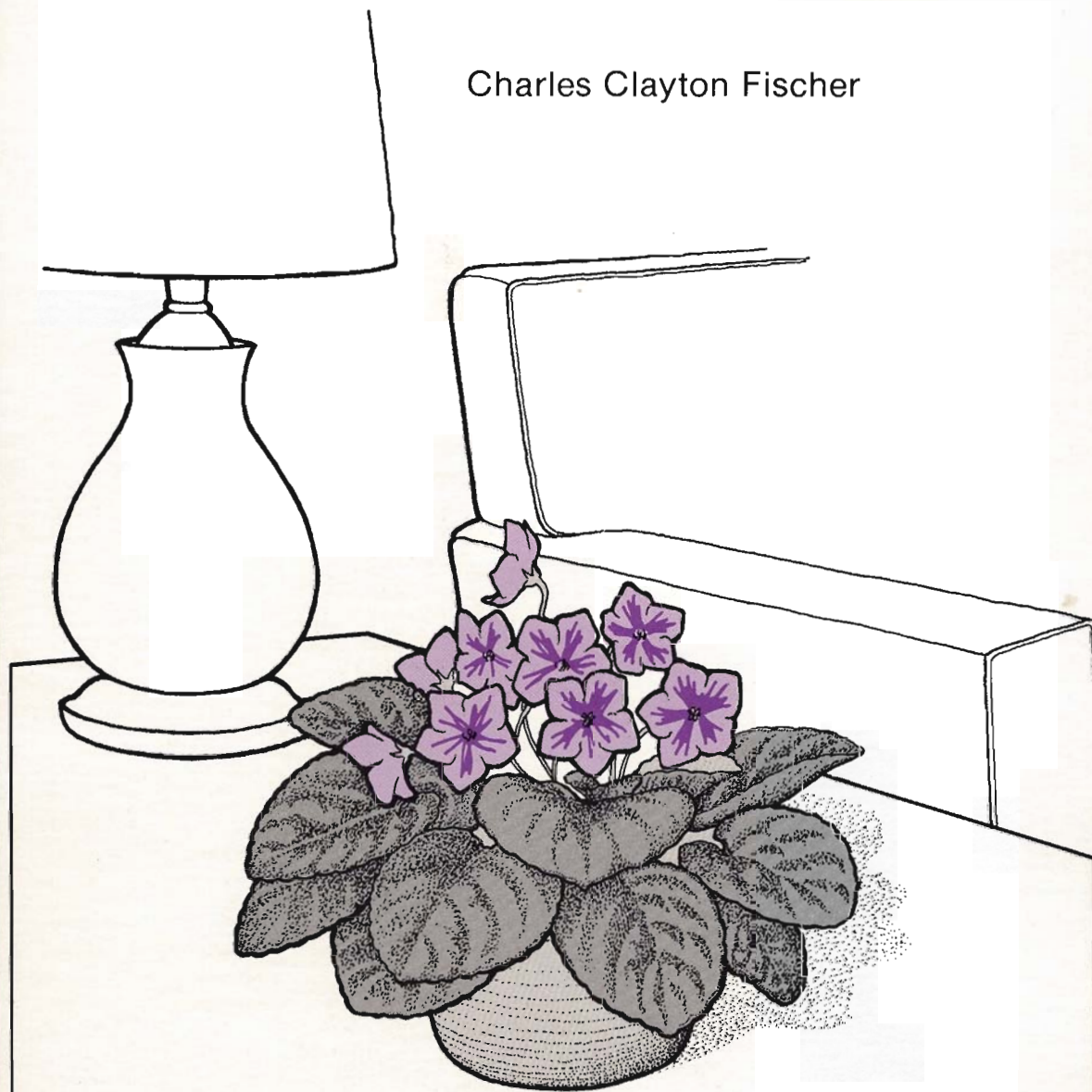


Growing African Violets

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Author

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Growing African Violets

Since the first hybrids were introduced in the United States in 1936, African violets have become our most popular flowering plant, extensively grown throughout the country in homes and greenhouses. Many local, state, and national* societies have been established concerned with the culture and improvement of this one plant. This popularity is justified because the African violet is a handsome plant, easily grown, readily propagated, and the only potted plant to bloom the year-round in the home.

The African violet is a member of the family Gesneriaceae. Other popular Gesneriads are Achimenes, Columnea, Episcia, Gloxinia, Smithiantha, and Streptocarpus. The first African violets were botanically classified as *Saintpaulia ionantha*. The genus name *Saintpaulia* was established to honor the family responsible for introducing the plants to culture. The species name *ionantha* translates from the Latin to read "with flowers like a violet." The common name "African violet" identifies the plant's native habitat, also the appearance of the bloom. Saintpaulias are not violets, nor even related. The true violets and pansies belong to the genus *Viola*, a member of the Violaceae family.

There are 21 named species of Saintpaulias native to tropical and subtropical Africa. Most of today's thousands of hybrids appear to be developed from the species that Baron Walter Von St. Paul discovered in 1892.

The origins of today's hybrids are not well documented. It is known that following the description of the plant in the late 1800s they were grown in botanical

gardens and private collections in Europe and England. In 1927, Armacost and Royston Nursery of Los Angeles imported seeds from Europe and began a hybridization program. Ten varieties were selected and released in 1936 to become known as the "Armacost Originals." This marked the introduction of African violets to the domestic market and the beginning of their popularity.

Saintpaulia ionantha



*The African Violet Society of America, Inc. (Box 1326, Knoxville, TN) with 27,000 members serves as the international registrar for new cultivars.

Several of the original hybrids are still grown today.

As with other plants of economic value such as chrysanthemums, orchids, roses, marigolds, zinnias, and many others, increased consumer sales encourages hybridization efforts to continuously develop and introduce new types. Plant breeding can improve varieties in several ways:

- increase inherent vigor,
- improve flowering: bloom size, new colors, and floriferousness,
- develop new growth habits (forms), plant sizes, and foliage variation,
- increase resistance to disease problems.

Many of the African violet hybrids grown now are so varied they hardly resemble the original species in foliage and flowering characteristics. Classes have been established for description, identification, and exhibition. Categories exist for single and double bloom; for flower color: white, blue, violet, or purple; orchid, mauve, lavender; red, maroon, plum, or burgundy; pink or rose; bi-color, two values of one hue (the upper lobes lighter, a tint of the hue), multi-color with two or more hues. In addition there is a novelty class for blooms with unusual patterns such as star shaped, bordered petals, and fringed or ruffled petals. Yellow and an accurate horticultural red

are not yet known but are objectives with the hybridizers. Undoubtedly the first yellow flowered African violet will be in great demand.

The breeding and selection of desirable *Saintpaulia* hybrids has resulted in a great variation of leaf forms. The leaf of the original species and many hybrids is a plain dark green known as “boy” type. When a mutant form with a pale spot at the leaf base was developed, it was called the “girl” type. These terms differentiate leaf type only, because the African violet is not a dioecious plant. Each bloom is perfect in that it contains both the stamens and pistil, the reproductive parts of both sexes.

As hybridization continued, other leaf types developed:

- quilted with the surface raised between veins,
- blades with ruffled, frilled, wavy, fluted, or scalloped margins,
- blades of extra large size: amazon, dupont, and supreme,
- variegated foliage with white or varying tones of green,
- turned up base or margins, spoon or cupped shapes,
- blades with very pointed tips,
- leaves with little pubescence, a smooth surface.

An additional result of hybridization is the introduction of various growth habits and plant forms. The recognized types and established classes include the miniature, semi-miniature, stan-

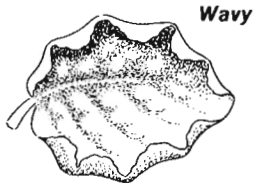
dard size, and those that grow to an extra large size. There are also African violets excellent for hanging containers. *Saintpaulia Grotei* and other species that have trailing habits of growth have been used to hybridize trailing varieties often promoted as “new” African violets.

The almost unlimited variation in the choice of today's hybrids is a fortunate result of African violet popularity and consumer demand. However, unfortunate myths have developed and persist concerning its culture. The most typical of the prevalent misconceptions are:

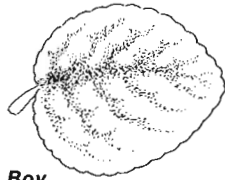
- *Special* fertilizers are required for African violets,
- only *special* growing media can be used for African violets,
- *always* water African violets by subirrigation,
- African violets need a *rest period*, when they're not in bloom.

The purpose of this publication is to provide consumer horticulture recommendations based on research and observations in order to provide a satisfactory experience for growing and enjoying African violets. *Saintpaulias* have basic needs for growth and bloom, and their culture can easily be realized by understanding and applying the basic requirements. A mature African violet will grow indefinitely and bloom throughout the seasons of the year when the right cultural conditions are provided.

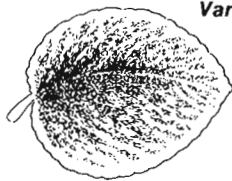
African Violet Variations



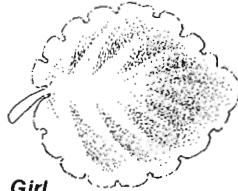
Wavy



Boy



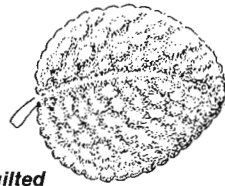
Variegated



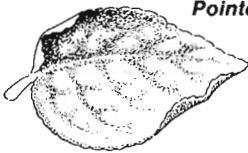
Girl



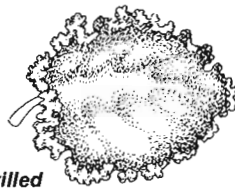
Spoon



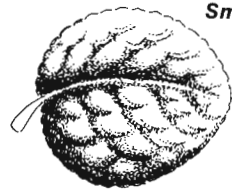
Quilted



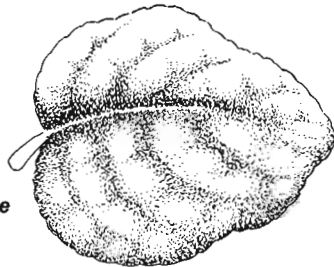
Pointed



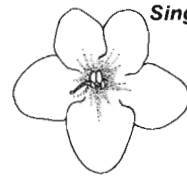
Frisled



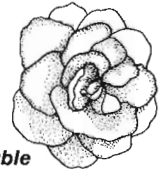
Smooth



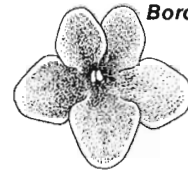
Large



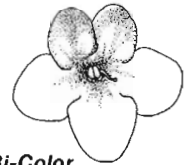
Single



Double



Bordered



Bi-Color



Star



Fringed

Trailing
Habit



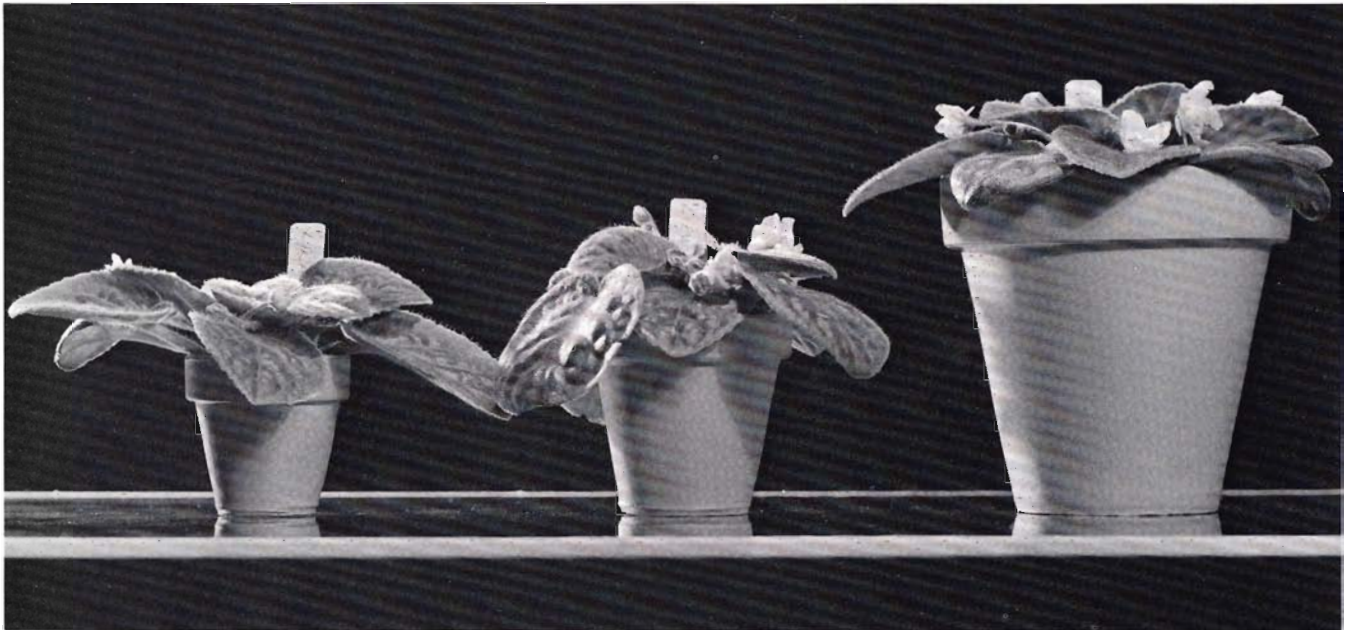
Giant



Standard



Miniature



Repotting

Repotting an African violet each year maintains a good growing medium. Once out of the pot carefully remove the outside area of the old medium and repot in the same container; or, if a heavy root mass is visible around the outside of the soil ball, shift the plant to a larger container without disturbing the roots. Saintpaulias should not be pot bound. This condition will retard growth in spite of the best care. There is no set time or schedule for shifting a developing plant. As a plant grows larger the root system develops too, eventually requiring a larger container for continued development. The general appearance of the plant is the best indication.



Top photo: The 3-inch pot on the left and the 4-inch in the middle are adequate sizes for African violets because the plants do not develop extensive root systems. Larger pots are generally not required. The large pot on the right is not in proportion to the plant. Furthermore, overpotting encourages the problems of excessive soil moisture, which can result in crown rot.

Center: The plant is shifted to the pot without disturbing the root mass and the medium is filled in around the old soil ball. Plant at the same level as before. If the plant has not been recently watered and is slightly wilted there will be fewer broken leaves.



Bottom: Transfer the identification label and the shift is completed. The 3-inch pot now provides sufficient additional growing area for the roots and the plant will make considerable growth and development in the larger container.

Growth Requirements

No *one* aspect of culture can be considered more important than another:

- avoid too much or too little light,
 - locate for favorable temperature,
 - keep growing medium moist,
 - fertilize to maintain nutrients,
 - use correct size containers,
 - use recommended potting media,
 - sterilize medium and containers,
 - keep plants free of insects and diseases.
-

Light Intensity

Incorrect light, that is, too much or not enough, is the most common reason for a lack of bloom. The flower buds require a high light intensity to develop, yet if it is too intense, the leaves will become pale with a yellow-green color. With continued exposure, dead spots will occur. Also, too intense light will cause the flowering to decrease.

Insufficient light impairs the plant's photosynthetic process and the foliage will begin to turn a yellow-green, normal plant vigor will be reduced, new growth will be smaller than typical, and the leaf blades will become thin with elongated leaf petioles. Too low a light intensity reduces flowering quickly. The buds may fail to develop, and if they do bloom, color will be less intense and each flower will be smaller and very soon no new buds will develop.

Various locations are required to grow the plants for continuous flowering throughout the year. The intensity of natural light varies with the seasons in these northeastern states. West and south windows offer the sun's highest intensities. To maintain bloom of Saintpaulias from November through February,

locate the plants for the sun to shine through windows onto the plant surfaces. This exposure will be too intense from March through October. Locations that do not receive direct sun will be required to continue flowering. Areas just adjacent to west and south windows are ideal. The sun streams through those windows but the plant is located so that the sun does not shine on plant surfaces. Plants grown directly in east and north windows are in a good location during the high light intensity seasons of spring and summer.

Change the placement of plants to use the varying natural light intensities so the African violets will keep flowering; they are not seasonal in their bloom and do not require a "rest period." With a large collection, moving all of the plants twice a year may not be possible (perhaps fewer plants, yet each in flower, may be considered rather than having too many with meager bloom). Supplementing low natural light with artificial sources would be an alternative.

Incandescent lamps can supplement natural light. A plant located on an end table to receive direct illumination from a typical 100 to 150 watt lamp of a living room fixture will benefit from the

light during an average evening's exposure. However, African violets to be grown in a location with no natural light source will require a long daily exposure to artificial light. Incandescent lamps are generally not satisfactory because the heat from the high wattage and the duration of the exposure will damage the plant.

Fluorescent light sources will provide the intensity of light without the heat and do not reduce atmospheric humidity as incandescent sources do. The fluorescent lighting more nearly duplicates natural light and is more economical. Attractively designed low wattage fixtures are satisfactory for supplementing natural light; but an installation to provide minimum light (to substitute for natural light) requires two 40-watt tubes and a reflective fixture. One cool white and one daylight tube, located 11 inches above the plants, in use 12 hours each day, will maintain the flowering of African violets. An 18-hour daily exposure will produce much better growth and bloom. A four-tube fixture will approximately double the light intensity, producing even more desirable plants. Numerous manufacturers provide fixtures or a typical industrial fixture can be installed at less cost.

African violets grown under artificial light readily develop the typical, natural, compact form with the ideal symmetrical shape. To maintain a uniform shape with natural light at window areas, rotate the pot to expose all sides of the plant to the light source. The growth rate of each individual plant and the light intensity available will determine how frequently a plant should be turned to maintain the uniformity. It is simpler to turn the plant with each watering.



Crown Division

African violets are best grown as single-crown plants; when a multiple crown develops the plant should be divided. Additional pots, pieces of broken pots to cover the bottom drainage, and potting soil will be needed. Labels to identify each plant are also recommended. The best growing medium for African violets is a mixture of equal parts of garden loam, peat moss, and horticultural perlite (or coarse sand). Carefully separate each crown to have a portion of the plant's original root system. Division is a quick way to obtain new plants; usually 2 or 3 plants are available from a multiple-crown plant. Place a piece of broken pot with the concave surface over the drainage hole. This protection will keep the medium from washing out of the pot, yet allow excess soil water to drain away.





Above: Pot each division by putting the plant on a small amount of medium in the bottom of the container. Fill with more soil around the roots. Gently firm the soil by pressing it down around the plant. This secures the plant and settles the medium to allow for watering space. Keep the crown above the soil level to prevent rotting.

Left: Record the hybrid name for accuracy and the date of division for personal reference.

Below: Water the soil immediately after the plant is potted. Apply until excess water runs out the bottom drainage to thoroughly saturate the soil. Saintpaulias require an ample supply of water, so keep the soil moist at all times *without* excess water.



Temperature

Since African violets are native to tropical climates, they require the warmth of the tropics in the home. The best range is from 65°F to 70°F at night, increasing during the day. Exposure to temperatures much lower than 65°F will be detrimental. The leaves curl and bend down from normal position, developing a light green color, and flowering is diminished. Exposure to 55°F will brown the foliage and severely damage the plant, if not kill it. Provide protection when transporting plants during cold weather. Wrap in several layers of newspaper and limit the time the plants are in lower temperatures. A thermometer should be used to measure temperature where the plants are located in the home. During the winter, locations near windows are usually cooler than elsewhere in the room. A plant next to a window is in the coldest part of the room especially if there are no storm windows or thermalpane panel. A sheet of plastic installed between the plants and the glass can prevent injury. Plants may even need to be moved away from windows on extremely cold nights.

Watering Practices

Gesneriads require an ample supply of water. The surface of the growing medium should be moist to the touch at all times, but not overly wet. An exact schedule of watering is not practical because of the variations in room temperature, light, and humidity. Apply water when the surface of the medium begins to feel dry. When plants are grown with insufficient moisture, the flowers

decline rapidly, buds may fail to develop, leaves wilt and curl, eventually tips and margins of leaves brown, and spots develop on the foliage. With overwatering and continued excess wetness, aeration within the medium is reduced and root activity is curtailed. This reduces water and nutrient absorption into the plant system. The first symptoms are wilting of the foliage, flower or bud drop, and yellow-green foliage. Eventually, brown tips and margins of the leaves develop, all vigor declines, and new growth stops.

Methods of watering African violets have caused much debate, but plants can be watered from either the top or the bottom, and *neither* way is best. The most important aspect is to thoroughly saturate the growing medium each time water is applied.

When surface watering, apply enough water to thoroughly saturate the medium, with the excess draining out the bottom of the container. This method requires a well-drained growing medium because if excess water stays at the crown or lower stems of the plant it promotes disease. The suitable amount of horticultural grade perlite or coarse sand in the potting mixture to provide good drainage is found in the *Growing Media* section.

Bottom watering distributes moisture uniformly through the medium and prevents excess water collecting at the basal stems of the plant. Set pots with bottom drainage holes in water-filled pans or deep saucers. Capillary action moves water uniformly through the medium until it reaches the surface. Excess water left in the pans should be removed within an hour or as soon as the surface feels moist. A common error is to keep the saucer continuously filled with water. This causes the medium to remain excessively

moist and will soon injure the root system.

A disadvantage of bottom watering is the accumulation of chemicals on the rim of the container or the surface of the medium brought up with the water by capillary action. These excess chemicals may become concentrated in sufficient quantity to become toxic if the plant surfaces come in contact with them. A good procedure is to occasionally apply surface water, which will dissolve the chemicals and bring them back down into the medium.

Drinking water is generally safe for plants because the amount of chlorine in city water is not sufficient to injure plants. Water softeners using sodium can have an adverse effect because this is an element that accumulates in the growing medium and eventually becomes toxic. Use of untreated water before it enters the softening system is recommended as is use of rain water, melted snow, water from dehumidifiers, or the water obtained from defrosting the refrigerator.

It has been reported that fluoride concentrations greater than 0.25 percent have caused injury in some foliage plants, especially members of the lily family. In areas where municipalities have fluorinated water it may be wise to use untreated water.

Water was once thought harmful to the leaves of African violets, but it's known now that a temperature difference between the water and the leaf causes spotting. Disfiguring can be avoided by using room temperature water because a difference of 10° too warm or too cool may cause damage. Occasionally syringe the plants with room temperature water, this is the best method to keep the leaves dust-free and will improve the appearance of plants.

Containers and Watering

The container in which a plant is grown will determine the frequency of watering. African violets' low growth habit makes them especially suitable for pot culture. The two best containers for plant culture are the regular greenhouse clay pot and the hard plastic pot. Both have bottom drainage holes for removal of excess water. The main difference is that clay pots are porous and the water in the soil mixture evaporates not only at the surface but also through the sides of the pot. Plants in clay pots need more frequent watering, but overwatering is less likely. Clay pots may become unattractive because the continued evaporation of moisture causes salts to accumulate on the outside of the container.

Plastic pots, being nonporous, do not lose moisture through the sides of the pot and plants growing in them will require less watering. The plastic containers will remain attractive and are available in a wide range of colors.

Both the clay and plastic containers are made as standard pots which have a height equal to the diameter and each type is available in diameters that increase by 1-inch intervals. For propagations and young plants 2¼-inch pots are sufficient.

African violets do not develop extensive root systems and the container need not be over 4-inch diameter for a mature plant. Larger size pots result in excess soil moisture with each application and pots with too large a diameter are not in proportion to plant size.

Other Containers

Plants can be grown in other types of containers, but those without bottom drainage holes must be watered very carefully. Excess water will collect at the base of the pot, reduce aeration of the soil, and quickly damage the plant. Because no moisture can escape through the sides or bottom of the typical glazed ceramic pots, plants require less watering. The best procedure to avoid overwatering is to place a 1- to 2-inch layer of coarse sand or gravel in the bottom of these containers. It may occasionally be necessary to lay the pot on its side to drain excess water away.

A plant may be grown in a porous clay pot set in a jardiniere. This arrangement combines the good drainage aspects of the clay pot with the attractiveness of a selected jardiniere. Use a jardiniere large enough to add 1 or 2 inches of gravel for the pot to sit on so that any excess water will

flush into this area. The space between the two containers may be filled with moist peat or sphagnum moss to slow the drying of the growing medium.

A wickwatering container provides a way for watering plants automatically. This is especially effective for African violets. In this system, water is placed in a separate pan or reservoir beneath the pot from which a fiberglass wick, placed through the drainage hole, draws the water into the soil by capillary action. The soil is kept moist, neither excessively wet nor dry. No drainage material is used in the bottom of the pot because it would prevent contact of the wick with the growing medium. An advantage of wickwatering is that with a large reservoir, the plants do not have to be tended more than once a week or longer. It is necessary to fill the reservoir when the water gets too low to maintain capillarity.

Another type of container is the multiple plant container. This is an attractive way to display plants and a space saver, because several plants can be grown in one container. It also reduces maintenance time since all of the plants are watered and fertilized at one time. However, the container needs to be rotated very often to maintain equal growth of the plants and replacing one will disturb the roots of others.

Rejuvenating an Older Plant

Older plants may lose the lower leaves, which makes the main stem bare above the soil.



This condition is easily corrected by placing the bare part of the stem below the soil when the plant is repotted (*left*).

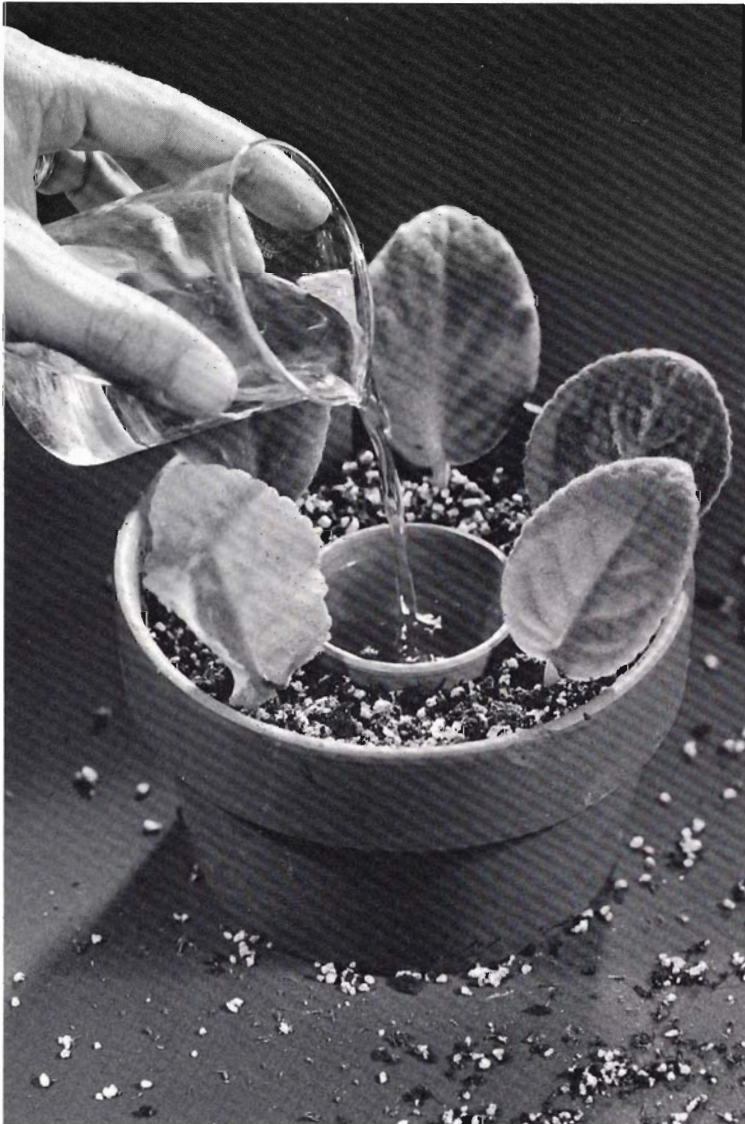
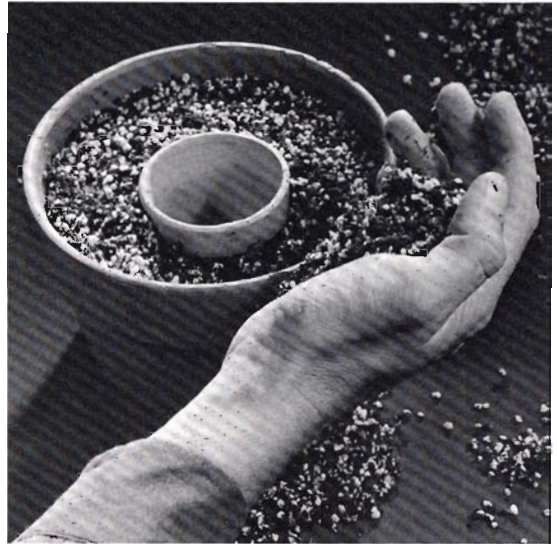
Older plants can be rejuvenated by vegetative propagation. Sever the above-ground part and discard the root system (*below, left*).

Remove most of the leaves yet retain a few around the growing point to make a stem cutting of the crown. Select mature leaves, neither the oldest nor the youngest, for leaf petiole cuttings (*below*).



Right: Insert each cutting in a rooting medium for best results. An ideal medium for home use is a mixture of equal parts peat moss and perlite. Horticultural vermiculite is also recommended. The stem cutting will be rooted within three to four weeks and should then be repotted into regular growing medium. Leaf cuttings may be propagated together in a large pot or individually in 2¼-inch pots.





Forsythe Pot

A Forsythe pot gives unusually good results. It is made with two pots, one about 2 inches in diameter and the other about 6 or 8 inches in diameter. (A bulb pan is especially suitable because it is twice as wide as it is deep, eliminating excess medium and moisture.) The rooting medium is put into the large pot. Plug the drainage hole of the small pot with clay and set it in the center of the larger one, level with the rim. Insert each petiole deep enough in the medium to support the cutting upright. The small pot is filled with water which seeps through the sides into the rooting medium. If the center pot is continuously filled with water, there will be a uniform supply for the cuttings and no other watering will be required. The medium should completely surround the center pot at a level below the rim. Don't put any of the medium in the little pot.

Growing Media

An ideal medium for growing plants in containers is made from equal parts (by volume) of coarse sand or horticultural grade perlite, garden loam, and peat moss. A mixture of these three ingredients will provide for drainage of excess water yet good moisture retention and aeration for root activity. Using garden soil alone is not advisable. Clay soils pack and prevent both good drainage and aeration, resulting in the same adverse effect as overwatering. Root activity is affected, which results in reducing bloom, plant vigor, and continued growth. Sandy soils lose water before plant roots can make use of it and symptoms similar to insufficient water will result.

Use of sterilized soil mixes is recommended so they will be weed, insect, and disease free. Unfortunately, it is not practical for the home gardener to sterilize soil using heat or chemicals. Small quantities of sterilized soil may be purchased from greenhouses, nurseries, and garden stores.

Currently, several prepared soil mixes are available in convenient packages. These mixes are usually already sterilized. However, their nutrient content is quite variable from deficient to excessive. The serious gardener would do well to have a soil analysis made at the county Cooperative Extension office or a commercial firm.

In addition, several soilless mixtures combining peat moss and vermiculite or perlite and other lightweight ingredients,

along with the necessary amounts of fertilizer for initial potting and growing, have been formulated and are on the market. These peat-lite mixes are generally considered sterile.

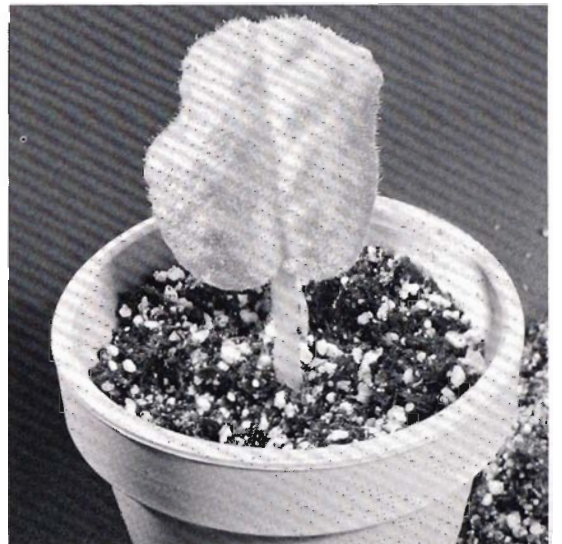
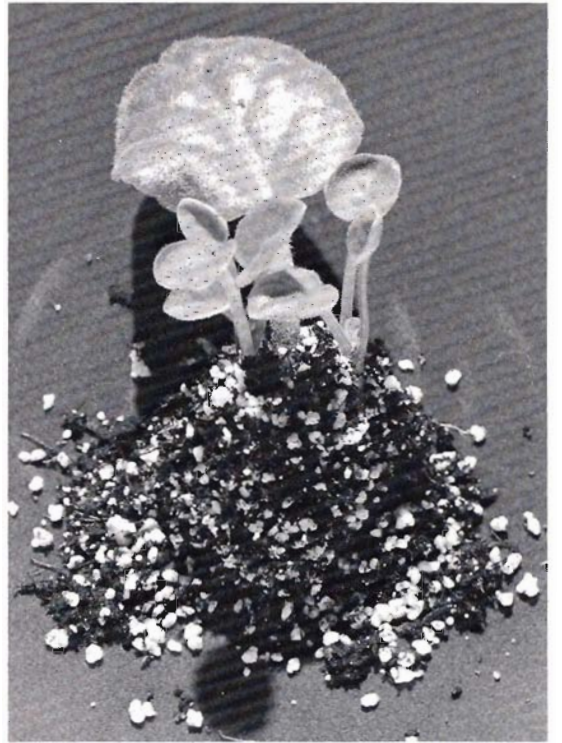
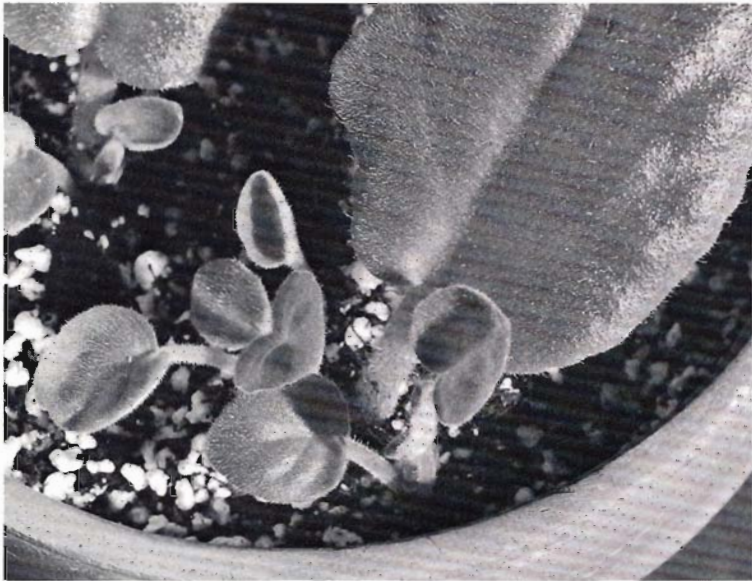
The Cornell Peat-lite Mix A is suggested for use in growing plants in the home. A small quantity can be made simply. The basic ingredients are vermiculite #2 size, sold as Terralite, and sphagnum peat moss. To make a one-peck mix, combine the following:

- Vermiculite #2 size
4 quarts
- Shredded sphagnum peat moss
4 quarts
- Limestone (preferably dolomitic)
1 level tablespoon
- Superphosphate (20%)
1 level tablespoon
- Potassium nitrate
1 to 2 level tablespoons

Mixing will be less dusty if the peat moss is slightly moistened. Mix the materials thoroughly and use immediately or store moist in a plastic bag. This medium is ideal for interior plants and those grown in containers outdoors during summer months. The fertilizer added at mixing will be sufficient for three weeks of use. For continued growth of African violets with this medium, fertilize with one level tablespoon of 20-20-20 per gallon of water every two weeks. A similar mixture may be purchased under such trade names as Jiff-mix, Promix, Redi-Earth, and others. Any of these media are suitable for the culture of African violets and other Gesneriads. There is *no need* to purchase those media that are labeled especially for African violets.

Potting Rooted Cuttings

Saintpaulia cuttings root quickly under good conditions. Hormone rooting powders are of little value in hastening the process. Each leaf will generally produce several new plants (*right, top*). When the new plants are about 2 inches high carefully remove the propagation from the medium (*far right, top*). Separate the young plants by gently pulling them apart (*right, center*). Each plant will have a root system and should be potted by itself in a 2¼- or 2½-inch pot. The regular growing medium should be used for potting the plants (*right, bottom*). When potted, the medium should be about ¼ inch below the pot rim for watering. Keep the crown of each plant above the surface of the medium to avoid injury (*far right, center*). The original leaf cutting may be propagated again after the first set of new plants has been removed. It requires about six to nine months to develop flowering plants from the start of a leaf petiole cutting (*far right, bottom*).



Nutrients and Fertilizing Practices

To understand nutrient requirements and the use of fertilizers, one needs to know that green plants manufacture their own food by photosynthesis. This unique process of the plant kingdom occurs in leaves and tissues containing chlorophyll. Here, water and carbon dioxide are combined to begin the process. Light provides the source of energy for a chemical reaction where sugars and starches are synthesized. These carbohydrates are then combined with basic chemical elements to produce proteins, fats, and oils. Carbohydrates are also stored for future energy needs.

A complete fertilizer is the most reliable way to supply the required chemical elements, the nutrients for this manufacturing process. A complete fertilizer contains nitrogen, phosphorus, and potassium—the three elements used by plants in the greatest quantity and those that are most frequently deficient in a growing medium. Fertilizer manufacturers are required to label the content of those primary nutrients on each container. A fertilizer with a ratio of number such as 20-20-20 is suitable for African violets, as for other container-grown plants.

Two months after purchasing a

plant, begin a regular fertilizer application by mixing a level tablespoon of the above grade fertilizer in a gallon of water. Always use surface application when using fertilizer solutions and do not apply to a dry growing medium. Water the plant generously with this solution every eight or ten weeks. A deficiency of nutrients will show a symptom of smaller blooms with less intense color. The foliage becomes yellow-green, new growth will lack vigor, leaves will be small, and flowering will be reduced.

Numerous *special* African violet fertilizers in pill, stick, powder, or liquid form are available. They are satisfactory if they have a complete nutrient content and are used according to the manufacturer's directions. Overfertilization can damage plant roots severely, resulting in buds failing to develop, wilting of the foliage, yellow-green color developing in the leaves, and eventually the tips and margins beginning to brown. If any new growth develops, leaves will be small, but with over-fertilization, the plant will undoubtedly be destroyed.

Practically everyone who grows plants has heard of unusual methods for fertilizing them. Maybe some systems have a beneficial effect but they usually give only a partial treatment and may even be harmful.

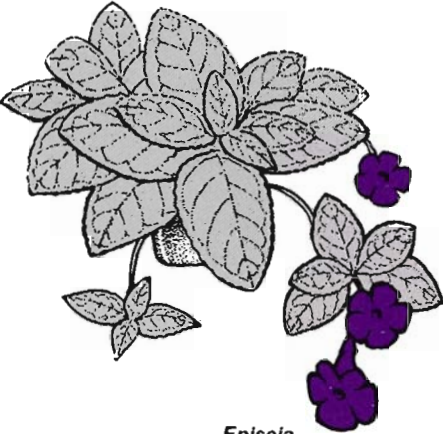
Humidity

Plants grow best in a humid atmosphere, but most houses are dry (have a low humidity) because of winter heating and summer air conditioning. The drier the air, the greater the loss of water from the plants. Interior humidity can be increased in several ways:

- install supplemental humidifiers in the heating system or use room humidifiers near the plants,
- set the plants above a tray of gravel, coarse sand, or perlite that is kept wet,
- group plants together; air surrounding a group of plants usually is more humid than the air around a single plant,
- avoid a location where excessive air movements will cause rapid water loss from plant surfaces,
- locate plants where the humidity is the highest, such as the bathroom or the kitchen, especially above the sink,
- keep plants adequately watered; with a correct supply of water, methods of increasing humidity may not be required.

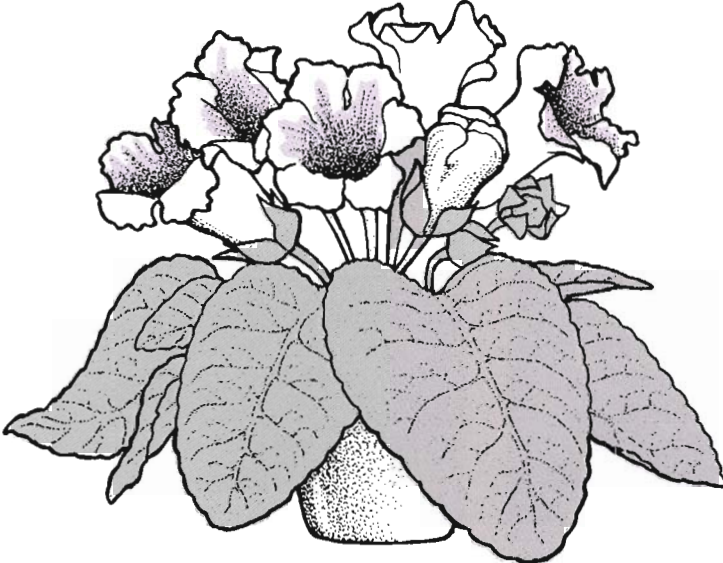
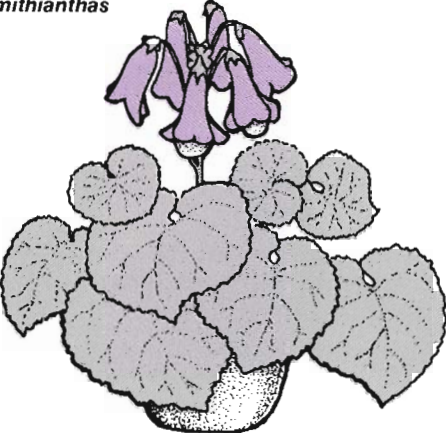
Other Popular Gesneriads

Columnnea



Episcia

Smithianthas



Gloxinia

Cultural Problems



The tropical origin of African violets is reflected in their temperature requirements. They are at their best in temperatures ranging from 65°F to 70°F at night and 5 degrees higher during the day. Lower temperatures will be detrimental. Repeated exposure to temperatures less than 65°F will result in the leaves curling downward and developing a light-green color, and flowering will be reduced (*right, top*). Response to lower temperatures will not be so subtle; the plant on the left was exposed to 35°F for five minutes. Death did not occur but the plant will be extremely slow to recover. The center plant was exposed to 46°F for two hours and shows typical leaf injury. The leaves of the third plant were syringed with cold water and displays the same foliar discoloration.

Temperature difference then is responsible for the leaf spot problem. Foliage exposed to cold water or cold air will display similar symptoms (*far right, top*). Exposure to a difference of more than 10°F cooler or warmer than the leaf temperature may cause damage. It is important to use room temperature water when watering the plants and cleaning the foliage. Avoid temperature extremes where the plants are located in the home. During the winter months a window area may be much cooler than within the room.

Crown rot (*right, middle*) can be caused by any of the organisms commonly present in the soil. The fungi enter the stem through a wound and decay the affected parts. The leaves suddenly wilt, and the main stem gradually softens and rots. To prevent this problem do not pot plants too deeply, sterilize all media and containers, avoid over-watering, and use a medium that maintains good drainage of excess water.

Soluble salts eventually accumulate on the rim of clay pots. Leaf petioles become soft and collapse at the point of contact with the concentrated chemicals (*far right, middle*).

In order to develop, flower buds require a high light intensity. Too little light is the most common reason for lack of bloom. The plant may grow well and have normal color but the leaves become thin with long petioles and produce little or no flowers. (*right, bottom*).

If light is too intense the leaves become bleached and burned (*far right, bottom*). The growth becomes less vigorous and flowering decreases. Seasonal variation of natural light can be a general guide for the placement of African violets within the home. From November through February locate plants in south or west windows to receive direct sunlight. Move the plants into indirect bright light from March through October. The indirect exposure is just beyond the reaches of sun's rays in a room or directly in east or north windows.

To eliminate petiole rot keep the stems from resting directly on the pot. The rim can be covered with a metal foil or dipped in melted paraffin before potting. The plastic containers, being impermeable, eliminate the deposit of soluble salts.

Cooperative Extension, the New York State College of Human Ecology, and the New York State College of Agriculture and Life Sciences, at Cornell University, Ithaca, N.Y., and the U.S. Department of Agriculture, cooperating. In furtherance of Acts of Congress May 8, June 30, 1914, and providing equal opportunities in employment and programs.

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