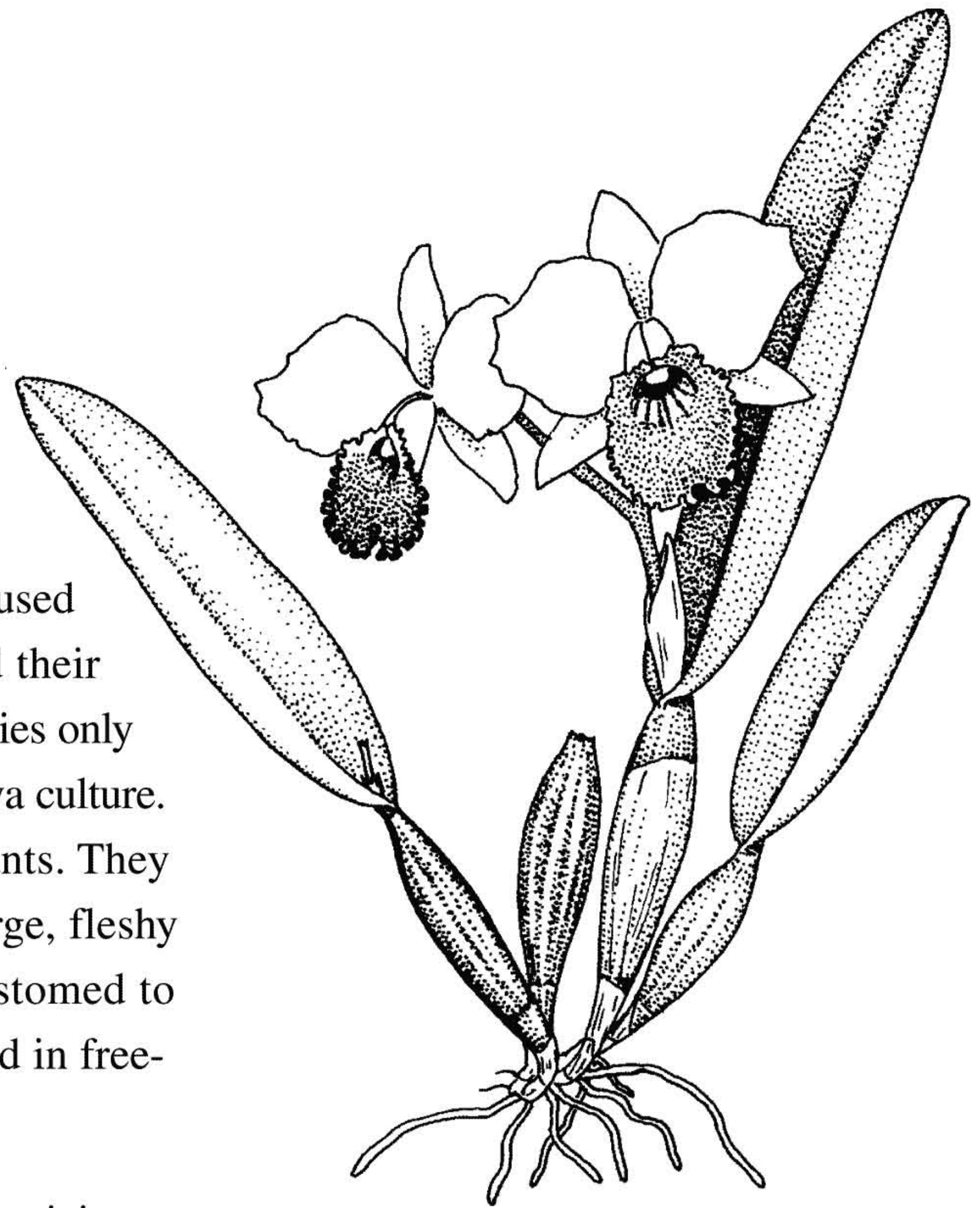


Cattleya

KAT-lee-ah



Cattleyas are among the most popular orchids. Their culture is often used as the basis for comparison with other types of orchids. Cattleyas and their related hybrids come in many colors, shapes, forms and sizes. Culture varies only slightly among most of these. This sheet is a general guide to basic cattleya culture. Like many other cultivated orchids, cattleyas are epiphytes, or air plants. They have developed water-storage organs, called pseudobulbs, and have large, fleshy roots covered with a spongy, water-retentive velamen. They are accustomed to being dry at the roots between waterings, and therefore should be potted in free-draining media.

LIGHT is the most important factor in growing and flowering cattleyas, whether in a greenhouse or in the home. Bright light to some sun should be given to the plants, with no direct sun in the middle of the day. This means an east, shaded-south (as with a sheer curtain) or west window in the home, and 50 to 70 percent full sun in a greenhouse (3,000 to 5,000 foot-candles). Leaves should be a medium-green color, pseudobulbs erect and requiring no staking.

TEMPERATURES should be 55 to 60 F at night and 70 to 85 F during the day. Seedlings should have night temperatures five to 10 degrees higher. A 15- to 20-degree differential between day and night is recommended, especially for mature plants. Higher day temperatures can be tolerated (up to 95 F), if humidity, air circulation and shading are increased.

WATER should be provided in two ways: in the pot by watering and in the air as humidity. Watering in the container is dictated by many criteria: size and type of the vessel, temperature, light, etc. Mature cattleyas need to dry out thoroughly before being watered again. Seedlings need more constant moisture. Compare the weight of a dry pot of the same size and type of mix; it can indicate if a plant needs water by the relative weight — light means dry, heavy means wet. If in doubt, it's best to wait a day or two until watering. Plants in active growth need more water than plants that

are resting. Water below 50 F may injure plants, as will water softened by the addition of salts.

HUMIDITY should be 50 to 80 percent for cattleyas. This can be provided in the home by placing the plants on trays of gravel, only partially filled with water so that the plants do not sit in the water. Air should always be moving around the plants to prevent fungal or bacterial disease, especially if high humidity or cool temperatures exist. In the greenhouse, the humidity is best increased by use of a humidifier. Evaporative cooling increases humidity while cooling the air.

FERTILIZE on a regular schedule. In fir bark, a high-nitrogen (such as 30-10-10) formulation, or a similar proportion, is used. Otherwise, use a balanced fertilizer. When in active growth, plants need fertilizer at least every two weeks, and when not actively growing, once a month. Fertilizer can also be applied with every watering at one-quarter the recommended dilution. Thorough flushing with clear water every month is recommended to prevent the buildup of fertilizer salts.

POTTING is necessary when the rhizome of the plants protrudes over the edge of the pot or the potting medium starts to break down and drain poorly (usually after two to three years). It is best to repot just before new roots sprout from the rhizome, after flowering or in the spring.

Mature cattleyas are usually potted in coarser potting material than are seedlings. Until a plant has at least six mature pseudobulbs, it generally should be put into a larger pot and not divided. If dividing a plant, three to five pseudobulbs per division are required. Select a pot that will allow for approximately two years of growth before crowding the pot. Pile mix against one side of the pot and cut off any dead roots. Spread the firm, live roots over the pile, with the cut rhizome against the side of the pot. Fill the pot with medium, working it around the roots. Pack firmly and stake if necessary. Keep the plant humid, shaded and dry at the roots until new root growth is seen.

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Cymbidium

sym-BID-ee-um

These orchids are prized for their long-lasting sprays of flowers, used especially as cut flowers or for corsages in the spring. There are two main types of cymbidiums — standards and miniatures. Where summer nights are warm (above 70 F), only miniatures can be recommended, because many are more tolerant of heat and able to flower in warmer weather.

LIGHT is important for growing cymbidiums. Coming from cool and bright areas in Asia, they need high light but cool temperatures. In many southern climates, high summer temperatures, especially at night, may prevent the plants from blooming. The maximum amount of light possible, short of burning, should be given to the plants. This means only light shade during the middle of the day, or about 20 percent shade. In cool areas (such as coastal California), full sun is tolerated. Leaves should be a medium to golden green in color, not dark green.

TEMPERATURES are another critical factor in flowering standard and miniature cymbidiums. During the summer, standard cymbidiums are usually grown outside in semishade, where day temperatures should be 75 to 85 F (or more), but night temperatures in the late summer to autumn (August to October) must be 50 to 60 F to initiate flower spikes. Optimum temperatures in winter are 45 to 55 F at night and 65 to 75 F during the day. When plants are in bud, temperatures must be as constant as possible, between 55 and 75 F. Miniatures can stand temperatures five to 10 degrees higher than standards and still flower. Most cymbidiums can tolerate light frosts and survive, but this is not recommended. Bring them inside when temperatures dip to 40 F. In mild climates, they can be grown outside year round. A bright and cool location inside is best for winter months.

WATER to provide a constant supply of moisture to cymbidiums, which are semi-terrestrial plants. They generally produce all their vegetative growth during the spring and summer and need the most

water during that period. Water heavily during the growth season, keeping the potting material evenly moist. Reduce water when the pseudobulbs complete growing in late summer. Keep barely moist during the winter.

HUMIDITY outdoors is usually sufficient during the summer, except in dry climates, where evaporative cooling in a greenhouse is necessary. Keep humidity at 40 to 60 percent during the winter, especially if plants are in bud. Keep the air moving to prevent fungus (*Botrytis*) from spotting the flowers.

FERTILIZE at the proper time to help cymbidiums flower. During the growth season (spring through late summer), high-nitrogen fertilizer (such as 30-10-10) is used. In late summer, use a high-phosphorus, blossom-booster fertilizer (such as 10-30-20), to help form bloom spikes. Fertilize at full strength every week to two weeks. In winter, fertilize once a month.

POTTING is usually done in the spring after flowering, usually every two years or when the potting medium decomposes. Shake all of the old potting mix off the roots, dividing the plant if desired. Pick a water-retentive potting mix; medium-grade fir bark with peat moss and perlite is a common mix. Select a pot that will allow for at least two to three years of pseudobulb growth before crowding the pot, while planning on placing the active growing pseudobulb(s) of the division farthest from the side of the pot. Spread the roots over a cone of the mix in the bottom of the pot and fill the container with medium, working it among the roots, tamping firmly.



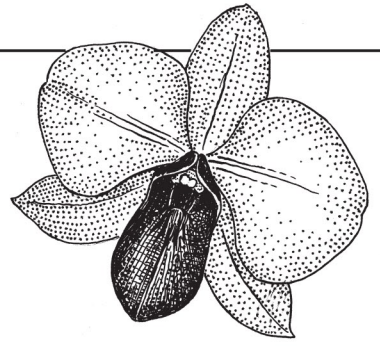
Single backbulbs need not even be placed in mix until new growth and roots are noted. Keep shaded and warm until new growth sprouts, and pot as above.

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Dendrobium

den-DROH-bee-um



The Spray Orchid

Dendrobiums are among the most commonly encountered orchids in the retail trade. Like most other cultivated orchids, dendrobiums are epiphytes, or air plants. They have well-developed water-storage organs (pseudobulbs), often called “canes” for their upright, leafy appearance. They should be potted in porous, free-draining media.

There are many different types of dendrobiums available to the specialist grower. However, hybrids involving *Den. phalaenopsis* are what you will most often encounter.

LIGHT

Sufficient light is important for healthy growth and flower production.

PROVIDE Bright light, to 50 percent sun. In the home, an east, west or lightly shaded south window. In a greenhouse, about 30 to 50 percent of full sun. Under lights, four 40 watt fluorescent tubes and two 40 watt incandescent bulbs directly over plants. Plants should be naturally erect, without need of (much) staking, and of a medium olive-green color.

TEMPERATURE

Mature plants need a 15 to 20 F difference between night and day.

PROVIDE Nights of 60 to 65 F; days of 80 to 90 F. Temperatures up to 95 to 100 F are beneficial if humidity and air circulation are increased. Low temperatures (below 50 F) may cause leaf drop.

WATER

Keep evenly moist while in active growth. Allow to dry between waterings after growth is mature (indicated by terminal leaf).

HUMIDITY

Dendrobiums need 50 to 60 percent. In the home, place on trays over moistened pebbles. In greenhouse, use a humidifier if conditions are too dry.

FERTILIZER

Should be provided on a regular basis during the active growing period.

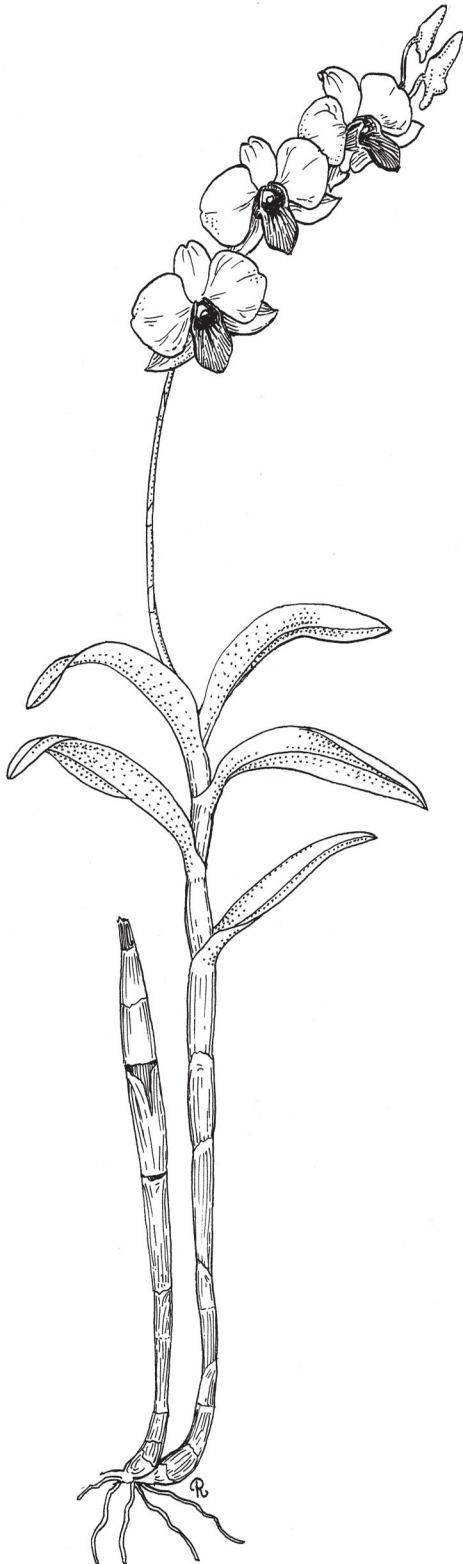
PROVIDE The exact fertilizer you use will depend on the mix in which your plant is growing. A good general rule is to apply a balanced (10-10-10, 12-12-12, or similar ratio) fertilizer “weakly, weekly” during the period of active growth. That is, fertilize every week at one quarter to one half of the recommended dilution.

POTTING

Should be done every two to three years before mix loses consistency (breaks down). Pot firmly in medium, giving aeration and ample drainage, allowing enough room for two years’ growth. Dendrobiums grow best in pots small for the size of the plant.

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Paphiopedilum

paff-ee-oh-PED-ih-lum

Paphiopedilums, the lady's-slipper orchids, originate in the jungles of the Far East including Indonesia. They are semiterrestrial, growing in humus and other material on the forest floor, on cliffs in pockets of humus and occasionally in trees. They are easy to grow in the home, under lights or in the greenhouse.

LIGHT is easier to provide for paphiopedilums than many other types of orchids. They require shady conditions, as in the home in an east or west window, or near a shaded south window. In the greenhouse, shade must be provided. Give about 1,000 to 1,500 foot-candles. In the home, fluorescent lighting is excellent; suspend two or four tubes 6 to 12 inches above the leaves.

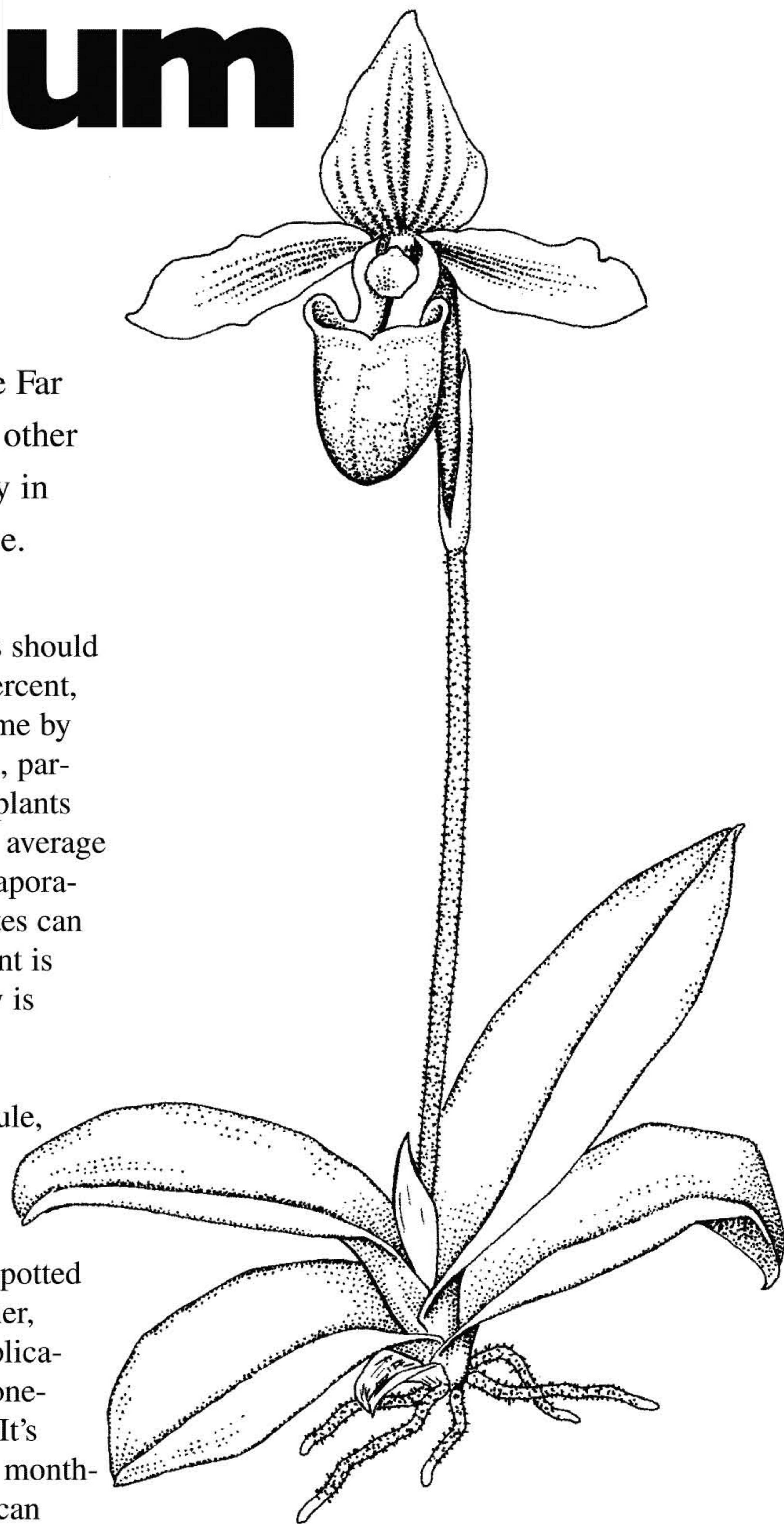
TEMPERATURES for paphiopedilums cover a considerable range. Paphiopedilums are traditionally separated into two groups: the warm-growing mottled-leaved types and the cool-growing green-leaved types. A third, increasingly popular group is the warmer-growing strap-leaved multi-floral paphiopedilums. Warm-growing types should be kept at 60 to 65 F during the night, and 75 to 85 F or more during the day. Cool-growing types should be kept at 50 to 60 F during the night and 75 to 80 F during the day. However, many growers raise all plants in the same temperature range with excellent results. The plants can stand night temperatures in the 40s if necessary (as when grown outside in mild climates), as well as temperatures to 95 F. Care must be taken to protect the plants from rot when cold (keep humidity low, and avoid moisture on leaves or in the crowns of the plants), and also to protect from burning when hot (shade more heavily and increase humidity and air movement around the plants).

WATER must be available at the roots constantly, because all plants in this genus have no pseudobulbs. All of these plants need a moist medium — never soggy, but never dry. Water once or twice a week.

HUMIDITY for paphiopedilums should be moderate, between 40 and 50 percent, which can be maintained in the home by setting the plants on trays of gravel, partially filled with water, so that the plants never sit in water. In a greenhouse, average humidity is sufficient. Using an evaporative cooling system in warm climates can increase the humidity. Air movement is essential, especially when humidity is high.

FERTILIZE on a regular schedule, but care must be taken to avoid burning of the fleshy, hairy roots. High-nitrogen fertilizers (such as 30-10-10) are recommended when potted in any fir-bark mix. In warm weather, some growers use half-strength applications every two weeks; others use one-quarter strength at every watering. It's important to flush with clear water monthly to leach excess fertilizer, which can burn roots. In cool weather, fertilizer applications once a month are sufficient.

POTTING should be done about every two years, or as the medium decomposes. Seedlings and smaller plants are often repotted annually. Mixes vary tremendously; most are fine- or medium-grade fir bark, with varying additives, such as perlite (sponge rock), coarse sand and sphagnum moss. Moisture retention with excellent drainage is needed. Large plants can be divided by pulling or cutting the fans of the leaves apart, into clumps of three to five growths. Smaller divisions will grow, but may not flower. Spread the roots over a small amount of medium in the bottom of the pot and fill with medium, so that the junction of roots and stem is buried $\frac{1}{2}$ inch deep in the center of the pot. Do not



overpot; an average plant should have a 4- to 6-inch pot.

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Phalaenopsis

fayl-eh-NOP-siss

Phalaenopsis, the moth orchid, is perhaps the best orchid for growing in the home, and is also a favorite with greenhouse growers. Well-grown plants can flower often, sometimes with a few flowers throughout the year, though the main season is late winter into spring. Average home temperatures and conditions are usually sufficient. Flower stems on certain hybrids can be forced to rebloom by cutting the tip off after the initial flowering. Only healthy plants should be induced to flower repeatedly. Culture for *Doritis*, a related genus, thought by some to be conspecific with *Phalaenopsis*, and *Doritaenopsis*, a hybrid between the two genera, is the same as for pure *Phalaenopsis*.

LIGHT is easy to provide for phalaenopsis. They grow easily in a bright window, with little or no sun. An east window is ideal in the home; shaded south or west windows are acceptable. In overcast, northern winter climates, a full south exposure may be needed. Artificial lighting can easily be provided. Four fluorescent tubes in one fixture supplemented by incandescent bulbs are placed 6 to 12 inches above the leaves, 12 to 16 hours a day, following natural day length. In a greenhouse, shade must be given; 70 to 85 percent shade, or between 1,000 and 1,500 foot-candles, is recommended. No shadow should be seen if you hold your hand one foot above a plant's leaves.

TEMPERATURES for phalaenopsis should usually be above 60 F at night, and range between 75 and 85 F or more during the day. Although higher temperatures force faster vegetative growth, higher humidity and air movement must accompany higher temperatures, the recommended maximum being 90 to 95 F. Night temperatures to 55 F are desirable for several weeks in the autumn to initiate flower spikes. Fluctuating temperatures can cause bud drop on plants with buds ready to open.

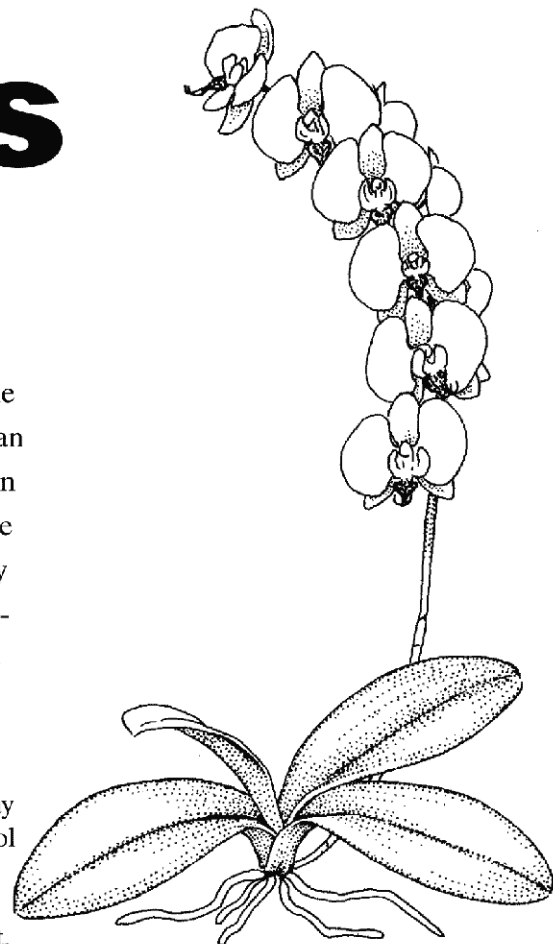
WATER is especially critical for phalaenopsis. Because they have no major water-storage organs other than their leaves, they must never completely dry out. Plants should be thoroughly watered and not watered again until nearly dry. In the

heat of summer in a dry climate, this may be every other day; in the winter in a cool northern greenhouse, it may be every 10 days. Water only in the morning, so that the leaves dry by nightfall, to prevent rot.

HUMIDITY is important to phalaenopsis, the recommended humidity being between 50 and 80 percent. In humid climates, as in greenhouses, it is imperative that the humid air is moving. Leaves should be dry as soon as possible, always by nightfall. In the home, set the plants on trays of gravel, partially filled with water, so that the pots never sit in water.

FERTILIZE on a regular schedule, especially if the weather is warm, when the plants are most often growing. Twice-a-month applications of high-nitrogen fertilizer (such as 30-10-10) are appropriate where bark-based media are used. Otherwise, a balanced fertilizer is best. When flowering is desired, a high-phosphorus fertilizer (such as 10-30-20) can be applied to promote blooming. Some growers apply fertilizer at one-quarter strength with every watering; this is best for warm, humid conditions. When cooler, or under overcast conditions, fertilizer should be applied twice per month at weak strength.

POTTING is best done in the spring, immediately after flowering. Phalaenopsis plants must be potted in a porous mix. Potting is usually done every one to three years. Mature plants can grow in the same



container until the potting medium starts to decompose, usually in two years. Root rot occurs if plants are left in a soggy medium. Seedlings usually grow fast enough to need repotting yearly, and should be repotted in a fine-grade medium. Mature plants are potted in a medium-grade mix. To repot, remove all the old medium from the roots, trim soft, rotted roots, and spread the remaining roots over a handful of medium in the bottom of a new pot. Fill the rest of the pot with medium, working it among the roots, so that the junction of the roots and the stem is at the top of the medium.

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