House plants can be propagated in a variety of ways. The methods used can be categorized as sexual (seeds or spores) or asexual (vegetative), the latter involving such techniques as division and separation, grafting and budding, layering and various types of cuttings. Not all house plants can be propagated using all these methods; certain methods are better suited for the propagation of certain plants. This publication briefly describes some of the more commonly used techniques.

**Sexual Propagation**

A number of common foliage and flowering house plants are easily propagated from seeds. These include umbrella tree, false aralia, tree philodendron, and many palms, cacti, and succulents. Many ferns, such as Boston, bird’s nest, and maidenhair, can be propagated from spores.

Sexual propagation is relatively simple and inexpensive and can usually be done without special propagating structures. However, because sexual propagation depends on the uniting of genes from two parent plants, a certain amount of variation should be expected in the offspring. Seedling plants may vary considerably from the plant that bore the seeds.

**Seed Propagation**

Seeds of tropical plants generally require no pretreatment like those of temperate woody plants, which may require moist chilling before germination can occur. In fact, seeds of tropical plants should generally be sown as soon as they mature.

Use a sterilized medium or commercial grade medium low in soluble salts such as milled sphagnum moss, vermiculite or a mixture of equal parts sand and peat moss. Almost any container with drainage holes can be used. Bottom heat (70° to 75°F) usually speeds up germination but is not essential; thermostatically controlled heating cables and mats come in several sizes and provide uniform heating.

Sow the seeds sparingly. If crowded together too closely, poor air circulation will increase the likelihood of damping-off, a fungal disease that attacks seedlings at the soil line. Extremely fine seeds should not be covered; larger seeds are usually covered to a depth about twice their size. It is a good idea to cover the container with glass or plastic to keep the medium from drying out. **CAUTION**: Remove the covering when seedlings appear. Label each flat or pot with the variety, planting date and other information you may desire. This provides a handy reference.

Check the seeds daily. Never allow them to dry out. Most seeds do not require light for germination. Filtered light is usually provided to germinating seeds, however, the light level should be increased when germination occurs; otherwise, weak, spindly seedlings will result. Seeds of many house plants are easily germinated under artificial light. Remember that the seedlings must be located close to the light source, usually not more than 12 inches in the case of fluorescent lamps.

Seedlings are transplanted more easily and with less shock when they are small. Most seedlings can be transplanted after the first true leaves appear. Dislodge the seedlings by lifting from below with a spoon or wooden label. Handle the seedlings by their root balls or by their leaves, NEVER by their stems. Replant them in their new container at approximately the same depth as they were growing and firm the soil around the roots. Water thoroughly and begin light fertilizer applications.

**Planting Spores**

Most ferns are propagated by division, but many can be propagated by spores which ferns produce on the underside of their fronds in structures called sori. The spores, which are the size of dust particles, should be scattered on the surface of a sterilized medium, usually one high in organic matter such as peat moss. Cover the container with a pane of glass or plastic to retain moisture. Place in a window receiving filtered light (rapid heating can occur under glass or plastic in direct light) or under artificial light. Be patient—it takes several weeks, sometimes months, for the young plants to germinate and reach sufficient transplanting size.
Asexual Propagation

House plants can be propagated using a variety of asexual or vegetative techniques. Asexual propagation leads to the production of new plants usually exactly like the parent plant; thus unique characteristics can be passed on to the offspring. Some plants produce few or no viable seeds, or they may be slow to germinate and develop. Larger plants can often be obtained more quickly using vegetative propagation techniques.

Separation and Division

Separation and division is certainly one of the easiest and quickest ways to propagate many plants. Plants like snake plant, Boston fern, asparagus fern, prayer plant and African violet are easily propagated using these techniques. Many palms and bromeliads produce offsets at the base of the mother plant.

Simply remove the mother plant from its container and separate or divide it by pulling or cutting it apart. Each division should have some roots attached. Repot the new plants.

Cuttings

There are many types of cuttings that can be used to propagate house plants. Certain cuttage techniques are better suited for certain plants.

Tip Cuttings

Tip cuttings (Figure 1) are a popular way of propagating many plants. Cuttings, usually three to six inches long, are taken from the tip of the stems or branches. The lower one-third of the foliage is removed, and the stem inserted into the rooting medium one to one-and-one-half inches deep.

Stem Cuttings

Stem cuttings are similar to tip cuttings except that lower portions of the stem or branch are utilized, thus several cuttings can be obtained from a single stem.

Leaf-bud Cuttings

Leaf-bud cuttings (Figure 2) provide an excellent means of propagating many vine-type foliage plants such as heart-leaf philodendron, devil's ivy and grape ivy and can be used for large-leaved plants like rubber plant. Single-eye cuttings are taken from plants with alternate leaves and have only one leaf and one axillary bud per cutting. Double-eye cuttings are taken from plants with opposite leaves, and have two leaves and buds per cutting. A leaf-bud cutting need not consist of a complete stem section. With rubber plant, a leaf and small section of stem tissue are usually taken; cuttings of this type are sometimes referred to as “heel cuttings.”

Leaf Cuttings

Leaf cuttings are used to propagate many house plants such as begonias, African violet, succulents, peperomia, gloxinia and snake plant. Since leaf cuttings do not include an axillary bud (which gives rise to the new plant), they can only be used to propagate species which have the capability of forming adventitious buds which can also give rise to new plants. There are several types of leaf cuttings:

Leaf-Petiole Cuttings

Leaf-petiole cuttings consist of a leaf blade and attached petiole and can be used to propagate such plants as African violet, peperomia, and some begonias (Figure 3). Roots and new plantlets form at the base of the petiole.
**Leaf-Blade Cuttings**

Leaf-blade cuttings consist of the leaf blade only (no petiole) and are used to propagate plants such as jade, sedum and certain cacti (Figure 4). Roots and plantlets form at the base of the leaf blade.

**Leaf-Vein Cuttings**

Rex begonia and certain other large-leaved plants can be propagated by cutting through the veins of single leaves in several places (Figure 5). New plantlets will form at each cut; thus multiple plants can be produced from a single leaf as opposed to a single plant typically produced with leaf-blade cuttings.

**Leaf-Section Cuttings**

Individual leaves of some plants can be cut into sections to produce new plants. Leaves of snake plant can be cut into pieces two to three inches long and inserted (right side up) in the rooting medium. New plantlets will form at the base (Figure 6). This method cannot be used to propagate certain forms of variegated snake plant because the variegation is not reproduced in the new plant. Rex begonia can also be propagated using leaf sections, which are usually cut into wedge-shaped pieces and inserted vertically into the medium.

**Cane Cuttings**

Cane cuttings provide an easy method of propagating certain plants like dumbcane, Chinese evergreen and corn plant. Leafless stem sections, usually two to three inches long, are cut from older stems and inserted into the medium either vertically or horizontally (Figure 7). Each section must contain at least one node. The sections will eventually root and produce a shoot. The process is somewhat slow and may require several weeks or months. That portion of the original stock plant remaining in the pot after removal of the stem and cane cuttings will sprout and produce a new stem, thereby renewing the original plant.

Regardless of the type cutting you use, certain essentials are common to all in order to insure success. Start with healthy cuttings. Weakened or diseased cuttings seldom root well or result in quality plants. Use a sharp knife to take cuttings. Blunt instruments, like scissors, tend to crush the tissue, restricting water uptake and opening the way for disease.

Rooting hormones can be used to improve or speed up rooting in some plants. Various commercial formulations are available. Most house plants root readily and rooting hormones are seldom necessary.

Cuttings should be rooted in soil, not water. Water rooted cuttings are generally weak and brittle and do poorly under transplanting. The rooting medium used should be firm enough to support the cuttings yet of a consistency to allow easy removal when rooted. Good drainage and aeration are essential. Sand, vermiculite, perlite and combinations of these materials with peat moss or sphagnum moss often work well. The rooting medium should be sterile and moist. Most commercially prepared media are sterile and ready to use. To sterilize your own mix, place it in the oven at 180 for 30 minutes. Space cuttings so that they have adequate room to root without over-crowding.

Daytime air temperatures of 70° to 80°F and night temperatures of 60° are satisfactory for propagating.
most plants. Bottom heat, as provided by heating cables and mats, can sometimes speed up rooting. For most types of cuttings, it is essential you maintain a high relative humidity around the cutting during rooting, since the cutting has a very restricted capacity to take up water. Commercial plant propagators use intermittent mist systems. Such systems are often not practical for the homeowner, but good results can be obtained by enclosing the plants with glass or plastic to retain moisture (Figure 8).

Layering
Layering is another simple method for propagating certain house plants. The technique is usually limited to plants with flexible stems such as vining plants. Layering is similar to cuttage except that the "cutting" is rooted on the mother plant before it is detached. The stem is simply bent over to the surface of the rooting medium and held there by pinning or weighing (Figure 9). Wounding the stem at the point of contact with the soil will often encourage rooting. When sufficiently rooted, the new plant is severed and repotted. Layering is often successful when other methods are not since it eliminates moisture stress during rooting.

Air layering is a specialized type of layering useful in propagating plants like umbrella plant, rubber plant, and corn plant. The method is actually used more often to renew old, overgrown specimens that have become too tall or lost their lower leaves or branches. The stem is wounded at the point where the new root system is desired, then surrounded by a moist rooting medium (usually sphagnum moss), and finally wrapped with a moisture retentive material (usually plastic). When the new roots have formed (often several months are required), the new plant is severed and repotted. The old plant is usually cut back close to the soil line and allowed to regrow.

Some plants produce structures that naturally layer on contact with the soil. Plants that produce stolons or runners, often terminating in small plantlets, are easily propagated. Examples include strawberry begonia, flame violet, and spider plant. Simply peg the plantlet down in place, and once it roots sever it from the mother plant.

Grafting and Budding
Grafting and budding are not commonly used to propagate house plants with the exception of a few cacti and miniature roses.

Micropropagation/Tissue Culture
Some plants are now being commercially propagated using micropropagation techniques, which involve the production of new plants from very small amounts of tissue. These techniques have other applications in plant breeding and elimination of diseases. The techniques and procedures necessary for micropropagation are too exacting for most hobbyists.