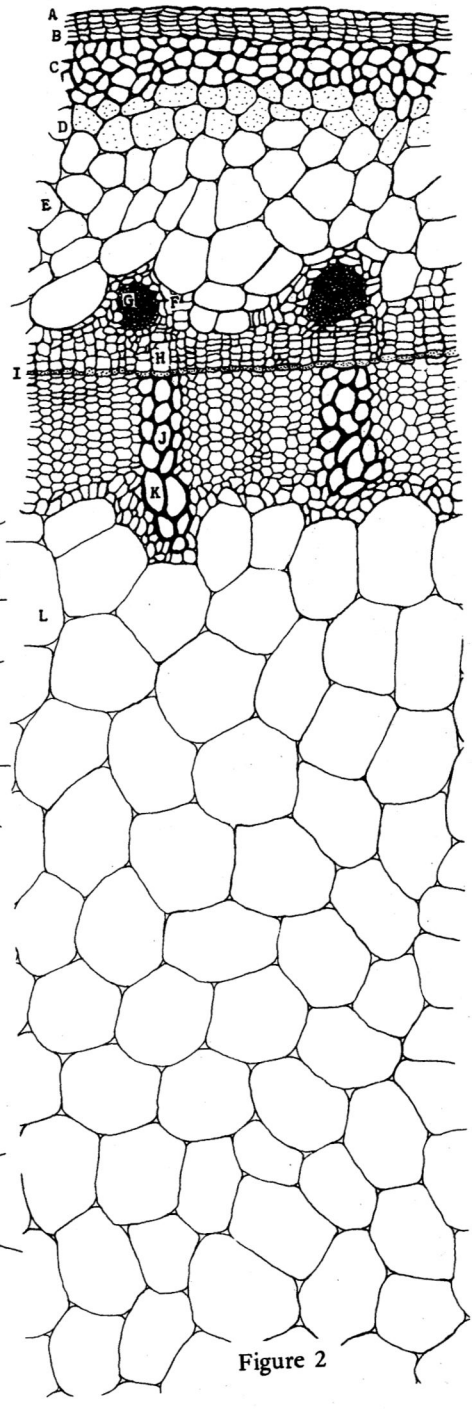


Figure 2

PLATE III

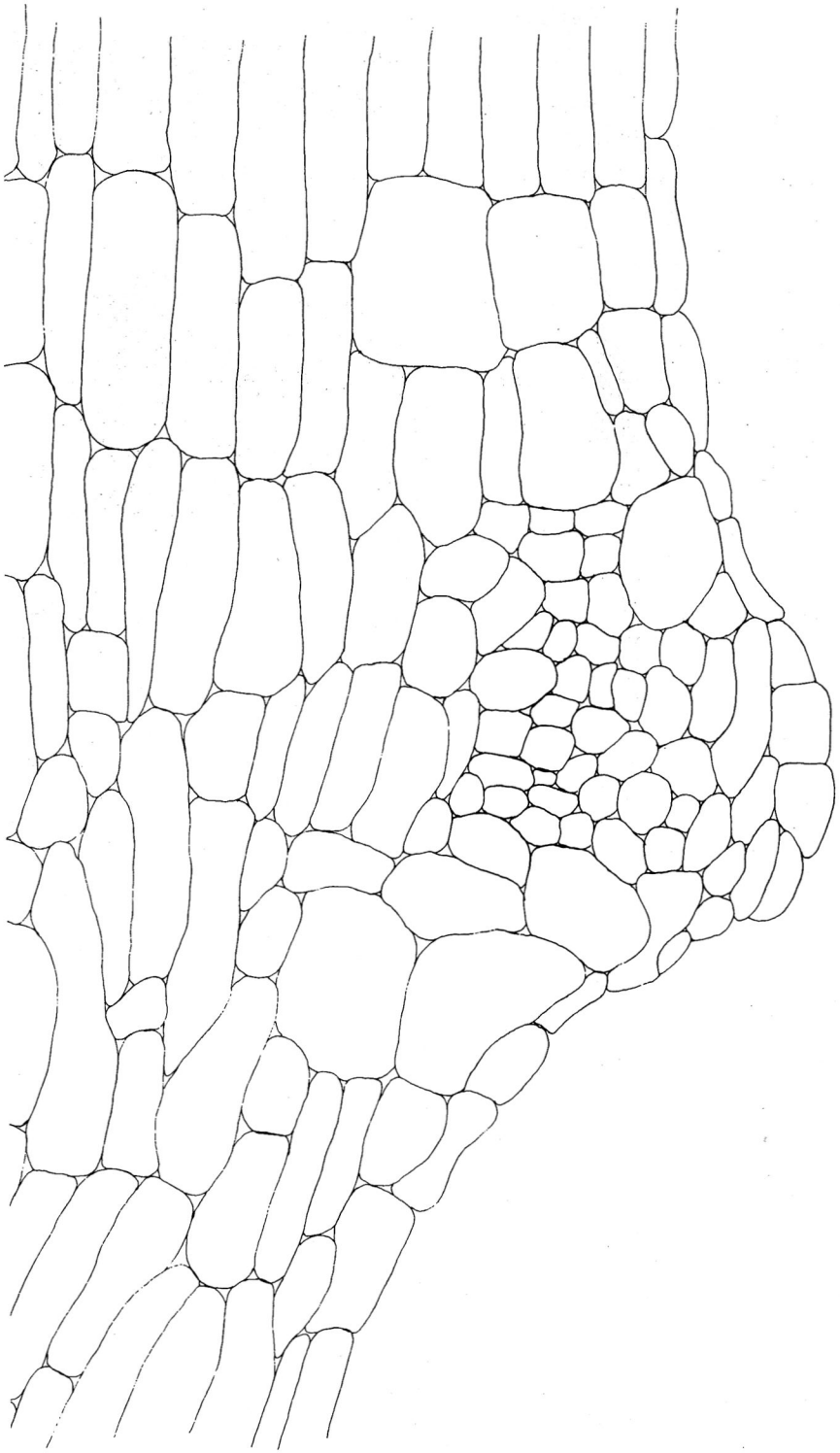


PLATE IV

cell division occur rapidly, again covering the exposed injured area.

As the vegetative shoot apex or lateral (axillary) bud becomes a reproductive one, the shape of the central region of the meristem changes so as to accommodate upon its surface new kinds of appenddages******, namely the floral parts. Depending on the species, primordia of SEPALS and PETALS (in *Begonia* collectively termed TEPALS), and either stamens or pistals appear in a definate order on the floral meristem. The tepals are more or less leaf-like in their anatomy, but they are generally simpler in detailed structure.

A sepal consists of two epidermal layers, between them is a ground parenchyma or mesophyll, consisting of isodiametric cells. These cells are commonly found to contain chloroplasts. The epidermal cells are covered by a layer of waxy cutin, and shows the development of stomata and often trichomes.

The cuticle that covers the epidermis of the petals, is rarely smooth, which gives them their characteristic texture, The cells of the mesophyll contain chromoplast or pigments, that cause the coloring of the petals.

A STAMEN consists of a FILAMENT with cutinized epidermal cells and vacuolated parenchyma cells of the ground tissue, and usually a two-lobed ANTHER in which pollen grains are produced. The pollen mother cells produced in the anther sacs are surrounded by a number of cell layers in the wall of the pollen chambers, from the outside inward the epidermis, endothecium, middle layer and tapetum. The latter is concerned with the nutrition of the pollen mother cells and young pollen grain and it disintegrates with the maturation of the pollen. Vascular tissues permeate the mesophyll of all of the organs of the flower.

In the OVARY the CARPELS develope and are regarded as fertile leaf-like structures. This is because each carpel bears OVULES along the margins, the ovules maturing into SEED as the ovary (FRUIT) ripens. There are three vascular traces in each carpel, a condition which is found in the foliage leaves. The position of the ovary in relation to the other floral appendages describes the flower as an EPIGYNOUS flower, with the ovary below the tepals. (*Begonia* has separate petals, while *Symbegonia* in the same family has sympetaly or united petals.) While the fruit of *Begonia* characteristically is a CAPSULE with three WINGS there are species producing wingless fruit and some producing berries.

NOTE: This is a brief summary of the most important aspects of plant anatomy as it applies in *Begonia,* but those interested in plant anatomy should consult some of the detailed studies of the subject.

EXPLANATION OF PLATES

PLATE I. Figures 1 and 2 are stem cells. Figure 3 is a diagram of a *Begonia* seedling. In figure 3 note that the cotyledons "E" are without stipules "F", while each leaf is accompanied with 2 stipules. The *Begonia* leaf "F", "G" and "H" is composed of the 2 stipules, a petiole, and a lamina or blade, a lamina which is always more or less assymetrical. The seedling is composed of stem "B" and root "A", and 2 cotyledons "E". Below the cotyledons is a stem portion called the hypocotyl "C" which is elongated and carries the cotyledons above ground, and above the cotyledons is a stem portion "D" called the epicotyl. The cotyledons are two and opposite on the stem; the leaves are always alternate on the stem. Figure 1 is a diagram of a parenchyma (or ground tissue) cell. These always have a rather thin wall "L" and large intercellular air space "M". A nucleus is always present and it is denser in color than the rest of the cell contents, and around the nucleus and the outer part of the cell and those parts connected by strands is the cytoplasm "J". The nucleus and the cytoplasm are the living parts of the cells. The liquid between the strands of cytoplasm, the vacuole "K", and the cell walls are considered non-living. Figure 2 is a cross section of a clorenchyma cell. Note that it is much like the parenchyma cell, but the cell wall "L" is much thicker and there is almost no intercellular air space. The cells are usually much longer than broad.

6. ******This is the basis of a doctoral study underway by the junior author.

A Root
B Stem
C Hypocotyl
D Epicotyl
E Cotyledon
F Stipule of leaf
G Petiole of leaf
H Lamina of leaf
I Nuceleus
J Cytoplasm
K Vacuole
L Cell wall
M Intercellular air space

PLATE II. Longitudinal sectional diagram of a root, and three corresponding cross sections to the regions above them. Note that the parenchyma "F" between the xylem and phloem begins to divide and becomes the cambium which produced the secondary xylem "O" and the secondary phloem "P". Note also that while the primary xylem is very angular, after a short while the secondary xylem is circular in cross section, and that while the primary phoelm is in separate bundles, in secondary growth it quickly becomes cylindrical.

A Meristem or growing point
B Rootcap
C Protostele
D Epidermis
E Root hairs
F Parenchyma
G Cambium
H Primary xylem
I Primary phloem
J Pericycle (parenchyma)
K Endodermis
L Cortex (parenchyma)
M Young lateral root
O Secondary xylem
P Secondary pholem

PLATE III. Stem anatomy in *Begonia.* Semidiagrammatic sections through the stem of *Begonia.* The section to the left shows the stem structure in cross sections as it is laid down from the growing point. The section to the right shows the modification of the primary structure by secondary growth in which the secondary tissues are inserted into (and between) primary tissues. At "B" the cork tissue has been inserted between the epidermis "A" and collenchyma "C", and secondary phloem "H" and secondary xylem "J" is being produced by the cambium "I" between the primary phloem "G" and primary xylem "K". Note that the secondary tissue appears as rows of cells radially arranged.

A Epidermis
B Cork
C Collenchyma
D Chlorenchyma
E Parenchyma of cortex
F Pericycle
G Primary phloem
H Secondary phloem
I Cambium
J Secondary xylem
K Primary xylem
L Parenchyma of pith

PLATE IV. Initiation of embryos on the excised petiole of *Begonia.* (From a study in progress by Stanley Roberts and Fred A. Barkley on the initiation and development of embroys on the petiole of *Begonia.* (Unpublished.) Note the division of cells in an irregular pattern near the epidermis of this petiole, causing a swelling which would eventually result first in roots and then in a bud (an embryo) which would develop in time into a new plant.

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PUBLICATION NOTICE

All material for publication – articles, notices, photographs – should be sent to the Editor, preferably five weeks before date of publication. Deadline is the first of the month preceding month of publication.

Advertising copy and inquiries should be sent to the Advertising Manager.

Condensed Minues of the Board of Directors of the American Begonia Society July 26, 1971

Meeting called to order at 8:00 p.m.; Pearl Benell presiding. After opening ceremonies, 11 officers and 7 Branch Representatives answered roll call. Minutes of Juen meeting approved as corrected.

Treasurer: Balance in General Fund $872.68.

Advertising Manager: Receipts $64.20, unpaid accounts $87.50. Reported on bids for printing stationery and low bid of $62.50 accepted on motion.

Awards Committee: Reported disappointment in scarcity of nominees for the Eva Kenworthy, Herbert P. Dyckman and Alfred D. Robinson Awards in spite of publicity.

Editor: Requested Board's approval for reprints requested by Northeastern University, approved by motion.

Judges Course Director: Reported lessons completed and course will continue with guest lecturers on ferns, fuchsias and shade plants.

Begonia Boat Editor: Final issue in preparation; refund may be due some subscribers.

Flower Show Co-chairman: Reported on no answer to correspondence to hold Convention (1972) in St. Louis, Mo. or Texas. Reported Banquet and prize tickets now available. Entry blanks for Show now available from Cecelia Grivich. Garden Tour to include John Eckstrands garden and Begonia glasshouse at L.A. County Arboretum.

Public Relations Director: Proposed changes be made in Constitution and By-Laws, i.e., President appoint Committee Chairman at Annual Meeting and Membership Secretary's office be divided into two departments: Membership and Circulation. Parlimentarian reported 1st change unfeasable and 2nd required only Presidential action.

Correspondence read from Thelma O'Reilly requesting Board action on feasibility of ABS selling Dr. Lyman B. Smith's book on the Begoniaceae of Santa Catarina. Sec. instructed to write Mrs. O'Reilly requesting information whether the ABS would have exclusive rights for resale in the U.S. and cost to the ABS.

The following Committees were appointed on motion: Ballot and Aduiting Committees.

Annual Board meeting at Convention at 1:30 p.m. at which time all officers requested to submit annual reports.

Following Branch reports the meeting adjourned.

Respectfully submitted
Anne L. Rose, Secy. Pro. Tem.

CALENDAR

September 9 – Whittier Branch, 7:30 p.m. Joint meeting with Whittier Fuchsia Society. Installation of Officers for the Whittier Branch of the ABS. George Gilbert speaker.

September 10 – Houston Texas Branch, "Planting Begonia and African Violet seed, Soil Mixture and Care".

September 19 – Long Beach Parent Chapter, 1:30 p.m. Speaker: Rudolf Ziesenhenne.

September 21 – Seattle Branch, 7:00 p.m. Regular Meeting; Loyal Heights Recreation Center.

September 24 – Redondo Area Branch, 7:30 p.m. "Whoopee Party".

September 27 – ABS Board. South Gate City Auditorium, 4900 Southern Avenue, South Gate, California, 7:30 p.m. Meetings are always open to members.

October 7 – Westchester Branch, 7:30 p.m. Speaker: Mrs. Irene Nuss, "Cane Begonias for Beauty".

October 22 – Redondo Area Branch, Pot Luck 6:30 p.m., Past President's and Birthday Dinner.

Visitors are always welcome at these meetings.

VISIT A BRANCH THIS MONTH

SECOND CLASS MAIL
American Begonia Society
6157 Lime Avenue
Long Beach, California 90805