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INDOOR GARDENING

MEMBER'S BULLETIN

J. Lee Taylor*

PROJECT INFORMATION

Who can take the project?

Indoor gardening projects are suitable for members of all ages. The many activities can be carried out in any home situation. Older members would be expected to have larger or more complex projects.

Why take this project?

There is an indoor gardening activity within the range of ability and interest of almost every 4-H member. The project provides opportunities to make items for someone else. These activities provide a contact with nature, give practice in manual skills, and emphasize "learning by doing."

What is included in the project?

Indoor gardening covers the following activities:

Caring for house plants. Care for 12 or more house plants. Repot, water, fertilize, and divide the plants. Time: any time during the year.

Dish gardens and terrariums. Make at least two woods, meadow, or desert dish gardens, and at least two woods or tropical terrariums. Time: fall or spring or both.

Winter bloom from bulbs. Pot and bring into bloom at least three pots of hardy spring flowering bulbs such as daffodils, tulips, hyacinths, and minor bulbs. Time: fall and winter.

Creating plaques from dried materials. Assemble three or more plaques on backing materials at least five by seven inches in size. Use two of the suggested designs. Time: any time during the year.

* This bulletin is based on several Extension publications of the New York State College of Agriculture, a unit of the State University, at Cornell University, Ithaca, New York, prepared by E. F. Schaufler, Department of Floriculture.

CARING FOR HOUSE PLANTS

Introduction

Do you have colorful flowering or foliage house plants? Would you like to know how to grow plants to brighten your home? From this bulletin you will learn how plants function. This will let you know how to take care of plants in your home. You will find that many house plants are fun to grow.

Plants need light, heat, air, food, and moisture. Correct plant care means proper watering, removing dead flowers and leaves, and repotting plants when they need it. You will learn a correct repotting procedure.

You will need to care for at least 12 house plants during the project—repotting, watering, fertilizing, and dividing as needed.

Use 4-H Form 210A, *Member's Plan and Evaluation*, to help evaluate your progress.

Equipment for the activity

Plants need light, heat, air, food, and moisture. You will need:

1. Window sill space with storm window protection, or table space for 12 or more plants close to a window.
2. At least 12 pots (clay, plastic, or aluminum) from two and one-fourth inch to six-inch size, depending on the size of your plants.
3. Saucers or tuna fish cans to use under the pots.
4. Twelve or more plants.
5. A watering can. One with a long, thin spout is preferred.
6. Soil mixture for your plants. Eight quarts, or one-fourth bushell will fill approximately 15 four-inch pots.

Kinds of House Plants

House plants are divided into two groups. Some are grown for their flowers, and others for their interesting or abundant foliage. Generally the foliage plants are less exacting in their growth requirements than the flowering plants.

Some common house plants are:

Foliage Plants

- | | |
|-------------------|--------------|
| Cacti | Grape ivy |
| Cast iron plant | Jade plant |
| Chinese evergreen | Peperomia |
| Coleus | Philodendron |
| English ivy | Pothos |
| Ferns | Rubber plant |
| German Ivy | Snake plant |
| | Zebrina |

Flowering Plants

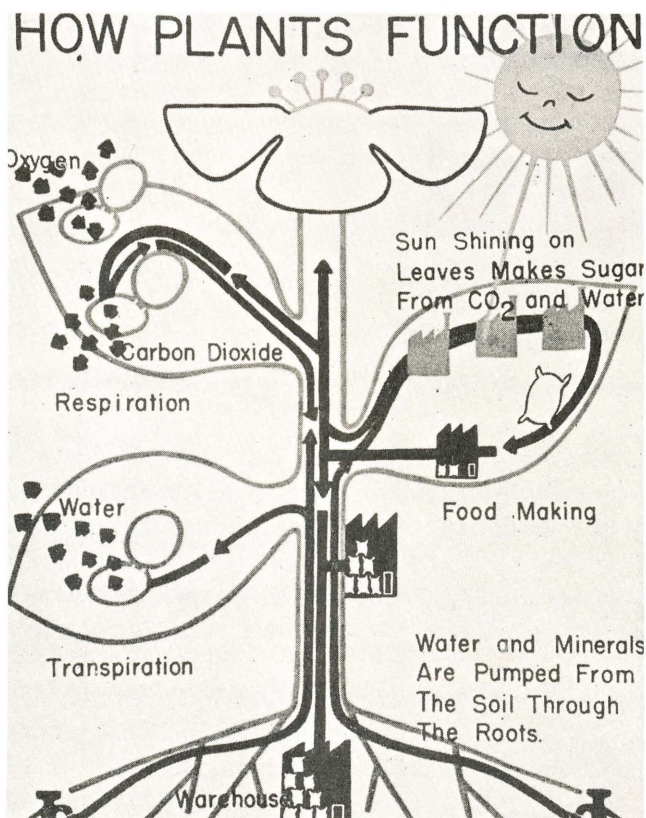
- | | |
|------------------|--------------|
| African violet | Geranium |
| Amaryllis | Gloxinia |
| Begonia | Impatiens |
| Christmas cactus | Shrimp plant |
| Episcia | |

What Makes Plants Grow

Water

Water is constantly moving through a plant; it enters the roots, moves through the stems, and exits from the leaves as a vapor. This process is known as "transpiration." The rate of transpiration varies. It is rapid with warm, sunny, and windy conditions. It is most rapid in homes with a dry atmosphere. Transpiration slows down when it is cool, dark, still, and humid. If roots are unable to take

up enough water for transpiration, the plant wilts. Should this condition last for any length of time, the plant may die.



All plants need a combination of conditions to grow. These are water, light, food, air, and a suitable temperature.

Light

Light is the most important factor regulating the growth of plants. Some light is needed for all green plants because the actual food for a plant is made or "manufactured" by green leaves in the presence of light. Energy from sunlight, raw materials from water, soil, and air, and the green chlorophyll in the leaves work together to produce the sugars, starches, and proteins that the plants use as food. If a green plant gets no light, it dies of starvation because it cannot manufacture its own food.

Food

The "food" a plant uses to grow is different from the "food" it takes in with water through the roots. Just as much of the food we eat is processed, the food a plant actually uses is changed from a raw form to a usable form within the plant. This process has the long name of "photosynthesis." We call fertilizers "plant foods," because they supply many of

the nutrients or minerals that a plant needs. These are in the raw material form. The lack of light, or the lack of nutrients will cause green plants to die.

Air

Air circulation is needed by plants because they use carbon dioxide to help manufacture usable food. Air leaves carbon dioxide in the leaf as it passes through, and picks up surplus oxygen and water vapor. This extra material is carried out of the leaf, and is part of the transpiration process. If dust gathers on leaves, it may clog some of the breathing pores and slows down the air movement through the leaves.

Temperature

Each plant has a definite temperature range in which it grows best. Many tropical plants stop growing when the temperature goes below 50°F. Yet some of our plants such as the geranium grow best when the temperature is about 50°F. African violets grow better in the home at a temperature of 70°F.

Summary

All green plants need water, light, food, air, and the right temperature for best growth. All these factors play individual parts in determining how well our house plants will grow.

The Actual Care of Plants

It is hard to give a general rule for watering house plants. The kind and size of pot, and the humidity and temperature of the air determine how much and how fast water is used by any one plant. In general, plants should be watered whenever they need watering.

Plants are fed by a good growing media and fertilizer. A recommended media is one part garden soil, one part organic matter (rotted manure or peat moss), and one part sand. To each six-inch pot of mixture, add one teaspoon of a complete fertilizer such as 5-10-5 or 6-12-6. The potting mixture for cacti is two parts sand, one part organic matter, one part garden soil. The higher amount of sand in this mixture promotes better drainage. Potting mixtures can also be purchased at garden centers and variety stores.

Plants are repotted once a year; feed them when they are repotted and again six months later. Avoid feeding during November, December, and January when plant growth is very slow because of poor light. Plants can use food only when they are growing actively.

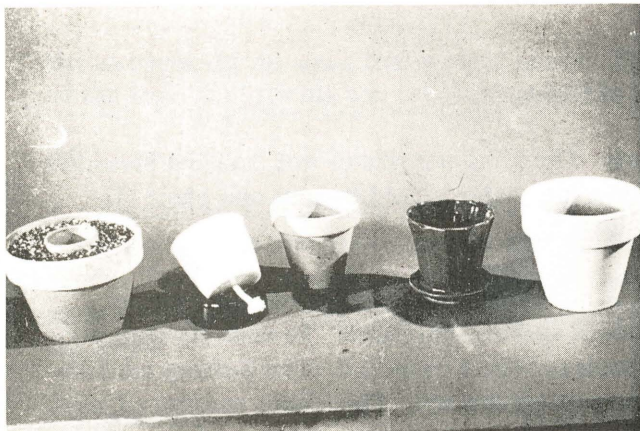
Plants vary in the amount of light needed for good growth. The following list should give you an idea about where certain plants might be placed in the home.

Poor Light*	Bright Light	Sunlight
<i>(away from windows, in halls, on tables)</i>	<i>(window sills on the north and east, curtained west windows)</i>	<i>(direct sun in south and west windows)</i>
Cast iron plant	African violet	Begonia
Chinese evergreen	Cacti	Christmas cactus
Jade plant	English ivy	Coleus
Peperomia	Episcia	Geranium
Philodendron	Ferns	German ivy
Pothos	Gloxinia	Hardy bulbs (forced)
Rubber plant	Grape ivy	Impatiens
Snake plant	Pepper plant	Zebrina
	Shrimp plant	

**(These plants will grow in poor light, but all grow better in bright light.)*

A small, clay pot with a large plant may need water twice a day. A large, glazed pot with a plant of the correct size may need water every other day. Plants should never wilt between waterings. Add enough water at one time so that all the soil in the pot will be moist. You can water from the top or bottom, but be sure that all excess water can drain off. Water is also used to wipe off the leaves. On plants with hairy leaves, such as African violets, it is best to use a small soft brush. Use room temperature water on African violets and other tropical plants.

The air around plants is often drier than is healthy for the plants. Humidity can be increased by setting the plants in a large waterproof tray. An inch of gravel, nearly covered with water, on which the pots are set, provides good humidity conditions. Plants do not like cold drafts, and some react to slight gas leaks.



Suitable pots for house plants include (left to right): small pot surrounded by mica, plastic self-watering pot, clay pot, gardenier (no drainage), and glazed pot.



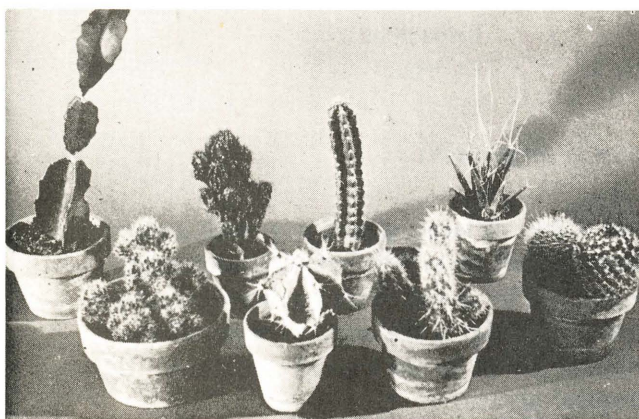
Here are some house plants that do well in poor light:
1. Cast iron plant; 2. Snake plant; 3. Rubber plant; 4. Chinese evergreen; 5. Variegated peperomia.



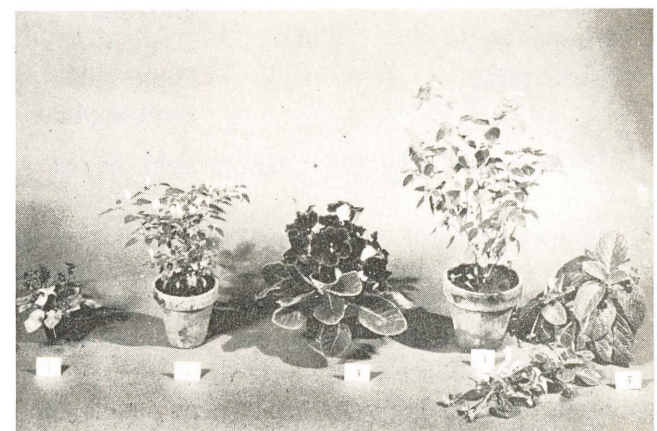
Some foliage house plants need direct sunlight to stay bushy. These are: 1. Echeveria; 2. Coleus; 3. Artillery plant; 4. Iresine.



The philodendron is a popular vine for the home. There are many variations of philodendrons. Here are four leaf forms.



Cacti do best in bright light. These interesting forms are very easy to grow.



Most tropical plants need bright light for best growth. These plants will burn in summer sun. Put them in north and east windows during the summer, or cut down light by using curtains in south and west windows. These plants are: 1. African violets 2. Pepper plant; 3. Gloxinia; 4. Shrimp plant; 5. Episcia or "flame violet."

Temperatures in most homes run too high for best plant growth. Day temperatures of 70° to 72° F are best, with night temperatures of 60° F to 65° F. Move plants off window sills during very cold weather. Extreme changes in temperature can check plant growth, and even kill some tropical house plants.

DISH GARDENS AND TERRARIUMS

Introductions

During the summer, you see many types of plants growing outdoors. As fall comes, all but the evergreen trees and shrubs shed their leaves. Annual flowers die after being touched by frost.

There are many plants you can grow and enjoy in your home during the winter. There are flowering and foliage-type house plants, but the big attraction in your home can be a pleasing dish garden or terrarium. You can assemble a tiny garden for your home this winter. Dish gardens make wonderful gifts, too.

Activity

Assemble at least two dish gardens and two terrariums to the satisfaction of your leader.

Attend a meeting on dish gardens and terrariums, or assemble them by following the instructions in this bulletin.

Use 4-H Form 210A, *Member's Plan and Evaluation*, to help evaluate your progress.

Equipment for the activity

To assemble dish gardens you will need:

1. Containers – A low, metal or pottery container of any shape at least 3 inches deep and not more than 8 inches high. Brass, copper, pewter, and iron containers are available in a number of styles. Pottery containers in dark or dull colors are very satisfactory.
2. Soil – A good house plant soil (1 part sand, 1 part loam, 1 part peat moss) should be used. Exception—for cactus use 2 parts sand, 1 part loam, 1 part peat moss.
3. Fertilizer – To the soil mixture add any 5-10-5 or 4-12-4 fertilizer at the rate of 1 level teaspoonful to a 6 inch pot of soil. (Pot measurements are the diameter of the top of the pot.)
4. Drainage – A layer of gravel, sand, broken pot, or granulated charcoal is needed in the bottom of the container. This should be at least 3/4-inch in depth and may be more if the dish is fairly deep.
5. Plants – Dish garden plants should be slow-growing types. Plants may be selected from the wild or they may be purchased. In general, there are four different dish garden types.

Examples of these are listed on the opposite page.

Woodland Gardens

Club mosses	Mosses	Seedling evergreens
Ferns	Partridge berry	Yew
Fungi	Pippsissewa	Hemlock
Ground pine	Rattlesnake plantain	Juniper
Hepatica	Rock polypody	Pine
Lichens		Wintergreen

Desert Gardens

Agave	Echinocactus	Optuntia
Aloe	Euphorbia	Sedums
Cacti	Haworthia	Sempervivum
Crassula	Kalanchoe	Snake plant
Echeveria	Mesembryanthemum	Staphylea

Tropical Gardens

Acorus	Dracena	Pteris fern
African violet	Ivy	Scindapsus
Bird's nest fern	Kalanchoe	Snake plant
Bromeliads	Peperomias	Syngonium
Cissus	Philodendrons	Zebrina
Cliff brake fern	Podocarpus	

Field and Meadow Gardens

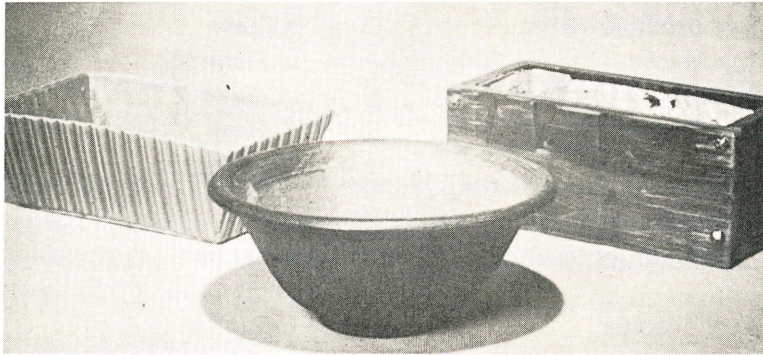
Cedar seedlings	Juniper seedlings	Pussytoes
Grasses	Lichens	Wild strawberry
Hawkweed	Mosses	

6. Room in your home where you can keep dish gardens throughout the winter.

To assemble terrariums you will need:

1. Containers – Terrariums can be assembled in glass jars, goblets, old-fashioned candy jars, aquariums, fish bowls, or elaborate glass bubbles. A clear glass container and a cover are basic requirements. Cloudy or tinted glass filters out too much light needed for growth and cuts down on what one can see in the terrarium.
2. Soil – A mixture of 1 part sand, 1 part peat moss, and 1 part good garden soil, which is the recommended house plant mixture, is a good media for terrarium plants. You may wish to buy a small amount of prepared soil mix because very little is needed in a terrarium.

Deep containers such as these could be used for dish gardens. They must hold enough soil for six to eight plants.



3. Drainage – The terrarium has no drainage hole, but excess water can be seen through the bottom. You may wish to put a layer of granulated charcoal in the bottom. The layer should be no more than 1/2-inch deep. Drainage material is put in after the bottom and sides of the container are lined with sheet moss, green side out.

4. Plant Materials – Some of the more common materials are:

Native Materials

- | | |
|----------------------|---------------------|
| Club mosses | Seedling evergreens |
| Ferns | Yew |
| Hawkweed | Juniper |
| Hepatica | Hemlock |
| Lichens | Pine |
| Partridge berry | Shelf fungus |
| Pippsissewa | Violets |
| Pussytoes | Wild strawberry |
| Rattlesnake plantain | Wintergreen |
| Rock polypody | Woods mosses |

Tropical Plant Materials

- | | |
|----------------|--------------|
| Acorus | Peperomia |
| African violet | Philodendron |
| Bromeliads | Podocarpus |
| Crassula | Pteris fern |
| Creeping fig | Scindapsus |
| Dracena | Selaginella |
| Echeveria | Snake plant |
| Ivies | Syngonium |
| Kalanchoe | Zebrina |
| Maranta | |

5. Room in your home, out of direct sunlight, where you can keep terrariums throughout the winter. With proper care, terrariums will last as long as three years.

How to Assemble a Dish Garden

A dish garden is a number of interesting plants pleasingly arranged in a suitable container. The container may be round, square, oblong, or any convenient shape for your selected use. Brass, copper, and iron containers should be lined with aluminum foil. Pottery containers in shades of blue, green, or brown can also be used.

Not all plant materials grow happily under the same conditions. Just think of a cactus plant, happy in the hot and dry southwestern states, moved into one of the boggy Florida swamps! Soon the cactus would shrink and die because it could not change into a bog plant. Plants that like the same conditions belong in one type of dish garden.



A piece of gnarled stump is the background for this woods dish garden. Small plant materials keep everything in scale.

Woods Dish Gardens

Your woods dish garden is assembled from plants you can collect along roads, hedgerows, and woods. Many of these plants grow in areas of light shade. Therefore, your woods dish garden can be used on a low table, on the mantle, or in another location that does not get full sun. Mosses of the woods are often the major materials in a woods dish garden.

Put a layer of small gravel, pearl chips, sand or ground-up charcoal in the bottom of your container. This is drainage material. If you water too heavily, the excess water will gather in this drainage layer.

Gather a little more soil than hangs onto the roots of your plants as you carefully dig them up. The extra woods soil you gather is put on top of the drainage layer. Your plants are then planted in the woods soil where they will feel at home.

You may also use tiny appropriate figurines or other center of interest objects in your dish garden. Tiny pottery animals, elves, interesting small stones, gnarled pieces of roots, or a lichen-covered rock may be your center of interest. Gaudy-colored or large figurines are generally not appropriate. Figurines of brown or shades of green are best.

Now you come to the exciting part! Arranging your center of interest and collected plants to form a pleasing, attractive dish garden.

Dish Gardens Viewed From All Sides

If your garden is to be viewed from all sides, interest can be gained by having your soil mounded higher in the center. On top of the mound, plant one of your seedling trees. The tallest tree should be about one and one-half times the longest dimension of your container. Let the partridge berry vine creep around the inside edge of your container. Place one or two of your tiny pottery animals halfway down the slope. Then place six to eight plants of two or three kinds on the slope. Cover all exposed soil with one type of a flat moss. Practice placing different materials for their best effect.

You may have a tiny piece of mirror as a pond, or a path of sand through your woods dish garden. Be sure your pool or walk is in scale with the figurines.



The four cacti and the container carry out a desert theme. White sand is used as a ground cover.

This dish garden of tropical plants can be viewed from all sides. The tall snake plant is exactly in the center of the garden.



Dish Gardens Viewed From One Side

If your dish garden is seen from one side only, it can be made level, or to resemble a sloping hillside. Again, try various placings for your center of interest to find where it looks best.

Your woods dish garden may look more attractive if you create contrast. Use a piece of bark, a shelf fungus or a gnarled piece of wood behind some of the plants. This should be done only with gardens to be viewed from one side.

The tallest material should be about one and one-half times the longest dimension of your container. It may be placed in the center behind your planting, or toward one side.

Desert Dish Gardens

The best containers for desert dish gardens are light blue, reddish, or buff in color. Most desert plants have a grayish cast from spines or fuzz.

Cacti like dry places and are used to thriving in the hot sun and little moisture. The soil mixture placed on top of the drainage layer for your desert garden is 2 parts sand, 1 part garden soil, and 1 part peat moss or compost. The sand lets excess moisture drain out of the soil mixture.

There are many different types and sizes of cacti for an interesting desert garden. Choose only two or three kinds in various sizes. Follow design rules for placing materials. Place the tallest toward the back.

The lowest ones look best in front. A piece of bleached wood or an interesting stone can give you a center of interest, or an interesting cactus plant may be the best center of interest.

For a finished look, cover the soil showing after your plants are planted with a thin layer of white sand, pebbles, stone chips, or crushed flower pots. Water your desert garden no more than once a week.

Tropical Dish Gardens

House plants that like lots of water are used for tropical dish gardens. You will recognize many of the house plant names suggested for a tropical dish garden.

The soil mixture for a tropical dish garden is 1 part garden soil, 1 part sand, and 1 part peat moss. These materials should be thoroughly mixed before being placed in your container. Do not forget to put a layer of drainage material in the bottom of your container.

If your dish garden is to be seen from all sides, mound soil a little higher in the center, or use your largest plant in the center. Group smaller plants around it. If the garden is to be seen from one side only, use the tall plant toward the back and center.

Many rooted cuttings of house plants can be used in tropical gardens. Here are some common house plants suitable for tropical dish gardens.

African violet
Bromelia
Croton
Grape ivy

Peperomia
Philodendron
Podocarpus

Small-leaved ivies
Snake plant
Zebrina

Watch for plants with interesting leaf markings or colors. The plant with the most interesting characteristics would be good for a center of interest.

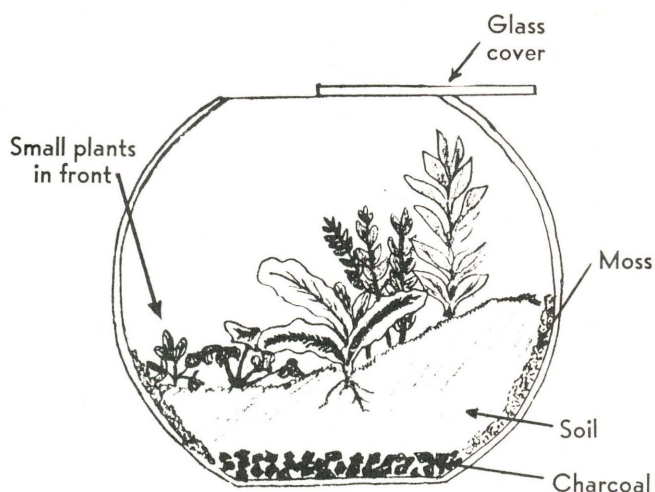
Terrariums

Terrariums are actually enclosed dish gardens. Clear glass jars, aquariums, fish bowls, goblets, and old-fashioned candy jars that can be closed or covered with a clear material make good containers. Glass containers with small openings are hard to plant.

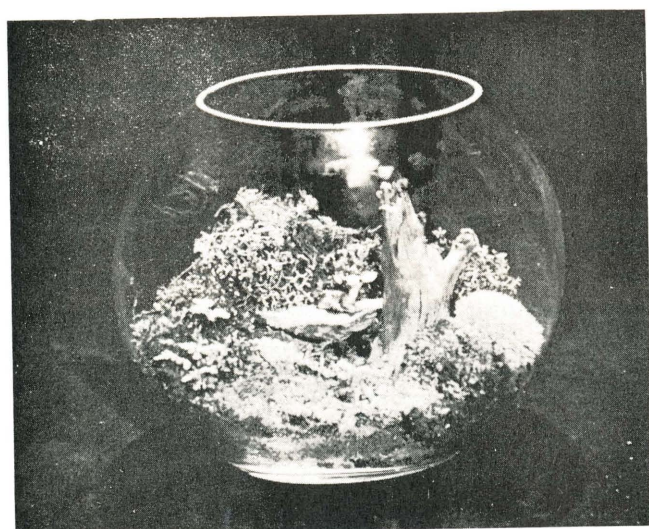
Line the sides of your container with sheet moss, up to the soil line, green side against the glass.

For drainage, use ground-up charcoal, small pebbles, coarse sand, or pieces of broken pots. This will provide internal drainage. Place the drainage material on the flat bottom portion of your container 1/2- to 1-inch deep.

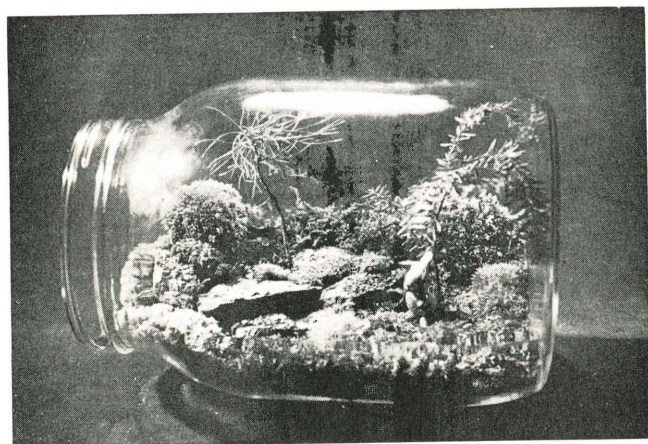
Your soil mixture (1 part soil, 1 part sand, and 1 part peat moss) goes on top of the charcoal. You may need only a handful or two of your soil mixture. The mixture is used only to support the plants.



This diagram shows how a terrarium is put together.



A small piece of stump, a deer figurine, rock and woods mosses are used in this hillside terrarium.



A gallon paste jar resting on its side is used for this hillside terrarium. All materials are in scale.

Here are native and tropical plants that grow well in a terrarium.

Native

- Hawkweed
- Hepatica
- Mosses
- Partridge berry
- Pippsissewa
- Seedling evergreens
- Shelf fungus
- Violets
- Wild strawberry
- Wintergreen

Tropical or Greenhouse

- Creeping fig
- Chinese evergreen
- Dracena
- Ferns
- Fittonia
- Philodendron
- Small-leaved begonia
- Strawberry begonia

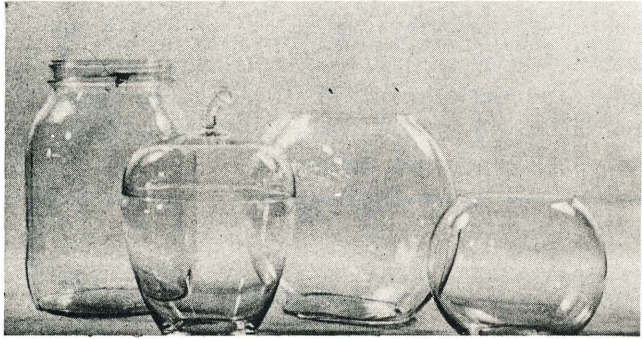
Do not mix native and topical materials because they have different cultural requirements. Woods moss can be used as a ground cover in a tropical terrarium. Otherwise, make a terrarium of either native or tropical materials. You can use slips as plants.

Do not crowd your plants. Open spots where soil shows after plants are in can be covered with pieces of moss.

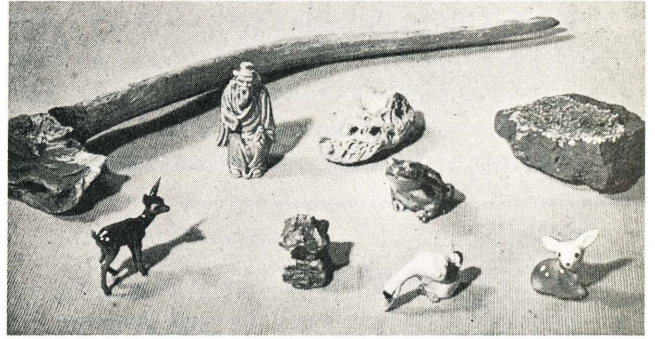
A small figurine, a lichen-covered rock, an interesting piece of bark or root may be a center of interest. A few plants, pleasingly arranged, are much more satisfactory than a jumbled mass of crowded plants

Do not let water stand in the bottom of your terrarium. If it does, remove the cover and let it evaporate. Your terrarium may need only one or two teaspoons of water a month. Place your terrarium in a light place and enjoy it throughout the winter.

Plan to collect plant material for woods dish gardens and terrariums before heavy snowfall comes in your area. Usually September and October are good months for this activity.



Clear glass containers are suitable for terrariums. They must be large enough for you to reach inside them to place materials.



Small figurines, interesting rocks, and pieces of wood can be used for a center of interest or background in dish gardens or terrariums.

WINTER BLOOM FROM BULBS*

Introduction

The process of flowering Spring bulbs by other than naturally occurring conditions is called forcing. This is a practice carried out by commercial growers the world over. With a little care and effort anyone can have a steady supply of bulb flowers from late January thru April. It is possible, using certain procedures and specific bulbs, to have flowers prior to January. Forcing bulbs should be a challenge to those who are interested in plants.

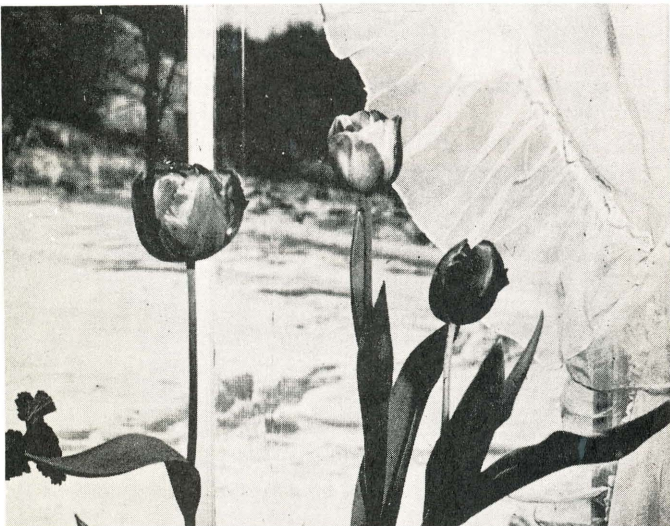
Activity

Pot up and bring into bloom at least three pots of bulbs. Use 4-H Form 210A, *Member's Plan and Evaluation*, to help evaluate your program.

General Information

The steps involved in forcing are quite simple:

1. The proper cultivars (cultivated varieties) must be selected for the desired flowering periods. This is necessary since all cultivars are not suitable for all flowering periods. Table 1 lists some cultivars which are best suited as pot plants for the various months.
2. The bulbs must be planted and given a cold treatment with temperatures ranging from 35° to 48° F. This cold treatment can be provided by either a cold-frame or an unheated cellar. Regardless of the method used, the bulbs must be rooted and stored for a minimum of 13 weeks.
3. They should be carried into the house for flowering. On the average, the bulbs will take about 3 to 4 weeks to flower. During this time you will be able to enjoy a growing plant.



Forced tulips peer out a window at a wintry scene. All major hardy spring-flowering bulbs can be brought into bloom indoors in February and March.



Crocus is easy to force. Keep pots in a cool room for long lasting flowers.

* A. A. DeHertogh and W. H. Carlson, Department of Horticulture, Michigan State University.

Materials

Bulbs – The selection of the proper cultivars for the desired period is very important. Table 1 describes several cultivars which are suitable as pot plants for the various months. It is strongly suggested, since some varieties suggested below may be in short supply, that you place your bulb order with your dealer in the spring to make sure he will have them in the fall.

TABLE I
Tulips, Hyacinths, Daffodils, and Crocus Suitable for Forcing

Type of Bulbs	<u>Time of Flowering</u>	
	January and February	March and April
Tulip	<u>Red</u> – Cassini, Paul Richter, Prominence, Christmas Marvel, Topscore, Trance, Charles, Bing Crosby, Olaf	<u>Red</u> – Couleur Cardinal, Red Queen, Utopia, Robinea
	<u>Yellow</u> – Levant, Bellona	<u>Yellow</u> - Makassar, Ornament
	<u>White</u> – Snow Star, Pax	<u>White</u> – Blizzard
	<u>Salmon</u> – Apricot Beauty	<u>Orange</u> – Orange Sun
	<u>Varigated</u> – Madam Spoor, Merry Widow, Roland	<u>Varigated</u> – Carl M. Bellman, Golden Eddy, United Europe, Edith Eddy, Paris
	<u>Pink</u> – Preludium	<u>Pink</u> – Pink Supreme, Pearless Pink, Rose Beauty
Hyacinths	<u>Red</u> – Jan Bos	
	<u>Pink</u> – Anna Marie, Eros, Lady Derby	<u>Pink</u> – Lady Derby, Pink Pearl, Marconi
	<u>Blue</u> – Ostara, Bismark	<u>Blue</u> – Ostara, Blue Giant Perle Brillante
	<u>White</u> – Carnegie, L’Innocence	<u>White</u> – Carnegie
Daffodils	King Alfred, Golden Harvest, Carlton	Gold Medal, Rembrandt, Van Sion, Geranium Cheerfulness
Crocus	Remembrance, Pickwick, Joan of Arc, Grand Maitre, Peter Pan	Pickwick, Peter Pan, Joan of Arc, Remembrance, Grand Maitre

Planting medium – The purpose of the planting medium is to anchor the bulbs and to serve as a supply of moisture. Thus, the planting medium must be WELL-DRAINED and yet retain sufficient moisture. A good mixture would be 1 part loamy soil, 1 part peat and 1 part sand. Fertilizer should not be added to the mixture.

Containers – Use only clean pots with adequate drainage holes. If they have been previously used, scrub the pots and rinse thoroughly. If they are new plastic pots, be sure that there are holes in the bottom of the pot. When clay pots are to be used, soak them overnight so that they will not draw moisture from the planting medium.

Procedures

Handling of bulbs prior to planting – It is extremely important that all bulbs be handled with care at all times. They are living plants and should not be dropped or subjected to extreme temperatures. After purchasing, be sure that the bulbs are kept WELL-VENTILATED. If they are in paper bags, open the bag to allow maximum air movement. If possible, it is a good practice to store them on open racks. Keep the bulbs in a room with a temperature between 55° and 63°F. Bulbs can be stored for several weeks at these temperatures. Temperatures above 63°F should be avoided at all times.

Planting – Planting can take place any time from October 1 to December 1, depending on the desired date of flowering, the type of storage used, and the prevailing weather. As a general rule it can be said that for late flowering it is best to plant late and for early flowering, plant early. Remember the minimum length of cold treatment should be 13 to 14 weeks.

For flowering in late January, the planting must be done around October 1. For February flowering, the bulbs should be planted in mid-October and for March and April, in mid-November.



Daffodils are the easiest hardy bulbs to force. This demonstrator shows how successful her indoor gardening project has been.



This demonstrator shows how she potted tulips for forcing. The terrariums allow the audience to see how deep the bulbs were planted.

When planting, the pots should be loosely filled with enough soil so that when the bulb is planted the top of the bulb will be even with the top of the pot. Place 6 tulips, 3 hyacinths, 6 daffodils, or 15 crocus to a 6-inch pot. When planting tulips, you will note that they have a round side and a flat side. Plant them so that the flat side of the bulb will be facing the outside of the pot. When this is done, the first big leaf of the plant will face outward and an attractive pot will be obtained at flowering. Do not press the bulbs into the soil. The soil under the bulbs should be loose so that good rooting can take place quickly. When covering bulbs, do not fill the entire pot. Fill only to within 1/4 of an inch of the top so that the plants can be more easily watered. Remember to LABEL EACH POT with the name of the cultivars, date of planting, and date to be placed in the house.

Cold treatment — After planting, two procedures are available for forcing. The first and by far the most convenient method is the use of indoor cold-storage such as a vegetable or unheated cellar. As long as the temperatures run between 36° and 50°F any type of structure can be used very successfully. It is a good practice to stagger the time of planting as previously suggested. After placing the pots in the unheated cellar, WATER THEM WELL. A good root system is essential and this cannot be obtained without proper watering. The bulbs should be watered frequently making sure that the soil is kept moist.

The second method which can be used is using a cold-frame. The cold-frame should be constructed on a well-drained piece of land and preferably in a shaded area which does not receive heat from the house. After the pots are placed in the cold-frame, WATER THEM WELL. After watering, the pots should be covered.



These bulbs have gone through the cold storage period and are ready for forcing.

There are various materials which may be used. These include sand, peat, and sawdust. More recently it has been found that ground polystyrene is excellent as a cover for bulbs. If this type of material is used, it will have to be covered with wire screening or some similar material to prevent blowing of the polystyrene. The material offers many advantages since it is lightweight, never freezes, allows water to pass through rapidly and

the bulbs may be inspected at any time during the forcing period. When using a cold-frame, stagger the plantings and remember that the last planting should be done at least 3 weeks prior to hard freezes. If the rains are infrequent, it will be necessary to water to ensure that the pots are kept moist.

Forcing the bulbs — After a minimum of 13 weeks of cold storage, the first bulbs may be placed in the house. If the first planting was made on October 1, the first plants may be taken into the house right after Christmas. For a continuous supply of flowers, bring in a few pots at weekly intervals. In the house, place the plants in an area with a temperature of approximately 60°F. For best results do not place in direct sunlight. The plants will require about 3 to 4 weeks to flower. Since the bulb contains most of the plant food it needs to develop, it is not necessary to fertilize once the bulbs are brought into the house. Bulbs which have been forced indoors are usually of little value for outdoor plantings. There are, of course, exceptions to this rule.

Tender Bulbs

Tender bulbs are bulbs that will not survive the usual winter weather experienced in our temperate zone, such as paper-white narcissus and amaryllis. Tender bulbs do not require cold storage treatment.

Treatment of tender bulbs

Paper-white narcissus is good for only one blooming period. Grow them in any medium (sand, gravel, pebbles, or soil) that will hold the bulbs upright. Place them in bowls or low pots, and set them immediately in a well-lighted location at 60° F. Temperatures of 75° F or higher are undesirable for they encourage weak growth and loss of flower.

Amaryllis is potted in the wintertime. Put one bulb in a pot, allowing an inch of space around the bulb. Leave the upper half of the bulb showing above the soil line. Give these plants good light, a good supply of water, and temperatures above 60° F. They will flower within six to eight weeks. Once they have flowered, keep watering the plants. Amaryllis does better if the foliage is left on the plant and the plant kept growing the year around.

For additional and more complete information on home forcing of bulbs, it is suggested that the following references be consulted.

1. Flowering Bulbs for Winter Windows, Marian C. Walker, D. Van Nostrand Company, Inc., Princeton, New Jersey 08540.
2. Handbook of Bulbs, Brooklyn Botanic Garden, 1100 Washington Avenue, Brooklyn, New York 11225.
3. Indoor Forcing of Dutch Bulbs, Netherlands Flower-Bulb Institute, 29 Broadway, New York, New York 10004.

CREATING PLAQUES FROM DRIED MATERIALS

Introduction

Many easily-obtainable, dry materials can be glued to an inexpensive backing to form a decorative plaque. Use such plaques as part of your room decorations or as gifts.

The following information will enable you to assemble pleasing plaques at little cost. Plaques formed in a shadow box are especially attractive. All the materials needed can be found in or around your home. Dried materials can come from left-over seed, gardens, roadsides, and fields. Always be on the lookout for usable dry materials.

Activity

Assemble three or more plaques on a background at least 5 inches by 7 inches, using more than one design.

Use 4-H Form 210A, *Member's Plan and Evaluation*, to help evaluate your progress.

Equipment for the Activity

To assemble plaques of dried materials satisfactorily you will need:

1. Backing or Background —
Picture frames (with wooden backing)
Squares, rectangles, and circles of plywood (five inches by seven inches and larger)
Old wooden trays
Wooden or plastic salad bowls
Wood shingles
Masonite

Wood and metal are suitable for backgrounds. Backing materials may be left natural or may be painted before a design is glued to them. Shadow-box effects can be made with old-fashioned shadow-boxes, painted cigar boxes, tin pie plates, or cake tins.

After sanding backing materials smooth, use shellac or lacquer to preserve natural backgrounds. If you are using a frame with backing, use one of a number of good color combinations to paint the frame and background. Metal backgrounds are usually painted. Good background color combinations are: two tones of brown, gold and black, brown and yellow, gold and light green, brown and gold.

2. Cement — A quick-drying, model airplane cement is best for dried materials. Household cement or glue is also good but is slower to dry.

3. Dry materials – You have an endless choice of substantial dried materials for plaques. Avoid feathery grasses or shedding seed stalks. Below are lists of good dry materials.

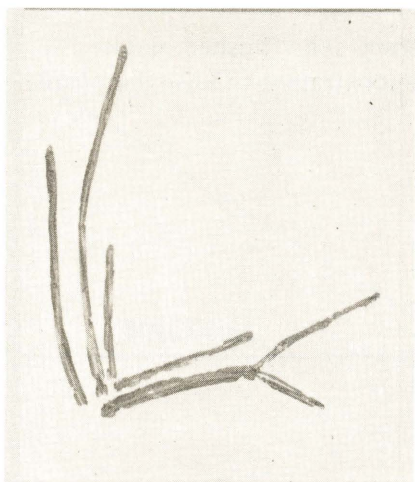
Seeds	Seed Pods	Dried Flowers
Barley	Ash	Blue salvia
Bayberry	Catalpa	Globe amaranth
Bean	Day lily	Strawflowers
Corn	Gladiolus	Tansy
Cucumber	Iris	
Melon	Leucothoe	Dried Foliage
Oat	Lilac	Beech
Peach	Lily	Magnolia
Pea	Locust	Mullein
Squash	Maple	Oak
Wheat	Milkweed	Ostrich fern fronds
	Narcissus	Sensitive fern fronds
	Okra	
Nuts	Peony	Dried Branches
Acorn	Poppy	Dogwood
Beechnut	Spruce	Larch
Black walnut	Swamp alder	Oak branches with acorns
Brazil nut	Teasel	Scotch broom
Hazel nut	Trumpet vine	Witch hazel
Hickory nut	Tulip	
Horse chestnut		Cones
Pecan		Arborvitae
Walnut		Fir
		Hemlock
		Juniper
		Larch
		Pine
		Spruce

4. Types of materials – Dried materials are divided into groups according to form or habit of growth. Long, spike-like materials, such as cattails and branches, are used for height and width. Round shapes, such as pine cones, are used toward the center of the arrangement. Small circular forms, such as acorns, may be arranged in a line to give a spiky effect. Small, spiky forms, such as long melon seeds, may be placed to create circles.
5. Designs – You can create endless designs from dry materials. The last sheet of this bulletin gives you some ideas. From these you may wish to choose your first design. Using your dry materials, you may work out your design directly on the background.

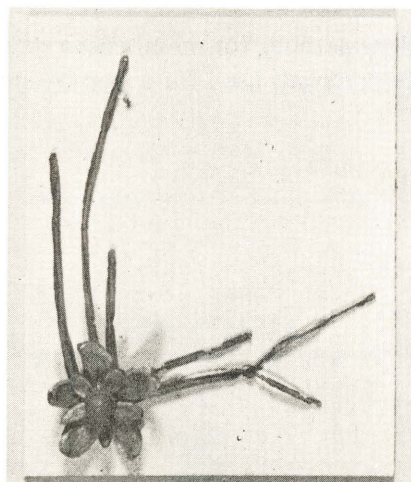
6. Brushes — If your frame and backing are to be painted, you will need narrow paint brushes, 1/2- to 1-inch wide.
7. Sandpaper, Steel Wool — Sandpaper is used to put a smooth surface on wood backing. Fine steel wool is used on cake tins if they are to be painted and used for a shadow-box effect.

How to Make Dried Plaques

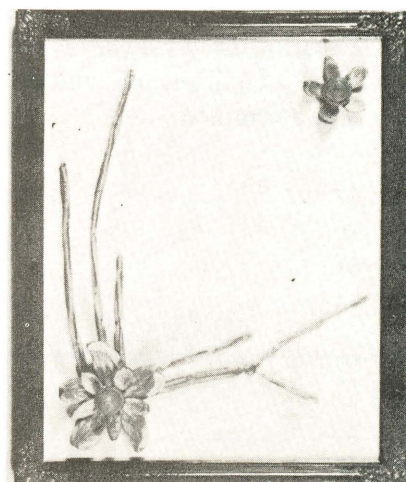
Select a design that will allow you to use the materials on hand and is suited to the background shape you have chosen. A rectangular background is suited to any design.



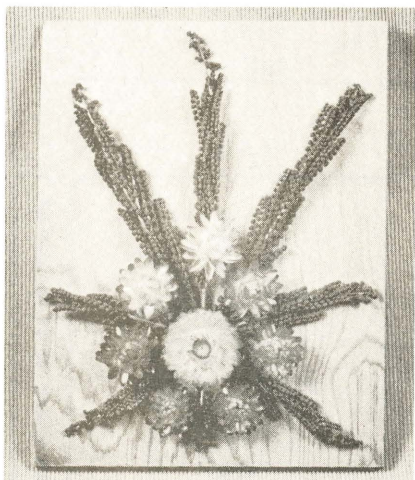
The lines for an L-shaped design are placed first. These are twigs of winged euonymus.



The focal point is added. Here it is an acorn with hickory nut shucks.



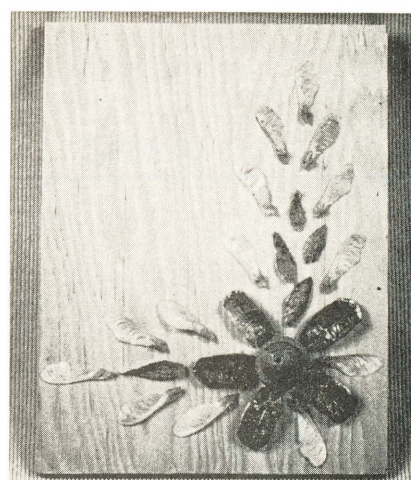
A frame and a smaller design in the upper right corner are added to complete the plaque.



This plaque follows the fan design. It is made from just two materials — strawflowers and sterile fern. A plaque does not need a large number of materials to look good.



Bittersweet vine makes the lines, a hemlock cone and seed corn form the center of interest. Single lilac seed pods fill in around the vine. The round capsules are a weed seed pod.



The line of this L is made of maple seeds. Scales from a pine cone and an acorn form the center of interest. Bits of bark form the transition from maple seed to pine cone scales.


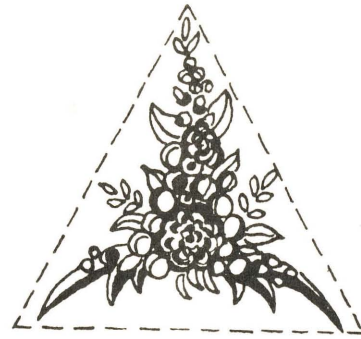

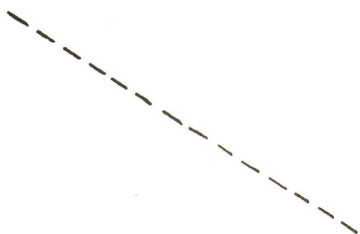


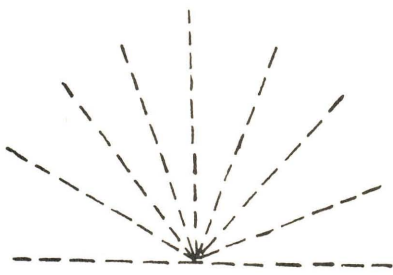

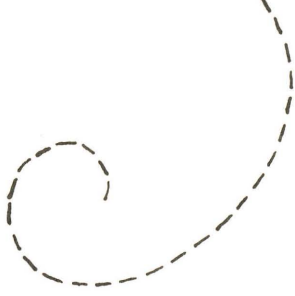




After you have chosen a design, rough out your selection in full size. Lay long materials, or materials to be laid in lines, on your background. Work from top to bottom. The largest materials and strongest colors are low and toward the center. The greatest mass, which is either one large or several closely grouped small pieces, is at the center of attention or focal point.

After your materials are satisfactorily placed and checked, you are ready to glue them into place on your background.

After the glue is dry, you may wish to shellac the entire plaque. A slightly shiny finish can be obtained by spraying the finished plaque with clear plastic spray. This is available in pressurized cans.

Demonstrations

Creating dried plaques is an excellent activity for members to demonstrate. The finished plaque should be displayed, and duplicate materials used for a step-by-step demonstration of how the plaque was assembled.

 <p>CRESCENT</p>	 <p>TRIANGLE</p>	 <p>3-LINE</p>	
 <p>DIAGONAL</p>	 <p>HORIZONTAL</p>	 <p>ZIG-ZAG</p>	
 <p>FAN</p>	 <p>VERTICAL</p>	 <p>SPIRAL</p>	
 <p>OVAL</p>	 <p>S-SHAPE</p>	 <p>STAR</p>	 <p>L-SHAPE</p>

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Some basic designs for dried plaques