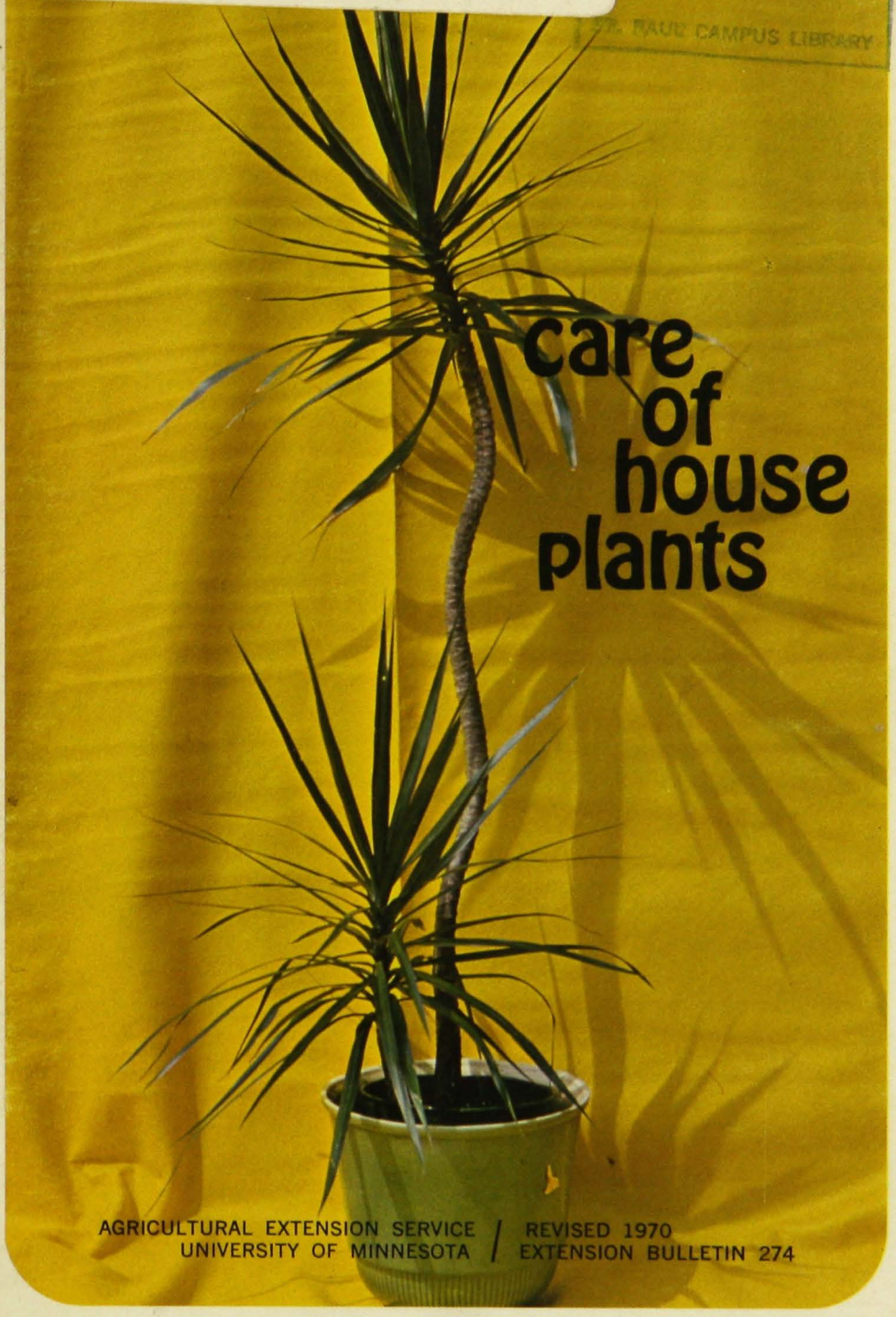
care of house plants



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CONTENTS

CULTURE 3
- Soil Mixtures 3
- Fertilizers 3
- Containers 4
- Watering 4
- Humidity 6
- Ventilation 6
- Temperature 6
- Light 7
- Training 7
- Summer Care 8
- Leaf Polish 8
- Vacation Care 9
- Repotting 9
- Rest Periods 9
- Propagation 10

INSECT CONTROL 12
- Principal Pests of House Plants 12
- Insecticides 14
- How to Treat 14

DISEASE CONTROL 15
- Leaf Disorders of Ornamental Foliage Plants 15

FLOWERING PLANTS 16
- Forcing Spring Flowering Bulbs 23

FRUITING PLANTS 26

FOLIAGE PLANTS 27

CACTI AND SUCCULENTS 41

GROWING PLANTS UNDER SPECIAL CONDITIONS 42
- Water Culture 42
- Artificial Light 42
- Dish Gardens and Planters 45
- Terrariums 46

SUGGESTIONS 47
- Plants for Low Temperatures 47
- Plants for Medium Temperatures 47
- Plants for High Temperatures 47
- Plants That Will Withstand Abuse 47
- Plants for Extremely Dry Conditions 48
- Vines and Trailing Plants for Totem Poles .. 48
- Plants for Hanging Baskets 48
- Suggestions for Large Tubbed Specimens .. 48

SPECIAL EXPOSURES 48

PLANT INDEX 50

Shown on the cover is Dracaena marginata, a slow growing exotic type of plant. Specimens with straight or crooked trunks are available.

Shown on the back cover is the geranium cultivar 'Sparkle'. It has been trained in the shape of a tree and makes an attractive patio plant.

Mention of commercial names does not imply endorsement nor does failure to mention a name imply criticism.

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care of house plants

Richard E. Widmer, Professor, Horticultural Science

Growing potted plants is a popular indoor pastime today. House plants, which are now considered an integral part of interior decoration, provide color and beauty during the winter months and are especially suitable for holiday entertaining.

Besides adding beauty, growing plants indoors helps satisfy the gardening urge for people who can't have outdoor gardens or who want to continue their horticultural activities during the winter. In fact, indoor gardening presents a challenge for even the most arden outdoor gardener.

culture

The artificial conditions under which you grow house plants can present some problems. But selecting the proper type of plants for your particular home environment and thoroughly understanding their cultural requirements will simplify the procedure and insure a greater degree of success.

Soil mixtures. Since plants obtain water, nutrients, and air from the soil, the proper soil mixture is of utmost importance. Most flowering plants thrive well in this mixture:

3 parts good garden loam
2 parts organic matter
1 part sand or perlite

Add bonemeal or 20 percent superphosphate to the soil mixture at the rate of 1 cup to each bushel of soil. You can use rotted manure, leaf mold, compost, peat, or acid peat moss as sources of organic matter.

If you use acid peat moss, substitute a cup of a 6-10-4 or a 5-10-5 fertilizer for the bonemeal or superphosphate. If the garden loam is heavy or clay-like, increase the proportion of sand or perlite. If the garden loam is light or sandy, omit the sand or perlite.

Foliage plants usually grow best in a soil mixture containing 50 percent organic matter. At least half of the organic matter used for foliage plants should be peat moss, since most other sources may be too rich in nutrients. Acid peat moss should be used as a source of organic matter for acid-loving plants such as azaleas, camellias, and gardenias. A higher proportion of sand is advisable for cacti and succulents (plants with thick leaves or stems). Peat moss alone can be used as the growth medium for some plants if a complete fertilizer is applied at regular intervals.

Fertilizers. If you use a good soil at potting time, most house plants will not need additional fertilizer for 3-4 months. Well established plants may need fertilizer every 5-6 weeks when actively

growing. Do not fertilize resting or dormant plants.

The easiest way to apply fertilizer to house plants is in the liquid form. If you use a soluble fertilizer, follow the manufacturer's directions. If you use a dry garden type fertilizer such as 5-10-5, dissolve 1 teaspoon in 1 quart of warm water. Stir well and, preferably, let it stand overnight before using. When applying fertilizers in liquid form, use enough of the solution to wet the entire soil mass. Slow release dry fertilizers mixed in the potting soil or applied to the soil surface are quite satisfactory. They provide a steady flow of nutrients for an extended time with a high degree of safety. Never apply fertilizer (in either dry or liquid form) to a dry soil, as root injury may result.

Acid-loving plants, such as azaleas, gardenias, and camellias, will develop chlorotic foliage if the soil is too alkaline. You can correct the chlorosis most quickly by adding a chelated iron product to the soil. In addition, you should make the soil more acid by adding iron sulfate or sulfur or by replanting in a fresh soil.

Many more house plants suffer from an excess of fertilizer than from a lack of it. Symptoms of overfertilization may include a slowdown of growth, stunted plants, burned or dried leaf margins, and wilted or even dead plants, depending on the degree of overfertilization. Symptoms of a lack of fertilizer may include pale foliage, leaf loss, few flowers, or shortened and hardened plants.

Containers. Glazed or unglazed earthenware, plastic, metal, or wood containers can be used if the soil is watered properly. Ordinary clay flower pots are porous and plants in such pots require frequent watering. Plants in nonporous containers should be watered less frequently to avoid waterlogged soil.

Regardless of the type of container, using containers with drainage holes in the bottom is advisable for the beginner. Take great care not to saturate the soil in containers that have no drainage outlet. Place coarse gravel or small pieces of broken flower pots in the bottom of such containers. Self-watering pots now on the market are satisfactory for plants such as African-violets.

Watering. There is no time schedule you can follow for watering plants, since the watering frequency varies with many factors such as weather, type and size of plant, and stage of plant growth. Most successful growers check their plants daily and water them only when necessary. A plant usually requires water when the soil surface appears dry. As a rule, the soil looks lighter when it dries, but

The ever-popular Philodendron pertusum (Monstera deliciosa) growing on a support.

The 'Maple Queen' cultivar of English ivy in a silver teapot.

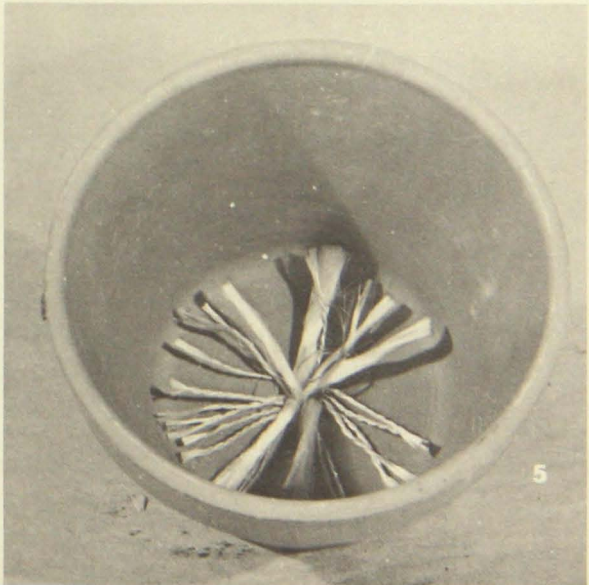
some dark or black soils are deceptive. If in doubt, touch the soil to determine its moisture content. A person familiar with different kinds of plants can detect when a plant will need water by noticing, for example, its freshness, firmness, and general appearance. Don't let plants wilt.

Soak the soil thoroughly, but don't water more often than necessary; overwatering encourages rotting of the roots. Rotting often is indicated by a change in foliage color from green to yellow and in extreme cases by foliage spotting or drying and even death of the plant. Lack of water can result in dwarfing, foliage spotting, leaf droppage, and eventual plant loss.

Water temperature is especially significant. Don't use ice cold water, especially on tropical plants. The water should be at room temperature and you should apply it in the morning whenever possible. Avoid getting water in the crown of plants such as cyclamen and African-violets, as it may encourage decay.

Watering from below is good, since it wets the soil thoroughly, but it is not essential. **Do not let the pot stand in water once the soil surface is wet,** however.

Plants also can be self-watered from below. You can buy self-watering pots or make them at home. Some of them



A glass wick can be used for self-watering.

have a glass wick to carry water up into the soil. To make such a pot, pull the wick through the drainage hole, unravel it, and spread it in all directions on the bottom of the pot (see the illustration). Then replace the soil ball, leaving out any drainage material such as broken pieces of pot. Next, firm down the soil ball to assure contact with the wick and place the pot on a container that holds water. Insert the lower end of the wick in the water.

Determining the proper water level in a container takes experience. If the soil is too wet, lower the water level; if the soil is too dry, raise it. The container should always have water. If the reservoir dries up or if the soil in the pot becomes too dry, half submerge the pot in water for 30 minutes to reestablish capillary action. This watering method is not recommended for plants that prefer a relatively dry soil, such as tuftroot, cacti, and succulents.

Fertilizer salts will accumulate at the soil surface and on the pot rim when plants are watered from below. To prevent excessive accumulation of such salts, flush the soil from above several times a year. Discard the water that drains out of the bottom of the pot during flushing.

Prolonged use of water from a water softener usually results in poor plant growth. In such cases, repot the plant in fresh soil and water with unsoftened water. The chlorine and fluorine contained in some city water supplies are not injurious to plant life.

The water supply throughout most of Minnesota is alkaline. Prolonged use of such water results in an alkaline soil condition that is not conducive to good growth of most plants. Applying iron sulfate solution or ordinary powdered sulfur to the soil surface one or more times a year will counteract the effect of alkaline water. An application of iron sulfate is quicker acting but has less total effect and a shorter period of effectiveness than an application of sulfur.

Aluminum foil sometimes is used as a pot cover for gift plants. Puncture the foil just below the drainage opening in the flower pot to help provide good drainage.

Humidity. The humidity in heated homes in this area is quite low during the winter. Some means of increasing it definitely will aid plant growth. Many house plants benefit from a regular spraying with clean, soft water at least once a week. Growing plants on a waterproof tray that contains moist sand, crushed rock, or colored pebbles also will help solve the humidity problem, but be sure the pots themselves are not sitting in water. Home humidifiers are quite helpful. Plants requiring very moist air should be planted in a terrarium (see page 46).

Ventilation. Proper ventilation is more essential for human beings than for plants, but sudden temperature changes and drafts should be avoided. Many house plants are especially sensitive to small quantities of escaped gas in the atmosphere. Avoid careless lighting, poor combustion, and leaks in gas ranges. Poor combustion in coal furnaces and kerosene heaters can be equally harmful. Tomato plants, African-violet blossoms, or freshly cut carnations are good gas indicators. Tomato plants will droop and twist abnormally and the foliage will turn yellow, African-violet blooms will shrivel and drop prematurely, and carnation flowers will "go to sleep" (petals will fold upward and inward).

Such plants are affected by gas long before humans detect it. Pure ethane, butane, and propane are not injurious to plants. Natural gas in itself is not harmful to plants, but manufactured or blended mixtures of natural and manufactured gas are toxic to them.

In light, plants discharge oxygen and take carbon dioxide from the air. At night the process is reversed, but the quantity of carbon dioxide given off by plants is so minute that it is of no significance. Therefore, plants need not be removed from sickrooms or bedrooms at night.

Temperature. Adverse temperatures account for the failure of many house

plants. Most plants will grow well in a day temperature ranging from 65°-75° F., but night temperatures should be approximately 10 degrees lower. Flowering plants, with the exception of a few such as African-violets, gloxinias, and poinsettias, will last much longer at night temperatures as low as 50° F., regardless of the conditions. Foliage plants, most of which originated in tropical areas, generally prefer day temperatures of up to 80° F. and night temperatures between 60°-75° F.

In some instances, you may be wise to transfer plants from a warm room to a cool place at night. During the cold period of the year, plants located near windows are subject to much lower temperatures than plants in the remainder of the room. To protect those foliage plants requiring high temperatures, pull the shades or drapes or place newspaper between the plants and the window.

Keep plants out of cold or hot air blasts and away from hot air registers, radiators, open windows, doors (in winter), and air conditioners (in summer).

Specific temperatures for inducing flowering of some plants such as the Christmas cactus are discussed under specific plants later in this bulletin.

Light. Light conditions in the average home are poor: Light may come from one side only and often in only small quantities. A plant growing in a sunny window or strong light can stand higher temperatures than the same kind of plant growing in poor light. Excessively high temperatures and low light intensity form a fatal combination.

Some plants require more light than others, so keep this factor in mind when choosing a plant for a particular location. Flowering plants usually require sunlight or bright light most of the day. Although foliage plants will thrive in less light, their location should be in a spot bright enough to permit reading most of the day.

Symptoms of insufficient light include small leaves, long thin stems, poor color, weak growth in general, and failure to flower.

A pillar geranium. The cultivar shown is Eleanor.

If you want plants in relatively dark locations and cannot use artificial light, you can increase their attractiveness and life span by rotating them with plants grown in lighter parts of the home.

Some plants such as African-violets can be grown under artificial light (see page 42). Using artificial light to supplement natural daylight may keep plants thriving for longer periods when they are grown in naturally dark locations.

Training. Pinching the growing tip of many plants at the proper time will produce stockier, more shapely plants. Geraniums, begonias, coleus, and ivies are examples of such plants. Plants such as ferns, tulips, lilies, and African-violets do not require pinching.

Older plants often require pruning or shearing to keep them within bounds and to maintain a favorable shape. Train

trailing plants to follow a support when growing; don't wait until they are too large to tie up. Not all trailing vines require support, since the cascade effect often is desirable.

Materials used to support vines and other trailing foliage plants include fernwood, cork, driftwood, pecky cypress slabs, and plastic poles. Some people prefer to fill a chicken wire cylinder with sphagnum moss. If you place a small flower pot in the top of the cylinder, you can fill it with water occasionally to keep the moss moist. The aerial rootlets of philodendrons and similar plants will then penetrate the moss.

Occasionally people train plants in the shape of a tree. To start such a plant, limit the plant to one trunk, stake it for support, if necessary, and remove the side shoots soon after they appear. Pinch the terminal once the plant reaches the desired height. Geraniums, coleus, fuchsias, and standard (large flowered) chrysanthemums can be handled this way. A modified tree or pillar plant habit may be obtained by retaining several trunks and allowing foliage to grow on them. Very good light conditions are necessary to produce such plants in the home.

Summer care. Many house plants thrive better and are easier to care for outdoors during the summer if they are adaptable to outdoor conditions. They can be grown on porches or terraces or in a garden border. However, African-violets, gloxinias, and a few other tender plants should be left indoors all summer.

In areas where summer nights are quite cool, keep plants indoors if they require a temperature of 60° F. or more. A great many plants can be carried through the summer with a minimum of care by sinking the pots to the rims in the garden border, remembering the different light requirements of the various plants. Flowering plants usually prefer a semi-shady location during summer.

Set the plunged pots on a base of gravel, clinkers, or sand to insure good drainage. Lift or twist the pots once a month to discourage rooting through the drainage hole. A location protected from strong winds is desirable.

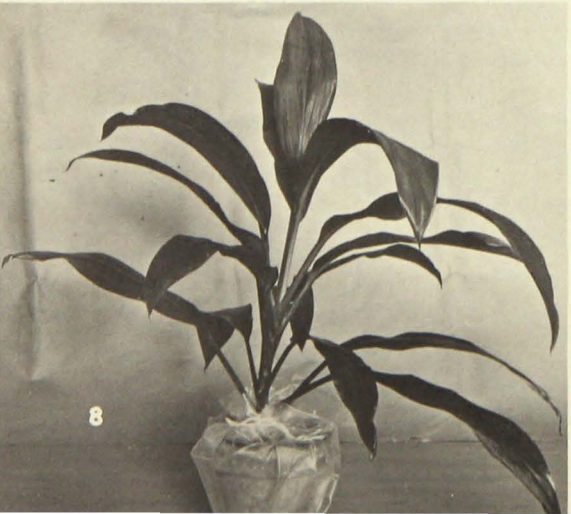
Before nights become cool in late summer or early autumn, lift the pots and repot the plants if necessary before returning them to the house. Do not return diseased or insect infested plants indoors.

Fast growing plants that are fairly easy to propagate, such as fuchsias, geraniums, and coleus, can be planted directly in the border. New plants raised from summer cuttings will produce house plants for the following season.

Leaf polish. Dusting or washing the foliage of house plants improves their appearance and frequently results in better growth. Numerous leaf polish products on the market are recommended for use only on firm leaves, such as those of most foliage plants. Preferably, you should dust the leaves before applying such products.

Leaf polishes often are used to mask hard water residue on the foliage. Such products usually are some type of plant wax and give foliage an extra shiny appearance. Always follow the manufacturer's recommendations and apply them when the soil is moist to lessen the possibility of plant injury. If you doubt a plant's tolerance, apply the polish to a few leaves first. If no injury is evident within a week, you can treat the entire plant.

A ti plant with the pot and soil wrapped in plastic to conserve moisture while the family is away.



Vacation care. If you have many house plants, the simplest procedure during vacation time is to have a friend check your plants for watering needs at regular intervals. If you have only a few plants, it may be easier to move them to a friend's home or to place them outdoors in a protected location.

If neither of these suggestions is practical, wrap the pots in polyethylene plastic and fasten the plastic around the base of the plant to reduce water loss from the soil. Be sure to water the soil thoroughly before wrapping up the plants. An alternate method is to place your house plants in a group, water them thoroughly, and surround the pots with moist sphagnum or acid peat moss. This procedure increases the humidity of the surrounding atmosphere and keeps the soil moist for some time.

Repotting. Plants obtained from the florist in full bloom usually do not require repotting until they have completed their flowering and are ready to enter another growing period. Repotting is necessary when the plant top outgrows the pot and there is not enough room for the roots.

If a plant requires water more often than once every 24 hours, a larger pot is required. Some plants require repotting annually, while slow growing species may require only the replacement of a little of the topsoil with fresh soil.

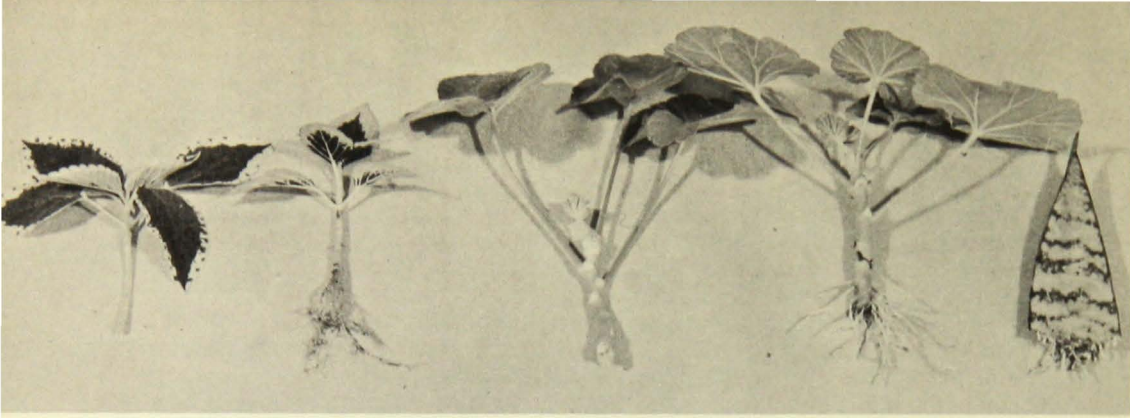
When repotting, remove the shoulder of soil around the top and any loose soil. To remove the soil, use a gradual squeezing motion to avoid breaking the tender young white roots. How the plant and pot look together should help you determine the proper size pot to use. Use only clean pots.

You can place broken pieces of flower pots, gravel, or similar material in the bottom of a pot for drainage. When using a piece of broken flower pot over the drainage opening, face the convex side up to avoid plugging the opening. The only benefit from using charcoal in the bottom of a pot or in the soil is to maintain good drainage.

When shifting to a larger pot, place some soil in the bottom of the pot and firm the soil around the old root ball. Leave enough room in the top of the pot for proper watering (½ inch for a 4-inch pot and 1 inch for an 8-inch pot). Water the soil thoroughly at first. Do not water the plant again until the soil dries out on the top.

Rest periods. Most house plants pass through seasonal growth cycles just like outdoor plants, although the cycle is not equally apparent with all plants. In general, water and fertilizers should be reduced or withheld entirely during periods of low activity. More detailed information is provided on specific plants later in this bulletin.

The artillery plant in pots that are (left to right) too small, proper size, and too large.



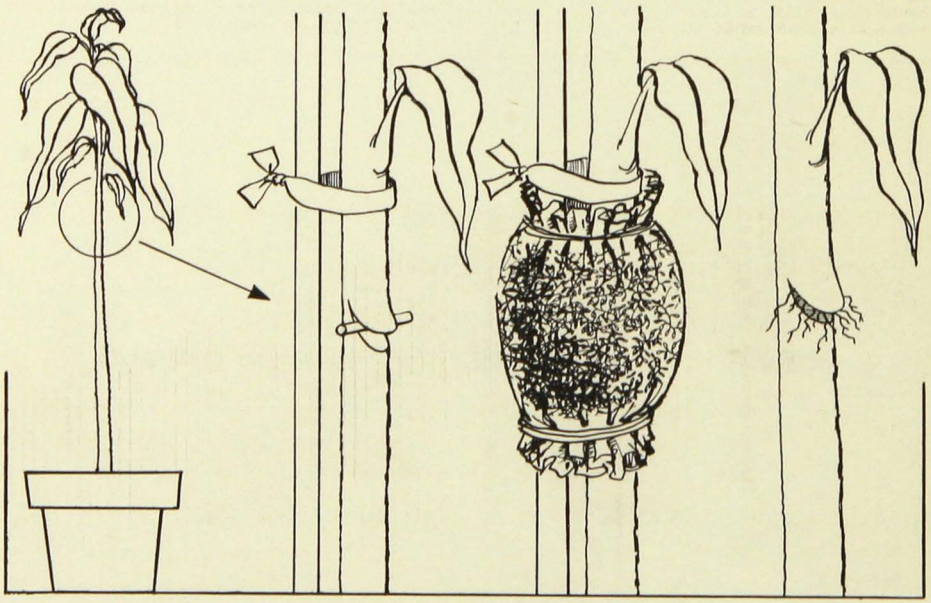
Coleus, geranium, and snake plant cuttings. The coleus and geranium are shown unrooted and rooted and ready for potting.

Propagation. Most house plants are propagated by cuttings, with terminal or stem cuttings being the most commonly used types. Leaf cuttings involving only a portion of a leaf may be used for plants such as the rex begonia, kalanchoe, sedum, and sansevieria. Leaf petiole cuttings are used with the African-violet, peperomia, Christmas begonia, and gloxinia. Leaf bud cuttings that include a portion of the stem to which the petiole is attached are used with philodendron, English ivy, grape ivy, and others.

Cuttings may be rooted in clear sand; vermiculite; a mixture of peat moss and sand or perlite or vermiculite and sand or perlite; or, in some instances, water.

Plastic foam blocks that are ordinarily used for holding cut flowers in arrangements also can be used to root cuttings. Thoroughly wet and wrap the block in aluminum foil except for the upper surface. Then insert the cuttings into the block. The weight of the block will help you determine when to add more water. A light block is too dry.

The steps in air layering.



When a cutting is rooted, remove it along with a portion of the block and plant it in soil. Completely cover the block with soil. Some plants root better than others with this method. Several brands of foam blocks are available. Some contain chemicals that inhibit rooting.

During rooting, keep cuttings out of direct sunlight and in as humid an atmosphere as possible. Because of the low humidity, rooting some cuttings at home is difficult unless you use some type of propagating case, terrarium, or cover. You can use large glass jars or plastic bags for covering the cuttings, but don't allow excessive condensation to accumulate. Use plastic bags with small holes in them for limited ventilation.

Ordinary window glass about 9 inches high can be used to enclose the area above a flat. Seal the cracks with transparent adhesive tape to avoid drafts and keep the glass in place. Cover the top of the case with two pieces of glass that can be moved to increase or decrease ventilation. Bottom heat, which usually speeds up the rooting of cuttings, can be supplied with a 5-watt bulb placed in a flat lined with aluminum foil. Place this flat under the flat used for propagation.

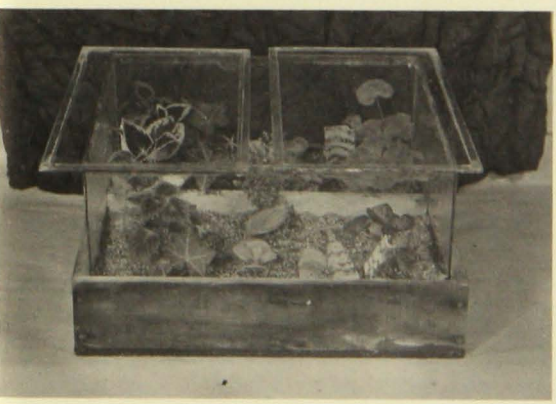
The temperature of the rooting medium should not exceed 75° F. Check the temperature with a thermometer. Don't place flats in strong sunlight.

A limited number of plants such as ferns, maranta, and African-violets can be divided to increase the number of plants. In some instances young plants can be obtained quickly from offsets, suckers, runners, etc., which can be removed without disturbing the parent plant. A number of others including annuals, asparagus fern, and cacti are propagated by seed.

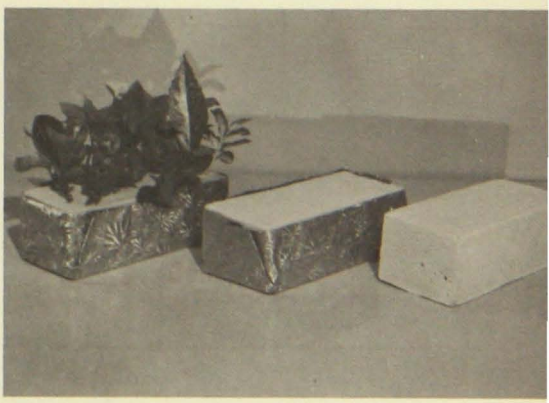
Large leaved plants with stiff or woody stems, such as tuftroot, dracaena, some philodendrons, and ficus, may eventually grow too tall and become unattractive. Such plants often are difficult to propagate from cuttings in the home, but they may be renewed by air layering. This process allows a portion of the plant to root while still attached to the parent plant.

Make a cut a little more than halfway through the stem at the point where roots are desired. You may have to tie the stem to a stake for support. Prop open the cut with a pebble, match stick, or similar item. Surround the area of the cut with moist, not wet, sphagnum moss and cover it with a piece of polyethylene film. Remove the film and some of the moss when the roots are visible. Then sever the rooted cutting from the parent and plant it in soil.

A simple propagating case that makes it easy to root cuttings in the home.



Plastic foam blocks can be used for rooting cuttings. Thoroughly wet the block (right), wrap it in foil except for the top (middle), and insert the cuttings (left).



insect control

L. K. Cutkomp, Professor, Entomology, Fisheries, and Wildlife

House plants can become infested with any of several kinds of insects and mites that thrive in the favorable temperature and growing conditions found in the average home. High temperatures are particularly favorable to most insects.

Rapid reproduction is very apparent among spider mites, which can be brought into the house on newly acquired potted plants or on cut flowers. During warm weather they can easily enter through open doors and windows or be brought in from the outdoors on clothing. In time, they multiply and spread to other plants in the house, select the ones on which they prefer to feed, and reproduce rapidly. These insects often escape early detection, but once established they can do much damage and sometimes can be difficult to control.

You can detect the presence of insects by examining your plants periodically. Each insect leaves a characteristic type of injury. The most common damage to house plants is caused by sucking insects that draw out a plant's vital sap. This type of injury can greatly interfere with normal growth, development, and blossoming.

Some pests attack leaf surfaces, leaving a white, stippled effect. This type of damage also is injurious to plants. An insect infestation may be responsible (though not always) for one or more of the following: lack of vigor, loss of normal color, stunting, failure to develop new shoots, and various types of discoloration such as yellowing or browning of foliage. Some plants can actually be killed by insects.

PRINCIPAL PESTS OF HOUSE PLANTS

Aphids or **plant lice,** the most common pest of house plants, may be green, pink, red, brown, or black. They usually feed in colonies, infesting growing tips and attacking the undersides of leaves. Plants become unthrifty and stunted and the leaves turn yellow and often curl. A sticky, honeylike substance (honeydew) on the leaves and white castoff skins are signs of aphid infestation.

Aphids can be controlled with malathion (premium grade for indoor use). Use 1-2 teaspoons of a 50- or 57-percent emulsifiable concentrate to 1 gallon of water or a 4- or 5-percent dust. Other effective materials are 1-2 teaspoons of nicotine sulfate plus 2 tablespoons of soap flakes in 1 gallon of water or preparations of pyrethrum for indoor use on plants. Since aphids are fairly easy to control, the aerosol bombs specifically prepared for use on growing plants can be effective.

Mealybugs infest the stem joints and main veins on the undersides of leaves. They live under white, cottonlike protecting masses; heavy honeydew on the leaves may reveal their presence. Infected plants are badly stunted and may be killed. Malathion, used at the higher dosage suggested for aphids, gives fairly good control, but thorough coverage is important and a repeat application at 7-10 days often is desirable. The white masses may be effectively removed with a cotton-tipped swab dipped in rubbing alcohol. Frequent plant washing and

good care prevent the establishment of mealybugs.

Whiteflies may be troublesome, particularly because they fly to many plants. They are especially serious on soft and hairy leaved plants. They feed on the lower sides of the leaves, giving off a lot of honeydew. Very young flies are scalelike and don't move.

Plants attacked by these flies appear unthrifty and may die. One level tablespoon of 50 percent endosulfan (Thiodan) per gallon is effective. One tablespoon of 50 percent endosulfan (Thiodan) wettable powder mixed with malathion provides a more rapid effect. Repeat these applications two or three times at weekly intervals if the infestation is severe or persistent.

Scale insects of various colors (usually brown) and forms are common on woody plants and ferns. They feed on the lower sides of leaves and discolor the foliage around their feeding places. Some species leave a honeylike residue on the leaves.

Dipping the plants in a solution of 2 teaspoons of 50 percent malathion or 2 tablespoons of a 25 percent wettable powder per gallon of water is most effective. Good plant care and frequent washing of foliage will prevent heavy scale insect infestation.

Thrips are tiny, narrow insects that are yellow, gray, brown, or black. They are very active when disturbed and hide in the foliage. They scrape the leaf surface with their sharp mouthparts, producing small, white, irregular patches, and they deposit small black specks over the infested foliage. Malathion in spray or dust forms gives good control of thrips.

Spider mites or **red spiders** are one of the worst pests of house plants. They breed best in dry, warm places and can infest all plants. The injury is much like that of thrips — small white dots on leaf surfaces. There are no prominent black specks, but the white ones give a bleached and unhealthy appearance to the foliage and plants may be killed by the injury. When mites are numerous, there will be a fine webbing over the leaves.

A dicofol (Kelthane) wettable powder (18½ percent) used at 2 level tablespoons per gallon or 2 teaspoons of 25 percent chlorobenzilate emulsion per gallon are very effective on spider mites but do not control any other insect pests. Some aerosols containing dichlorvos, pyrethrum, and rotenone also are very helpful. If the infestation is not too severe, malathion at the higher doses applied as a spray or plant dip gives good protection. Check plants after 3-4 days. If control is poor, use one of the other recommended chemicals. Fine dusting sulfur provides some control.

Cyclamen mites are difficult to control because they feed in the hearts of plants. They curl the young leaves, cause plants to become excessively hairy, and deform young shoots. They can be found on African-violets, gloxinias, begonias, cyclamen, English ivy, geraniums, and a few other plants. Used as for spider mites, dicofol provides effective control if sprayed into the hearts of plants.

Fungus gnats invade potted soil and may injure plant roots. They are small white worms in the larval stages that come to the surface when pots are watered. The adults are very small, black, nonbiting, mosquito like flies. They can be easily controlled with a light dusting of the soil surface with a 5- or 10-percent chlordane dust. Regular watering will carry the insecticide into the soil.

Springtails or **Collembola** often are seen running on the soil. They jump when disturbed. If especially numerous, they may injure plant roots. Apply insecticide directly on the soil. Use a 10-percent chlordane dust, or 1 teaspoon of 40 percent chlordane per gallon of water, or 1 teaspoon of 50 percent malathion per gallon of water.

Symphylids or **greenhouse centipedes** are close relatives of insects and are known to do much damage to plants by

feeding on root hairs, thus seriously weakening and stunting the plants. Both of these pests can be controlled with a 5- or 6-percent chlordane dust applied to the soil surface.

Earthworms occasionally are found in potted plants. Repot such plants and eliminate the worms, as they clog the drainage hole and lump the soil by tunneling among the roots.

INSECTICIDES

Since concentrations of different insecticides vary, follow the directions on packaged insecticides very carefully. Following them is important because many house plants are more sensitive than plants grown outdoors.

Wettable powder formulations must be agitated well during mixing and spraying. Some of the powdery material will be left as a visible residue on plants.

Emulsion concentrates are liquids that mix readily with water but, because they contain some oily solvent, there is danger of burning plants. Malathion emulsions, properly diluted, can be safely sprayed on most house plants. A premium grade of malathion is desirable for indoor use to avoid the persistent odor of the agricultural grades. Do not overspray, particularly with emulsions.

HOW TO TREAT

Plants can be treated by spraying, dipping, dusting, or by using an aerosol bomb. To spray efficiently and with the least danger of wetting furniture, put plants in the bathtub, in a washtub, or in the basement for treatment. You can apply soapy solutions of insecticides by brushing or sponging the leaves and infested stems. Use rubber gloves whenever there is a possibility of contacting the spray or dip. Plants also can be dipped, but be sure the insecticide is uniformly mixed with the water. Check the condition of the plant and soil in the flower pot before you upend and dip it.

Dipping an infested plant in an insecticide-water mixture is a technique used for difficult-to-control pests, especially mealybugs, whiteflies, scale insects, and spider mites. Put the insecticide mixture in a pail large enough to accommodate the top of the largest plant. Before turning the plant upside down, slit a cardboard disk and fit it around the plant stem so the loose soil won't fall off the roots. Then turn the plant upside down and immerse the foliage for a few seconds.

Drenching the soil of a plant infested with fungus gnats, springtails, or greenhouse centipedes may be necessary for a serious infestation. Apply the recommended insecticide-water mixture to the soil using 1½ tablespoons for a 2½-inch pot, ¼ cup for a 3-inch pot, and ½ cup for a 4-inch pot.

Aerosols, or small bombs in cans, are carefully prepared mixtures that can be atomized directly on plants without any dilution or mixing. Use only bombs that are sold for use on ornamental plants, and read the label to make sure it is recommended for house plants. Bombs prepared for fly, mosquito, or roach control may burn and even kill sensitive plants. In general, aerosols do not deposit as much insecticide as a sprayer, so you may have to use them several times at intervals of a few days for complete control.

Use great caution when handling any insecticide. Avoid spraying food, cooking utensils, and aquariums. Do not spray heavily in a small space without good ventilation.

disease control

Herbert G. Johnson, Professor and Extension Plant Pathologist

Diseases and disorders of house plants are in many ways quite different from those of plants growing outdoors. The low relative humidity and continuously dry leaf surfaces of indoor plants prevent infection by the fungi and bacteria that cause leaf spots on plants growing in more moist places. Leaf spots and powdery mildew may be present on plants that have been brought into the house from outdoors. You can use chemicals for initial control, but these diseases generally will not persist under house conditions.

Space plants adequately to prevent high humidity and condensation of water on leaf surfaces.

Potting soil should be free from disease causing organisms. Field soils may be satisfactory, but there is always the risk of infection when using such soils. You can purchase clean soil from greenhouses and garden stores, or you can make soil safe for planting with chemical or heat treatment. Heat small amounts of soil in the oven in a shallow pan to pasteurize it. The soil should be moist but not wet when heated. Raise the soil temperature to 180° F. and hold it there for 20 minutes. To sterilize old clay pots and similar containers, heat them in boiling water for 30 minutes. These directions also apply to broken pieces of pottery used for drainage. Wash porcelain and metal containers thoroughly and scald them with boiling water before using them.

The following information on caring for foliage plants applies equally to most other plants that can be grown indoors.

LEAF DISORDERS OF ORNAMENTAL FOLIAGE PLANTS

Leaves of ornamental foliage plants often show spots, dying margins, and color variations. These symptoms generally are caused by adverse growing conditions rather than by infection from disease-causing agents. Leaf-spotting fungi, bacteria, and nematodes generally are unable to infect foliage plants in the house because leaf surfaces are continually dry. The cause of trouble in most leaf disorders generally is associated with the roots. The soil may be in proper condition when the plant is received, but changes occur over time and an unfavorable situation can develop. Check over the following items and correct your handling of plants where necessary.

Improper watering. This is the most common cause of trouble. Follow the recommendations on watering given in the first part of this bulletin.

Inadequate fertilization. Soil fertility levels may be too high, too low, or out of balance. Nitrogen, phosphorus, and potash are the nutrients that generally are needed at regular intervals and in proper amounts. Light green color or yellowing of foliage often indicates a nitrogen deficiency. Potash deficiency usually results in the browning and dying of leaf margins. Phosphorus deficiency symptoms are less distinct: The leaves may turn a dark, dull green or a bluish green or no specific symptom may be present. Follow the fertilizing recommendations given in the first part of this bulletin.

Accumulated salts. Unused salts from fertilizer and from water may accumulate in soil over a period of time and often can damage plants. These salts sometimes occur as crusts of salt crystals on the soil surface and the rim of the container. At times the crusts also may be seen on plant stems. A general high level of salts in soil impairs normal root functions. Prevent these salts from forming or remove them when they appear. Regular leaching of the soil about twice a year is a good practice. You must have a porous soil to do so. Pour large amounts of water through the soil over a period of hours. The soil and container must drain freely and must be placed where the water can drain away. Pour through amounts of water equal to five times the volume of the container. If that amount of water will not go through in the required time, drainage is not adequate and must be corrected. Repot the plant using a porous soil.

Repotting. See the section on repotting (page 9).

Insufficient light. See the section on light (page 7).

Root and crown rot. These are diseases caused by living organisms. Some of them can be severe enough to cause the death of a plant. In some cases, new plants can be started from aboveground parts before the plant is too far gone. In this case, you can eliminate the trouble by rooting the shoot and planting it in disease free soil. In most instances, root and crown rot are encouraged by poor growing conditions, as described above.

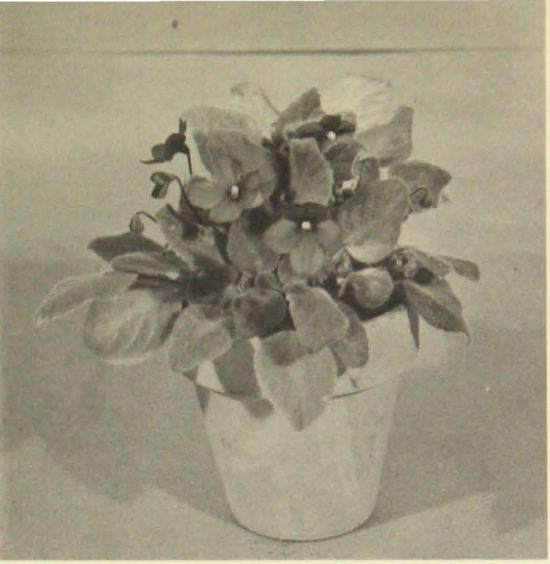
Nematodes. These are small eelworms that live in the soil or on plant parts. Some types of nematodes produce enlarged growths on roots. Their feeding often is followed by root and crown rots. In most cases, starting new plants from stem or leaf cuttings and planting them in clean soil is the best way to eliminate the problem.

Virus diseases. Viruses are liquid type infectious agents that cause plant diseases. Symptoms generally are mottling, yellowing, and lack of vigor. Once a plant is infected, it should be destroyed to prevent spread of the virus to healthy plants. Viruses generally are spread by insects or by handling plants.

flowering plants

Achimenes is a summer flowering plant arising from a thickened underground stem called a rhizome. Rhizomes can be planted from March to May and should be placed in a sunny window. Partial protection from the sun may be necessary during the summer. If the soil of actively growing plants dries out, the plants may go dormant prematurely. After flowering, allow the plant to dry and store the rhizome in the pot or in dry sand at 50°-60° F.

African-Violet (Saintpaulia), probably the most popular flowering house plant today, is especially well adapted to the average well heated home. This plant prefers a night temperature of 68°-70° F. and a day temperature up to 75° F. Never allow the night temperature to drop below 60° F., since chilling may prevent flowering, cause the leaves to curl downward around the edges and turn a pale green, and weaken or even kill the plant.



An African-violet with multiple crowns or growing points.

Five separate plants obtained by dividing the African-violet at the left.

Good light is necessary to grow quality plants, but avoid direct sunlight in midday except for the period from mid-November to mid-February. Excessive light will produce sunken sunscald spots on leaves and flowers and a pale, bleached appearance. Poor light may result in wonderful foliage but no bloom.

Keep the soil moist, using room temperature water. Don't let cold water touch the leaves and keep the plant out of the sun when the foliage is wet or the upper leaf surfaces will become spotted. Single crown plants bloom most freely and produce the best appearing plants. Propagate them by leaf petiole cuttings and divisions.

Old plants sometimes become tree like, with a thick trunk like stem below the rosette of leaves and flowers. Renew such plants by severing the top from the base just below where the lowest leaves are attached to the stem. Place the stem base in a saucer of water and new roots will develop in about a month. The shortened plant is ready for potting when new roots develop.

Amaryllis (Hippeastrum) should be planted from October to March with the bulb two-thirds above the soil level. Use a pot with a diameter of not more than 3 inches greater than the bulbs. Best growth is obtained in full sun at a minimum temperature of 60° F. and with a good water supply.

After flowering has ceased, keep the plant growing actively. Place it in the garden when danger of frost has passed. You may place the pot in the ground or plant the bulb directly in the ground in a partially shaded location. Good summer care helps insure reblooming year after year. Take the plant indoors before frost arrives in the fall.

Although the amaryllis can be kept in continual growth, most people prefer to dry off the plants in early fall, since the foliage is not especially attractive. If the bulbs have been planted directly in the

A well-grown single crown specimen of the African-violet cultivar Giant Snow Prince. Notice the appropriate brass outer container.

Amaryllis, an especially colorful flowering plant for the home.

garden, dry them off and store them in a cool place until about January 1, when you can pot them. If the bulbs have been grown in pots continually, repot them in fresh soil about January 1. Be careful not to injure the fleshy roots. Dormancy may be broken by watering.

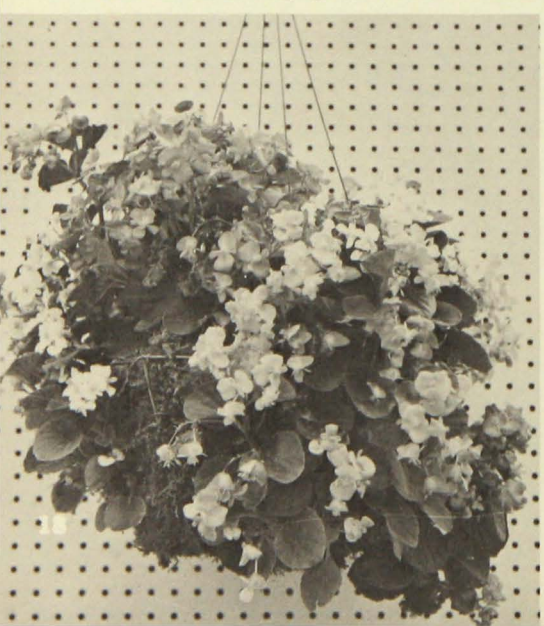
Azalea (Rhododendron) lasts longest if purchased with more buds than open flowers. It prefers bright light or direct sunlight and a constant moisture supply.

After the plant has flowered, keep it in a bright window until the danger of frost has passed. Then plunge the pot in the soil outdoors in a partially shaded location. Be sure to keep the soil moist. Prune the plant before July 1 to keep it well shaped.

Take the plant indoors before the frost arrives and keep it in a cool (35°-50° F.), well lighted, but not sunny, location until January 1. Then place it in a warm, bright window for forcing into bloom. The cool period permits development of the flower buds and results in a uniform floral display. Since rhododendrons require an acid soil, acid peat moss is a very satisfactory growing medium.

Balsam (Impatiens) can be grown from seeds or cuttings. The plants grow best at a temperature of 65° F. and with good light. Pinch them to obtain well shaped plants. You can set them in the garden after danger of frost has passed.

Begonia semperflorens (Everblooming Begonia) makes a colorful hanging basket the year round.



Wax, Perpetual, or Everblooming Begonia (Begonia semperflorens) prefers full sun during the winter and partial shade during the summer. It likes a uniform water supply and thrives best with a minimum night temperature of 60° F. The plant will fail to flower when a night temperature of 70° F. or more is maintained during the short day period. It is a good bedding plant that can be carried over the winter with cuttings taken from the base of the plant in late summer.

Calla Lily Begonia (B. semperflorens albofoliis) is a unique type that is a bit more difficult to grow than the ever-

The Rex begonia has showy foliage.

Steel begonia, one of the toughest begonias for house plant purposes.

blooming type. Do not try to grow it in direct sunlight.

Melior or Christmas Begonia (B. socotrana) lasts for several months if it has many buds when purchased and is properly cared for. Keep it in full sun at a cool (50° F.) night temperature. Keeping the plant too dry greatly shortens the life of the blooms. Although it is not the easiest begonia to grow, it can be reproduced from cuttings taken in late March. The cuttings can be grown to flowering specimens for the following Christmas. Avoid direct sun in the summer.

Miscellaneous Begonias, most of which are of the fibrous rooted type, require sun or bright light and a uniform moisture supply. They prefer partial shade during the summer.

Tuberous Begonias (B. tuberhybrida). These plants must be started indoors for outdoor bloom. Plant the tubers in shallow containers of peat, sand, or vermiculite in March and April. Place the hollow side of the tuber up with the top exposed. Keep it moist, but not wet, at 70° F. Once the plants are well started, plant them in 6- or 8-inch pots using an organic soil mix. Place the tuber just below the soil surface. Grow begonias at 60°-65° F. and shade them from strong sunlight.

Place begonias outdoors in a protected location when warm weather arrives. In late summer or early fall, dry the plants by a gradual reduction of the water supply. When all growth dies down, remove the tubers from the soil, dry them in sunlight for 1-2 days, remove all parts of the old stems, and store them in dry peat moss, vermiculite, or sand at 38°-45° F. over the winter.

An alternate method is to store the tubers in soil. Turn the pots on their sides and do not water.

Browallia (B. speciosa) makes an attractive blue- or white-flowered house plant that can be grown in sunny or partially shaded windows. Sow seed from June to August for bloom in late winter or early spring.

Calceolaria should be purchased with both buds and open flowers. This plant requires a bright location, abundant moisture, and a night temperature of 50° F. (if possible) for a maximum life. It is an annual and should be discarded when flowering has ceased.

Calla Lily (Zantedeschia) often is grown as a potted plant. The white lily should be planted in August and the yellow in November. These plants will grow continuously if permitted to do so. Plant one rhizome per pot. Callas prefer a sunny or bright location and an abundant

Greenhouse produced potted chrysanthemums last 3 weeks if properly selected and handled. The cultivar shown is Yellow Mandalay.

moisture supply. The white one prefers a 55° F. night temperature and the yellow prefers a 60°-65° F. night temperature. Most people prefer to dry off the plants in June. Keep them as cool as possible when dormant.

Camellia prefers a moist soil, a bright location, and high humidity, especially during the flowering period. During the fall and winter prior to flowering, a night temperature of 40°-50° F. is recommended. After flowering, 50° F. is the best temperature. Excessively high temperatures induce bud drop, faded flower color, and smaller blooms. An acid soil is required.

Chenille Plant (Acalypha hispida). This plant is grown for the bright red flowers in pendant spikes. It requires a moist soil, full sun, and a minimum temperature of 60° F.

Christmas Cactus (Schlumbergera bridgesi), Easter Cactus (Schlumbergera gaertneri), and the **Thanksgiving Cactus (Zygocactus truncatus)** grow best when kept constantly moist except in autumn, when they should be watered thoroughly but allowed to become moderately dry between waterings. They prefer sunshine and form flower buds at a 55° F. night temperature, regardless of day length, or at a night temperature of 63°-65° F. during short days. Flower buds may drop if the temperature is too high or the light intensity is too low. No flower buds will develop when the night temperature is maintained at 70°-75° F.

Chrysanthemum plants purchased from the florist require abundant moisture and a bright location. Partially opened flowers of the colored cultivars will not develop their full color if you keep them out of the sunshine. Chrysanthemum flowers are among the longest lasting of flowering pot plants, especially when kept cool at night.

Greenhouse cultivars do not make satisfactory garden plants in the Upper Midwest because they do not flower before killing frost arrives in the fall.

You can pot plants growing in the garden in late August or early September for flowering in the home, but leave them outdoors as long as possible, as they require full sun. The chrysanthemum is not a satisfactory house plant when not in bloom.

Cineraria culture is the same as that for Calceolaria.

Crown of Thorns (Euphorbia splendens) is a spiny plant that resembles a cactus but is closely related to the poinsettia. It will tolerate a wide range of conditions, but it prefers full sun and a moderately dry soil in November and December.

Cyclamen plants require sunshine and a cool (50°-60° F.) night temperature. Plants with many buds as well as open flowers will last longest. Water them when the soil appears dry at the surface, but don't get water in the crown of the plant. Plant wilting at high temperatures when the soil is dry usually will result in yellowing of the leaves. Bud blasting and leaf yellowing also will occur if the night temperature is too high or the light intensity is too low.

After flowering, keep the plant dry until June. Then replant the corm (fleshy bulblike structure) in fresh soil, being careful to keep the corm half above and half below the soil line. If grown properly, it will bloom again the following winter.

Easter Lily prefers bright light, a moist soil, and a 60° F. night temperature. Dry soil and high temperatures will shorten the life of the flowers. Lasting time in the home is determined by the number of flower buds present when the plant is purchased. Lily bulbs usually can not be forced in the home because of inadequate light and high temperatures.

After the plant has bloomed, keep it watered until the foliage yellows. When weather permits, plant it in the garden in a well-drained location, covering the bulb with 6-8 inches of soil. The bulb will rest until midsummer, when new growing shoots will appear. If fall frost is late, the plant may bloom again in the fall. In following seasons, expect a flower crop in midsummer.

Lily bulbs usually are winter hardy, but it is advisable to cover the areas with a straw mulch.

Fuchsia makes an interesting house plant if grown in full sun in a cool room. It will flower in the shade during the summer. Good drainage is essential.

Gardenia requires full sun and a night temperature near 60° F. Buds will form but turn brown and fail to develop at a night temperature of 70° F. or more. High temperature and low light intensity induce bud drop. An acid soil is required and high humidity is beneficial.

Geraniums (Pelargonium) are available in wide variety. They require full sun, cool temperatures, and moderate watering for successful pot plant culture. Propagation usually is by cuttings, but new seed propagated cultivars are now available.

Martha Washington Pelargoniums will not flower unless the night temperature is below 60° F.

Gloxinia (Sinningia speciosa) thrives best in bright light, but should be protected from the direct rays of the midday sun after May 1. It prefers a warm (65°-70° F.) night atmosphere, a moist soil, and good air circulation. Bud blasting or rot usually is associated with poor air circulation, too dry an atmosphere, insufficient or irregular watering, overfertilization, low temperature, or insect injury. Legginess very often is due to overwatering when the tuber is first started. Insufficient light and high temperatures also induce leggy, spindly growth.

Unless the plant is a new cultivar that prefers constant growth, keep the soil dry until the foliage dries after the plant has finished flowering. Then store the tubers in their pots or in sand or peat at 55° F. Do not allow the tubers to wilt excessively. In February or March, replant the tubers in fresh soil and start them at a 70°-80° F. temperature. Plants grown from tubers usually bloom in 4 months.

Hibiscus includes numerous species and cultivars with large attractive blooms. They are especially effective in planters in front of the window walls of modern homes, where year-round flowering and fairly large plants are desirable. These plants prefer a night temperature of 60°-65° F., bright light, and moist soil.

Hydrangea plants require a lot of water, especially when in bloom. They prefer full sunlight, and the blooms last longer when plants are kept cool at night.

If the plant is to be carried over for another season, cut back the stems to 3-5 inches from the ground after blooming has stopped. When weather permits, place the pot directly in the garden, remembering to lift the pot every few weeks and to water the plant in dry weather. Repot the plant in a slightly larger pot either when you move it outdoors or in late August. Leave the plant outdoors until the first light frost occurs. Store it in a cool (35°-40° F.), dark place until January 1. Keep the soil just moist enough to prevent stem shriveling. Most, if not all, of the foliage will drop during this period. Remove any remaining leaves. Then move the plant to a cool (60° F. at night), sunny window.

Hydrangeas require fertilization during forcing. The flower color of some cultivars ranges from blue, when grown

in an extremely acid soil, to pink, when grown in a slightly acid soil. The quality of homegrown hydrangeas seldom equals that of greenhouse grown plants.

Italian Bellflower (Campanula isophylla) often is erroneously called Star of Bethlehem. Its growth habit makes it well suited to hanging baskets. This plant requires a bright location, plenty of moisture, and a cool (50°-60° F.) night temperature. Remove the flowering shoots at pot level when the flowers fade.

Kalanchoe (Kalanchoe blossfeldiana) should be kept in bright light or full sunshine. The scarlet flowers are appropriate for Christmas or St. Valentine's Day. Cultivars with cream-colored or pink flowers also are available. The compact growing cultivars are the most popular. This plant may be kept in active growth for flowering the following year, but fresh plants usually are preferable.

Orchids usually are not good house plants unless special provisions are made to satisfy their cultural needs. Orchids can be grown in glass or plastic cases located in bright windows, since this method allows retention of high humidity. Obtain detailed information before attempting to grow orchids in your home.

The kalanchoe makes a compact, interesting house plant.

Oxalis (sometimes called Shamrock) should be kept in a sunny window at a temperature between 50°-60° F. Water it normally, but avoid maintaining an extremely wet soil. A slightly alkaline or neutral soil is best.

Poinsettia (Euphorbia pulcherrima) usually is purchased in full bloom. It requires bright light and should not be allowed to wilt or it may lose some of its leaves. Do not subject poinsettias to drafts, sudden temperature changes, or temperatures below 60° F. Temperatures above 75° F. also shorten the life of the blooms. Several recently introduced cultivars are much better adapted to conditions in the average home than were the old cultivars.

To carry plants over for a 2nd year, dry them after flowering and store them in a cool (55°-60° F.), well ventilated place. In May, cut back the plants to a point approximately 5 inches above the ground line, repot them in fresh soil, and return them to a bright window to renew active growth. After outdoor night temperatures have ceased to drop below 60° F., place the pots in the garden in a location partially protected from the midday sun. Pinch plants until September 1 to keep them short, but remember that pinching the same shoot more than once may result in smaller bract clusters (the brightly colored portion).

When cool nights approach, take the plants indoors and keep them in a sunny, airy location with a night temperature of 60°-68° F. Higher night temperatures or exposure to artificial light after sunset following October 1 will delay or prevent flowering.

The quality of homegrown poinsettias seldom equals that of greenhouse grown plants.

Primrose (Primula) culture is the same as that for Calceolaria.

Rose requires full sun, abundant moisture, and a night temperature around 60° F. Plants with the buds partially open when purchased last the longest. Most varieties sold by florists as holiday potted plants make good garden

plants. After the plant has bloomed, cut off the old flower clusters and keep the plant in active growth in a sunny location until weather conditions permit planting in a sunny, well-drained location in the garden. Protect such roses during the winter or they may not survive.

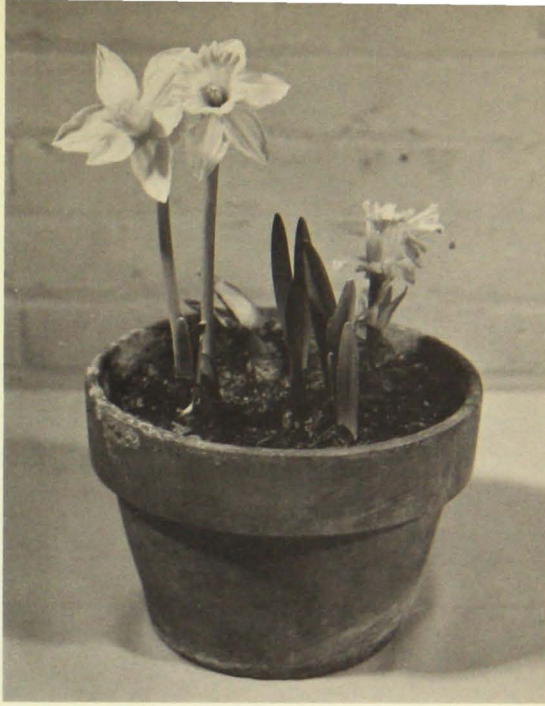
The **Shrimp Plant (Beloperone guttata)** is grown for its unusual flowers and bracts, which are produced in drooping terminal spikes. Frequent pinching is required to keep the plant from becoming too leggy. It prefers full sun and a night temperature of 50°-55° F.

FORCING SPRING FLOWERING BULBS

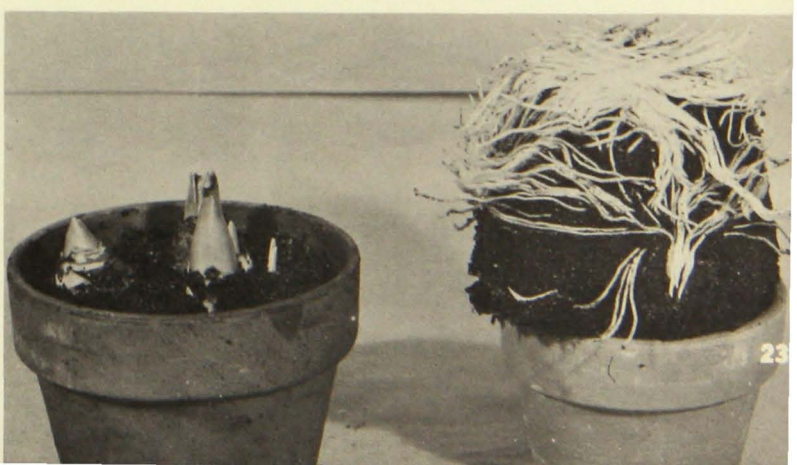
Well known types of bulbs such as tulips, narcissi (daffodils), hyacinths, and crocus, as well as less familiar types such as grape hyacinths, scillas, and even lilies-of-the-valley, can be potted for flowering in late winter and spring. To insure success, use only bulbs of good quality and size and cultivars adapted to pot culture.

Prior to planting, store bulbs at 55°-63° F. in a well ventilated location for several weeks. You can plant the bulbs any time from October 1 to December 1. Early planting results in early flowering.

Pot the bulbs in shallow pots called bulb pans containing a soil with good water holding capacity and good drainage. A mixture of three parts garden loam, two parts peat moss, and one part sand works well. Use a soil relatively low in nutrients, as bulbs require only a limited nutrient supply during forcing. Using manure often encourages the development of disease. Too high a nutrient level may rot the bulbs. Plant hyacinths and narcissi as close together as the bulbs will allow. Plant five or six tulip bulbs per 5-inch pan or six to nine bulbs per 6-inch pan. Place the flat side of the tulip bulb against the side of the pan so the first leaf will spread over the outside of the pan. As a general rule, plant bulbs other than the three just mentioned so as to leave as much space unoccupied as the bulbs already occupy in the pan. Use only clean containers with adequate drainage openings. Don't



The King Alfred narcissus forced before an adequate root system had developed.



Hyacinths with top and root development that indicate they are ready for forcing.

RECOMMENDED CULTIVARS *

Type of bulb	Flowering time	
	January and February	March and April
TULIP	**Red** Bing Crosby, Cassini, Cellini, Charles, Christmas Marvel, Olaf, Paul Richter, Prominence, Topscore, Trance	**Red** Albury, Couleur, Cardinal, Danton, Robinea
	Yellow Bellona, Levant	**Yellow** Makassar, Ornament, Yellow Present
	White Pax, Snow Star	**White** Blizzard
	Salmon Apricot Beauty	**Orange** Orange Sun
	Variegated Kees Nelis, Madame Spoor, Merry Widow, Roland	**Variegated** Carl M. Bellman, Denbola, Edith Eddy, Golden Eddy, Paris
	Pink Blenda, Preludium	**Pink** Peerless Pink, Palestrina, Pink Supreme, Rose Beauty, Virtuoso
HYACINTH	**Red** Amsterdam, Jan Bos	**Red** Amsterdam
	Pink Anna Marie, Delight, Lady Derby, Eros, Princess Irene	**Pink** Eros, Lady Derby, Marconi, Pink Pearl, Princess Irene
	Blue Bismark, Delft Blue, Ostara	**Blue** Blue Giant, Blue Jacket, Marie, Ostara
	White Edelweiss, L'Innocence, Madame Kruger	**White** Carnegie, Colesseum
DAFFODIL	Carlton, Golden Harvest, King Alfred	Cheerfulness, Geranium, Gold Medal, Rembrandt, Van Sion
CROCUS	Grand Maitre, Joan of Arc, Peter Pan, Pickwick, Remembrance	Grand Maitre, Joan of Arc, Peter Pan, Pickwick, Remembrance

* Based on studies conducted at Michigan State University.

Potted tulips add color and a touch of spring to the home. When purchasing plants, select those with tight buds like these so they will live longer in your home.

press the soil hard or pack the soil by pushing the bulbs down. Fill the pots only to within ¼ inch of the top. Label each pot with the name of the bulbs and the planting date. Water the soil thoroughly after planting.

Place the pans in a cool basement at a 35°-50° F. temperature for a minimum of 12 weeks. Hyacinths prefer a 50°-55° F. temperature until the new shoots are 1½ inches above the bulb. The soil must be kept moist with frequent watering while pans are in the rooting room.

If you do not have a cool basement, place the pans outdoors in a trench 10-12 inches deep and on a 2-inch layer of sand or gravel to insure good drainage. Fill in around and over the pans with sand, leaving a 2-inch layer covering the top of the pan. Cover the sand with a 10-inch layer of soil and place a 10-inch mulch of sawdust, leaves, or hay over the soil. Recent work has shown that shredded polystyrene also makes an excellent covering, but it must be covered with screening or mesh to keep it in place.

Beginning in January, or when the roots are well developed, place the pans where the temperature is about 60° F. for forcing. For best results, keep the plants out of direct sun and keep the soil moist. Early in the forcing season, you may be wise to keep hyacinths in the dark for a few days or to place heavy paper around the plant (on the outside of the pot rim) to draw the flower stalk up above the leaves.

If you want to save the bulbs after flowering, leave the foliage on the bulb, apply a complete fertilizer, and keep the bulb in active growth until it yellows. Then dry the soil. You can plant these bulbs in the garden in the fall, but get fresh bulbs each year for indoor forcing. Reused bulbs do not always perform well in the garden.

Paper white narcissus, lily-of-the-valley, Roman hyacinth, hyacinth, and a few other bulbs can be grown in pebbles if the water level is kept just below the bottom of the bulbs. A little charcoal may help to keep the water fresh. Place paper white narcissi and lilies-of-the-valley directly in the sun. Hyacinths may benefit from storage in a cool, dark location until the roots are 2-3 inches long, especially in the early part of the forcing season. Special vases or bottles are available for holding hyacinth bulbs.

When window space is at a premium, you can use basement window sills in a bright location for growing the bulbs to the flowering stage as well as for maturing the foliage after flowering.

Proper selection of cultivars enables you to have a continuous display of flowers during the bulb forcing season.

fruiting plants

Avocado (Persea americana) often is grown from seed because it is an interesting novelty. Soak the seed, which may be obtained from the fruit, in water to remove the outer covering. Then suspend the seed with the large end down and the base just touching water. An easy method is to stick three toothpicks into the sides of the seed to support it in the proper position in a water glass or similar container. A less interesting but equally satisfactory method is to plant the seed in a sandy soil, covering it with ½ inch of soil. Fruiting of plants grown in the home is uncommon. Avocado prefers bright light, moist soil, and a minimum temperature of 60° F.

Citrus plants include oranges, lemons, and grapefruits, which have fragrant white flowers and attractive fruits. A few that are suitable for the home include **C. mitis,** the **Calamondin Orange; C. taitensis,** the **Otaheite Orange; C. limonia meyeri,** the **Dwarf Chinese Lemon;** and **C. limonia 'Ponderosa,'** the **American Wonder Lemon.** These plants prefer a sunny location, moist soil, and a night temperature of 55°-65° F. The flowers last longer at the lower temperature.

Pineapple plants bearing edible fruit sometimes are available at greenhouses.

Jerusalem Cherry (Solanum pseudocapsicum) should be obtained from the florist when full of fruit. It lasts much longer if kept at a night temperature of 50° F. Place the plant in bright light and keep the soil moist. Too dry soil or escaping gas in the home may cause dropping of the leaves and fruit.

Coral Berry (Ardisia crispa), an attractive, slow growing plant, should be grown at a minimum temperature of 60° F. The plants can be grown outdoors in partial shade during the summer if adequate moisture is provided. A slightly sandy soil of relatively low fertilizer content is most satisfactory. Older plants develop coral berries that last for a year or more.

Ornamental Pepper (Capsicum frutescens) should be exposed to full sun at a minimum temperature of 55° F. Lack of water will cause fruit rotting and foliage loss. You may dry the fruits for use as a seasoning, but use them sparingly as they are hot!

Pineapple (Ananas species) can make a satisfactory house plant, although it does not commonly bear fruit in the home. Cut off the crown of leaves atop the fruit, root it in sand, and pot it. There are several species and cultivars; the variegated forms make the showiest house plants. Plants bearing young fruit sometimes are available in commercial greenhouses. Young plants started from suckers at the base of older plants may bear fruit quicker than plants started from the crown on top of the fruit. If fruiting is an objective, replant the pineapple in a larger pot whenever it becomes rootbound. The plant prefers an open, well drained soil, bright light,

moist air, moist soil, and a minimum temperature of 60° F.

Variegated Chinese Evergreen (Aglaonema commutatum) will bear long lasting clusters of berries that are green at first and gradually turn yellow, orange, and finally red. It grows best with a minimum temperature of 65° F. and a good water supply. It is extremely durable and will do well even in relatively dark locations. This plant is attractive for its foliage as well as for its fruit.

Several cultivars of **A. marantifolium** also produce attractive red fruit.

Fruit on an attractive specimen of Aglaonema marantifolium maculatum. This plant is similar to, but larger than, the variegated Chinese evergreen.

foliage plants

Foliage plants are used in homes to provide decorative effects, interest, and beauty over an extended period. The objective is to keep the plants alive and in good condition and yet avoid rapid growth. Limiting the water and nutrient supply and providing adequate light usually produce this result.

Here is a relatively easy method for maintaining foliage plants in good condition while limiting growth. Place ½ inch of gravel or pieces of broken flower pots in the bottom of a decorative container and place the potted plant inside the container. The top of the inner pot should be approximately 1 inch lower than the top of the outer container, and there should be at least ½ inch of space between the two pots. Pack this space and the area above the inner pot with peat moss to within ½ inch of the top of the outer container. When water is required, temporarily push the peat moss away from the soil over the inner pot. Moisten the peat moss occasionally to keep it from becoming dry and dusty. Use the same procedure for planters and room dividers. Plants handled in this manner require full rate fertilizer applications a maximum of twice a year.

Artificial plants do not provide equal satisfaction and are not recommended, except for locations such as near outside doors and in very dark areas where using supplementary light is highly impractical.

Abutilon (Flowering Maple) includes a group of old-fashioned green and variegated plants. They prefer a sunny location, low temperatures (55°-60° F.), and moist soil.

Acalypha (Copper Leaf) requires a high soil moisture content, full sun, and a minimum temperature of 60° F. Propagate it from cuttings in late summer.

Acorus gramineus (Sweet Flag) and the white striped cultivar **variegatus** will grow in sun or shade, but they require abundant water.

Aglaonema (Chinese Evergreen) are among the toughest house plants available. They prefer good light, a minimum temperature of 65° F., and a good water supply. The plants can exist in poor light even at high temperatures, however,

A cross section view showing how smaller pots can be supported in a planter. Place a layer of gravel on the bottom of the planter and fill the area between the pots with peat moss.

and also will grow in water or in a dry soil.

Several species are available. **A. modestum,** the most common form, generally is sold under the name **A. simplex.** Both species have solid green foliage, but the leaves of **A. simplex** are more oblong and narrow with a twist, are thinner in texture, and are deep green and glossy with depressed veins. **A. 'pseudo-bracteatum'** is the showiest species. It has long leaves that are a deep green variegated with light green, yellow, and creamy white, and white stems. **A. roebelini,** often called **Schismatoglottis** by florists, is very attractive with its broad, gray-green leaves variegated with dull silver. **A. treubii** has narrow, attractively marked, bluish-green, leathery leaves. **A. *commutatum*** and **A. *marantifolum*** are discussed under fruiting plants.

Alternanthera (Joseph's Coat) includes several dwarf varicolored forms that are suitable for terrariums. They prefer bright light, moist soil, and a minimum temperature of 65° F.

Aphelandra squarrosa is a showy plant with striking white veins on shiny green leaves and bright yellow flowers. Provide moderate light, a minimum temperature of 65° F., and moist soil. 'Dania' and 'Louisae' are stocky cultivars.

Araucaria excelsa (Norfolk Island Pine) is an interesting evergreen with needle like leaves borne on stiff branches rising in whorls at regular intervals along the stem. An extremely tolerant plant, it will survive in cool or warm, light or dark locations, but branchlets will droop when light is limited. The best growth is obtained in the sun with a temperature of 65° F. and moist soil.

Asparagus of two types can be grown. **A. plumosus (Fern Asparagus)** has very fine needle like dark-green leaves with twisting stems. **A. sprengeri (Sprenger Asparagus)** has coarse yellow-green needle like leaves and drooping stems; it produces red berries in good light. The best growth is obtained in full sun in the winter and bright light in the summer. Keep the soil moist and the temperature

between 60°-70° F. Propagate it from seeds.

Aspidistra elatior (Cast-iron Plant) is a very rugged plant that has been grown for many years. There also is a white striped cultivar called **variegata.** Although the plant will survive almost any condition in the home, the best growth is obtained when the plant is given medium to bright but not direct sunlight, a generous water supply, and a temperature of 60°-70° F.

Aucuba japonica variegata (Golddust Plant), with its gold spotted, dark-green leaves, will withstand temperatures down to freezing. The cultivar **goldeana** is especially attractive. The centers of its leaves are a golden yellow and the borders are green. Provide plenty of water, sun or bright light, and a temperature below 75° F.

Bromeliads are durable plants that will survive unfavorable conditions better than any others. **Aechmea, Ananas (Pineapple), Billbergia, Cryptanthus (Zebra Plant), Dyckia, Tillandsia (Spanish Moss,** etc.), and **Vriesia** are some of the common Bromeliads. Many of them store a supply of water in their center, vaselike cups, which may double as a cut flower container in the home. Replace the water regularly when used for flowers. Some forms produce attractive blooms and others have showy foliage. This group deserves more consideration as a source of house plants. In general, Bromeliads grow best in bright light, a night temperature of 60° F., and a well drained soil.

Buxus sempervirens (Boxwood) is quite tolerant of varied conditions but prefers a sunny location and a cool night temperature.

Caladium requires a 65° F. minimum temperature, bright light, and a uniformly moist soil. After the foliage dries in the fall, store the tuber in dry peat moss or sand at a 65° F. temperature. Tubers usually can be started in March or April, although low humidity in the home may make forcing difficult.

The showy foliage of Aphelandra squarrosa 'Dania'.

A temperature of 80°-90° F. is preferable for starting the tubers.

Chamaeranthemum igneum is a low, spreading herb with beautiful dark brownish-green leaves that have red to yellow veins. It requires a 65° F. minimum temperature, moist air, filtered light, and moist soil.

Chlorophytum (Anthericum or **Spiderplant)** prefers moist soil and sun or partial shade.

Araucaria excelsa (Norfolk Island Pine) in a glazed pottery outer container.

Cissus grows best in bright light at a minimum temperature of 60° F. Provide a well drained soil and plenty of water. Numerous types are available, including the popular **C. rhombifolia (Grape Ivy);** its more compact cultivar 'Mandiana'; the coarse, fast growing **C. antartica (Kangaroo Vine);** the slow growing, smaller, self-branching **C. antartica minima (Miniature Kangaroo Vine); C. rotundifolia,** which has round, smooth, bright-green, firm leaves; and **C. discolor (Begonia Ivy),** the showiest of the group, which is most attractive when young. The last species listed requires moist air and is not as easy to grow in the home as the others.

Codiaeum (Croton) requires full sun except during the summer to develop full leaf color. Provide a uniform supply of water and a minimum temperature of 65° F. Crotons are available in a wide variety of leaf shapes and colors.

Coleus requires full sun to develop its best foliage color. Pinch the plants to induce branching, and keep the soil moist. You can plant coleus in the garden during the summer.

Columnea (Goldfish Plant) prefers a 55°-60° F. night temperature, a well drained soil, warm water to prevent leaf spotting, and about the same light as African-violets. Thin stemmed or vining types are useful for hanging baskets. The brightly colored tubular flowers resemble the fantail goldfish. **C. 'stavanger'** is called the **Norse Fire Plant.**

Cordyline terminalis (Ti Plant) prefers a minimum temperature of 60° F. and sun or bright light. Never allow the soil to dry out. The plant is relatively tolerant of reduced light intensity. Some variegated forms are exceedingly colorful. Propagate the plant with cuttings; a 4-inch section of the main stem is sufficient to produce a new plant.

Cyperus alternifolia (Umbrella Sedge), an exotic plant, grows in either sun or shade if there is a constant water supply. It will even grow in water.

Dichorisandra reginae resembles a slow growing, upright, wandering-Jew with attractive foliage markings. It prefers a minimum temperature of 60° F., moist air and soil, and moderate light.

The various leaf patterns and growth habits of the Dieffenbachia. 1. D. 'Janet Weidner,' 2. D. amoena, 3. D. 'Mary Weidner,' 4. D. picta 'Rudolph Roehrs,' 5. D. picta, 6. D. bausei.

Dieffenbachia (Tuftroot or **Dumbcane)** must be kept on the dry side at a minimum temperature of 60° F. Although the plant is tolerant of poor light conditions, growth is best in bright light. The best cultivars include **D. picta (Spotted Dumbcane),** with yellowish-white blotches on its dark-green leaves; **D. picta 'Rudolph Roehrs' (Roehrs Dumbcane),** which has a chartreuse leaf blade blotched with ivory and only the midrib and border dark green; **D. bausei,** which has yellowish-green leaves marked with white and dark-green spots and dark-green margins; **D. picta superba, D. exotica,** and **D. 'Janet Weidner,'** with high degrees of white variegation on the dark-green leaves; **D. 'Mary Weidner,'** with limited ivory spotting on the dark-green leaves and highly spotted petioles; and **D. amoena,** with some white coloring along the veins. The last plant is especially durable and will withstand a somewhat lower temperature than the others.

Dizygotheca elegantissima (False Aralia) offers graceful foliage and eventually develops into a large plant. Plastic open worked pot covers with waterproof bases are popular and practical.

Dizygotheca (Aralia) elegantissima (False Aralia) has graceful, palmately compound, metallic, red-brown leaves and prefers a minimum temperature of 65° F., moderate light, and moist soil. Leaf drying is caused by dry soil.

Dracaenas grow best in bright light at a minimum temperature of 65° F. and in a moist, well drained soil. Good types for the home include **D. fragrans massangeana (Massange Dracaena),** which has broad strap-shaped green leaves with a gold band down the middle of each leaf; **D. godseffiana (Spotted Dracaena),** a small type with dark-green leaves spotted with ivory; **D. godseffiana 'Florida Beauty,'** which is highly variegated with ivory markings; **D. godseffiana friedmanni,** which has a broad ivory stripe down the middle of the speckled leaf; **D. hookeriana 'rothiana' (Roth Dracaena),** an especially tough plant with

Dracaenas vary in appearance. 1. D. sanderiana 'Margaret Berkery,' 2. D. sanderiana, 3. D. hookeriana 'rothiana,' 4. D. godseffiana 'Florida Beauty,' 5. D. dermensis warnecki.

A group of Episcia. All of them produce young plants on runners. 1. E. dianthiflora (note the delicate white flower), 2. E. cupreata variegata, 3. E. cupreata 'Harlequin,' 4. E. cupreata 'viridifolia.'

rich green leaves and a somewhat wavy leaf margin; **D. marginata,** with a rosette of thick, narrow, linear, dark-green, red-edged leaves atop slender attractive trunks (slow growing); **D. sanderiana (Sanders Dracaena),** a medium-sized type that has broad white bands bordering its gray-green foliage; **D. sanderiana 'Margaret Berkery,'** a robust plant of medium size with waxy, deep-green leaves and a broad white band in the leaf centers; and **D. deremensis warnecki (Warnecki Dracaena),** with white stripes down the center of gray-green leaves.

Dyckia culture is the same as that for Cryptanthus.

Episcia, which has been called the **Flame Violet,** is not really a violet. This relative of the African-violet has the same cultural requirements as the African-violet, except that it desires a little more light. Episcias are grown primarily for their foliage effect. Numerous species and cultivars are available with foliage in shades and combinations of green, bronze, silver, copper, and purple. Most types bear scarlet flowers at certain times of the year.

Euonymus (Spindletree) prefers bright light, cool temperatures, and a good water supply. Several attractive, variegated dwarf forms are available. It is subject to red spider infestation, especially at higher temperatures.

Fatsia japonica also is called **Aralia sieboldi** by florists. Its culture is similar to that for Fatshedera.

Fatshedera lizei, which resembles an upright English Ivy, and the variegated form **F. lizei variegata** grow best in cool locations under the same conditions required by Hedera (English Ivy).

Ferns all have similar cultural requirements, with the exception of **Platycerium bifurcatum (Staghorn Fern).** This variety usually is wired to a piece of bark or wood to which some Osmunda fiber has been attached. It will survive temperatures as low as 40° F. with no ill effects. Submerge the plant in water at frequent intervals to prevent drying out.

Three plants with interesting foliage. From left to right, they are Fatsia japonica, which was crossed with Hedera helix (English ivy) to produce the middle plant, Fatshedera lizei, and a young specimen of Schefflera actinophylla.

Most other ferns thrive well in a soil containing at least 50 percent organic matter. Keep them in bright light, but out of direct sunlight, at a 65° F. minimum temperature and in a moist soil. Some of the more popular types include **Asplenium nidus (Birdsnest Fern), Cyrtomium falcatum (Holly Fern), Nephrolepis exaltata bostoniensis (Boston Fern),** and other cultivars, including **'Fluffy Ruffles'** and **'whitmani'** and **Pteris (Table Ferns)** — the smallest of the group. **Adiantum (Maidenhair Fern)** will not thrive in the home unless the plant is kept in a humid atmosphere.

Ficus (Rubber Plant or **Fig)** is best suited to a temperature above 60° F. and moist soil. Although growth is best in bright light, the plants will endure poor light. The main types include **F. elastica (India Rubber Plant); F. elastica 'decora' (Showy Rubber Plant),** with large, broad, heavy leaves; **F. elastica 'Doescheri'** and **variegata,** variegated forms; the bold, large leaved **F. lyrata (pandurata) Fiddleleaf Fig; F. lyrata 'Phyllis Craig,'** a smaller growing cultivar; **F. pumila (repens) (Creeping Fig),** a small leaved creeper; and **F. radicans variegata,** a showy variegated creeper. The Showy Rubber Plant is especially sensitive to overwatering, which causes leaves to yellow and fall quickly.

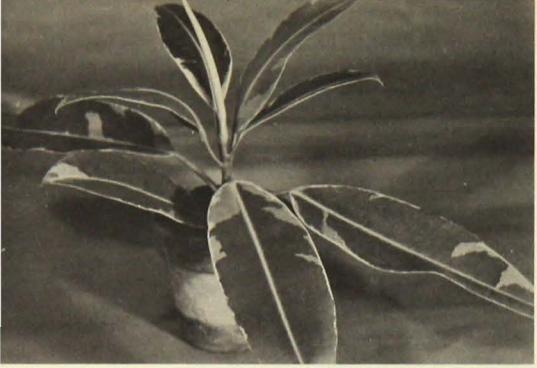
Fittonia is a spreading plant with attractive leaves. It requires warmth, humidity, and bright light. The leaves wilt quickly when the soil is dry. There are two forms, **Fittonia verschaffelti argyroneura (Silvernerve Fittonia)** and **Fittonia verschaffelti (Rednerve Fittonia).**

Geogenanthus undatus (Seersucker Plant) is a low growing, compact plant with quilted and striped leaves. Provide a minimum temperature of 65° F., a soil rich in humus, moderate light, and moist soil.

Grevillea robusta (Silk-Oak) grows into a large plant with lacy, gray-green leaves. It will tolerate temperatures down to 50° F. and prefers a dry soil and bright light.

Gynura (Velvet Plant) is an attractive novelty because of the profusion of reddish-purple hairs borne on the green leaves. It does best in full sun. Pinch the plant to keep it compact. **G. aurantiaca** is upright in growth, and **G. sarmentosa** is a loosely twining plant with shal-

The fiddleleaf fig can be used for a bold effect. Note the attractive redwood tub.



The variegated rubber plant.

lowly lobed leaf margins. Flowers of the latter have an undesirable odor and should be removed before they open.

Hedera canariensis variegata, known as **'Gloire de Marengo,'** has large, attractive, variegated green to slate-green to creamy-white foliage. The best growth is obtained in a moist atmosphere and bright light. This form is more delicate than most **H. helix** varieties when grown as a house plant.

Hedera helix (English Ivy) grows best in bright light, although it will tolerate poor light. A cool temperature is preferred to discourage insect attack. A large selection of cultivars includes the following: **H. helix conglomerata (Japanese Ivy),** an upright form with small, closely crowded leaves; **'Curlilocks'** and **'Ivalace,'** with curled leaf margins; **'Green Ripples;' 'Maple Queen;' 'Merion Beauty;' 'Needlepoint;' 'Pittsburgh;' 'Pixie;' 'Rochester;' H. helix scutifolia (cordata); Sweetheart Ivy; H. helix minima;** and **'Shamrock,'** which requires a moist atmosphere; and the variegated forms **'Golddust,' 'Glacier,'** and **'Goldheart.'** Goldheart, which has dark-green leaves with golden-yellow centers, will lose its variegation if fertilized too frequently.

Various forms of Hedera. 1. H. helix 'Goldheart,' 2. H. helix scutifolia, 3. H. helix 'Maple Queen,' 4. H. helix 'Curlilocks,' 5. H. helix 'Needlepoint,' 6. H. helix 'Glacier,' 7. H. helix 'Golddust,' 8. H. canariensis variegata 'Gloire de Marengo.'

Helxine soleiroli (Baby's Tears or Irish Moss) prefers bright light and ample soil moisture. It occasionally dies down and then grows back after a rest period.

Hoya carnosa (Wax Plant) likes a minimum temperature of 60° F., with sun or bright light. Allow the soil to dry between waterings. **H. carnosa variegata (Variegated Wax Plant),** which requires a slightly higher temperature, has attractive white leaf margins. Both are climbers and should be provided with suitable support. Hoya also is attractive for its flowers. Water this plant less frequently during its rest period in the fall.

Iresine (Bloodleaf) should be grown in full sun with a moist soil and a temperature around 60° F. It may be a poor house plant during the winter because of lack of light. Prune the plant for a better shape.

Lonicera japonica aureo-reticulata (Yellownet Japanese Honeysuckle) is a trailing plant with green leaves and yellow veins and is useful in window boxes. Provide moderate to bright light and a moist soil, but avoid high temperatures.

Malpighia coccigera (Miniature Holly) is not a true holly. It will withstand temperatures as low as 50° F. and likes moist air and bright light.

Maranta (Banded Maranta or Prayer Plant) is so named because its leaves fold up at night. Keep the plant in bright

light with a moist soil at a 65° F. minimum temperature. Vigorous new growth usually starts in February and replaces the old foliage. Encourage the new growth by removing the old foliage when the new shoots first appear. **M. leuconeura massangeana** has striking foliage with bands of reddish brown around a bluish-green center on the upper surface and a red-purple underside. **M. erythroneura (Jungle Plant)** is an attractive red-veined form. **M. leuconeura kerchoveana** has grayish-green foliage with chocolate to dark-green blotches on the upper surface and blotched, red undersides.

Mimosa pudica (Sensitive Plant) is notable because of the ability of its leaves and petioles to fold down or droop temporarily when touched. It prefers bright light, a dry soil but moist air, and a night temperature between 50°-60° F.

Myrsine africana (African Boxwood) resembles boxwood but is more graceful and has red stems. Provide bright light, moist soil, and a night temperature of 50°-60° F.

Nephthytis afzeli (Arrowhead) is a trailing or climbing plant with green sagittate leaves. It prefers a moist soil, a night temperature of 65° F., and moist air. Many plants thought to be in this genus really are **Syngoniums.**

Palms do fairly well in poor to bright light but should not be placed in direct sun in summer. Keep the soil moist. A 60° F. minimum temperature should be maintained except when light is very poor (then the temperature may be 50° F.). **Chamaedorea elegans 'bella' (Neanthe bella), C. tenella (Dwarf Fishtail Palm), Howea (Kentia) belmoreana (Belmore Sentry Palm), Howea (Kentia) forsteriana (Forster Sentry Palm),** and **Phoenix roebelini (Miniature Date Palm)** are generally known as house plants.

Pandanus tolerates unfavorable conditions, but much of its variegation will be lost if the soil is kept dry. It prefers a minimum temperature of 65° F. and moist soil. Keep the plant in bright light, but avoid direct sun in the summer. **P. veitch (Veitch Screwpine)** is the well known common form with small sharp spines along the leaf margins. **P. baptistii** is a newer form without the marginal spines.

A red-veined maranta (Maranta erythroneura) attached to an upright slab.

Pellionia, a trailing plant, prefers bright light, a moist soil, and a minimum temperature of 60° F. Two species are generally grown: **P. daveauana,** with leaves that are brownish purple to black with pale green centers, and **P. pulchra,** with leaves that are light to grayish green with a network of brownish to black veins.

Peperomias will withstand a great deal of neglect, but do not keep them wet or the plants will rot at the groundline. They thrive best in bright light, although they will tolerate poor light even at high temperatures. However, variegation will be less in poor light. Avoid direct sun in summer and temperatures below 60° F.

Two interesting creeper plants: Pellionia daveauana on the left and Pellionia pulchra on the right.

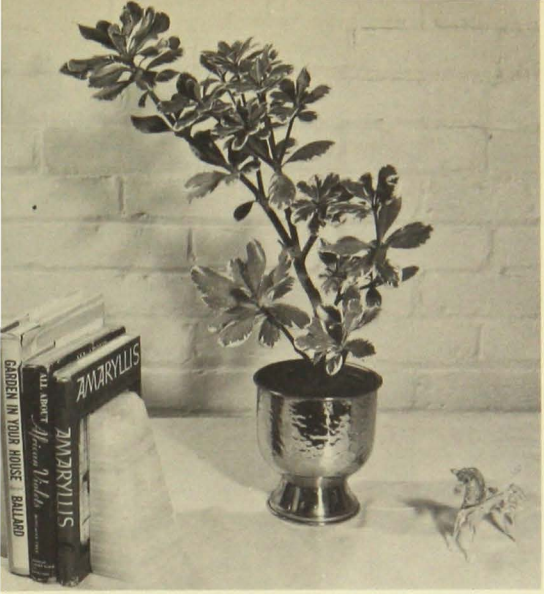
A group of Peperomias. 1. P. sandersi, 2. P. griseo argentea, 3. P. caperata 'Emerald Ripple,' 4. P. verschaffelti, 5. P. rubella, 6. P. obtusifolia variegata, 7. P. fosteri.

Preferred species include **P. obtusifolia (Ovalleaf Peperomia),** with solid green leaves; **P. obtusifolia variegata (Variegated Ovalleaf Peperomia),** which is predominantly golden yellow with green areas; **P. sandersi (Watermelon Peperomia),** which has red petioles and silver stripes on the leaves; **P. caperata (Emerald Ripple Peperomia),** a sturdy species with corrugated, deep-green leaves; **P. polybotrya (Coinleaf Peperomia),** an upright species with shiny, shield like, green leaves; **P. fosteri,** a creeper with short, elliptic, dark-green leaves with light-green veins and slender red stems; **P. verschaffelti,** which has broad silver bands between the recessed yellow veins on the bluish-green leaves; **P. grieseo argentea (hederaefolia),** which produces a bushy rosette of glossy, silver leaves with sunken, purplish-olive veins; and **P. rubella,** a miniature form that requires a fairly high humidity.

Philodendron is probably the most popular genus of foliage plants today. These plants grow best in moist soil and bright light. Leaf and plant size are reduced by poor light as well as by the lack of nutrients. A minimum temperature of 65° F. is recommended. Most philodendrons are climbers and do well when provided with a support that can be kept moist. Leaves will yellow or become spotted from lack of water, too small a pot, low temperature, poor drainage, or other cultural shortcomngs.

Hundreds of species are known. Popular species include **P. oxycardium (cordatum) (Heartleaf Philodendron),** which is the most widely grown of all foliage plants; **P. micans,** which has silky bronze, heart shaped leaves that are reddish beneath, and is very susceptible to cold; and some of the large climbing

The cutleaf philodendron, a climbing variety.



The distinctive Pittosporum tobira variegata in a brass container.

types such as **P. 'dubium' (radiatum) (Cutleaf Philodendron); P. 'Florida,'** which has deep-green leaves with five-pointed main lobes and rough petioles; **P. guttiferum,** with elliptical, oblong leaves; **P. hastatum (Spadeleaf Philodendron); P. laciniatum palmatisectum; P. panduraeforme (Fiddleleaf Philodendron); P. pertusum (Swiss Cheese Plant),** which is the fast climbing juvenile state of **Monstera deliciosa; P. squamiferum,** with its rich, green, five-lobed leaves and olive petioles covered with green to red bristles; and **P. tripartitum (Trileaf Philodendron).** Numerous reddish-green foliage types such as **P. 'Red Emerald'** and **P. 'rubrum'** are quite showy.

The self-heading, nonclimbing species of Philodendron are less popular and generally require more space because they are wide spreading in habit. A few of these are **P. bipinnatifidum (Twicecut Philodendron), P. foesterianum, P. selloum,** and **P. undulatum.**

The leaves of young plants of **P. pertusum** usually are entire. Leaves on older plants sometimes return to the entire from the "cut" form when growing conditions are unfavorable or when the plant grows beyond its support. A type of support that holds moisture is preferable for this species.

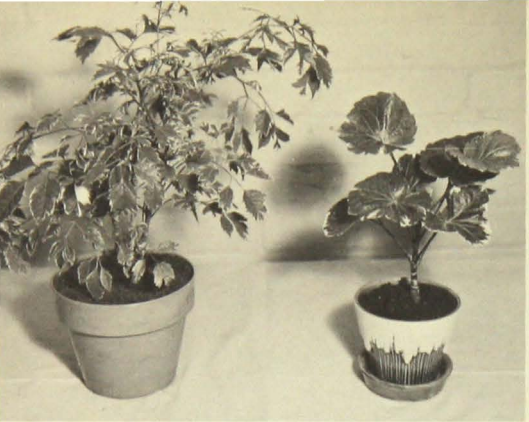
Pilea prefers moist soil, partial shade in summer and full sun in winter, and a minimum temperature of 60° F. **P. cadierei (Aluminum Plant)** has unusual silver markings on raised portions of the deep-green leaves. The dwarf cultivar **P. cadierei 'minima'** makes a better house plant. **P. involucrata (Panamiga** or **South American Friendship Plant)** is attractive for its coppery red-brown leaves and bushy habit; **P. microphylla (Artillery Plant)** is fine textured and has bright-green leaves; and **P. 'Silver Tree'** has bronzy-green leaves with silver bands and dots and white, hairy stems.

Piper nigrum (Black Pepper) is a vine with dark blue-green foliage. Its culture is the same as that for philodendron.

Pittosporum tobira (Australian Laurel) is a tough, slow growing plant that resembles the rhododendron. **P. tobira variegata** has attractive grayish-green leaves edged in white. Place it in bright light and keep the soil moist.

Plectranthus (Trailing Coleus) prefers a 62°-65° F. minimum temperature, diffused sun or bright light, and moist soil. **P. australis** has fresh-green, waxy leaves

The sturdy Pleomele thalioides.



Notice the foliage contrast between the lacy Polyscias guilfoylei victoriae (left) in a plastic pot and the bold Polyscias balfouriana marginata (right) in a pottery container.

and **P. oertendahlii** has green to bronzy leaves with silvery veins.

Pleomele has cultural requirements similar to those of philodendron. **P. reflexa gracilis** is an attractive, self-branching, densely foliated plant with 4-inch, recurved leaves with translucent edges. **P. thalioides** is a robust plant with thin, leathery, rich glossy green leaves that are ribbed lengthwise.

Podocarpos macrophylla maki (Maki Yew Podocarpos), with dark-green leaves, withstands adverse conditions and low temperatures very well. Water it moderately.

Polyscias (Aralia) requires a minimum temperature of 60° F., moist air and soil, and bright light. The most popular forms include **P. balfouriana marginata,** which has leathery, semi-rounded, green leaves with white borders; **P. guilfoylei victoriae,** a lacy plant with grayish-green leaflets edged in white; and **P. guilfoylei quinquefolia (Oak Leaf Aralia).**

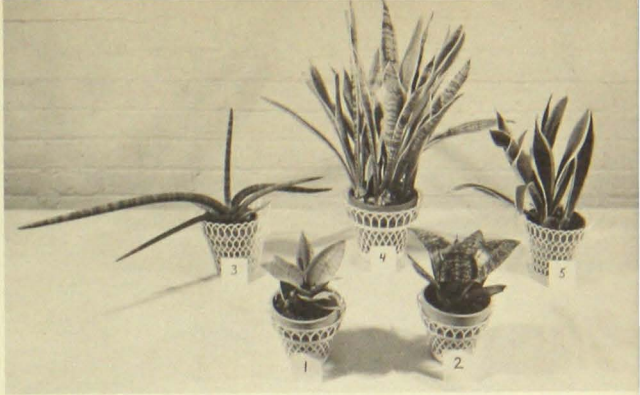
Ruellia makoyana is an attractive, old-fashioned, spreading plant with foliage that is satiny olive-green shaded violet with silvery veins. It prefers a minimum temperature of 60° F., moist soil and air, and bright light.

Sanchezia nobilis glaucophylla, which has glossy green leaves and yellow veins, prefers bright light and moist soil. This plant grows best at temperatures over 60° F., although it often survives much lower temperatures in window boxes.

Sansevieria (Bowstring Hemp or Snake Plant) really is a succulent, but it is discussed under foliage plants because of its wide popularity. It is extremely tolerant and will withstand almost any adverse conditions except low temperature and excess water. It will grow best at 65°-70° F. in partial shade and in a uniformly moist soil.

Numerous forms are available, including the tall **S. trifasciata laurenti (Varigated Snake Plant** or **Congo Snake Plant),** with yellow bands along the leaf margins; **S. trifasciata (Snake Plant),** which is similar to the above except for the absence of yellow bands; **S. trifasciata laurenti 'compacta' (Dwarf Congo Snake Plant),** which has a shorter plant habit and hard, stiffer, blackish-green leaves with broad yellow bands on the leaf margins; **S. trifasciata 'hahni' (Hahn's Dwarf Snake Plant),** a rosette form with pale and dark-green bands on

Polyscias guilfoylei quinquefolia (Oak Leaf Aralia) in an attractive redwood tub that is used as an outer container.



Some forms of the durable Sansevieria. 1. S. trifasciata 'Silver hahni,' 2. S. trifasciata 'hahni,' 3. S. cylindrica, 4. S. trifasciata laurenti, 5. S. trifasciata laurenti-'compacta.'

the leaves; **S. trifasciata 'Golden hahni,'** which is similar to the above except for broad cream to golden-yellow bands along the leaf margins; **S. trifasciata 'Silver hahni,'** which also is a rosette and has metallic, pale silvery-green leaves; and the novel **S. cylindrica,** with its cylindrical grooved leaves.

Sarococca ruscifolia (Sweet Box) has small, leathery, dark-green leaves, will withstand temperatures as low as 50° F., and prefers filtered light and moist soil.

Saxifraga sarmentosa (Strawberry Geranium, Strawberry Begonia, or **Mother of Thousands),** gets its name from the many young plants produced on runners. The leaves are a deep olive green with silver-gray markings, while the attractive cultivar **S. sarmentosa tricolor** has dark-green leaves edged with white and tinted pink. The species prefers a cool location and sun or partial shade, while the cultivar is more tender and prefers humid conditions and a dry soil.

Schefflera actinophylla (Australian Umbrella Tree) thrives very well if kept on the dry side in a warm room. It makes a good tubbed specimen.

Scindapsus (Pothos) often is confused with the heart-leaf philodendron. **Scindapsis,** with ridged stems, should not be watered as freely as the smooth stemmed philodendron, which requires a constantly moist soil. A minimum temperature of 65° F. and bright light are preferred, although the plants will survive indefinitely in poor light. **S. aureus (Devil's Ivy)** is a glossy green with limited yellow spotting. **S. aureus 'tricolor'** has a moderate amount of green with yellow and cream variegation. **S. aureus 'Silver Marble,' 'Marble Queen,'** etc. are highly variegated with white. Grow them at temperatures above 70° F. and water them less frequently than the preceding forms.

Selaginella kraussiana (Spreading Clubmoss) has the same cultural requirements as ferns.

Senecio mikaniodies (German Ivy) requires sun or bright light and will withstand night temperatures as low as 50° F.

A large specimen of Schefflera actinophylla in a decorative fiberglass container. It is a sturdy house plant.

The 'Silver Marble' pothos thrives best if kept warm and dry.

Serissa foetida variegata (Variegated Serissa) has small green leaves with ivory-white margins. It prefers sun or bright light and moist soil.

Siderasis fuscata, sometimes sold as **Tradescantia fuscata,** forms an attractive rosette of broad, oblong, olive-green leaves with a silvery center band and is covered with brown hairs. This plant prefers high temperatures, filtered light, and dry soil, but it withstands less favorable conditions, including low temperatures, quite well.

Spathiphyllum prefers a minimum temperature of 65° F., shade, and wet soil. It is a very durable house plant. **S. clevelandi** has glossy green leaves and white, papery spathes. **S. 'Mauna Loa'** produces fuller leaves and spathes.

Syngoniums are vine like plants that usually have leaves in the shape of arrowheads. They grow in indirect light of high or low intensity at a minimum temperature of 65° F. A moist soil is satisfactory, but growth is more compact when moisture is limited. Preferred

Tolmiea menziesi, the piggy-back plant, is easy to grow.

The Spathiphyllum 'Clevelandi,' with its long lasting white spathes. This durable plant should be more widely grown.

cultivars include **S. podophyllum 'Emerald Gem,'** with dark-green leaves and a compact plant habit; **S. podophyllum 'Trileaf Wonder,'** with light-green areas inbetween the dark-green margins; and **S. podophyllum xanthophilum,** known as **'Green Gold,'** which has yellow-green leaves with narrow green margins.

Tolmiea menziesi (Piggy-back Plant) is unique because young plants arise at the junction of the leaf blade and the petiole. It grows best in bright light and in a uniformly moist soil.

Tradescantia (Wandering-Jew) roots readily in water and grows in moist soil or water. It does well in shaded locations. Green and several variegated types are available.

Vinca major variegata (Periwinkle) is a trailing evergreen with green leaves edged in cream. It is resistant to low temperatures but grows best in the sun and in a uniformly moist soil at 60° F.

Zingiber zerumbet (Ginger) is of interest primarily for its spicy, fragrant leaves. This plant is well adapted to conditions found in the average home and prefers filtered light and moist soil.

cacti and succulents

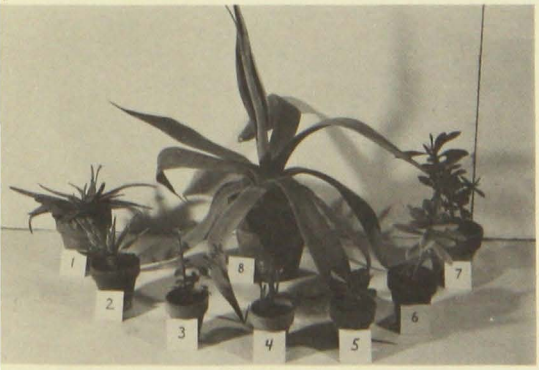
Plants are classified as cacti according to their flower characteristics. They usually can be recognized by their numerous spines and by the absence of leaves. Succulents have fleshy leaves or stems but do not always have spines. Almost all cacti are classified as succulents, but not all succulents are cacti.

The slowest growing, toughest, and often most attractive types have been chosen for house plant purposes. They are used for specimen plants as well as in novelty dishes and dish gardens (see page 45).

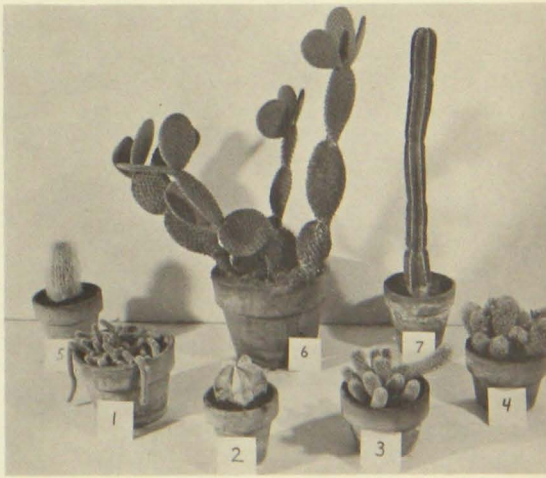
Use a sandy, well drained soil. Although plants in this group will survive quite well in poorly lighted locations, full sunlight is necessary for best growth and flowering, especially for cacti.

Keep the plants relatively dry during the winter, adding only enough water to keep the stems from shriveling. Water them more frequently during periods of active growth and during the summer. Contrary to popular opinion, applying fertilizer at least a few times a year will improve growth if the plants are kept in a sunny location. A minimum temperature of 65° F. is desirable.

An assortment of succulents. 1. Gasteria verrucosa (Deer's Tongue), 2. Agave filifera, 3. Portulacaria afra (Elephant Bush), 4. Crassula lycopodioides (Watch-chain Plant), 5. Crassula arborescens (Jade Plant), 6. Kalanchoe tomentosa (Panda Plant), 7. Euphorbia splendens (Crown of Thorns), 8. Agave Americana (Century Plant).



An assortment of cacti. 1. Chamaecereus silvestri (Peanut Cactus), 2. Astrophytum (Bishop's Cap), 3. Mammillaria (Lace Cactus), 4. Coryphantha runyoni (has flowers and attractive red fruit), 5. Cephalocereus senilis (Old Man Cactus), 6. Opuntia (Beaver Tail), 7. Lemaireocereus marginatus (Organ Pipe Cactus).



POPULAR CACTI

Aporocactus flagelliformis (Rat-tail Cactus)
Astrophytum (Bishop's Cap, Sand Dollar)
Cephalocereus senilis (Old Man Cactus)
Chamaecereus silvestri (Peanut Cactus)
Coryphantha runyoni
Echinocereus (Hedgehog Cactus)
Echinopsis (Easter Lily Cactus)
Epiphyllum (Orchid Cactus)
—treated like a geranium
Lemairocereus marginatus (Organ Pipe Cactus)
Mammillaria (Pincushion Cactus, Lace Cactus, Old Lady Cactus)
Opuntia (Prickley Pear, Beavertail)

POPULAR SUCCULENTS

Agave (Century Plant)
Aloe
Ceropegia woodi (Rosary Vine)
Crassula (Jade Plant, Princess Pine, Scarlet Paintbrush, Watch-chain Plant)
Echeveria (Hen and Chickens)
Euphorbia splendens (Crown of Thorns), E. tirucalli (Candelabra Euphorbia)
Gasteria verrucosa (Deer's Tongue)
Haworthia (Cushion Aloe)
Kalanchoe (Bryophyllum, Air Plant, Panda Plant)
Portulacaria afra (Elephant Bush)
Sedum (Stonecrop, Live-Forever)
Sempervivum (Houseleek)

growing plants under special conditions

WATER CULTURE

Most house plants can be grown in water when careful attention is paid to aerating the water, adding fertilizers, regulating acidity, and changing the solution every 2-3 weeks. Such manipulations usually involve far more work and trouble than growing the same plants in soil.

There are a few plants, however, that can be grown for long periods in tapwater with very little trouble. These plants include the coleus, Chinese evergreen, devil's ivy, dumbcane (all species), English ivy, jade plant, philodendron, snake plant, sweet potato, Tradescantia, and trileaf wonder. If the plants get too large for their containers, new plants can be started by placing cuttings in water.

A few pieces of charcoal will help to keep the water fresh. If green algae form on the roots, change the water and wash the roots. Using a dark container that keeps light off the roots will discourage the growth of green algae.

ARTIFICIAL LIGHT

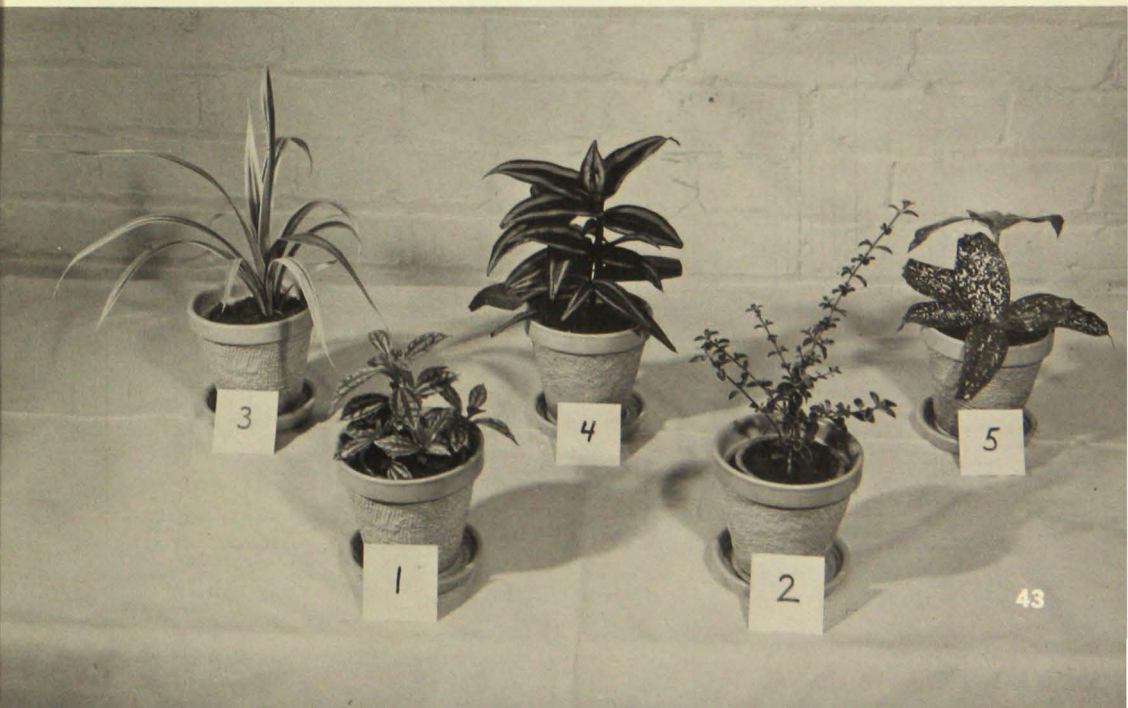
Although plants require light, it is no longer essential to place them near a window. Artificial light may be used to supplement or replace natural daylight.

The difficulty in using artificial light as the only light source is to get enough light without increasing the temperature

too much. Fluorescent tubes give a high light efficiency with low heat. They give off a minimum of two and one-half times as much light per watt as incandescent lamps. The heat output is the same in both types, but it is less concentrated with fluorescent lamps because it is distributed over a long tube. Daylight or standard cool white tubes are recommended for overall use with plants. Combining fluorescent and incandescent light in the ratio of 3 watts of fluorescent to 1 watt of incandescent will increase the flowering of plants grown entirely under artificial light. Back the fluorescent tubes with reflectors for the most efficient use of available light. Usually, two 40-watt tubes are placed in each reflector. You will get better results if the light fixtures are adjustable so you can raise or lower them, depending on plant height. Keep all plants at least 3-4 inches away from light tubes to avoid plant injury from heat. If you grow plants in a special area such as the basement, painting nearby walls white also will increase the efficiency of available light. You may use lights as long as 20 hours per day, but don't allow them to burn constantly, as it may prove harmful to some species. Use a time switch to turn lights on and off each day.

Usually, plants that grow in nature in reduced light will do best under fluorescent light. Recently, high output lamps such as those designated VHO, SHO, and Powergrove have become available as complete lighting systems with tubes, fixtures, reflectors, and ballast. Such units permit the successful growth under artificial light of plants with a higher light requirement than was possible previously. Certain conditions must be satisfied if plants are to be grown successfully under artificial light. Water plants only when they need moisture, to avoid getting soft, leggy plants, and to prevent the development of diseases. Do not allow the plants to wilt, however. Since plants under artificial light do not have as much light and usually are not watered as often as plants in natural light, they require only one-third to one-half as much fertilizer. If plants still look weak and spindling after these conditions have been met, the temperature may be too high.

An assortment of variegated plants. 1. Pilea cadierei 'minima' (Dwarf Aluminum Plant), 2. Serissa foetida variegata, 3. Pandanus veitchi (Veitch Screwpine), 4. Dichorisandra reginae, 5. Dracaena godseffiiana (Spotted Dracaena).



Number of months foliage plants will remain attractive under various light intensities based on a 16-hour day*

Plant	Light intensities in foot-candles			
	15-25	25-50	50-75	75-100
	months			
Aglaonema commutatum	12	36	36	..
Aglaonema marantifolium	..	12	..	..
Aglaonema roebeleni	..	12	..	..
Araucaria excelsa	..	36	36	38
Aspidistra elatior	12	..	..	..
Aucuba japonica	12	24	36	38
Begonia metallica	..	12	..	..
Bromeliads	..	12	..	..
Chlorophytum	..	30	..	36
Cissus rhombifolia	..	..	..	12
Dieffenbachia amoena	12	18	26	..
Dieffenbachia picta	12	12	12	..
Dieffenbachia picta R. Roehrs	..	12	..	..
Dracaena deremensis	30	36	36	38
Dracaena hookeriana rothiana	12	24	36	..
Dracaena sanderiana	12	..	..	..
Fatshedera lizei	..	..	..	12
Fiscus elastica doescheri	..	..	..	12
Fiscus lyrata (pandurata)	..	..	..	12
Hedera helix 'Maple Queen'	..	..	12	..
Howea (Kentia) foesteriana	..	12	..	..
Nephrolepis exaltata bostoniensis	..	12	..	..
Peperomia obtusifolia	..	12	..	..
Philodendron dubium (radiatum)	..	26	32	..
Philodendron hastatum	12	30	36	36
Philodendron oxycardium (cordatum)	12	24	..	..
Philodendron panduraeforme	..	..	..	34
Philodendron pertusum (Monstera deliciosa)	..	..	..	36
Pilea cadierei	..	12	..	..
Sansevieria species	12	..	..	..
Schefflera actinophylla	..	30	36	38
Scindapsus (Pothos) aureus	..	..	30	36
Scindapsus (Pothos) aureus 'Marble Queen'	..	..	..	12
Spathiphyllum clevelandi	..	..	..	12
Syngonium podophyllum	12	..	..	..
Tolmiea menziesi	..	..	..	12

* Source: New Jersey Extension Bulletin 327.

Plants grown at high temperatures require a higher light intensity. Poorly lighted plants become soft, weak, and spindling unless grown in the lower limits of their temperature range. Light requirements also vary with individual species and cultivars.

African-violets grow especially well under fluorescent lights. They grow best when tubes placed 12 inches above the plant tops are used for 18 hours each day, which provides an intensity of approximately 600 foot-candles.

Gloxinias require 15-16 hours of light a day. Place lights 3 inches above young plants and 12 inches above older ones.

Seedlings are grown 5-10 inches below the lights, which are kept on for 15 hours per day. If seedlings are spindling, try increasing the period to 18-20 hours.

Cuttings root well under lights kept on for 10 or more hours daily. The cuttings should be no less than 15 inches below the lights until rooted.

Foliage plants of a wide variety may be grown under artificial light. A combination of fluorescent and incandescent light usually is superior to either type alone. Incandescent light in addition to daylight-fluorescent light is beneficial to the plants and takes away the cold appearance imparted to plants under this type of fluorescent light. The table on page 44 contains detailed recommendations.

The following information may serve as a foot-candle guide. A person requires 20 foot-candles for casual reading, 30 foot-candles for prolonged reading, 40 foot-candles for sewing, and typists should have 50 foot-candles. If this guide is not adequate, you may be able to borrow a light meter from your local power company.

DISH GARDENS AND PLANTERS

Dish gardens are plantings of small, relatively slow growing plants in open, shallow containers. Since such containers seldom have a drainage opening, be careful not to overwater. If the container is deep enough, place ½ inch of gravel, sand, or charcoal in the bottom under the soil to improve drainage. You can place a thin layer of sand, colored gravel, or pebbles on top of the soil after planting to further improve the appearance of the garden.

An attractive planter with plants that are in good proportion to the container.

Be careful to put only plants with similar cultural needs in the same container. Cacti and succulents are excellent subjects for dish gardens (see section on cacti and succulents, page 41). Other suitable plants include boxwood, dracaena (small type), eunonymus, Irish moss, ivies, mother of thousands, pellionia, peperomias, miniature date palm, pilea, podocarpos, serissa, sweet flag, and wax plant.

An overgrown planter.

Deep containers, often used for large plants, usually are referred to in the trade as planters. Such containers may be brass, wood, plastic, or pottery. Many modern homes have built-in planters in front of picture windows, near entryways, or in hallways where they serve as room dividers. Built-in planters should be waterproof and rustproof and usually are made of stone, concrete, or metal.

Metal containers may be coated with an asphalt emulsion (tar is toxic to plants) to make the container waterproof, to prevent rusting, or to prevent a toxic effect if the container is made of copper. Such planters vary from 6 to 14 inches deep. Allow space to permit up to 2 inches of broken crock, charcoal, or stone in the bottom of the planter to provide good drainage. If the planter is deep enough, you can leave plants in their original pots. Fill the space between the pots with sphagnum or peat moss (see the introduction to foliage plants, page 27). With this system, you can rearrange plants at will and replace overgrown or poor ones without disturbing the others.

Here again, you should combine only plants with similar cultural requirements to insure a long lasting planting. For specific ideas and structural details on illuminated indoor gardens, see USDA Home and Garden Bulletin 133, *Indoor Gardens for Decorative Plants.*

Cacti are not often used in planters, although some succulents prove very useful. Many of the small plants suggested for use in dish gardens are suitable for planters. The following plants also are recommended: African-violet, Australian laurel, coral berry, golddust plant, aucuba, banded maranta, Chinese evergreen, croton, dumbcane, fatshedera, fittonia, philodendron (small types), piggy-back plant, veitch screwpine, snake plant, schismatoglottis, and pothos.

TERRARIUMS

Terrariums are miniature gardens enclosed in glass. The glass enclosure may be a round glass globe, fish aquarium, brandy glass, bottle, or any similar container. Such gardens are especially useful for plants that require high humidity. Many of the plants other than cacti and succulents listed for dish gardens also flourish in terrariums. Cuttings can be easily rooted in these containers because of the humid atmosphere.

Use a piece of glass to cover the top of the glass container. This cover should be constructed so it can be moved to ventilate the terrarium when excessive moisture collects on the inside of the glass. Keep the soil moist but not boggy. Keep the terrarium in bright light but never in direct sunshine.

Terrarium plantings are relatively easy to construct. Place a 1-inch layer of gravel, pebbles, broken crock, or charcoal under the soil to improve drainage. Line the sides below the soil level with sheet moss (available at your local florist), keeping the green side out for a finished effect. Mound the soil higher on one side to provide a naturalistic setting. A soil containing one-quarter loam, one-half leaf mold or peat, and one-quarter sand is preferable. Use plants with equal growth rates so the fast growing ones won't crowd out the slower ones. Prune overgrown plants.

You can use native as well as cultivated plants in terrariums. Suitable native plants include: bloodroot, dogtooth violet, Dutchman's breeches, evergreen seedlings, small ferns, ground pine, Jack-in-the-pulpit, maidenhair fern, moss, mushrooms, rattlesnake plantain, toadstools, partridge berry, pitcher plant, violet, wild strawberry, and wintergreen.

Cultivated plants suitable for the terrarium include: African-violet, banded maranta, begonia, chamaeranthemum, Chinese evergreen, coleus, creeping fig, croton, dracaena (small types), fittonia, grape ivy, English ivy (small types), Irish moss, Joseph's coat, mother of thousands, palm (small types), peperomia, philodendron (small types), snake plant, pothos, selaginella, and wandering-Jew.

suggestions

PLANTS FOR LOW TEMPERATURE (50°-60° F. at night)

Australian Laurel
Azalea
Baby's Tears
Black Pepper
Boxwood
Bromeliads
Calceolaria
Camellia
Christmas Begonia
Cineraria
Citrus
Cyclamen
Easter Lily
English Ivy cultivars
Fatshedera
Flowering Maple
Fuchsia
Geraniums
German Ivy
Honeysuckle
Jerusalem Cherry
Kalanchoe
Miniature Holly
Mother of Thousands
Oxalis
Primrose
Sensitive Plant
Spindletree
Vinca
White Calla Lily

PLANTS FOR MEDIUM TEMPERATURE (60°-65° F. at night)

Achimenes
Amaryllis
Ardisia
Avocado
Bromeliads
Browallia
Chenille Plant
Christmas Cactus
Chrysanthemum
Citrus
Copper Leaf
Crown of Thorns
Easter Lily
English Ivy cultivars
Gardenia
Grape Ivy
Hibiscus
Hydrangea
Norfolk Island Pine
Palms
Pilea
Peperomia
Poinsettia
Rose
Shrimp Plant
Silk-Oak
Ti Plant
Tuberous Begonia
Velvet Plant
Wax Begonia
Wax Plant
Yellow Calla Lily

PLANTS FOR HIGH TEMPERATURE (65°-75° F. at night)

African-violet
Aphelandra
Arrowhead
Australian Umbrella Tree
Banded Maranta
Cacti and Succulents
Caladium
Chinese Evergreen
Croton
Dracaena
Episcia
Figs
Gloxinia
Golddust Plant
Philodendron
Scindapsus (Pothos)
Seersucker Plant
Snake Plant
Spathiphyllum
Veitch Screwpine

PLANTS THAT WILL WITHSTAND ABUSE

Arrowhead
Australian Umbrella Tree
Cast-iron Plant
Chinese Evergreen
Crown of Thorns
Devil's Ivy
Fiddleleaf Fig
Grape Ivy
Heartleaf Philodendron
India Rubber Plant
Jade Plant
Ovalleaf Peperomia
Pleomele
Snake Plant
Spathiphyllum
Trileaf Wonder
Tuftroot (D. amoena)
Veitch Screwpine
Zebra Plant

PLANTS FOR EXTREMELY DRY CONDITIONS

Bromeliads
Cacti
Crown of Thorns
Ovalleaf Peperomia
Snake Plant
Scindapsus (Pothos)
Wandering-Jew

VINES AND TRAILING PLANTS FOR TOTEM POLES

Arrowhead
Black Pepper
Creeping Fig
English Ivy cultivars
Grape Ivy
Kangaroo Vine
Pellionia
Philodendron
Scindapsus (Pothos)
Syngonium
Wax Plant

PLANTS FOR HANGING BASKETS

African-violet
Anthericum (Spider plant)
Asparagus Fern
Begonias (some types)
Black Pepper
English Ivy cultivars
Episcia
Fuchsia (some cultivars)
German Ivy
Goldfish Plant
Grape Ivy
Honeysuckle
Italian Bellflower
Ivy Geranium
Peperomia (some species)
Philodendron (some species)
Saxifraga
Scindapsus (Pothos)
Syngonium
Trailing Coleus
Wandering-Jew
Wax Plant

SUGGESTIONS FOR LARGE TUBBED SPECIMENS

Australian Umbrella Tree
Dracaenas
False Aralia
Fatshedera
Fiddleleaf Fig
India Rubber Plant and cultivars
Palms
Philodendrons
Silk-Oak
Tuftroot
Veitch Screwpine

special exposures

SOUTH OR WEST WINDOWS

Amaryllis
Azalea
Begonia (in winter)
Bloodleaf
Cacti and Succulents
Calla Lily
Coleus
Cyclamen
Easter Lily
Gardenia
Geranium
Lily
Oxalis
Poinsettia
Rose
Sweet Flag
Tulip
Velvet Plant

NORTH WINDOW

African-violet
(in summer)
Anthericum
Arrowhead
Australian Umbrella Tree
Baby's Tears
Cast-iron Plant
Chinese Evergreen
Dracaena
Dumbcane
Fern
Ivy
Mother of Thousands
Norfolk Island Pine
Peperomia
Philodendron
Piggy-back Plant
Pleomele
Rubber Plant
Scindapsus (Pothos)
Snake Plant
Tuftroot
Wandering-Jew

EAST WINDOW

African-violet
Banded Maranta
Caladium
Dracaena
Fatshedera
Fern
Gloxinia
Ivy
Peperomia
Philodendron
Rubber Plant
Scindapsus (Pothos)
Serissa
Silk-Oak
Tuftroot
Veitch Screwpine
Wandering-Jew
Wax Plant

plant index

Abutilon 27
Acalypha 20, 27
Achimenes 16, 47
Acorus 27
Adiantum 33
Aechmea 29
African Boxwood 35
African-violet 4, 5, 6, 7, 8, 10, 11, 13, 16, 17, 45, 46, 47, 48, 49
Agave 41, 42
Aglaonema 27, 28, 44
Air Plant 42
Aloe 42
Alternanthera 28
Aluminum Plant 37, 43
Amaryllis 17, 18, 47, 48
Ananas 26, 29
Anthericum 29, 48, 49
Aphelandra 28, 29, 47
Aporocactus 42
Aralia 31, 32, 38, 48
Araucaria 28, 29, 44
Ardisia 26, 47
Arrowhead 35, 47, 48, 49
Artillery Plant 9, 37
Asparagus Fern 11, 28, 48
Aspidistra 29, 44
Asplenium 33
Astrophytum 41, 42
Aucuba 29, 44, 46
Australian Laurel 37, 46, 47
Australian Umbrella Tree 39, 47, 48, 49
Avocado 26, 47
Azalea 3, 4, 18, 47, 48

Baby's Tears 34, 47, 49
Balsam 18
Beavertail 41, 42
Begonia Ivy 30
Begonias 7, 13, 18, 19, 44, 46, 47, 48
Beloperone 23
Billbergia 29
Birdsnest Fern 33
Bishop's Cap 41, 42
Black Pepper 37, 47, 48
Bloodleaf 34, 48
Bloodroot 46
Boston Fern 33
Bowstring Hemp 38
Boxwood 29, 45, 47
Bromeliads 29, 44, 47, 48
Browallia 19, 47
Bryophyllum 42
Buxus 29

Cacti 3, 6, 11, 41, 45, 46, 47, 48
Caladium 29, 47, 49
Calceolaria 19, 47
Calla Lily 19, 47, 48
Calla Lily Begonia 18
Camellia 3, 4, 20, 47
Campanula 22
Candelabra Euphorbia 41, 42
Capsicum 26
Cast-iron Plant 29, 47, 49
Century Plant 41, 42
Cephalocereus 41, 42
Ceropegia 42
Chamaecereus 41, 42
Chamaedorea 35
Chamaeranthemum 29, 46
Chenille Plant 20, 47
Cherry Plant 26
Chinese Evergreen 27, 42, 46, 47, 49
Chlorophytum 29, 44
Christmas Begonia 10, 19, 47
Christmas Cactus 7, 20, 47
Chrysanthemum 8, 20, 47
Cineraria 20, 47
Cissus 30, 44
Citrus 26, 47
Codiaeum 30
Coleus 7, 8, 10, 30, 42, 46, 48
Columnea 30
Copper Leaf 27, 47
Coral Berry 26, 46
Cordyline 30
Coryphantha 41, 42
Crassula 41, 42
Crocus 23, 24
Croton 30, 46, 47
Crown of Thorns 20, 42, 47, 48
Cryptanthus 29
Curlilocks Ivy 34
Cushion Aloe 42
Cyclamen 5, 13, 20, 47, 48
Cyperus 30
Cyrtomium 33

Daffodil 23, 24
Deer's Tongue 41, 42
Devil's Ivy 39, 42, 47
Dichorisandra 30, 43
Dieffenbachia 30, 31, 44
Dizygotheca 31
Dogtooth Violet 46
Dracaena 2, 11, 31, 32, 43, 44, 45, 46, 47, 48, 49
Dumbcane 31, 42, 46, 49
Dutchman's Breeches 46
Dyckia 29, 32

Easter Cactus 20
Easter Lily 21, 47, 48
Easter Lily Cactus 42
Echeveria 42
Echinocereus 42
Echinopsis 42
Elephant Bush 41, 42
Emerald Gem 40
English Ivy 5, 10, 13, 33, 34, 42, 46, 47, 48
Epiphyllum 42
Episcia 32, 47, 48
Euonymus 32, 45
Euphorbia Pulcherrima 22
Euphorbia Splendens 20, 42
Euphorbia Tirucalli 41, 42
Everblooming Begonia 18

False Aralia 31, 48
Fatshedera 32, 33, 44, 46, 47, 48, 49
Fatsia 32, 33
Ferns 7, 11, 32, 46, 49
Ficus 11, 33, 44
Fig 33, 46, 47, 48
Fittonia 33, 46
Flame Violet 32
Florida Beauty 31
Flowering Maple 27, 47
Fuchsia 8, 21, 47, 48

Gardenia 3, 4, 21, 47, 48
Gasteria 41, 42
Geogenanthus 33
Geranium 7, 8, 10, 13, 21, 47, 48
German Ivy 39, 47, 48
Ginger 40
Glacier Ivy 34
Gloire de Marengo 34
Gloxinia 7, 8, 10, 13, 21, 45, 47, 49
Golddust Ivy 34
Golddust Plant 29, 46, 47
Goldfish Plant 30, 48
Goldheart Ivy 34
Grapefruit 26
Grape Hyacinth 23
Grape Ivy 10, 30, 46, 47, 48
Green Gold 40
Green Ripple Ivy 34
Grevillea 33
Ground Pine 46
Gynura 33

Haworthia 42
Hedera 33, 34, 44
Hedgehog Cactus 42
Helxine 34
Hen and Chickens 42
Hibiscus 21, 47
Hippeastrum 17
Holly Fern 33
Honeysuckle 47, 48
Houseleek 42
Howea 35, 44
Hoya 34
Hyacinth 23, 24, 25
Hydrangea 21, 47

Impatiens 18
Iresine 34
Irish Moss 34, 45, 46
Italian Bellflower 22, 48
Ivalace Ivy 34
Ivy Geranium 48

Jack-in-the-Pulpit 46
Jade Plant 41, 42, 47
Japanese Ivy 34
Jerusalem Cherry 26, 47
Joseph's Coat 28, 46
Jungle Plant 35

Kalanchoe 10, 22, 41, 42, 47
Kangaroo Vine 30, 48
Kentia 35, 44

Lace Cactus 41, 42
Lemaireocereus 41, 42
Lemon 26
Lily 48
Lily-of-the-Valley 23, 25
Live-Forever 42
Lonicera 34

Maidenhair Fern 33, 46
Maki Yew Podocarpos 38
Malpighia 34
Mammillaria 41, 42
Maple Queen Ivy 5, 34, 44
Maranta 11, 34, 35, 46, 47, 49
Marble Queen Pothos 39
Melior Begonia 19
Merion Beauty Ivy 34
Mimosa 35
Miniature Holly 34, 47

Monstera 4
Moss 46
Mother of Thousands ...39, 45, 46, 47, 49
Mushroom 46
Myrsine 35

Narcissus 23, 25
Neanthe Bella 35
Needlepoint Ivy 34
Nephrolepis 33, 44
Nephthytis 35
Norfolk Island Pine ..28, 29, 47, 49
Norse Fire Plant 30

Old Lady Cactus 42
Old Man Cactus 41, 42
Opuntia 41, 42
Orange 26
Orchid Cactus 42
Orchids 22
Organ Pipe Cactus 41, 42
Ornamental Pepper 26
Oxalis 22, 47, 48

Palms 35, 45, 46, 47, 48
Panamiga 37
Pandanus 35, 43
Panda Plant 41, 42
Paper White Narcissus 25
Partridge Berry 46
Peanut Cactus 41, 42
Pelargonium 21
Pellionia 35, 45, 48
Peperomia 10, 35, 36, 44, 45, 46, 47, 48, 49
Pepper 37, 47, 48
Periwinkle 40
Persea 26
Philodendron 4, 8, 10, 11, 36, 42, 44, 46, 47, 48, 49
Phoenix 35
Piggy-back Plant 40, 46, 49
Pilea 37, 43, 44, 45, 47
Pincushion Cactus 42
Pineapple 26, 29
Piper 37
Pitcher Plant 46
Pittosporum 37
Pittsburgh Ivy 34
Pixie Ivy 34
Platycerium 32
Plectranthus 37
Pleomele 37, 38, 47, 49
Podocarpos 38, 45
Poinsettia 7, 22, 47, 48
Polyscias 38
Portulacaria 41, 42
Pothos 39, 40, 46, 47, 48, 49
Prayer Plant 34
Princess Pine 41, 42
Prickly Pear 42
Primrose 22, 47
Primula 22
Pteris 33

Rat-tail Cactus 42
Rattlesnake Plantain 46
Rex Begonia 10, 19
Rhododendron 18
Roman Hyacinth 25
Rochester Ivy 34
Rosary Vine 42
Rose 22, 47, 48
Rubber Plant ...33, 34, 47, 48, 49
Ruellia 38

Saintpaulia 16
Sanchezia 38
Sand Dollar 42
Sansevieria 10, 38, 39, 44
Sarococca 39
Saxifraga 39, 48
Scarlet Paintbrush 42
Schefflera 33, 39, 44
Schismatoglottis 28, 46
Schlumbergera 20
Scilla 23
Scindapsus 39, 44, 47, 48, 49
Screwpine 35, 46, 47, 48, 49
Sedum 10, 41, 42
Seersucker Plant 33, 47
Selaginella 39, 46
Sempervivum 42
Senecio 39
Sensitive Plant 35, 47
Serissa 40, 43, 45, 49
Shamrock 22
Shamrock Ivy 34
Shrimp Plant 23, 47
Siderasis 40
Silk-oak 33, 47, 48, 49
Silver Marble Pothos 39, 40
Silver Tree 37
Sinningia 21
Snake Plant 10, 38, 42, 46, 47, 48, 49
Solanum 26
South American Friendship Plant 37
Spanish Moss 29
Spathiphyllum 40, 44, 47
Spider Plant 29, 48
Spindletree 32, 47
Spreading Clubmoss 39
Staghorn Fern 32
Steel Begonia 19
Stonecrop 42
Strawberry Begonia 39
Strawberry Geranium 39
Succulents..3, 6, 41, 45, 46, 47, 48
Sweet Box 39
Sweet Flag 27, 45, 48
Sweetheart Ivy 34
Sweet Potato 42
Swiss Cheese Plant 37
Syngonium 35, 40, 44, 48

Table Fern 33
Thanksgiving Cactus 20
Tillandsia 29
Ti Plant 8, 30, 47
Tolmiea 40, 44
Tradescantia 40, 42
Trailing Coleus 37, 48
Trileaf Wonder 40, 42, 47
Tuberous Begonia 19, 47
Tuftroot 6, 11, 31, 47, 48, 49
Tulip 7, 23, 24, 25, 48

Umbrella Sedge 30

Veitch Screwpine ...35, 43, 46, 47, 48, 49
Velvet Plant 33, 47, 48
Vinca 40, 47
Violet 46
Vriesia 29

Wandering-Jew 40, 46, 48, 49
Watch-chain Plant 42
Wax Begonia 18, 47
Wax Plant 34, 45, 47, 48, 49
Wild Strawberry 46
Wintergreen 46

Yellownet Japanese Honeysuckle 34

Zantedeschia 19
Zebra Plant 29, 47
Zingiber 40
Zygocactus 20