

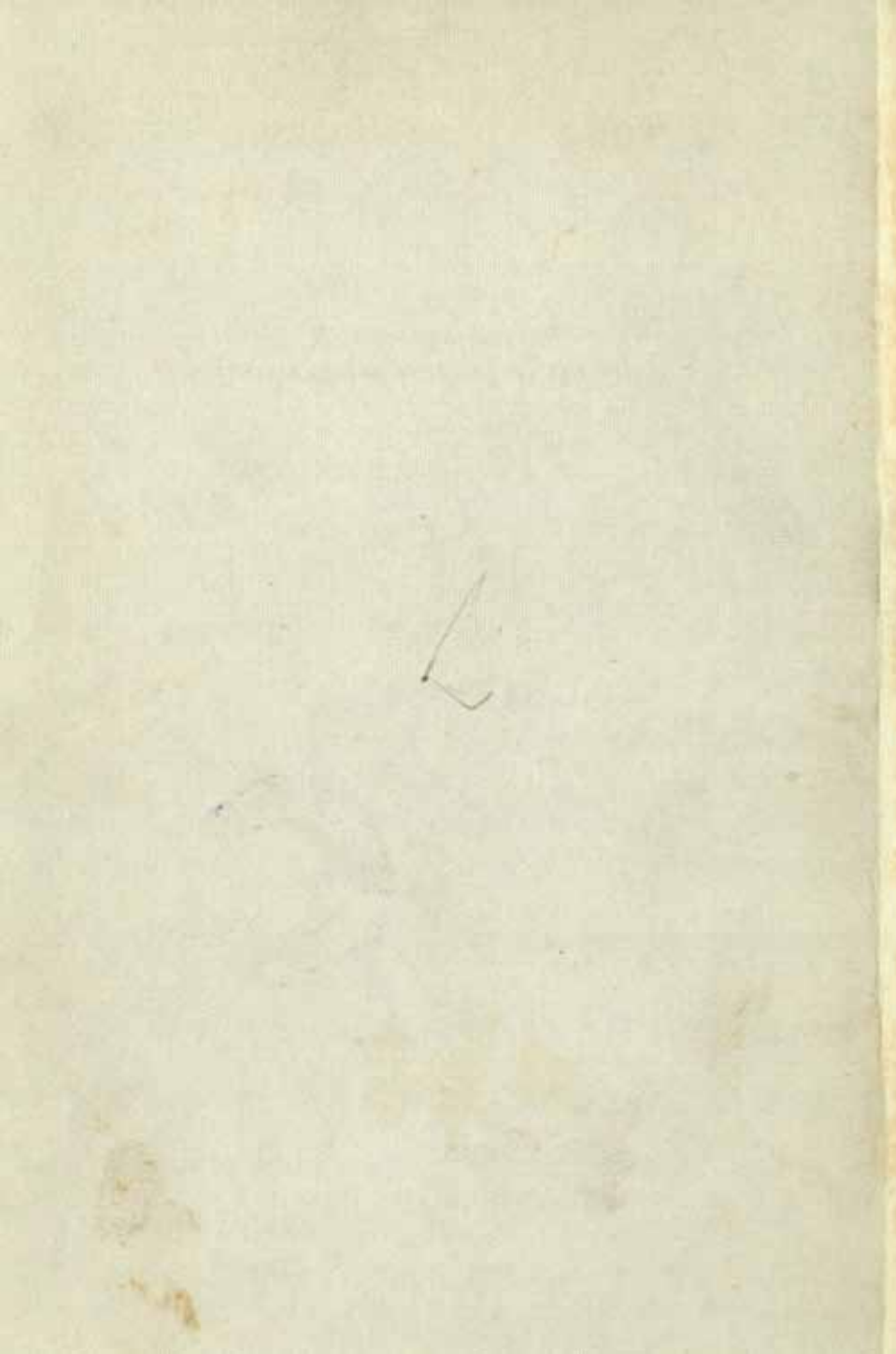
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A GROUP OF NYMPHAEAS
Nymphaeas (water-lilies) are perhaps the best-known of aquatics. They grow to various sizes and are suitable for all types of pool

The Water Garden

WATER adds charm to a garden. It is easy to manage, lively and ever-changing, and blends effectively with earth, rocks and plants.

Many beautiful and unusual plants can be grown in a water garden, and the making of such a garden is an adventure within the reach of everyone. Almost any receptacle capable of holding water is a potential pool, and there are water-lilies small enough to live and flower in an ordinary sized washing-up bowl.

If a pool is well constructed, if care is taken with the planting, and if the right planting compost material and aquatics (water plants) are chosen, water is easier to manage than grass. But with no other feature in the garden is the margin between success and failure so delicately

poised. Great care is needed to hold the balance between clear water and a well-managed pool on the one hand, and smell, slime, green water and rank aquatics on the other.

SITING

The position of water in the garden is very important, for water-lilies and most aquatics love the sun. The warmer the water, the more luxuriant the growth and the greater the number of blooms will be. A pool should, therefore, be sited in the open as far as possible.

The shelter of trees or a hedge to the north or north-east of the water garden breaks the force of driving winds and considerably extends the flowering season, but be sure to build the pool some

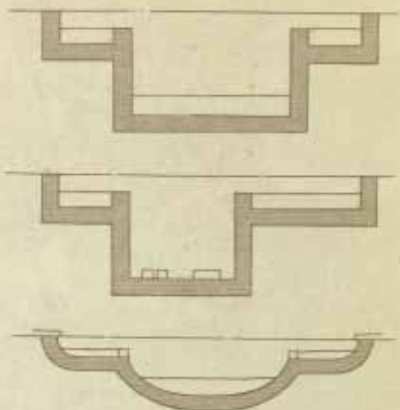
distance from the trees or hedge, so that dead leaves do not fall into the pool and foul the water. Alternatively, spread wire-netting over the surface of the pool during the few weeks of the autumn fall.

A very deep pool can be a disadvantage since depth controls the temperature of the water, but the water must not be too shallow or it will freeze up in winter. Fifteen to 18 in. of water above the crowns of plants is shallow enough to induce free-flowering and yet sufficiently deep to safeguard the roots in winter. Rock garden pools are often only 1 ft. or even less in depth, and should be protected during very bad weather (see *Winter Care of Pools*), but such precautions are impracticable for larger pools.

Water gardens are either formal or informal, and should fit in with their surroundings. The formal water garden is usually the dominant feature of a garden—in a central position or perhaps the keypoint of an area to which all paths lead. It is regular in shape (a circle, square, oblong or some geometric form) and its outline is defined with a raised kerb or flat, paved surround. Fountains can be placed in the water garden, but as a general rule running water is not desirable, especially if the water supply comes from a natural spring or similar low-lying source, because it will constantly lower the temperature and also destroy the calm on which water-lilies thrive.

Formal pools look better in conventional surrounds and do not blend with natural features such as wild or rock gardens or alpine meadows. Keep the vegetation in them low, using water-lilies and submerged and floating aquatics rather than marginals and bog plants.

An informal pool should not disclose its origin. The concrete or other material of which it is made can be hidden by keeping the outer edges below the level of the surrounding ground, and by the



CONCRETE POOLS

A concrete pool does not have to be of uniform depth and can have a curved or rectangular section. Water-lilies, submerged aquatics and fish all require deep water, but marginal aquatics are quite happy in a shallow surround. In the deep part of the pool, stands for plant baskets may be installed.

skilful use of marginal plants—bog and marginal aquatics being used to bridge the gap between the water and dry land. The informal pool blends with any natural setting, and is not, therefore, the best type of pool for a formal rose garden or similar tailored feature.

TYPES OF POOL

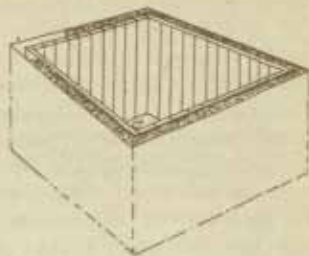
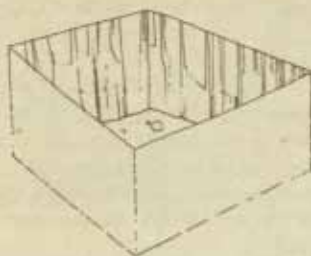
There are four principal types of pool construction for the gardener to choose from: making a pool in concrete; fitting pre-shaped pools made of plastic materials such as Fibreglass; adapting old containers such as tubs, baths and barrels; and lining an excavation with polythene sheeting.

CONCRETE POOLS

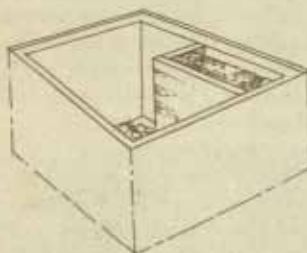
These are the most popular; because of the flexibility of the material, concrete pools can be any size and shape. If they

THE WATER GARDEN

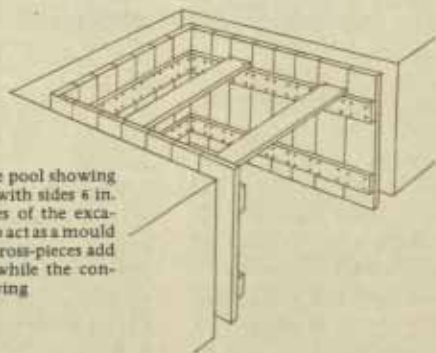
BUILDING A CONCRETE POOL



A concrete pool is probably the simplest to construct. When the excavation has been made, build a roofless and bottomless wooden box to stand inside the hole with about 6 in. to spare all round. Build up the cement between box and earth walls, working continually round the box



A boggy area for shallow-water plants may be constructed in a corner of the pool from cement or bricks and then filled with earth



A section through the pool showing how the shuttering, with sides 6 in. shorter than the sides of the excavation, is positioned to act as a mould for the cement. The cross-pieces add strength to the box while the concrete is drying

are properly constructed—they are durable enough to last for many years.

A concrete pool need not be the same depth all over. Water-lilies, submerged oxygenators (plants that provide oxygen in the water) and fish all require deep water; but a shallow part at one end or entirely surrounding the deeper portion will provide a home for marginal aquatics. This outer rim will reduce the cost and labour of the excavation and, because of its shallowness, will make it easier to shape the surround, which can be formal or informal as required.

Ensure that the deeper part of the pool is watertight, as the plants and fish that will occupy it are much less tolerant of drought than shallow-water aquatics. It is best, therefore, to make this part of the pool formal in shape, as a square or rectangular tank is easiest to construct. The final shape required can then be worked in the shallow outer rim.

Mark out the deep area with pegs, and excavate the soil to a depth of 2½ ft. This allows for 6 in. of concrete, 6 in. of soil (or the depth of a basket) and 1½ ft. of water. Make sure that the base is level and free of loose soil before laying the concrete, which should be spread over the whole floor of the pool in one operation. Roughen the edges for about 6 in. all round, with a trowel or similar tool, to make a key for the new concrete when the sides are constructed.

The sides can be built in a variety of ways. For instance, a brick wall can be built and then covered in concrete. But perhaps the most efficient method is to construct a roofless and bottomless box of stout timber to stand inside the excavation with about 6 in. to spare all round, and then to pack concrete into the space between earth and wood. Build up the necessary depth of cement by working continually round the box; do not complete one side at a time. Take

special care to force the material down at the corners. Oiling or soft-soaping the boards beforehand makes it easier to remove them a few days later when the concrete has set.

The outer rim of the pool is made in the same way, except that it is only necessary to excavate 10 in. of soil—allowing for 4 in. of concrete and 3 in. each of compost and water. Sides 4 in. thick will be strong enough for this part of the pool.

As it is so important that a pool be waterproof, use only top-quality materials—Portland cement, coarse sand, and clean gravel or aggregate of varying sizes between ½ in. and ¾ in. They should be mixed in the proportions of one part cement, two parts sand, and three parts clean gravel or aggregate, with sufficient water to make a good, stiff dough.

If mixing concrete seems too laborious a business, it is worth considering the use of ready-mixed concrete.

MATURING CONCRETE

Before a new pool is stocked, be sure that the concrete is matured. In its fresh, raw state it is exceedingly alkaline and dangerous to many plants and animals. Goldfish are particularly affected; their gills become sore and inflamed and they finally suffocate.

There are three ways of dealing with the problem:

1. By keeping the pool full of water for six months, then emptying and rinsing it out before planting. This is the usual procedure with a pool constructed in the autumn.
2. By painting over the surface with one of the several proprietary insulating substances available from sundriesmen. Most of these substances also contain a waterproofing material which helps to ensure water-tightness.
3. By neutralizing with acid the alkaline substances which come from the cement.

THE WATER GARDEN



TUBS AS WATER GARDENS

Small containers should be sunk into the ground so that the plants can be seen from above. If the rims are well below ground, give the pool a decorative outline by placing pieces of stone or scrambling plants round the edges. The soil inside the containers can be built up round rocks to give varying depths.



Any cheap acid such as commercial, syrupy, phosphoric acid does for this purpose. Stir into the water enough to show an acid reaction to litmus paper 24 hours after adding.

PREFABRICATED POOLS

These are made of Fibreglass, aluminium or plastoglass, and are so light that a child can handle them. The majority have pressed-out depressions of various depths, to provide planting pockets for deep or shallow water aquatics, and they are available in simple square and circular shapes and also in more complicated designs.

To install these pools, it is only necessary to excavate a hole into which they just fit (a template is usually provided with them), check the rim for level, plant, and then fill with water. As they are made only in comparatively small sizes, the depth of water is often insufficient to

prevent deep freezing in winter. This means that the pool has to be protected in bad weather (see *Winter Care of Pools*). The edges of these pools can be concealed by turfed, paved or flagged surroundings.

MISCELLANEOUS CONTAINERS

Tubs, old baths, stone troughs, coppers and even galvanized tanks can be used for water gardens. Copper is not a suitable receptacle for most livestock, but water-lilies and aquatics grow in it safely.

Old wooden wine or beer casks sawn in half can also be used, free-standing or sunk in the ground. They need thorough cleansing beforehand, and should be kept filled with water or the staves will shrink and the tubs leak. If free-standing casks are to be painted, cover only the outside surfaces.

Most receptacles present a better effect when seen from above, so it is usual

to sink tubs. If the rims are well below ground level, pieces of stone and scrambling plants can be put round the edges to mask the outlines. A boggy surrounding area suitable for marsh plants can be made by occasionally flooding the tub.

POLYTHENE SHEETING

This is a cheap and simple method of preparing a site for growing aquatics; all that is needed is to excavate the area to the required shape and depth (or depths), line the depression with thick polythene sheeting (500 gauge), fill with water and introduce the plants (in baskets) and fish.

A new type of plastic sheeting, known as Plastolene, is reinforced with Terylene. This expands so that when slowly filled with water it takes up the exact shape of the excavation. It is available in a variety of colours and has greater strength than ordinary plastic.

There are two sources of danger: a stab with a fork or similar sharp tool spells disaster; and if hot sun constantly plays on the material above the water-line, it is liable to become thin and leak when the pool is full. For this reason protect the edges of plastic pools with pieces of rock or by laying soil or paving stones up to the water's edge; and always keep them full of water.

STREAM GARDENS

Rock and water are natural partners, and in the garden streams and waterfalls not only bring beauty, but sound and movement as well. A large area of ground is not essential, but the site must, of course, be sloping. At the highest point, water from a hidden tap will trickle slowly into a basin or cavity, to spill over in a waterfall and collect in another basin. Here it spills over again before running, via a stream, to the largest area of water, which is the pool proper. Surprisingly little water is needed to create attractive effects and there are several models of

pumps on the market which will return the water so that it is used over and over again.

Remember that constantly moving water is not good for lilies and the more decorative aquatics, so that the source of supply should be turned off at night and in cold weather. Also, the path of the water from the top of the rock garden to the main pool should not be too straight. In Nature, water takes the line of least resistance, finding its way through soft rock and round obstacles in steady descent to the lowest reaches. Study such phenomena in the wild or visit some good rock gardens before embarking on the building of a stream garden.

BOG GARDENS

Many plants like to feel the influence of water without actually growing in it; they cannot stand drought, yet cannot live in stagnant moisture. These are the bog plants, some of which are the most colourful plants in the water garden.

There are several alternative ways of arranging for constant moisture during the active growing season. Firstly, the area may be flooded periodically, which is quite successful if the flood water can be trapped.

But if it runs all over the garden it will be a wasteful nuisance. There is also danger that, during a period of drought, when water is most urgently required, local authorities may enforce water restrictions.

A second method is to place 6 in. of drainage material such as broken crocks, stones or washed clinker over the base of a 1 ft. deep basin, cover this with a layer of turves laid grass side downward, and then 10 to 12 in. of compost. In this soil bed raised above the level of the neighbouring pool, the plants' crowns will rest in well-drained soil, but the roots will go down to or feel the influence of the water below.

Often there is no need to carry out any special construction work to grow bog plants; in reasonably moist or heavy soils sufficient moisture is usually present in the ground to take care of their needs. An annual top-dressing with a mulch of well-rotted leaves (in April or early May) will conserve the moisture.

WINTER CARE OF POOLS

During the winter months, keep all garden pools full of water as this is the best insurance against frost damage to plants and fish.

Cover very shallow pools during sustained cold spells. Prefabricated pools are often sold with mats for this purpose, but boards or branches laid across the surface and covered with sacks are equally effective. Remove the coverings as soon as a thaw sets in, or premature growth will take place in the warmth engendered beneath them.

If possible keep a hole open in the pool to give fresh air to any fish it contains. Do not bang the ice with a heavy hammer as this can injure both fish and concrete, but allow a ball or piece of wood to float on the surface, and lift this out every day so that the ice round it can be gently chipped away.

In the autumn and before the garden is left for the winter, cut all dead herbage at the waterside as low as possible to prevent it harbouring the larvae of the water-lily beetle and other pests, and remove all dead leaves and debris from the water-lilies and from the pond itself as far as possible. The rotting down of this kind of debris is the chief reason for cloudy pools.

PLANTING

Water-lilies, aponogetons and nuphars are hearty feeders and need a good, rich planting compost. Do not economize on planting compost, because poor soil

invariably results in a paucity of bloom, small stunted leaves and a general meagreness of growth. These plants need good heavy loam, such as the top spit from pasture land, which has rotted down for six or nine months, or clay soil enriched with one-sixth of its bulk decayed cow manure, which must be at least 12 months old and have been stored under cover to prevent the destruction of its mineral properties by exposure to sun and rain. Other natural manures are unsuitable, and if cow manure is unobtainable, the best substitute is coarse bone meal used in the proportion of a 5-in. potful to a wheelbarrow-load of soil. Mix the constituents together thoroughly, remove any fibrous material, and, if it is necessary, water the heap to get it into a moist condition.

OMISSION OF ORGANIC MATERIAL

Do not introduce any of the organic materials normally associated with potting composts. Leaf mould, rotted compost, spent hops, peat and similar substances may make good food, but during their breakdown they will charge the water with mineral salts. These will encourage algae, which in turn will discolour the water. If too much organic matter is present, putrid gases escape—they can sometimes be seen bubbling upward through the water and can suffocate fish.

TWO METHODS OF GROWING WATER-LILIES

There are two methods of growing water-lilies in artificial pools. One is to place a 5- or 6-in. carpet of prepared loam across the base of the empty pool and plant directly into this material. The disadvantage of this method is that when it is time to attend to or lift and divide the plants, the gardener churns up the mud and the water loses the clarity that is one of its chief attractions.

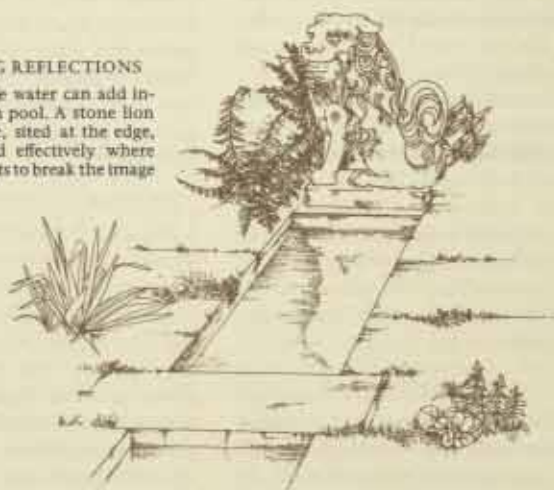


A CLASSICAL POOL

Carefully-chosen stone flags can make the effect of a severely classical pool even more formal. The corner-stones provide ideal stands for tubs of large plants such as agapanthus, or shrubs such as bay trees

INTERESTING REFLECTIONS

Reflections in the water can add interest to a garden pool. A stone lion or similar figure, sited at the edge, will be mirrored effectively where there are no plants to break the image



A MINIATURE WATER GARDEN

An old stone trough makes an excellent small water garden. Plant one or two *Nymphaea pygmaea alba*, *N. Graziella* or *N. freibeli*, according to the size of the trough. The rocks that form the firm base could be interplanted with rock plants, such as pink dianthus or *Androsace lanuginosa*



STONE CARVING AMONG REEDS

A pool of formal shape, edged with *Typha latifolia*. A stone carving between the reeds gives added interest



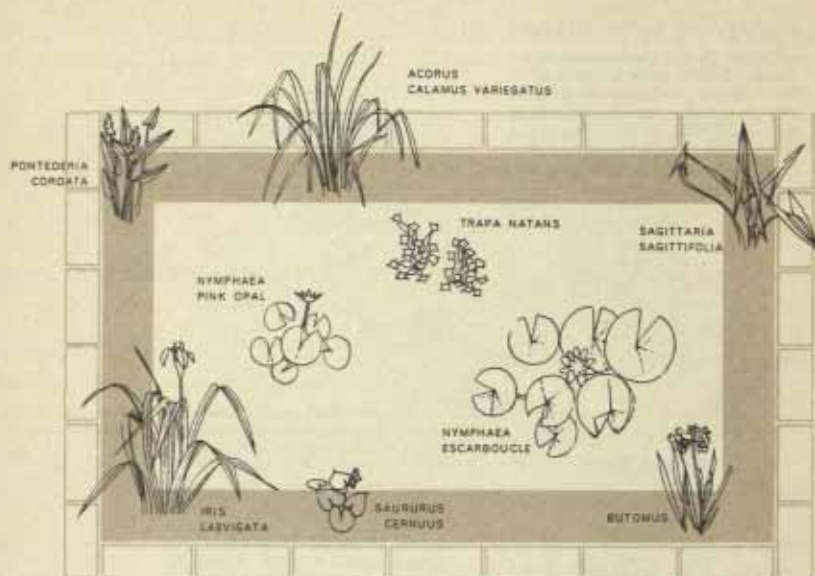
A POOL FOR A PAVED GARDEN

In a paved garden, a pool makes an attractive centre-piece, particularly if it has an irregular outline to relieve the severity of the stone paving



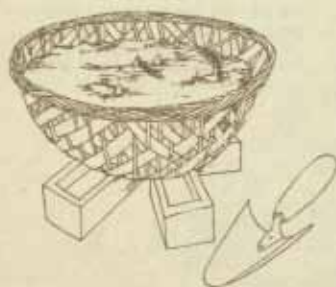
THE WATER GARDEN

A SUGGESTED ARRANGEMENT FOR A MEDIUM-SIZED WATER GARDEN

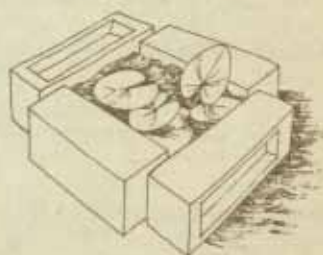


Submerged oxygenators, which are not shown in the plan, should be planted in proportion to the size of the pool—allowing one oxygenator to every square foot of water

PLANTING IN CONTAINERS



Baskets are ideal containers for water-lilies, as the water can come into contact with the soil through the open sides of the baskets. Raise them on bricks so that the lily crowns are just above the water



If ready-made containers are not available, bricks placed on the bottom of the pool before it is filled with water will serve the purpose. Leave spaces between the bricks for the water to seep through

When planting by this first method, make quite sure that the soil is in a moist, and even sticky, condition. This ensures firm planting, for dry soil does not bind effectively, and once water is added to it the roots often become dislodged and float. Plant according to the root stocks. Place lilies with rhizomes (iris-like roots) horizontally and set firmly, with the growing points of the shoots just protruding from the soil. Barely cover the top of the rhizome with soil. The other types (which include all the *Marliacea* varieties) have a root something like celery; plant these up to the collar, with the roots going straight down into the soil.

The second method is to plant the water-lilies directly into containers. These can be made from galvanized wire or wicker baskets or of wood slats or even fashioned in concrete. Although not so long lasting as other containers, baskets are the most satisfactory, for the open sides allow the water to come into contact with the soil. If boxes of wood or concrete are used, bore holes in the sides and base beforehand.

Firm planting is even more essential for this method, otherwise the planting is the same as for the first method. Leave sufficient room in the basket to top-dress the soil with shingle. This prevents the fish from disturbing the mud and so fouling the water.

CARE AND MANAGEMENT

When planting by the first method is finished, run in just enough water to cover the crowns of the lilies. After a few days, run in another few inches, and continue in this way until the pool is quite full. This is a worth-while procedure, for the water-lilies, having sustained the shock of transplanting, do not want this aggravated by the running in of a large bulk of cold water, probably straight

from the tap. If the water is added in direct ratio to their growth the lilies will develop gradually and will probably flower in the first season.

When lilies are planted in baskets or containers, fill the pool first—preferably some days previously—and raise the baskets on bricks so that the crowns of the lilies stand just below water level. As growth proceeds, lower these platforms gradually until the baskets are eventually standing on the concrete base of the pool.

PLANTING AQUATICS

Aquatics that grow at the margin of a pool do not need stimulants. The problem is to keep them compact and within bounds. Use plain, heavy, fibreless loam in shallow troughs, and plant directly into these.

Floating aquatics are simply placed on the water's surface.

PLANTING OXYGENATORS

Submerged oxygenators have small rootstocks, and in soil-bottomed pools need only be weighted with a strip of zinc and then dropped into place. They soon form their own roots for anchorage.

Pools without soil need to have oxygenators introduced in the same way as the lilies—in containers. Fill shallow pans or boxes with loam and a little charcoal, and insert the plants as cuttings. This is the simplest way to plant them and they soon settle in when the containers have been dropped into place.

WHEN TO PLANT

Spring, from March until the beginning of June, is the best time for planting water-lilies and the stronger aquatics, but floaters and oxygenators can be introduced at any time during the summer months. Put in bog plants either in early autumn or early spring.

LIVESTOCK IN THE POOL

Livestock added to the pool completes a balanced community. Fish and water snails feed on insects and debris, and by their excreta fertilize the plants. The carbon dioxide they exhale provides the underwater plants particularly with one of the necessary ingredients for photosynthesis or the making of food, and in turn the oxygen released during this vital process serves the needs of respiration in both plants and animals.

Fish keep down many enemies. In their ceaseless search for food they destroy countless aphids, mosquito larvae and other pests, and also bring colour and movement to the water garden. Surface-swimming fish are the only ones suitable for an ornamental pool, but do not introduce them until six or eight weeks after planting is completed. Of these, goldfish and their varieties and golden orfe are the best and will live in harmony together. Many fish, such as tench and mirror carp, which feed near the bottom of the pool, keep the water in a continuously cloudy condition by their constant foraging in the mud. Do not overstock the pool with fish because, if there is plenty of submerged vegetation, they will breed and multiply. Any dealer in fish will advise on the numbers required for a specific pool.

Artificial feeding is seldom necessary in an outdoor pool, and in any case should not be overdone. Several times a week give the fish as much food as they can consume in five minutes. If too much is provided it drops to the bottom and starts to ferment. From November until March stop artificial feeding entirely, for the water is too cold for the fish to digest the food properly, and various ailments or even death may follow unwise feeding or overfeeding.

Since goldfish normally exist in winter on the fat stored in their bodies, protein

foods such as minced, raw meat, finely pulverized hard-boiled egg or chopped earthworms can be given regularly between September and November to build up their constitutions for the winter fast.

TROUBLES IN THE WATER GARDEN

GREENFLY

Aphids or greenfly are the chief pests to attack water plants. Their worst attacks are in a warm season, when they cluster on the emerging stems and shoots of plants and on the upper surfaces of the lily leaves. A B.H.C. or nicotine spray can be used only when there are no fish in the pool, because fish are allergic to such materials. In a pool that contains fish, dislodge the aphids from the plants with a powerful jet of water from a hose or syringe. They will then fall into the water and be devoured by the fish. Some of the aphids will always crawl back, and it is therefore important to repeat the operation several days running.

Another method of destroying these pests is to lay hoops or similar shaped pieces of metal over the crowns of the water-lilies so that the leaves and flowers are forced beneath the water. Leave them overnight and by morning all the aphids will be drowned or consumed by fish.

DISCOLOURED WATER

Green or cloudy water is the chief worry of the pool owner and is caused either by stirred-up mud or sediment, or by microscopic plant life. Green water owes its colour to myriads of tiny plants, known as algae. These appear from air-borne spores, and multiply at a prodigious rate when the weather is sunny and the water contains plenty of mineral salts.

To combat the algae cut down supplies of both sun and mineral salts. This can be done effectively by:

THE WATER GARDEN



1. Adding no organic matter to the original planting compost (see Omission of Organic Material).
2. Removing rotting vegetable material such as dead flowers and leaves regularly.
3. Providing competition for the food in the pool by introducing more plants.
4. Providing natural shade by adding floating plants, such as water-lilies and other surface aquatics.
5. Not introducing fish that live at the bottom of the pool.

Flood water from silt or clay will also cause discoloration, but contrary to popular belief, constant emptying and refilling of the pond from the tap is no remedy. Most tap water today is treated with chemicals and is therefore not pure. It takes time for the effects of these chemicals to wear off and for the water to take on that still, limpid appearance found in a natural lake. Even the latter is subject to periodic bouts of cloudiness, usually in spring, but these soon settle.

Patience is the water gardener's best ally. In time the pool will clear, although it may well take 12 or 18 months to do so.

Some forms of algae are stronger and more tenacious than others, forming slimy bundles or the long, hair-like growths that are often called blanket weeds. Remove these by hand, using the fingers or a twisted stick which can be turned round and round, and so wind the blanket weed on the fingers or the stick, from which it can later be removed. This is arduous, but regular attention in the initial stages can keep the algae down. Do not use chemical methods of weed control, as these will increasingly change the nature of the water and introduce other problems. Any poison capable of destroying blanket algae usually damages the submerged oxygenators as well.

CLEANING

From time to time small pools need to be emptied and replanted, chiefly because the lilies will have exhausted the soil and the flowers will have become fewer and smaller. Most of the plants will need drastic division. Empty the pool and rinse it out, and put the plants in fresh soil in the way described in Planting.

SUGGESTED PLANTS

NYMPHAEA (HARDY WATER-LILIES)
All the varieties mentioned are propagated by division in early spring. Water-lilies normally flower in summer.

For large pools or broad expanses of water
Area covered in a few years—4 to 6 sq. ft.
Depth of water—2 to 2½ ft.

WHITE

Colossea, large flowers, flesh-pink ageing to white. This is a long-season variety, blooming from May until the frosts.

Gladstoniana, perhaps the most beautiful white water-lily, exceptionally large blooms of purest white accentuated by a mass of golden stamens in the centre of each flower; plain green leaves, free flowering.

Hever White, large, tulip-shaped, milky-white flowers; a strong grower but less free flowering than some.

Nymphaea marliacea carnea, white flowers with rosy tinge at the base of the sepals and outer petals; blooms all summer.

N. tuberosa, pure white, cup-shaped, sweetly scented flowers. This species will stand deeper water than most. Root stock rhizomatous.

PINK AND RED

Attraction, large red blooms, 7 to 8 in. across, plain green leaves; a favourite free-flowering variety.

Goliath, long-petalled flowers, white overlaid with pink.

Leviathan, fragrant, soft pink flowers.

Marguerite Laplace, very beautiful variety, rose-pink flowers, deeper in colour towards the edges of the petals.

N. marliacea rosea, similar to *N.m. carnea* but with more pink in the flowers, very free. One of the most popular hardy lilies.

YELLOW

Colonel A. J. Welch, large star-shaped, soft canary-yellow flowers, carried just above the water surface. Not as free flowering as the yellow forms in the next section.

For medium-sized pools

Area covered in a few years—3 to 5 sq. ft.
Depth of water—1½ to 2 ft.

WHITE

Gonnère, very squat flowers, semi-double, greenish-white with green sepals, in bloom on and off all summer.

Hermine, freely produced flowers standing 3 or 4 in. above the water.

N. marliacea albida, fragrant white flowers



NYMPHAEA JAMES BRYDON



NYMPHAEA PINK OPAL

THE WATER GARDEN

with pink flush on the sepals, from May until September. Foliage green above, purplish beneath.

N. virginalis, a beautifully-shaped pure white flower, with gold stamens and green leaves.

PINK AND RED

N. brackleyi rosea, sweetly scented, clear rose flowers which tend to fade with age; very free flowering.

Escarboucle, the deep, blood-red flowers, which under good cultivation become very large (8 to 10 in.), have pointed petals which give the blooms a stellate appearance; extremely free flowering.

James Brydon, cup-shaped blooms which sit low in the water; the colour of a red paeony. Perhaps the most useful variety and one of the most free flowering.

Mrs. Richmond, very large flowers (8 to 9 in.) which are deep pink and deepen in colour as they age.

René Gerard, large, star-shaped, rich rose flowers flecked and overlaid with splashes of crimson; free flowering.

Rose Nymphe, large, open flowers 6 to 7 in. across, deep rose, very fragrant.

Wm. Falconer, deep crimson flowers with a velvety sheen which reflects the rich golden stamens; this is one of the darkest water-lilies and associates well with pinks and whites.

COPPER, ORANGE AND YELLOW

Nearly all the water-lilies in this section have especially attractive foliage, the green being heavily mottled or blotched with maroon and crimson.

J. C. N. Forestier, flowers stand clear of the water and are soft copper-rose which intensifies with age.

N. marliacea chromatella, beautiful cup-shaped, primrose-yellow flowers; fragrant and very free-flowering.

N. moorei, very similar to *N. marliacea chromatella* but the foliage is more spotted than blotched.

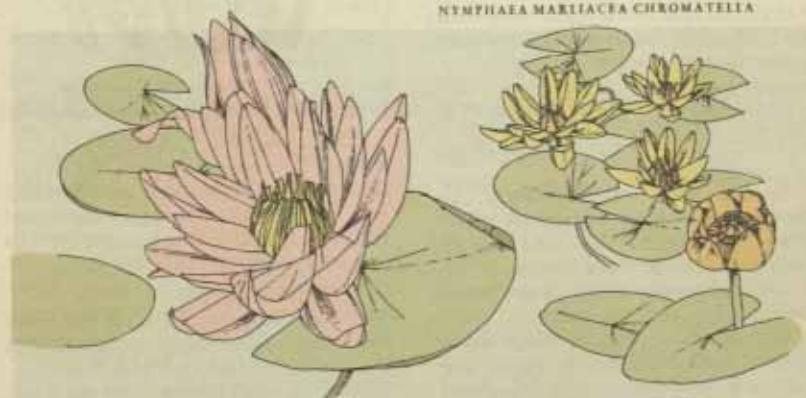
Sunrise, the richest yellow variety, is a clear sunshine colour; the flowers are more stellate than the others in this section.

For small pools, tubs, rock garden pockets and prefabricated pools

Surface area covered—approximately 3 sq. ft.

Depth of water—1 to 1½ ft.

NYMPHAEA MARLIACEA CHROMATELLA



NYMPHAEA WM. FALCONER

NYMPHAEA LUTEA

WHITE

Albatross, large, star-shaped flowers, pure white with conspicuous golden anthers.

N. odorata, small, fragrant flowers freely produced from early June until October.

N. pygmaea alba, small white flowers with bright green sepals, 1 to 2 in. across, green leaves. Does best in very shallow water, 6 to 12 in.

PINKS AND REDS

N. caroliniana, delicate rose-pink flowers with yellow stamens; sweetly scented.

N.c. rosea, an improved form with deeper rose flowers.

N. ellisiana, darkest in colour of the smaller-growing water-lilies with garnet-red blooms; very free flowering.

Fire Crest, deep pink, fragrant flowers, with red-tipped stamens; very handsome but not particularly free flowering.

N. froebeli, rich wine-crimson flowers; one of the most popular for tub gardens and small pools.

N. laydekeri lilacea, soft pink flowers. Both this form and *N.l. purpurata* are frequently used for prefabricated pools and tub gardens as they tolerate shallow water and bloom freely all summer.

N.l. purpurata, rosy-carmine flowers, very similar to *N.l. lilacea*.

Pink Opal, flowers stand clear of the water and are deep coral-pink with pointed petals, which give them a starry appearance.

COPPER, ORANGE AND YELLOW

All in this section are characterized by mottled foliage—maroon-red or chocolate on green.

Aurora, very variable variety, the flowers opening to an apricot-yellow, changing to bronze the next day and copper-red on the third.

Graziella, pretty shade of copper-red with bright orange stamens.

Indiana, another form which shows great variation in the flowers, opens orange-red and deepens to bright copper-red. Also suitable for medium-sized pools.

N. odorata sulphurea, small, fragrant, starry

flowers, pretty shade of canary-yellow.

Paul Hariot, opens delicate apricot-yellow and changes with age to orange-pink and finally almost red.

N. pygmaea helvola, soft yellow flowers beautifully shaped, the size of a penny; leaves handsomely blotched with red. The smallest water-lily and a veritable gem for rock garden pools, it can also be grown in a bowl on a sunny windowsill.

Sioux, rich yellow passing to a delightful shade of reddish-copper.

Solfatare, star-shaped flowers, yellow flushed with rose, not very free-flowering.



EUTAMIAS

ORNAMENTAL AQUATICS

Unless otherwise stated, all the plants described in this section should be given very wet or shallow water conditions at the pool margin. All are propagated by spring division.

ACORUS (SWEET FLAG)

This plant has something of the habit and foliage appearance of an iris; it grows from a stout rhizome and has strap-shaped leaves which are very aromatic when bruised. The brown flowers, which are more striking than beautiful, appear in late summer, on 3- to 4-in. finger-like

spikes protruding from the upper stems.

Acorus calamus, 2 to 3 ft., green flowers, is less attractive than

A.c. variegatus, green and cream striped foliage; a good plant and worth a place in every water garden.

A. gramineus variegatus, 8 to 9 in., a dwarf form, also has green and white striped foliage; suitable for rock garden pools.

ALISMA (WATER PLANTAIN)

Plants with plantain-like leaves and candelabra-like sprays carrying whorls of small, pink, three-petalled flowers. Seedlings from these can constitute a nuisance, so it is wise to cut them off as the blooms fade. The chief kinds, which are all very similar and flower in the summer, are: *Alisma gramineum*, *A. lanceolatum*, 1 to 1½ ft. and *A. plantago-aquatica*, 2 to 3 ft.

APONOGETON (WATER HAWTHORN)

Aponogeton distachyus, the oblong leaves and white flowers with purple anthers borne on forked spikes and arranged in pairs float flat on the water's surface. The flowers are fragrant, with the scent of vanilla or hawthorn, and bloom from April to October. The plant comes from the Cape of Good Hope but is hardy in this country and adaptable enough to grow in 6 in. or 2 ft. of water. The egg-shaped tubers should be planted in baskets or pots and dropped into position.

BUTOMUS (FLOWERING RUSH)

A British plant which grows from 2 to 3 ft. high and bears showy umbels of rose-pink flowers from June to September. The triangular, sword-shaped leaves are purplish when young but change to green with age.

CALLA (BOG ARUM)

Calla palustris, 6 to 9 in., the only species, is a pretty little North American aroid with miniature white calla flowers in June and July, and bright green, heart-shaped leaves. Water snails fertilize the flowers, which develop into red berries in autumn. This is a scrambling plant useful for masking the concrete edge of a pond.

CALTHA (KINGCUP, MARSH MARIGOLD)

Calthas have showy blooms and are



CALTHA PALUSTRIS

valuable for their early flowering in April and May.

Caltha leptosepala, 8 to 12 in. Solitary, white, buttercup-like flowers.

C. palustris, 9 to 15 in., a native of the British Isles, showy golden buttercup-like flowers on branching stems, and smooth, heart-shaped leaves.

C.p. plena, completely double and so floriferous in early spring that the leaves are completely masked.

C. polypetala, a much taller species with branching stems 2 to 3 ft. high, and blooms in May and June. It increases by runners, so careful watch is necessary to ensure that it does not become rampant.

COTULA (BRASS BUTTONS)

Cotula coronopifolia, 6 to 10 in. Small, toothed, scented foliage and round golden flowers all summer, which look like the centres of daisies with the outer petals removed. Is the only aquatic member of a large genus and, though an annual, will colonize in shallow water or wet mud.

DECODON (WATER WILLOW)

Decodon verticillatus, 2 to 3 ft., the willow-like leaves are green all summer but

assume handsome tints of red and gold in autumn. The flowers are purple, tubular in shape and carried in the leaf axils in July.

ECHINODORUS

Echinodorus ramunculoideus, up to 1 ft., a dainty plant that bears loose panicles of rosy flowers from May to July. During the winter months the strap-shaped leaves often become skeletonized. Blends well with water forget-me-nots and marsh marigolds if planted at the edge of the pool.

GLYCERIA (MANNA GRASS)

Glyceria aquatica variegata (syn. *G. spectabilis*), 1½ to 2 ft., one of the most attractive waterside grasses, the leaves are very heavily striped with cream (in the young state they are rosy-pink). Inclined to be rampant, so needs to be grown in a confined pocket or else rigorously reduced every autumn.

HOULTUYNIA

Houttuynia cordata, 1 to 2 ft., a Japanese plant with tapering, somewhat heart-shaped, bluish-green leaves and spikes of white flowers in July and August. The creeping root stock thrives equally in 2 to 4 in. of water or in wet mud.

IRIS

This large family contains several truly aquatic members as well as a great number that are happiest under bog conditions. The latter are described in Bog Plants. The kinds mentioned here, however, will grow in 3 to 4 in. of water all the year round.

Iris kaempferi, 2 ft., is often confused with *I. laevigata* but is easily distinguished by the leaves, which have a prominent mid-rib that is absent in *I. laevigata*. This plant is often called the clematis-flowered iris because of its flat, open flowers, which are very showy in self shades of white, pink, red or purple, or mottled, blotched and striated in a mixture of colours. The flowers appear from June to September. The plants need plenty of sun. They detest lime and will not tolerate standing in water in winter;

a retentive soil incorporating plenty of peat and manure will keep the ground moist. Mixed sorts are sometimes sold by nurserymen and are an interesting and worthwhile buy.

I. laevigata, a beautiful species with strap-shaped foliage and large, rich blue flowers in June. Varieties include:

I.I. alba, white flowers.

I.I. colchesteri, blue and white flowers.

I.I. Regal, rich royal purple flowers.

I.I. Rose Queen, pink flowers.

I.I. variegata, blue flowers with variegated leaves.

I. pseudacorus, (yellow flag), 2½ to 3 ft. Stately, sword-shaped foliage and bright golden blooms in May and June.

I.p. bastardi, soft primrose flowers.

I.p. variegata, gold striped leaves.

JUNCUS (RUSH)

A large and extensive genus widely spread all over the world, but the majority are too weedy or insignificant for introduction to the water garden. Exceptions are:

Juncus effusus aureo-striatus, 2 to 3 ft., a variety of the common rush used for mats and seating. The smooth, round stems are dark green, with a longitudinal golden band running up them, and are given a one-sided appearance by the crowded bunches of small brown flowers. It appears to have no leaves, because they are reduced to sheaths that wrap closely round the stems and are not free to wave in the breeze.

J.a. spiralis (corkscrew rush), 1 to 1½ ft., called "corkscrew" because the stems grow spirally.

JUSSIEUA (WATER PRIMROSE)

Jussieuia repens, a scrambling plant with small, privet-like leaves, very smooth and shining, and large, primrose-like, golden flowers from July to September, which are held just above water level. Not always hardy in winter, especially in the north. Cuttings root easily in pans of loam in September and can be kept in a frame until May to safeguard the stock.

MENYANTHES (BOG BEAN)

Menyanthes trifoliata, 6 in., a member of the gentian family with a scrambling

root stock, foliage like that of a broad bean and compound clusters of prettily fringed pink flowers from May to July. Grows well in shallow water or moist soil and like *Calla palustris* is a useful plant to mask the edge of the pool.

MYOSOTIS (FORGET-ME-NOT)

Myosotis palustris, 6 to 8 in., a well-known plant with bright blue florets in May and June, suitable for wet mud or shallow water colonization. Propagate by seed or cuttings.

M.p. Mermaid is taller and larger with deep sky-blue flowers.

MYRIOPHYLLUM (WATER MILFOIL)

Myriophyllum proserpinacoides, 6 to 8 in., this species is useful for growing over fountains or rock garden basins, for the stems are closely packed with whorls of needle-like leaves which hang down in feathery trails and turn up at the ends. They are green with red tips in autumn, thus earning the plant the name parrot's feather. The flowers are insignificant. A Brazilian plant that can only be grown outside during the summer months, it can be overwintered in shallow pans from September-rooted cuttings in a frost-proof greenhouse.

NUPHAR (SPATTERDOCK)

These are strong-growing aquatics akin but inferior to the hardy water-lilies; they should be grown only in situations where the latter plants would be unlikely to succeed, as, for example, in shade or very deep or running water. The rhizomatous roots are very invasive, and in deep water the submerged foliage is particularly handsome with wavy margins and translucent membranous texture. Floating leaves are usually oblong heart-shaped, dark green and pointed, and the flowers, which bloom all summer, are usually gold, smaller than water-lilies with a strong alcoholic odour.

Nuphar advenum, large flowers 2 to 3 in. across, a native of America.

N.a. variegatum, the variegated-leaved form.

N. japonicum rubroinctum, orange-scarlet

flowers, 2 to 3 in. across, and red-tipped stamens.

N. lutea, the yellow pond lily, is less decorative than either of the above.

NYMPHOIDES (WATER FRINGE)

Nymphoides peltata (syn. *Limnanthemum nymphoides*), a pretty little plant which grows like a water-lily with floating leaves and flowers. The leaves are round with wavy margins and heavily blotched with chocolate markings. The three-petalled flowers, which bloom from May to August, are yellow and something like those of an *eschscholzia*. Suitable for 6 to 18 in. of water.

ORONTIUM (WATER CLUB)

Orontium aquaticum, 1 to 2 ft., an aroid with large, fleshy roots which need a good depth of soil. The large leaves—glaucous with a silver sheen—are so coated with wax that water runs from them like globules of mercury. The white spadix covered with small yellow flowers from June to July is particularly attractive. Suitable for 4 to 12 in. of water (when the leaves float) or deep mud (when they stand upright).

PELTANDRA (ARROW ARUM)

The two species of *peltandra* bear dark green, arrow-shaped leaves on stems 1 to 2 ft. long and flower in July.

Peltandra alba, white arum flowers followed by scarlet berries.

P. virginica is similar but has green flowers succeeded by green berries.

PONTEDERIA (PICKEREL WEED)

Pontederia cordata, 1½ to 2 ft., one of the best blue-flowered aquatics, with heart-shaped, smooth, shiny leaves on long stems and spikes of soft blue flowers all the summer. A plant that never becomes rampant or untidy.

P.c. angustifolia, may reach 5 ft. in one season, and is the more prolific variety, but less hardy than the type.

RANUNCULUS

Ranunculus lingua grandiflora, 2 to 3 ft., is a larger-flowered form of the spearwort, a British species of branching habit with very large, buttercup flowers in late

spring and summer and neat narrow leaves.

SAGITTARIA (ARROW-HEAD)

These are interesting plants botanically, because the foliage is adaptable to various conditions. In deep water the leaves are completely submerged and ribbon-like, in water of medium depth they float and are rounded, and in shallow water they are borne 1 to 1½ ft. above the surface and are cut to the centre in triangular arrow-shapes. The flowers are white, three-petalled and borne on spikes. Most species increase rapidly by rounded, bulb-like stolons or creeping stems and must be kept within bounds. The only exception to this indiscriminate spreading and perhaps the best garden form is:

Sagittaria sagittifolia flore-pleno (syn. *S. japonica flore-pleno*), 1½ to 2 ft., a handsome double-flowered plant, in appearance not unlike a Brompton stock; flowers all summer. Do not plant under water more than 5 in. deep.

SAURURUS (LIZARD'S TAIL)

Both the following species grow from 12 to 16 in., and flower most of the summer.

Saururus cernuus (American swamp lily), a pretty plant for poolside planting in shallow water, with dark green, heart-shaped leaves borne on very slender stems, and long, terminal spikes of fragrant, creamy-white flowers.

S. chinensis, from China, is very similar.

SCIRPUS (BULRUSH)

Scirpus lacustris, the true bulrush, 3 to 6 ft., has fat, round rushes, with brown bunches of flowers protruding from the upper parts of the stems in July and August, and will grow in running and fairly deep water.

S. tabernaemontani zebrinus (porcupine quill or zebra rush), 3 to 4 ft., stems alternately barred with broad bands of green and white, is more ornamental for the water garden. Check any tendency to revert to plain green by removing the offending stems.

SENECIO

Senecio smithii, 2 to 3 ft., the only really aquatic member of one of the largest

plant genera, has tough, dark green, broadly oblong leaves and showy heads of white, daisy flowers from May to July. Unfortunately, the plant is subject to chrysanthemum fly, so that leaf-miners often spoil the foliage. The species was discovered by Captain Cook on Cape Horn and brought to Britain.

THALIA

Thalia dealbata, 3 to 5 ft., one of the stateliest aquatics, has handsome, glaucous, strongly ribbed leaves the size and shape of canna foliage, and panicles of purple flowers on long, arching stems in late summer and autumn. The upper part of the inflorescence is dusted with a white bloom. It is only hardy in sheltered positions or where the roots are planted sufficiently deep (2 ft.) to be beyond the reach of frost. Alternatively, pot-grown plants may be sunk in the pool during the summer months and kept in a greenhouse for the winter.

TYPHA (REED MACE)

These are the so-called bulrushes, with poker-like heads of flowers and flat, grassy foliage. Most typhas spread too much to be introduced to small or medium-sized pools, although the following are perfectly safe if planted in pockets or with slates embedded vertically in the soil to prevent root running.

Typha laxmannii, 3 to 4 ft. Roundish, dark brown flower heads in July and very narrow leaves which are constantly stirred by the breeze.

T. minima, only 1 to 1½ ft. Tiny, purplish-brown poker heads in July. A charming little plant for shallow water.

VILLARSIA

Yellow-flowered, mainly Australian plants for shallow water or wet mud, which will live outside only under reasonably sheltered conditions. The following flower all summer:

Villarsia ovata, 6 to 12 in. Citron-yellow fringed flowers, from Africa.

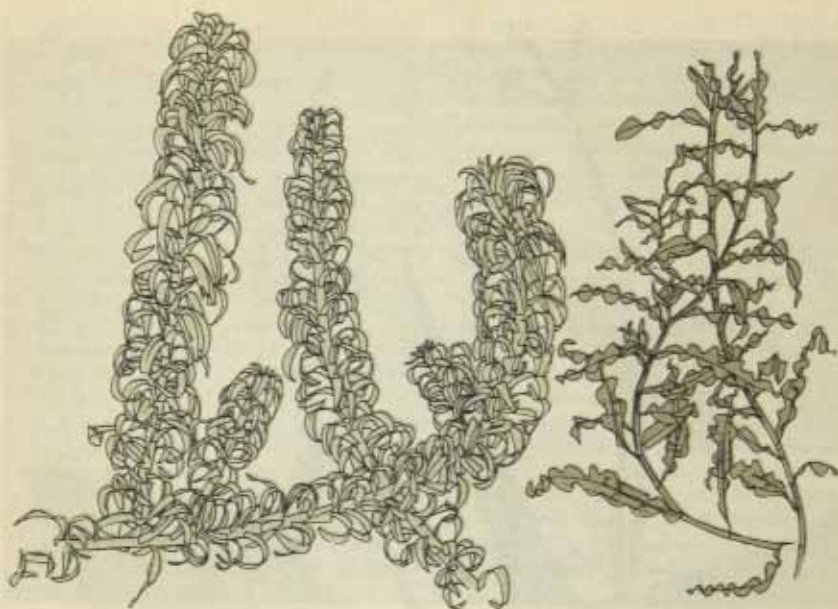
V. parnassifolia, 1 to 2 ft. Soft yellow blooms.

V. reniformis, 1 to 2 ft. More golden and has rounded leaves.



SAGITTARIA SAGITTIFOLIA

PONTEDERIA CORDATA



LAGAROSIPHON MAJOR

POTAMOGETON CRISPUS

ZANTEDESCHIA (ARUM LILY)

Zantedeschia aethiopica (syn. *Calla aethiopica*), 2 to 2½ ft. Green, glossy, arrow-shaped leaves and large, white flowers in winter and spring. Arum lilies like plenty of water during the growing season, and pot plants can with advantage be submerged at the poolside during the summer months when they are in flower. Crowborough, 2 to 3 ft., a variety that is hardier than most, can be left outside with confidence during the winter in the south of England.

FLOATING PLANTS

Some floating plants, particularly lemna (duckweed), grow very rapidly and can prove a nuisance in the garden. Unless they are tender enough to be killed in winter (like eichhornia) it is unwise to introduce them to the outdoor pool.

AZOLLA (FAIRY FLOATING MOSS)

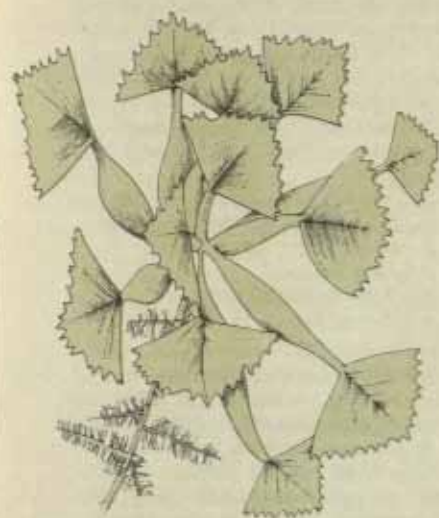
Azolla caroliniana, small floater with

double fronds, ¼ to 1 in. long, of palest green, which change colour in autumn to russet-crimson. In warm weather it spreads rapidly, forming a complete carpet over the surface, but is never likely to become a permanent worry as frost kills most of it every year.

EICHHORNIA (WATER HYACINTH)

Eichhornia crassipes (syn. *E. speciosa*), is one of the oddities of the vegetable kingdom, having a petiole (leaf stalk) swollen like a fat sausage with air-filled spongy tissue, which makes it very buoyant so that it floats like a cork. The tough, glossy, heart-shaped leaves are formed in a rosette round the crown of the plant, and the light blue flowers with conspicuous "peacock-eye" markings on the lower petals are borne on spikes. They appear at intervals during the summer but last for only a day.

In a well-grown specimen, fibrous roots



TRAPA NATANS

hang down 12 or 15 in. into the water and become favourite places for goldfish to lay their eggs.

The water hyacinth is not hardy in Britain, so a few stock plants must be wintered indoors. A bowl with a little soil at the bottom will serve for this purpose and must be kept in a light but frost-free position.

HYDROCHARIS (FROGBIT)

Hydrocharis morsus-ranae, a British plant, with dainty, three-petalled, white flowers standing above the water in spring, and bright green, rounded leaves. Towards autumn the foliage begins to wither, and tiny rosettes (winter buds or turions) are formed, which sink to the bottom until spring when they begin to grow and rise again to the surface.

STRATIOTES (WATER SOLDIER)

Stratiotes aloides floats just beneath the water and has bright green, sharp-edged

leaves arranged something like the top of a pineapple. Male and female flowers are borne on separate plants in July. Both are small, white and three-petalled.

TRAPA (WATER CHESTNUT)

Trapa natans, an annual with large, black, spiny seeds the size of a large horse-chestnut, which lie at the bottom of the pool all winter and germinate in spring to trailing stems, 2 to 4 in. long, with holly-like, floating leaves upheld by swollen, air-filled footstalks. The flowers are small and set seed only in warm summers. The fruits are edible and much appreciated in Chinese and Italian cookery.

SUBMERGED AQUATICS

The chief reasons for using submerged aquatics are to maintain water clarity (they compete with algae for food and light), to provide nurseries where fish can lay their eggs, to hide and protect the young fry after hatching from the cannibalistic tendencies of their parents, and to provide food for all kinds of live-stock.

Unlike plants in aquaria, these plants are rarely seen in a pool, so that daintiness, leaf texture and colouring matter little. The most important thing is their oxygenating abilities; some have been proved better than others in this respect. A few come to the surface and produce flowers that stand above the water to be insect pollinated, but the majority have insignificant blooms fertilized by sperm brought by water currents. One or two are deplorably weedy and will choke water-lilies and other plants if given undisputed sway.

The following species are recommended and should be planted liberally as recommended in Planting Oxygenators.

A 4- by 6-ft. pool will require some two dozen oxygenators; pools of other sizes should be stocked proportionally.

ANACHARIS

Anacharis canadensis (syn. *Elodea canadensis*) (American pond weed), dark green, small leaves, and brittle stems. A very good oxygenator.

HOTTONIA

Hottonia palustris (water violet), 1 to 2 ft. Cut foliage and spikes of mauve flowers above the water in June and July.

LAGAROSIPHON

Lagarosiphon major (syn. *Elodea crista*), resembles a large curly-leaved anacharis; another good oxygenator.

MYRIOPHYLLUM (WATER MILFOIL)

All members of this family have attractive feathery leaves and are useful as oxygenators.

POTAMOGETON (PONDWEED)

Most potamogetons are useful in a pool and are entirely submerged, but beware of the floating species, *Potamogeton natans*.

RANUNCULUS

Ranunculus aquatilis (water crowfoot), small white, floating flowers in spring. Does well in still or running water.



CARDAMINE PRATENSIS

BOG PLANTS

These are decorative plants for the pool-side, which like moist soil but not standing water, and look most effective if they are grouped in bold clumps. The majority are propagated by division in spring.

ACONITUM (MONKSHOOD)

These are handsome perennials with spikes of mostly blue, helmet-shaped flowers and deeply cut, smooth leaves like those of the buttercup. Suitable for sun but will last longer in the shade. Good kinds which grow from 2 to 4 ft., and flower from June to August are:

Aconitum carmichaelii (syn. *A. fischeri*), deep purple.

A.c. wilsonii, a vigorous form, blue or violet flowers with very large helmets.

A. napellus, blue.

A.n. album, white.

A.n. bicolor, blue and white.

A.n. Newry Blue, very deep blue.

AJUGA (BUGLE)

Good ground-cover plants for sun or partial shade. Small green leaves on creeping stems and spikes of blue flowers.

Ajuga reptans, 6 to 12 in., a British plant, flowers from June to July. Its varieties with variegated or coloured foliage, such as *atropurpurea*, *Rainbow* and *variegata* are more gardenworthy.

ANAGALLIS (PIMPERNEL)

Anagallis tenella (bog pimpernel), 2 to 4 in. Rosy-pink, bell-shaped flowers in summer and small opposite leaves, a charming native annual for a wet place.

ARUNCUS (GOAT'S BEARD)

Aruncus sylvestris (syn. *Spiraea aruncus*), 4 ft., a noble plant with deeply cut, spiraea-like leaves and impressive plumes of creamy-white flowers in June. Will remain for years in the same situation.

A.s. kneiffii, has more finely cut foliage.

ARUNDINARIA (BAMBOO)

The hardy bamboos make good wind-breaks and shelters and look very effective in such settings. They need a good loamy, moist soil, and may take several years to become established, but afterwards are no trouble. Bamboos are evergreen and rarely, if ever, flower. Prospective buyers are advised to visit a specialist grower and select after examination. The following are hardy bamboos and vary in height from 1 ft. to as much as 20 ft.: *Arundinaria*, *Phyllostachys*, *Pleibastus*, *Pseudosasa* and *Sasa*.

ASCLEPIAS (MILKWEED)

Asclepias incarnata, 3 to 3½ ft. Stout, grey-green, leafy stems, and showy umbels of flesh-pink flowers in July and August.

ASTILBE (FALSE GOAT'S BEARD)

These are important perennials for pool-side planting, associating well with irises, primulas and day lilies. They are very adaptable provided the soil never dries out, but plenty of sun is essential for flowers. In light soil, peat or leaf mould mulches should be given annually about April. The roots of astilbes always remain close to the surface so that mulches retain moisture as well as feed the plants.

The leaves are compound and the flowers are borne in feathery plumes from July to August. Most of the garden forms are of hybrid origin. Excellent kinds that grow from 2 to 3 ft. high are:

Apple Blossom, soft pink.

Avalanche, white.

Betsy Cuperus, pale pink.

Burgkristal, white flowers like coconut-ice.

Etna, deep red.

Granat, crimson.

Salland, deep rose.

William Reeves, dark crimson with bronze foliage.

ASTRANTIA (MASTERWORT)

Astrantia carnioica, 1 ft., a curious little plant with buttercup-like leaves, and round heads of white or blush-pink flowers enclosed in a ring of green and white bracts in July and August.

A.c. rubra, similar but with redder flowers.

BRUNNERA (SIBERIAN BUGLOSS)

Brunnera macrophylla (syn. *Anchusa myosotidiflora*), 1 to 1½ ft. Rough, heart-shaped, basal leaves, and spikes of bright blue forget-me-not flowers in April; a charming little perennial for damp soil and partial shade. Propagated by root cuttings or division.

BUPHTHALMUM (OX-EYE)

Buphtalmum speciosum (syn. *Telekia speciosa*), 3 to 4 ft., robust perennial with large yellow daisies from July to September, and large heart-shaped leaves. A plant to

group by itself or with other vigorous species, as it could smother small plants.

CAMASSIA (QUAMASH)

Camassias are bulbous plants with broad, strap-shaped leaves and spikes of blue, white or soft yellow flowers, and are very showy, especially when grown in grass. They will tolerate very wet conditions. The following flower in May and June:

Camassia esculenta, 1 to 1½ ft., light blue.

C. leichtlinii, 3 ft., creamy-white.

C.l. plena, 2 ft., sulphur-yellow double flowers.

C. quamash, 2 ft., dark blue.

CARDAMINE (LADY'S SMOCK)

Cardamines are spring-blooming perennials which associate well with calthas and primulas.

Cardamine pratensis, the common cuckoo flower, 1 ft., flowers pale purple to white from April to May.

C. pratensis flore pleno, pale lilac, double blooms which are borne on showy spikes.

CIMICIFUGA (BUGBANE)

Bugbanes are suitable for the drier parts of the bog garden and useful for their late flowers, which are whitish and appear from July to September; the flowers are attractive *en masse* and are borne in erect spikes on branching stems 3 to 7 ft. high, the leaves being heart-shaped and cut into lobes.

Cimicifuga americana

C. dahurica

C. racemosa

C. simplex, has the most showy flowers.

} are very similar.

EUPATORIUM (HEMP AGRIMONY)

These are coarse perennials for growing amongst vigorous plants. The following kinds flower in August and September:

Eupatorium ageratoides, thin, long-stalked, opposite and oval leaves on 2- to 4-ft. stems carrying large flat heads of thistle-like flowers.

E. cannabinum, 3 to 4 ft. Purple flowers, less attractive than its double form.

E.c. plenum is very spectacular.

FILIPENDULA (MEADOWSWEET)

A beautiful genus formerly associated with the spiraeas, having pinnate or palmate foliage and feathery sprays of



FRITILLARIA MELEAGRIS

fluffy flower heads. Likes sun or partial shade, but a perennially moist soil is essential. Propagated by division or seed sown soon after harvesting.

Filipendula camtschatica (syn. *Spiraea gigantea*), 4 to 8 ft., has large heads of fragrant white flowers in May.

F. c. carnea, pink flowers.

F. c. rosea, rose flowers.

F. hexapetala, 2 to 2½ ft. Creamy-white flowers in June and July. There is a double form *flore pleno*.

F. rubra, 2 to 3 ft., rosy flowers in June.

F. r. venusta, deep pink flowers.

F. ulmaria (common meadowsweet), 2 to 3 ft. Creamy panicles of blossom from June to August and three- to five-lobed leaves; is well known and worth a place in the water garden. It has given rise to several forms including:

F. u. aurea, golden leaves.

F. u. flore pleno, the double form.

FRITILLARIA (SNAKE'S HEAD FRITILLARY)
These little bulbous plants readily colonize in moist ground and flower in April and May on 1 ft. stems.

Fritillaria meleagris, curious, hanging flowers patterned in purple and white

squares like a chess board. Plain white and reddish-purple forms frequently appear in naturalized colonies.

GUNNERA

An imposing plant, from 8 to 10 ft., for the large water garden. It has enormous rhubarb-like leaves, sometimes 10 ft. by 7 ft. across, on thick spiny stems. The flowers are clustered on spikes that may be as much as 3 ft. long and resemble a giant bottle-brush.

When frost in autumn blackens all the growth above ground, the leaves should be removed and inverted over the crowns to form a natural protection and mulch.

Gunnera manicata, is the kind most usually grown but *G. chilensis* (syn. *G. scabra*) has more reddish flowers and stems. Flowers from June to August.

HEMEROCALLIS (DAY-LILY)

Day-lilies are invaluable for associating with irises and primulas, and have arching, grassy foliage and spikes of amaryllis-like flowers from June to September. These last only a day, but so many buds are produced that the flowering season is usually extended over six to eight weeks. Suitable for damp or even wet spots, in sun or shade. There are many garden varieties, of which the following are representative:

George Yeld, 2 ft., rich orange.

Hesperus, 4 ft., soft citron-yellow.

Hyperion, 2½ ft., golden-yellow.

Pink Lady, 3 ft., pink.

Royal Ruby, 3 ft., red-crimson.

The Doctor, 2½ ft., deep red.

HOSTA (PLANTAIN LILY)

Hostas, which are often referred to by their old name of funkia, are fine, foliaged plants which like moist soil and somewhat shaded situations. The flowers are white or mauve, funnel-shaped and borne on slender spikes. The following grow from 1 to 2 ft., and flower at various times during the summer:

Hosta decorata, oval leaves margined with white, and dark blue flowers.

H. glauca, corrugated, bluish-green foliage and pale lilac blooms.

H. lancifolia, very narrow green leaves and lilac flowers.

H. plantaginea, white blooms and oval, heart-shaped leaves.

H. undulata, green leaves heavily splashed with white, and pale lilac flowers.

INULA (ELECAMpane)

Showy perennials with large, daisy flowers, 2 to 4 in. across, and rough leaves. They require plenty of sunshine.

Inula helenium, 3 to 4 ft., has bright yellow, ragged-petalled sunflowers about 3 in. across in summer.

I. royleana, 2 ft., has black buds, surmounted by a green collar or sepals, which open to large orange flowers. Blooms from August to October.

IRIS

An important family in the water garden and one that should receive full representation. No lime should be given to any of the following species and varieties:

Iris delavayi, often reaches 4 ft. in moist soil, a deep purple iris of the *siberica* type. Flowers in June.

I. forestii, 1½ ft. Good clear yellow flowers in June and grassy leaves.

I. kaempferi (see Ornamental Aquatics).

I. siberica, 2 to 3 ft., grassy leaves and dainty, poised flowers in June; is well known as a border perennial but gives bigger blooms in wet soil. Varieties include:

Caesar, deep purple.

Perry's Blue, light blue.

Snow Queen, white.

Tropic Night, almost black.

LOBELIA

Although not reliably hardy, the bog lobelias are well worth a little cultural trouble. The scarlet-flowered forms of *Lobelia fulgens* are particularly bright and doubly colourful as they also have crimson leaves. Stock can be preserved from year to year by lifting the roots towards the end of September and packing them round with soil and leaves in a cold frame. Alternatively, August-rooted cuttings can be kept under glass for the winter months. During this winter resting period they should be kept rather dry. Plant out again in mid-May. Propagate by seed raised in gentle heat in February, by cuttings, or by spring division.

Varieties of *L. fulgens* that reach from 1 to 3 ft. and flower from May until September include:

Huntsman, bright scarlet.

Purple Emperor, purple.

Queen Victoria, deep purple leaves and spikes of crimson flowers.

L. syphilitica, 1 to 3 ft. Hardy with spikes of light blue, tubular flowers from July to October, and narrow, oblong leaves.

L. alba, similar but with white flowers.

LYSICHTHUM

Lysichitum americanum, 2 to 3 ft., a large aroid with showy, deep yellow arum flowers 1 to 1½ ft. in height, which bloom in May and are succeeded by large, glaucous leaves. Not suitable for a small garden. Propagate by seed or division.

LYSIMACHIA (LOOSESTRIPE)

Easily-grown plants for wet soil and sun or partial shade. The following reach from 2 to 3 ft., and flower from June until August:

Lysimachia clethroides, spikes of pure white, primrose-like flowers.

L. thyrsiflora, yellow, will even grow right in the water.

L. vulgaris, a showy native which has leafy spikes of yellow flowers.

LYTHRUM (PURPLE LOOSESTRIPE)

The genus includes some of our brightest and gayest summer perennials, with densely packed spikes of sage-like flowers, mostly red and purple. The following grow from 2 to 4 ft. and flower from June to September.

Lythrum salicaria, red-purple flowers, is less gardenworthy than any of the following:

Lady Sackville, vivid rose-purple.

Morden's Pink, deep pink.

Rose Queen, bright rose.

The Beacon, rosy-red.

MIMULUS (MUSK)

Musks are low-growing plants of doubtful hardiness in some areas, but invaluable for the brightness of their flowers in late summer. They grow readily from seed, or named varieties from cuttings wintered under glass. The most useful are hybrids from *Mimulus guttatus* such as

Bees Dazzler, with pillar-box-red flowers; also mixed hybrids of *cupreus*, *maculosus* and *tigrinus*, and the hose-in-hose sorts which have a double corolla ring. All these grow from 8 to 12 in. and flower from June until September.

MONARDA (BERGAMOT, OSWEGO TEA)
All the following grow from 2 to 2½ ft. and flower from June to September.

Monarda didyma, has square stems, bright red, nettle-like flowers and fragrant leaves.

M.d. Beauty of Cobham, clover pink.

M.d. Crimson King, crimson.

M.d. Croftway Pink, rose-pink.

PRIMULA (PRIMROSE, PRIMULA)

This is a large family, the majority favouring a moist soil that never becomes dry or waterlogged. An occasional top dressing of well-rotted manure and leaf mould is beneficial but not essential. Allow the seed to drop round the parent plants and form colonies—many sorts will inter-hybridize under such conditions. Propagation by seed sown directly after gathering, or by spring division.

The candelabra primulas carry flowers of various shades in a succession of whorls up the stems and are the most ornamental in the water garden. They include the following, which grow from 2 to 3 ft. and flower in June:

Primula beesiana, rosy-carmine flowers.

P. japonica, white, pink and crimson flowers.

P. helodoxa, golden flowers.

P. pulverulenta Bartley Strain, with mealy stems, has produced many fine shades in pink and rose.

Other good species are:

P. rosea, 6 in., which will tolerate standing moisture for short periods and has rich pink flowers in April.

P. sikkimensis, 2 ft., like a giant cowslip, carrying many nodding, fragrant, pale yellow flowers in July.

RODGERSIA (BRONZE-LEAF)

These are fine foliage plants with handsome leaves and spikes of astilbe-like flowers. Increase by root cuttings or division.

Rodgersia aesculifolia, 3 ft. Bronze leaves shaped like those of the horse-chestnut, and flat sprays of fluffy, white flowers in June and July.

R. podophylla, 4 ft. Heavily netted bronzed leaves divided into five deeply toothed lobes, and yellowish-white flowers from June to July.

R. rabularis, 3 ft. Leaves almost round, 2 to 3 ft. across on thick, bristly stems, and white flowers in July and August.

SENECIO (RAGWORT)

Ragworts are showy plants of vigorous growth with daisy flowers and coarse, toothed leaves. Suitable for the larger garden.

Senecio clivorum (syn. *Ligularia clivorum*), 3 to 4 ft. Large, round, toothed leaves, 1 ft. or more across, and much branched heads of large (2 to 3 in.) orange-yellow flowers in July and August.

Othello, an improved form.

S. pulcher, 1 to 2 ft. Rosy-purple flowers, 2 to 3 in. across, from August to October, and long, lobed, silver leaves. Needs winter protection in exposed positions.

S. tanguticus, 3 to 4 ft. A handsome plant with upright stems, deeply cut leaves and panicles of golden-yellow flowers in September.

TROLLIUS (GLOBE FLOWER)

Globe flowers are handsome relations of the buttercup with cut leaves and ball-like heads of yellow or orange flowers. Suitable for sunny places in wet soil. Varieties are preferable to species, especially the following, which grow from 1 to 2 ft. and flower in May and June:

Bees Orange, orange-gold.

Earliest of All, butter-yellow.

Lemon Queen, very pale yellow.

Salamander, fiery orange.

Principles of Pruning

PRUNING serves both practical and aesthetic ends and is designed to develop and reveal the best qualities of a plant. It entails the cutting away of any parts of a plant that are not required, and is particularly applicable to shrubs and trees.

The chief aims of pruning are:

1. To keep the plant healthy by cutting away all dead, diseased, injured or weak shoots as soon as possible.
2. To regulate growth, either to restrict a plant to an allotted space or shape, to enhance its natural habit, to keep it neat and shapely, or to increase its vigour.
3. To develop to the full those qualities, whether of form, foliage, flower or fruit, for which the plant is being grown.

PRINCIPLES

The basic principle lies in the fact that the removal of a part of a plant modifies the remaining growth, and pruning will not be successful unless the way in which the pruned plant is likely to use its growth energies is intelligently anticipated.

A characteristic woody plant has a branching root system under ground and a framework of stem and branch, clothed with leaves, above ground. In the established shrub or tree the roots and leaves have usually arrived at an economical working balance, and curtailment of either will disturb this balance. When top growth is cut away there are fewer leaves for the roots to support, and, because there are fewer leaves, less plant



HEADING BACK

The shoots are removed to just above well-placed buds

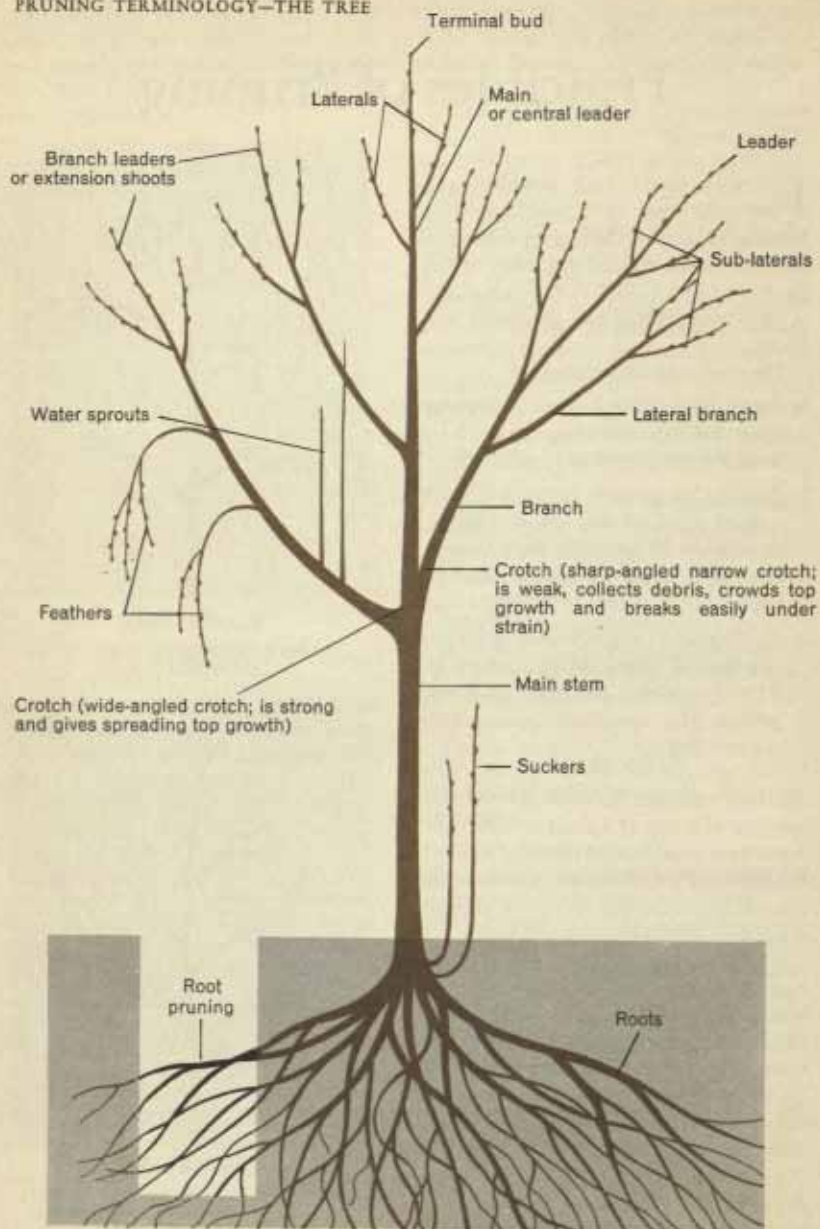


THINNING OUT

Shoots and weak laterals growing into or crossing main branches are removed to admit light and air

PRINCIPLES OF PRUNING

PRUNING TERMINOLOGY—THE TREE



food is manufactured to nurture root action. Consequently, the root system adjusts itself by becoming proportionately less extensive and less active. Conversely, any pruning of the roots checks the top growth.

The reaction of a plant to pruning takes place during periods of active growth (usually spring and summer) and the adjustment is often more gradual than immediate. To appreciate what the reaction may be, the branching framework of the stems and roots must be regarded as a structure in which food reserves manufactured in the growing season are stored.

When top growth is removed, some of the food reserves are lost, but those in the roots are undiminished, so that there is a tendency for the roots to initiate a vigorous reaction which is evidenced by new stem growth. Just how vigorous this reaction is and the form it takes depends partly on the manner of pruning and its timing.

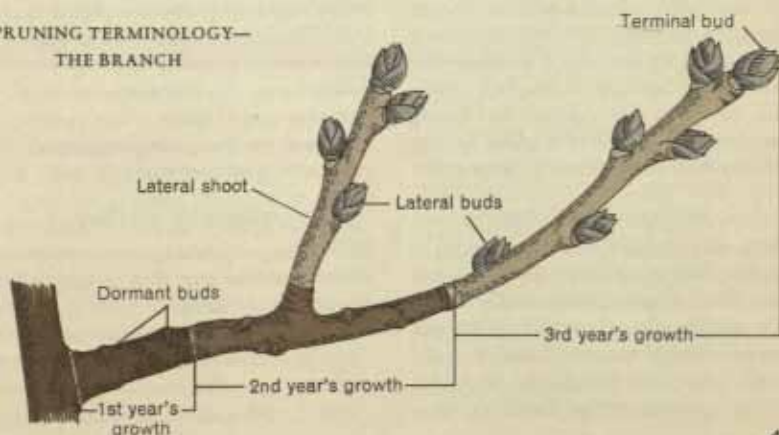
Hard pruning usually results in a strong growth reaction, and a shoot that is cut back severely will attempt to produce more leaf-bearing shoots or wood growth quickly. This reaction can be

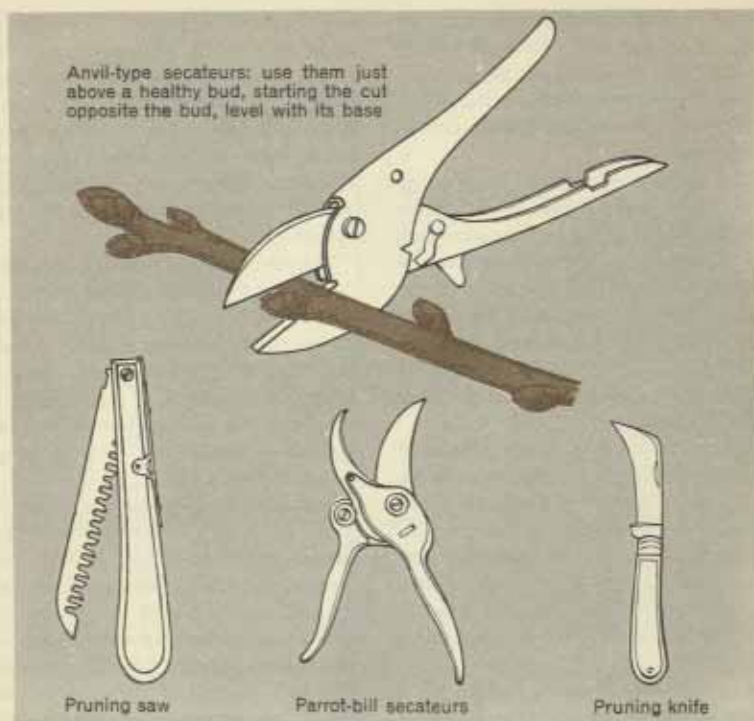
advantageously used when it is desired to build up a strong branch framework in young plants, or to make a plant produce strong new growth. But if the shoot is pruned lightly, or not pruned at all, food reserves in the shoot are left more or less intact and are used to induce new growth in the buds—the undeveloped branchlets.

The development of buds is apparently controlled by certain growth-regulating substances in the plant, sometimes called plant "hormones", but it varies according to the species or variety of plant. Development is also affected by the food reserves available when new growth is made, and can be greatly influenced by pruning.

The buds usually consist of the terminal or tip bud formed at the end of a shoot, and lateral or axillary buds formed in the axils or angles of leaves and stem along the length of a shoot. The newly formed buds consist of stem and leaves in embryo. Some of them eventually burst into leaf only, others into leaves and twiggy lateral shoots, and a few, usually at the lower end of a shoot, may remain dormant for a year or more. Other buds pass through a subtle change

PRUNING TERMINOLOGY— THE BRANCH





PRUNING TOOLS

known as flower-bud initiation or bud differentiation, which results in flowers being formed with the prospect of seeds or fruits later on. Light to moderate pruning encourages flower-bud initiation, especially when carried out during the dormant period of a plant or just before a new growing season begins.

REGENERATION

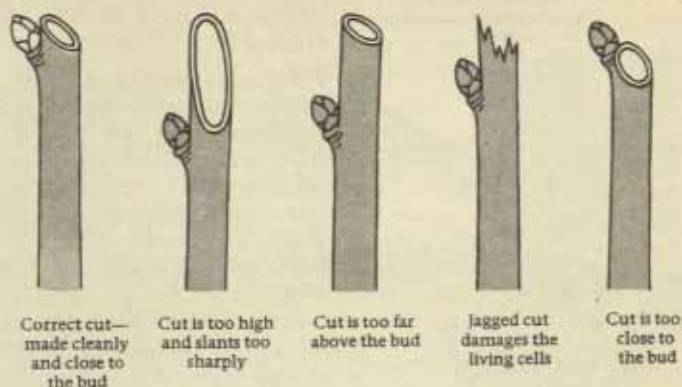
Plants differ widely in their reaction to pruning and their ability to regenerate thereafter. Some kinds readily make new shoots even if most of, or all, the top growth has been cut away. Laurels, holly, yews and hawthorns have this facility, and old, ailing plants can often

be rejuvenated by drastic pruning. Other plants, such as magnolias, brooms and camellias, when once well established, resent severe pruning and may even be killed by it. Woody plants usually regenerate most readily when pruning is confined to the young shoots of the current or previous year's growth.

WHEN TO PRUNE

The timing of pruning is important as it affects both the growth response and the health of the plant.

Most deciduous shrubs and trees can be pruned when dormant, that is between leaf-fall and bud-burst, during the autumn and winter, but there are two



How to make a pruning cut correctly

broad exceptions to this rule. Firstly, stone fruits and related ornamental trees of the *prunus* tribe (such as flowering almonds and cherries), maples, walnuts, and other trees liable to bleed profusely or to develop diseases if pruned hard in winter, must be pruned when freshly in full leaf in June or early July. Secondly, spring- and early summer-flowering shrubs, such as *forsythia*, flowering currant and *deutzia*, can be pruned after flowering because they produce their flowers best on shoots matured in the previous year.

Prune evergreens and most conifers just before new growth begins in spring. Winter pruning may cause the tree to die back as a result of injury by the weather.

Carry out pruning to restricted shapes for hedges or topiary work in the growing season as growth dictates. Most hedges can be kept neat with a June and late August trimming; a few need cutting more frequently, while informal hedges or well-established walls of beech, hornbeam, holly, box or yew thrive on one annual cutting in the summer.

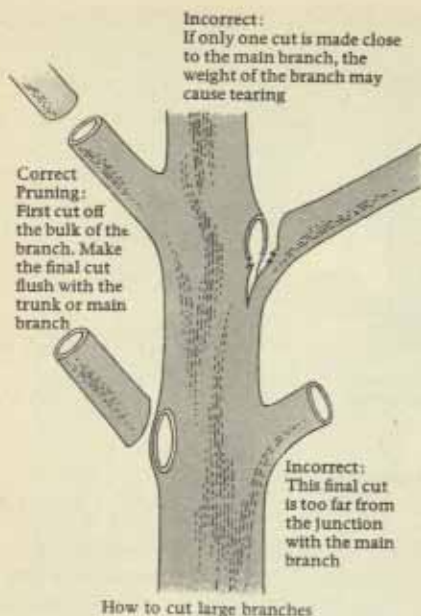
SUMMER PRUNING

Summer pruning is done in July and August and entails the removal of leaves that are actively at work, and has an almost immediate effect on the root-leaf balance. If the pruning is carried out too early in the season and growth is then checked, the plant tries to put out new shoots and leaves, which can exhaust and weaken it.

Summer pruning is practised chiefly on cordon-trained and ornamental trees by removing a few inches from the growing tips of new shoots as their wood begins to harden in late summer.

PRUNING TOOLS

Pruning tools must be razor-sharp and clean-cutting. A pruning knife used expertly against the anvil of the thumb is excellent, but well-designed secateurs used with the thin cutting blade nearest to and underneath the branch are satisfactory. Use a pruning saw for large cuts, then clean and smooth the rough surface of the cut with a knife, and protect it with a tree antiseptic such as Arbrex.



GENERAL RULES

In practice it is necessary to study and appreciate the habits and requirements of the species and varieties of the plants to be pruned, but in all pruning there are four guiding principles which should be kept in mind

1. Cut cleanly. The living cells of the shoots are concentrated in and about the greenish, slightly slimy area, called cambium, just inside the bark. Try not to damage these cells, as the healing of the cuts and the development of new growth depend on them.

2. Cut just above a healthy bud or node. It is here that cambium and growth cells are most concentrated and where the

energies of the plant will be diverted. Start the cut opposite to and level with the base of the bud and slant it very slightly upward to finish just above the bud.

3. Remember that the growth reaction will be strongest in the terminal and uppermost buds left after pruning. When pruning for new growth, make the cut above a bud facing in the direction the new shoot is required to grow. Pruning retards the growth of dormant lower buds, and to stimulate such buds into growth a method of bark-nicking is recommended. A notch of bark is removed from just above a bud from which new shoot growth is required, or below a bud from which flower development is desired.

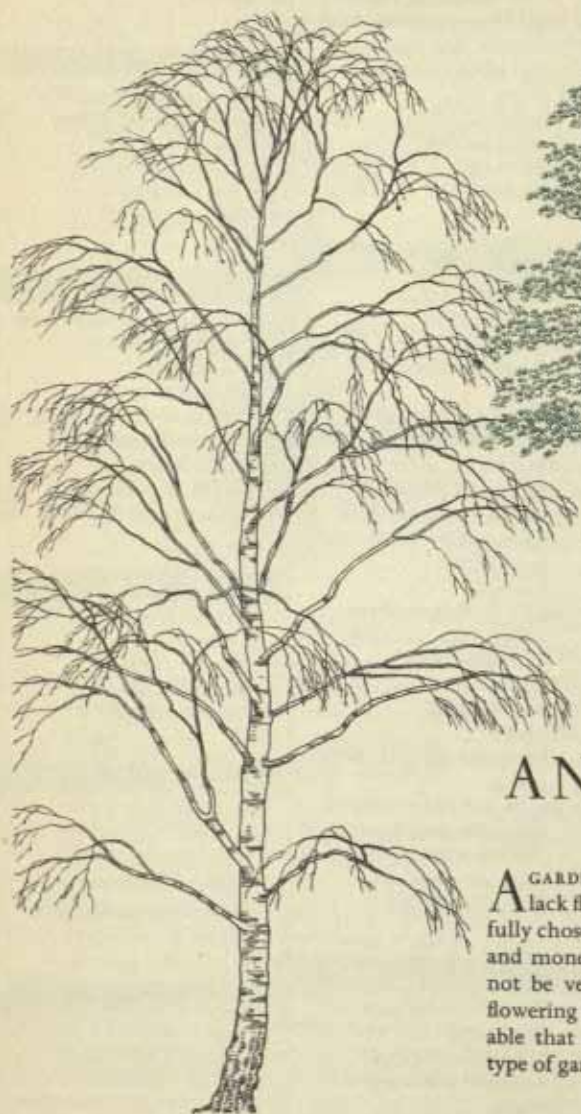
4. Remove unwanted shoots or branches at their base or at their junction with a large branch. This is necessary when thinning out growth from which regeneration is not required. Tangled branches must be removed to enable light and air to reach the plant. Make the cuts flush with the bark of the major branch that is left or with the stem of the tree so that no stubs remain. If stubs are left they do not heal but encourage pests and diseases. In removing dead, diseased or damaged shoots it is essential to cut back to where healthy, clean tissue is exposed, preferably at the base.

Cuts can be protected until healing is complete by a coating of Arbrex or a wound compound—usually a mixture of white lead and raw linseed oil.

After pruning, clean, healthy cuttings can be used for the base of a compost heap, but it is advisable to burn large limbs, dead and diseased wood and add their ashes to the compost heap.

CALENDAR OF PRUNING

JANUARY	APRIL continued	JULY continued
Complete winter fruit tree pruning in mild weather	Winter-flowering heaths (<i>Erica carnea</i> and varieties) Summer- and autumn-flowering ceanothus Fuchsia Peaches <i>Spartium junceum</i> <i>Hibiscus syriacus</i> <i>Calluna vulgaris</i>	Plums
FEBRUARY	MAY	AUGUST
Tip raspberries; cut autumn-fruiting varieties to ground level <i>Hydrangea paniculata</i> <i>Spiraea japonica</i> and varieties Lay hedges Willows, not grown for bark effect <i>Clematis jackmanii</i> varieties <i>C. lanuginosa</i> varieties <i>C. viticella</i> Floribunda roses Southernwood (<i>artemisia</i>) <i>Abelia grandiflora</i> Tamarix	Flowering currants <i>Viburnum carlesii</i> Flowering quince (<i>chaenomeles</i>)	Weeping rose standards Sweet cherries, plums <i>Clematis alpina</i> <i>C. montana</i> Trim lavender Trim hedges
MARCH	JUNE	SEPTEMBER
Floribunda and hybrid tea roses Rose species Climbing hybrid tea roses <i>Jasminum nudiflorum</i> Chimonanthus Other very early flowering shrubs—e.g. <i>hamamelis</i> <i>Hypericum</i> <i>Hydrangea macrophylla</i> and varieties (thin out older shoots only) Thin <i>Potentilla fruticosa</i> and varieties Cob-nut trees Gooseberries Buddleia Cornus, for bark effect Rubus, for bark effect Willow, for bark effect	Apricots Apples and pears Pick off dead heads of rhododendrons and lilacs <i>Deutzia pulchra</i> Mahonia Remove suckers from roses, lilacs and grafted or budded shrubs <i>Spiraea arguta</i> <i>Genista hispanica</i> <i>G. lydia</i> Cytisus species after flowering Prune flowering cherries, almonds, peaches and prunus species as they pass out of bloom, according to need	Remove spent flowers of veronica species <i>Senecio greyii</i> <i>S. laxifolius</i> Cut down fruited stems of raspberries Pleach limes Cut away cankered branches in orchards
APRIL	JULY	OCTOBER
Evergreens Caryopteris Conifers Forsythia	Summer-prune wisteria "Dead-head" kalmia Philadelphus hybrids <i>Deutzia scabra</i> and varieties Weigela Escallonia hybrids <i>Clematis florida</i> and <i>C. patens</i> hybrids Cherries	Start root-pruning fruit trees Morello cherries Rambler roses <i>Jasminum officinale</i>
		NOVEMBER
		Apples, pears Figs Black currants Red and white currants Blackberries and hybrid berries
		DECEMBER
		Winter-prune wisteria Tidy and lay hedges <i>Clematis viticella</i> Tidy briar and blackthorn hedges Root-prune over-vigorous fruit trees (see <i>Fruit</i>) Grape vines under glass



BETULA PENDULA—silver birch



CEDRUS ATLANTICA GLAUCA
blue cedar

SHRUBS AND TREES

A GARDEN, however small, need never lack flowers. If it is planted with carefully chosen shrubs, the amount of work and money needed to maintain it need not be very much. So many kinds of flowering trees and shrubs are now available that a selection suitable for every type of garden can be made.

BUYING

Shrubs normally live for many years, so it is worth buying good plants from a specialist nurseryman who stocks a



THUJA OCCIDENTALIS
American arbor-vitae



PRUNUS PERSICA
peach



GLEDITSCHIA TRIACANTHOS
honey locust

wide range of plants and is well known for the quality of his produce. The catalogues issued by these nurserymen are mines of reliable information, and the plants bought from them will have been properly cared for and correctly labelled.

Many nurseries encourage visitors and allow them to mark particular plants for delivery later. It is best to visit nurseries while the plants are in flower. The more common plants are obtainable fairly cheaply, but a larger specimen of a less popular variety may cost over eight times as much, so check the plants against the catalogue.

There are many cheap shrubs advertised each year and it is possible to buy a selection for only a few pounds, but these offers generally apply to the more common shrubs, which are easily propagated. The specimens may be very small and take many years to reach a reasonable size.

DELIVERY OF THE PLANTS

Bundles of plants are usually delivered between October and March. If they arrive during a frosty or wet period when it is impossible to plant, they can safely be kept in their straw or other packing for a week or even for a fortnight provided the string round the wrappings is loosened, and they are kept in a frost-proof shed. Make sure that the straw is dry.

Soak the roots in a bucket of cold water for an hour or two if they are very dry when unpacked. If it is not possible to plant at the end of the frosty period, heel in the plants temporarily. To do this, dig a trench (for small plants this need be no more than a V-shaped nick a few inches deep made with a spade) and place the roots in it; cover with soil and firm with the foot. It is best to heel in the plants where they are not liable to be blown about by the wind. As a precautionary

measure, drive a few stakes into the ground close by and attach the top growths, so that these do not rest on the soggy or frozen soil.

WHEN TO PLANT

Leaf-losing shrubs and trees can be planted at any time from late October to the end of March. For evergreens the period extends from early October to late April. It is better to plant in October, but if planting is not done until April careful watering and overhead spraying will be needed each evening in dry weather during the summer until the plants are properly established.

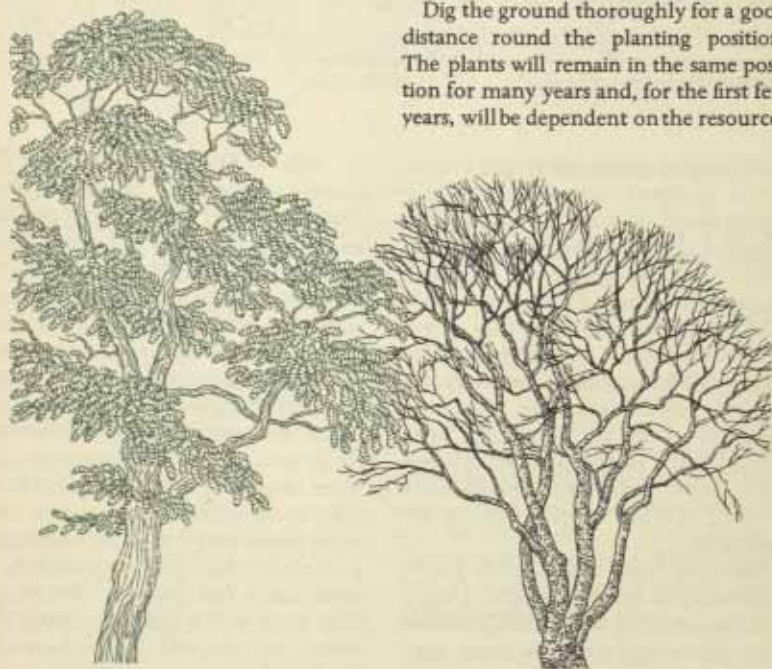
The planting season appears to be a long one, but do not plant when frost,

snow and heavy rain make the ground unworkable, or when there is a bitter east or north-east wind.

PREPARING THE GROUND

The soil, although reasonably workable, is sometimes too sticky to use for returning round the roots. This applies particularly to heavy clay soils, which pack down like concrete when they are firmed. To prevent this, keep some planting soil under cover so that it is dry enough to use when shrubs and other plants are set out in the winter. The planting soil can be a mixture of ordinary garden soil, coarse gritty sand and leaf mould—if leaf mould is not available, replace it with well-rotted garden compost. Do not use fresh manure as this burns the roots of young plants.

Dig the ground thoroughly for a good distance round the planting position. The plants will remain in the same position for many years and, for the first few years, will be dependent on the resources



ROBINIA PSEUDOACACIA—false acacia or locust tree

CERCIS SILIQUASTRUM—Judas tree

immediately available until they are thoroughly established and send out roots far and wide in search of water and food.

On very heavy soil and on light soil, dig in well-rotted manure or garden compost. This will provide the heavy soil with plant food and make it more workable, and the light soil with both food and moisture-retaining material. When planting lime-hating shrubs such as heaths, rhododendrons and azaleas, mix in fair quantities of thoroughly soaked peat with the soil. Never use dry peat as it may remain dry in the soil for years.

It is best to dig the soil a few weeks before planting so that the ground will settle down naturally, otherwise rake the soil over and then tread it until the surface is really firm.

THE PLANTING HOLE

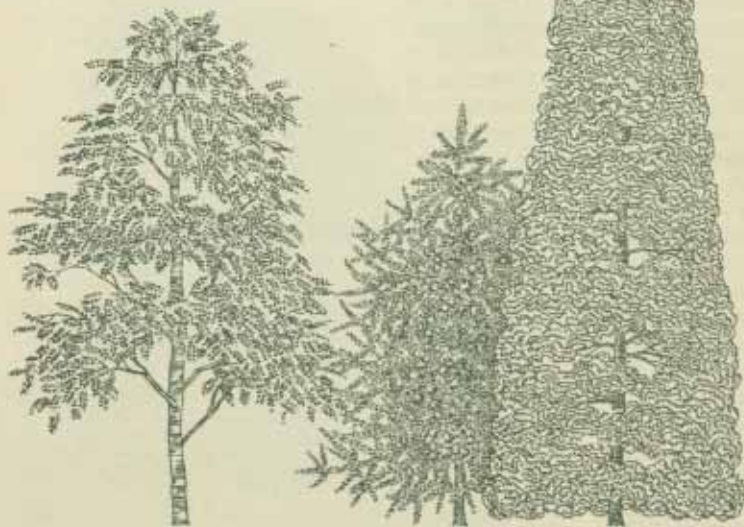
The planting hole must be of sufficient depth and width to accommodate the roots of the shrub or tree when fully

spread out. The plant must be set at the same depth as it was in the nursery (use the soil-line round the base of the stem as a guide).

In very heavy soils, plant the specimen on a mound of lighter soil in the middle of the hole, spreading the roots out before returning the soil.

STAKING

If the plant is to be staked, and this is essential with large specimens and even with small ones in windy situations until their roots are anchored, put the stake in position in the centre of the hole *before* planting so that there is no risk of damaging roots by driving in a stake at a later



SORBUS AUCUPARIA
mountain ash

PICEA ALBERTIANA
CONICA—dwarf spruce

CHAMAECYPARIS
LAWSONIANA
Lawson's cypress

date. Use stout stakes, driving them well into the ground.

Split chestnut stakes last for years, but whatever stakes are used, it is advisable to treat the part that will be in the soil with a wood preservative based on copper naphthenate, such as Cuprinol or Solignum. Creosote gives off fumes that are dangerous to plant life for many years.

TREATMENT BEFORE PLANTING

Roots shrivel very quickly if exposed to the wind or sun, therefore lift only one plant at a time from the heeling-in place, and cover the roots with damp sacking while they are out of the ground. Before planting, always examine the plant to see if there are any broken roots, which must be cut off with a knife or secateurs.

PLANTING

When planting shrubs and trees it is important to allot to each plant sufficient space for its complete development, even though this means it will be surrounded by a patch of bare ground for a few years.

One person alone can quite easily plant small specimens. Spread out the roots in the planting hole and then return a little good soil over them. Shake the shrub to ensure that the soil sifts down among the roots and then return more soil over the roots until they are covered. Firm this with the foot and repeat the operation until the hole is filled. The plant will then be quite firm and upright.

At this stage, if necessary, tie the plant to the stake. Make the ties reasonably tight, crossing the strings over between plant and stake, or bind a pad of folded sacking between stem and stake to prevent chafing of the young bark. Plastic patent tree-ties are quick to use, reliable and long lasting.

It is advisable for two people to plant the larger specimens, so that one can hold the plant and shake it when necessary

and the other can return the soil and firm it. However, one person alone can plant them if the stem is tied loosely to the stake while the soil is returned and firmed.

After planting, rake the surface soil to remove footmarks.

PLANTING IN GRASS

When shrubs and trees are planted in lawns or rough grass, and it is impossible to dig a wide area round the planting hole, dig a deep hole and put some garden compost or well-rotted manure in the bottom spit.



PSEUDOTSUGA TAXIFOLIA—Douglas fir

If the shrubs are planted in circular beds cut from the turf, mowing is made very difficult because the machine must be stopped frequently to mow round the edges. This difficulty is overcome if the shrub is planted in a long, leaf-shaped bed, wide in the centre and narrowing to a point at each end.

PLANTS WITH "BALLED" ROOTS

Certain plants, such as rhododendrons and azaleas, arrive from the nursery with their roots "balled" (wrapped up in sacking which is tied round to keep it in place). If the ball of soil round the roots is intact, cut the string, then carefully remove the sacking and put the plant in position.

If the ball of soil shows signs of disintegrating, do not remove the sacking but simply place the shrub in its hole, cut the string and leave the sacking in

place. It will eventually rot down and disintegrate in the soil, and the roots of the plant will, in the meantime, grow through it. In either case do not spread out these "balled" roots.

AFTER-TREATMENT

Most shrubs need little attention after planting, though the ties holding them to the stakes must be examined occasionally and loosened if they become so tight that the stem is restricted. Trees may need further ties as they grow, and require special attention during gales.

Weeds must be kept down near the



QUERCUS ILEX—holm oak



GINKGO BILOBA—maidenhair tree

plants. Clear a circle round the plants, and, if they are planted in grass, keep the grass round them cut short and make sure it does not encroach on the circle round their stems.

MULCHING

All shrubs benefit from a mulch of rotted compost, sedge peat or rotted old manure round them in late spring. This conserves soil moisture, keeps down weeds, and is eventually absorbed into the soil, where it not only provides plant food but also improves the texture of the soil. (See *General Soil Operations*.)

WATERING

Droughts often occur even in spring, and watering may be necessary in very dry

weather during the first season. Newly planted evergreens may look rather sick during the first few weeks after planting, and watering and overhead spraying are needed to keep them from falling and to ensure that they do not drop their leaves.

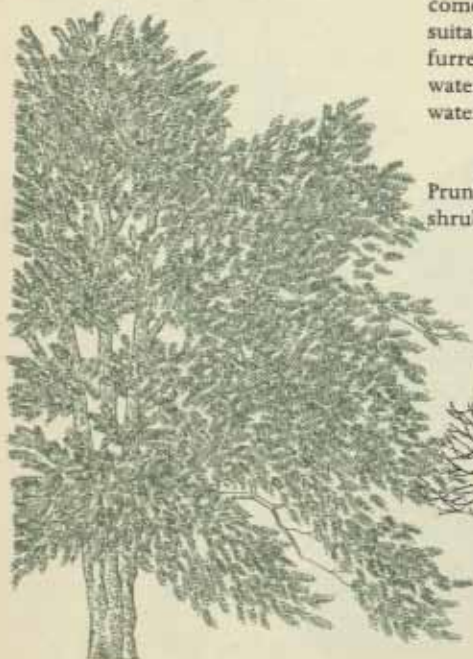
Laurels usually drop their leaves, but this indicates that the plants are becoming established. Once they are established new leaves appear.

A few shrubs, principally the cistuses, must not be watered in dry weather. They thrive in hot dry soils and sunny positions and are likely to be killed by watering at such a time.

Even though the garden soil is lime-free and therefore suitable for growing rhododendrons, azaleas, heaths and other members of the lime-hating heath family, the household tap-water may come from a chalky district and be unsuitable for watering these plants. (A furred-up kettle is a sure sign that the water is chalky.) In this case collect rain-water in butts or tubs for watering.

PRUNING

Pruning is not essential for all established shrubs, although many are improved



TAXUS BACCATA—English yew.



PRUNUS TRILOBA

by the annual removal of dead or dying wood. Some shrubs need occasional, and others need annual, pruning. Those that need annual pruning are divided into two main categories: those that produce flowers on the new wood formed in the current season, and those that produce their flowers on wood formed and ripened in the previous season. There is a marked difference in the pruning necessary for the two types.

SHRUBS FLOWERING ON WOOD PRODUCED IN CURRENT YEAR

These include caryopteris, buddleias, some escallonias, the hardy fuchsias, *Hydrangea paniculata grandiflora*, some hypericums, *Indigofera gerardiana*, *Leycesteria formosa*, the golden elders, certain spiraeas, and *Tamarix pentandra*.

In mild districts pruning can be carried out at any time during the winter, but in exposed districts, or where there are frequent spring frosts that may damage the young growths, it is best not to prune until April.

Some plants, such as caryopteris, may be cut down each year to within a few inches of the ground, but others if treated in the same way will not grow very large. If a large specimen is wanted, build up a framework of stem and main branches by pruning the old growths to within a few inches of their base. This forces them to produce new growths from the buds that are left, and these in turn are cut back the following year to within a few inches of their base.

If the bush eventually grows too large, prune it more severely to keep it within bounds.

Other plants, such as certain cornus (dogwoods) and salix (willows), which are grown for their winter stem colour, must be cut down to the ground in late spring to induce them to produce new, brightly coloured shoots.

SHRUBS FLOWERING ON WOOD PRODUCED IN PREVIOUS YEAR

These include weigelas (diervillas), some forsythias, *Jasminum nudiflorum* (winter jasmine), kerrias, some spiraeas, and philadelphus.

Cut away the shoots or branches that have flowered as soon as possible after the flowers have faded in order to give the new shoots an opportunity to develop properly and to ripen in late summer.

SHRUBS THAT NEED NO PRUNING

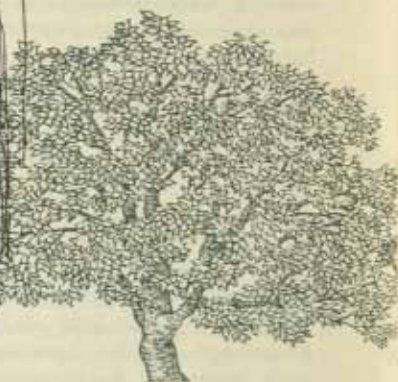
Among the shrubs that can safely be left unpruned for many years are amelanchiers, aucubas, arbutus, azaleas, bamboos, most berberis, camellias, ceanothus, choisyas, cistus, clerodendrums,



SALIX ALBA—white willow



SALIX VITELLINA PENDULA
weeping willow



CATALPA BIGNONIOIDES
Indian bean tree

coluteas, cornus (except those grown for their stems), cotoneasters, cytisus, daphnes, eucryphias, gaultherias, hamamelis, hibiscus, hippophae, hydrangeas (except *H. paniculata grandiflora*), *Jasminum officinale*, lavandulas, *Lupinus arboreus*, magnolias, myrtus, paeonies, potentillas, pyracanthas, rhododendrons, rhus, ribes, rosmarinus, *Senecio laxifolius*, syringas, viburnums and zenobias.

These shrubs need no pruning unless they grow too large for the space allotted to them, when it is best to remove whole branches right back to their point of origin in the winter. Do not chop off bits of branches because this results in the rapid production of new shoots.

If frost kills or damages some growths, cut them back until sound wood is found. Do this in May after the frost is over.

SHRUBS THAT NEED DEAD-HEADING

The shrubs that benefit from the removal of dead flower heads include

azaleas, cytisus, kalmias, *Lupinus arboreus* (tree lupin), rhododendrons, *Senecio laxifolius*, syringas (lilac), and zenobias.

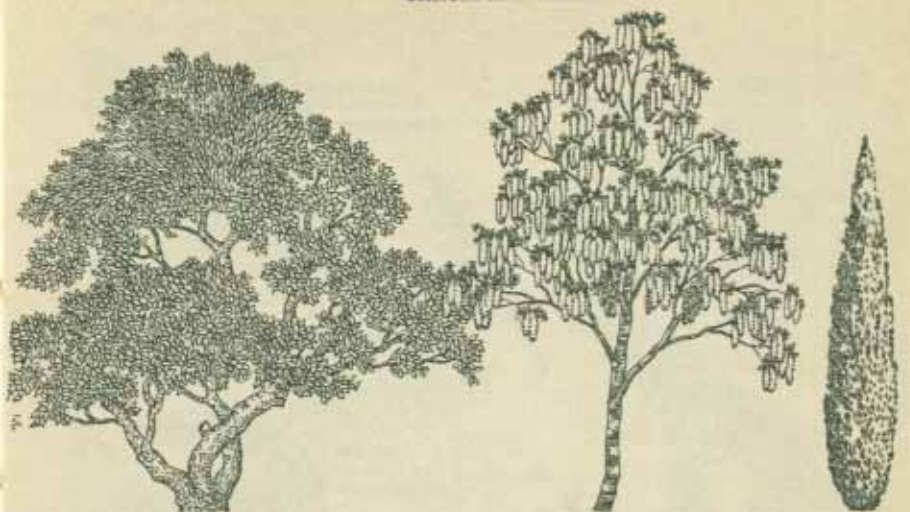
Remove the dead heads soon after the flowers have faded so that new growths can develop properly.

GENERAL NOTES ON PRUNING

1. Always use sharp tools. The professional gardener often uses a very sharp knife, as he considers this is less likely to damage the wood than secateurs, but in the hands of an unskilled person a knife can be dangerous when used for pruning, and a good pair of secateurs, kept sharp and used properly, is nearly as effective.

A common fault is to damage the branch while trying to cut through wood that is too thick for the tool. Secateurs should not be used for branches more than $\frac{1}{4}$ in. thick. For these a pruning saw, curved or straight, is preferable.

2. Before sawing through a thick branch, make a saw-cut on the underside, a little



ARBUTUS UNEDO
strawberry tree

LABURNUM ANAGYROIDES
common laburnum

JUNIPERUS COMMUNIS
juniper

distance from the point at which the branch is to be removed. Then saw through from above. By doing this the branch can be prevented from tearing the bark when it falls off.

In any case, when sawing off large branches, it is always better to repeat this operation at intervals along the branch to avoid damage.

3. After sawing off any branch more than $\frac{1}{2}$ in. thick, pare the edges of the cut neatly with a very sharp knife. Then paint the wound over with a proprietary preparation such as Arbrex, white lead paint or Stockholm tar to prevent the entry of disease spores.

4. When pruning, always take the opportunity of cutting away dead and dying wood and the weak, thin growths on all shrubs, even those that do not normally require pruning. Watch out, too, for crossing branches and shorten one of them to prevent them from rubbing together in the wind.

REMOVAL OF SUCKERS

Azaleas, cytisus, rhododendrons, syringas (lilac), and *Viburnum carlesii* are a few of the plants that are liable to produce suckers from below ground which must be removed.

If the plant is known to be a particular variety grafted on to a stock root of a commoner sort (for example, named varieties of lilac grafted on to common lilac stock), the suckers will only produce flowers of the type normally produced by the stock, and may be vigorous enough to replace the grafted variety eventually. To remove the suckers, dig carefully to the root from which the suckers spring and then cut the sucker off.

Other plants such as bamboos, ceratostigmas, some clerodendrons, some cornus, fuchsias, some hydrangeas, some hypericums, kerrias, philadelphus, roses on their own roots, rubus, salix and some spiraeas spread by means of shoots produced from below ground.

SHRUBS AND TREES



*CERCIS
SILICUASTRUM*
Judas tree



*LABURNUM
ANAGYROIDES*
common laburnum



*PICEA
ALBERTIANA
CONICA*
dwarf spruce



PSEUDOTSUGA TAXIFOLIA
Douglas fir



*SORBUS
AUCUPARIA*
mountain ash



*PRUNUS
PERSICA*
peach



THUJA OCCIDENTALIS
American
arbor-vitae



*CEDRUS
ATLANTICA
GLAUCA*
blue cedar



*GINKGO
BILoba*
maidenhair tree

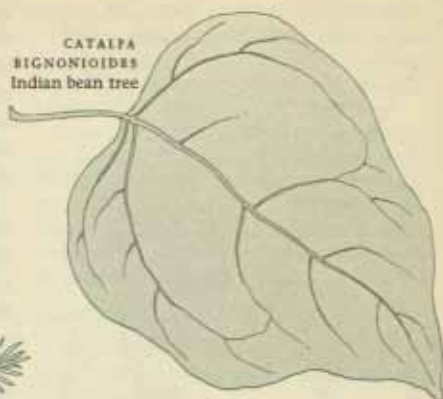


*GLEDITSCHIA
TRIAcANTHOS*
honey locust

SHRUBS AND TREES



QUERCUS
ILEX
holm oak



CATALPA
BIGNONIOIDES
Indian bean tree



TAXUS
BACCATA
English yew



SALIX VITELLINA
PENDULA
weeping willow



CHAMAECYPARIS
LAWSONIANA
Lawson's cypress



JUNIPERUS
COMMUNIS
juniper



ROBINIA PSEUDOACACIA
false acacia or locust tree



ARBUTUS UNEDO
strawberry tree



PRUNUS
TRILoba



BETULA
PENDULA
silver birch



ACER PALMATUM—Japanese maple

Strictly, these shoots are suckers, but do not remove them unless it is necessary to keep the plant within bounds. To remove the suckers, cut round the base of the plant with a spade.

PRESERVING TREE SHAPES

Many trees produce unwanted growths or "feathers" from their trunks, which must be removed or they will quickly develop and spoil the shape of the tree. When training a young plant into tree shape, remove all side growths until the required height of trunk is reached; the plant can then be allowed to develop naturally and form a head. Many plants grown as shrubs are treated in this way, especially those that are required for lawn specimens.

PESTS AND DISEASES

Various pests such as aphids, leaf-rolling insects, sap-sucking pests, and leaf- and shoot-eating caterpillars do sometimes

attack trees and shrubs. In some years these attacks may be fairly severe, particularly in the vicinity of large trees, but they can be controlled by routine sprays with insecticides such as derris, D.D.T., gamma-B.H.C., malathion or nicotine preparations.

If the plants are attacked by fungus diseases, which produce a grey, mould-like deposit on the leaves which is unsightly but seldom very damaging, spray them either with copper fungicides or with Karathane.

Spray forcefully, holding the nozzle so that the underside of leaves and the growing points are thoroughly wetted.

PROPAGATION

Many shrubs can be propagated from soft-wood cuttings taken in spring or early summer and rooted in a frame, or from hard-wood cuttings taken in autumn or early winter and rooted in a sheltered place out-of-doors. It is also easy to detach the rooted suckers of some plants (not those of grafted trees) for propagation purposes.

The pliable branches of some types of shrub often touch the ground and root where they touch. This is called a rooted layer, which can be detached and grown as a separate plant.

The layering method is often used to propagate shrubs whose branches are low enough and supple enough to be brought to ground level. A slight incision is made on the underside of the branch, which is then held in the soil with a stout wire pin or a stone.

Most shrubs and trees can be raised from seeds, although some hybrids will not come true to colour or form. The seeds of trees and shrubs often takes over a year to germinate, so do not throw away the pots in which seeds have been sown until at least two years after sowing. (See *Propagation*.)

SUGGESTED PLANTS

D=deciduous (leaf-losing) E=evergreen

ACER (MAPLE) (D)

Some of the maples are forest trees, too large for most gardens. The Japanese maples, however, are shrubby species and are more suitable. Many Japanese maples have finely divided leaves, which are brilliantly coloured in autumn and often throughout the year. Some of the more delicate kinds need protection in winter in cold places. Maples grow well in rich, deep soil. Plant from October to March.

Of the Japanese maples, the following are recommended:

Acer japonicum, 20 ft., all varieties.

A. palmatum, 10 to 20 ft., all varieties.

A. p. septemlobum osakazuki, fiery-coloured leaves, particularly recommended.

Other fine specimens of maple which are suitable for the larger garden include:

A. grosseri hersii (snake bark maple), 15 to 20 ft., marbled bark, streaked with white; colours well in autumn.

A. platanoides Crimson King (Goldsworth Purple), 60 ft., large, purplish-crimson leaves.

AMELANCHIER (SNOWY MESFILUS) (D)

Amelanchier laevis (often sold as *A. canadensis*), 15 to 25 ft., an attractive small tree; bears pretty trails of white flowers in April while its young, bronze-green leaves are only half-formed. The flowers are followed by an abundant crop of berries which turn crimson by June. The leaves turn bronze or tan in autumn. Hardy and grows in ordinary soil. Plant in November.

ARAUCARIA (MONKEY PUZZLE) (E)

Araucaria araucana (syn. *A. imbricata*), 60 to 70 ft. or more, unusually attractive with its regularly overlapping leaves borne on long, arching branches. Plant this conifer from September to November in deep, moist soil, remembering its eventual height when choosing position.

ARBUTUS (E)

Plant these large shrubs in September, November or April in sheltered positions

and in deep, well-drained, lime-free soil.

Arbutus andrachne, over 15 ft., rarer than *A. unedo*, more notable for its reddish bark than its fruits. Tender as a young plant.

A. unedo (strawberry tree), 15 ft. or more, bears small white flowers in autumn, and when established carries the orange, strawberry-like fruits and flowers simultaneously. Easily kept in shape by judicious pruning. To ensure pollination, plant at least two specimens.

ARTEMISIA (D)

Artemisia arborescens, 3 ft., bears silvery-grey leaves (not as finely cut as those of *A. abrotanum*).

A. abrotanum (lad's love, old man or southernwood), 3 to 4 ft., grown for its finely divided greyish leaves, which are delightfully fragrant when bruised; a favourite cottage-garden plant.

Both these species bear small, insignificant flowers. Plant from October to March in an ordinary soil.

AUCUBA (E)

Aucubas grow in any soil and in sun or shade. Plant in October, November or



Height 6-8 ft.

BERBERIS DARWINII



BERBERIS STENOPHYLLA



BUDDLEIA ALTERNIFOLIA

April. Among the best, which grow to 6 to 8 ft., are:

Aucuba japonica crotonoides, leaves densely mottled with small gold markings.

A.j. maculata (spotted or variegated laurel), with bright splashes of gold on its leaves and attractive red berries, is a good town shrub, but useful anywhere to give colour all year. Male and female flowers are borne on separate plants and both must be planted if berries are desired.

BERBERIS (BARBERRY) (D and E)

There are at least 50 attractive barberries in cultivation, but many are for the specialist who wants a very wide range of these thorny plants, although most of them are easy to cultivate in practically any soil. Most of them flower in late May. Plant the deciduous species from October to March and the evergreen from October to April. Among the most popular are:

Berberis aggregata (D), 4 to 5 ft., yellow flowers in July are followed by large clusters of red berries. The leaves turn a good colour in autumn.

B. calliantha (E), 3 to 4 ft., one of the best plants, has small, holly-like leaves which are white underneath, reddish stems, and yellow flowers followed by blue-black fruits covered with a grape-like bloom.

B. darwinii (E), 6 to 8 ft., one of the most popular kinds, has prickly, holly-like leaves, orange flowers and bluish berries.

B. gagnepainii (E), 6 to 7 ft., makes a dense, upright-growing shrub, with long, narrow leaves, yellow flowers and blue-black fruits.

B. irwinii (E), 3 ft., a more compact plant, with leaves, flowers and berries rather like those of *B. darwinii*.

B. linearifolia (E), 3 to 4 ft., bright orange flowers in spring.

B. lolagemis (E), 8 ft., the hybrid between *B. irwinii* and *B. linearifolia*, a fine plant with apricot flowers and prickly leaves.

B. stenophylla (E), 8 ft. or more, one of the larger barberries, with large leaves and yellow flowers on the arching branches in spring.

B. thunbergii atropurpurea (D), 4 ft., the best form of *B. thunbergii*, with reddish-purple leaves and yellow flowers.

B. wilsoniae (E), 2 ft., a dwarf kind with yellow flowers and red fruits. The leaves turn brilliant colours in autumn.

BETULA (BIRCH) (D)

A number of birches are grown principally for their attractive silvery bark colours. An easily grown tree is:

Betula pendula (silver birch), 50 ft., very graceful, occasionally planted as a specimen tree or in copses in larger gardens. Plant in any soil from October to March.

BUDDLEIA (D)

Plant buddleias in deep, loamy soil, and in warm, sunny positions in October or April.

Buddleia alternifolia, 12 to 15 ft., slender arching branches bearing tiny lilac-purple flowers along their full length in early June.

B. davidii (syn. *B. variabilis*), 12 ft., the most popular species, is sometimes known as the butterfly bush because its purple flower spikes are often crowded with butterflies in summer. Its varieties have lavender, violet, blue, deep purple, reddish-purple or white flowers. Needs hard pruning to ensure that it flowers freely and does not grow leggy. Cut back almost to the base each spring and the long flowering stems will quickly appear. Pruning need not be so severe if a large plant is desired, but remove dead wood regularly.

B. globosa (semi-evergreen), 15 ft., with globular, bright orange flowers in midsummer. Needs little pruning.

B. weyeriana, 12 ft., a hybrid with attractive balls of orange flowers marked with mauve and pink in midsummer. Needs little pruning.

CALLUNA (LING, SCOTCH HEATHER) (E)

These plants are invaluable for providing colour from late July to October in a lime-free soil. The flower colours vary from white through the various shades of pink and crimson to dark crimson. Plants reach from 2 or 3 in. to 3 ft. Some specimens make good foliage plants, as their leaves are golden, bronze or pinkish during the summer, often deepening in

autumn. Plant in the very early spring.

Calluna vulgaris alba, 3 in. to 2 ft., white heather.

C.v. C. H. Nix, 3 ft., dark crimson flowers.

C.v. *faxii nana*, forms a cushion only 2 or 3 in. high. It is not free-flowering.

C.v. H. E. Beale, 1 to 2 ft., long spikes of double rose-pink flowers in autumn; a favourite kind.

CAMELLIA (E)

Camellias require a lime-free soil or at least one that contains little lime. Plant in March or April in a loamy soil to which plenty of peat and leaf mould have been added. They are quite hardy but need the slight shelter of a tree or wall (not an east wall, as early morning sun can damage buds).

Plants are sold when very small and grow slowly, taking a number of years to reach 7 or 8 ft.

Among the hardiest are the varieties of *Camellia japonica*, which flower in spring:



CALLUNA VULGARIS—H. E. Beale

SHRUBS AND TREES



Height 7-8 ft.

CAMELLIA JAPONICA



Height 3-4 ft.

CISTUS—rock rose

Camellia japonica Adolphe Audusson, dark red, semi-double flowers.

C. j. Comte de Gomer, pale pink double flowers striped a darker shade.

C. j. donckelarii, crimson, semi-double flowers mottled with white.

C. j. Lady Clare, soft pink, semi-double flowers.

C. j. nobilissima, white, double flowers.

The *williamsii* hybrids are also becoming popular, including:

C. williamsii Donation, 4 in. semi-double pink flowers with a brush of yellow stamens from February to March. Noted for its dull green leaves (other camellias have highly polished dark green leaves).

CARYOPTERIS (D)

Caryopteris is a genus of small shrubs bearing blue flowers in late summer. They prefer sunny positions but are not particular about soil. Plant in winter. Both of the specimens listed below flower better if cut down almost to the ground each April, but not the first year after planting.

Caryopteris clandonensis, 2½ to 3 ft., a hybrid, with greyish leaves and spikes of bright blue flowers in August and September.

C. Ferndown, 2½ ft., violet-blue flowers and dark green leaves.

CATALPA (INDIAN BEAN TREE) (D)

Catalpa bignonioides, 25 to 40 ft., a very decorative rounded tree, which makes a good specimen for a lawn. It bears beautiful heart-shaped leaves and, in July, cream, purple-spotted flowers carried in upright clusters. These are followed, particularly in warm dry seasons, by drooping seed pods, sometimes over a foot long, which hang from the bare branches throughout the winter. It prefers a normal garden soil and grows well in towns. Plant from October to April.

C. b. aurea, similar to *C. bignonioides*, but with golden-coloured leaves.

CEDRUS (CEDAR) (E)

Most cedars are very tall and are unsuitable for the small garden. They are not particular about soil. Plant from September to November or from March to May.

Among those that reach over 60 ft. in height and are recommended for the very large garden only are:

Cedrus atlantica glauca (blue cedar), bluish foliage.

C. deodara (deodar), is particularly good in its golden form *aurca*.

More suitable for small gardens are the dwarf, slow-growing cedars:

C. deodara pendula, takes many years to reach 6 or 7 ft., and has graceful drooping branches with grey-green needles.

C. libani Comte de Dijon, 5 ft., pyramidal in shape.

C. l. nana, 5 ft., a round bushy tree.

CERCIS (JUDAS TREE) (D)

Cercis siliquastrum, rarely reaches 20 ft., and is one of the best May-flowering trees for small gardens. It flowers when quite young, and the rosy-purple pea-flowers are produced abundantly while the rounded, heart-shaped leaves are only just unfolding from their buds. Makes a forked, spreading tree and is ideal as a lawn specimen in any soil. Plant from October to March.

CHAMAECYPARIS (FALSE CYPRESS) (E)

These false cypresses flourish in any soil. Plant from September to November. Many of them used to be called cupressus.

Chamaecyparis lawsoniana (Lawson's cypress), 75 to 80 ft. in this country on maturity, grows slowly and is usually kept to about 20 ft. It is often referred to as *Cupressus lawsoniana*, and is a good hedge or screen plant, but the more ornamental kinds are found among its varieties.

C. l. allamii } bluish-green foliage,

C. l. fletcheri } pyramidal in shape.

C. l. fraseri, grey-green foliage.

C. l. stewartii, golden-yellow foliage.

C. l. Triomphe de Boskoop, very blue foliage.

C. l. versicolor, a variegated form.

In addition there are the following dwarf, slow-growing forms of *lawsoniana*, *obtusata* and *pisifera*, which do not grow to more than 6 ft.

C. l. ellwoodii, bluish-green foliage.

C. l. gimbarnii, an egg-shaped form.



Height 6 ft.

CHOISTA TERNATA
Mexican orange blossom



Height 20 ft.

COTONEASTER CORNUBIA

C.I. minima aurea, golden ascending foliage, of rounded habit.

C.I. minima glauca, blue-grey foliage, a rounded form.

C. obtusa caespitosa, a bun-shaped cushion.

C. pisifera filifera aurea, slender golden foliage.

C. p. squarrosa, grey foliage, is bun-shaped.

CHOISYA (MEXICAN ORANGE BLOSSOM) (E)

Choisya ternata, 6 ft., bears bright evergreen leaves, and sweetly scented white flowers appear in May and sometimes again in the autumn when the plant is established. As it is not completely hardy, where frosts are frequent or in exposed gardens, place near a wall. Plant in October or March in any soil.

CISTUS (ROCK ROSE) (E)

There are many species and varieties of cistus. Some are harder than others, but all have beautiful flowers over a long season, although the individual flowers last for only a day. They thrive in the hottest, driest positions, preferably on a south-facing bank, and are ideal for the larger rock garden. Plant in winter, and never water in a drought.

Among the hardiest are:

Cistus corbariensis, 3 to 4 ft., pure white flowers.

C. laurifolius, 6 ft., white, yellow-centred flowers.

C. Silver Pink, 3 to 4 ft., pink flowers.

The following two specimens can be grown only in the milder south and west:

C. lusitanicus, 3 to 4 ft., white petals with a crimson blotch at the base of each.

C. purpureus, 3 to 4 ft., rosy-crimson petals with a deep maroon basal blotch.

CLERODENDRUM (D)

Plant these shrubs in ordinary garden soil in October or November. The species usually grown bear blue fruits.

Clerodendrum hungesii, 5 ft., bears large, flattish clusters of pink flowers in August. Less hardy than *C. trichotomum fargesii*, it is invariably cut back by frost, but springs again from the base.

C. trichotomum fargesii, 8 ft., bears fragrant white flowers in summer. The porcelain-blue berries, which ripen in autumn, are

surrounded by the reddish-maroon or crimson calyces which persist after the petals have fallen.

COLUTEA (BLADDER SENNA) (D)

Coluteas are fast growing and very tough. They thrive in dry, stony situations. Plant from October to February.

Colutea arborescens, 12 ft., bears attractive yellow pea-flowers throughout the summer, but is chiefly remarkable for the inflated, translucent pods which follow the flowers and which can be "popped" like balloons.

C. orientalis, 4 ft., bears coppery-red flowers from June to September.

CORNUS (DOGWOOD) (D)

This genus contains a number of widely different but attractive shrubs or small trees which grow from 10 to 15 ft. They are not particular about soil. Plant from October to February.

Cornus alba spaethii, grown for its winter bark colour, which is red. It also has attractive golden variegated foliage. Cut back established plants of both this form and *C. stolonifera* almost to the ground in March to encourage the production of new shoots, as the colour is heightened on young wood.

C. florida rubra, large rosy bracts in May.

C. kousa, showy white bracts from May to June followed by fruits like strawberries hanging from the branches. This form and *C. florida rubra* are the most attractive dogwoods.

C. mas (cornelian cherry), 15 ft., a winter-flowering kind with small yellow flowers in February followed by red berries.

C. stolonifera flaviramea, grown for its yellow winter bark. Cut back to the ground in March to encourage new shoots.

COTONEASTER (D and E)

The cotoneaster is one of the easiest shrubs to grow and is among the most beautiful, both in flower and fruit.

Cotoneasters are hardy and require no special soil. There are over 60 different kinds in cultivation, all of which bear small pinkish-white flowers in May or



Height 1-1½ ft.

COTONEASTER HORIZONTALIS

June and ornamental fruits. Plant from October to February.

Cotoneaster adpressa (D), 1½ ft., similar to *C. horizontalis*, and can be grown at the foot of a wall.

C. cornubia (D), 20 ft., very large scarlet fruits.

C. dielsiana (D), 8 ft., a graceful shrub with large scarlet fruits and good autumn colour.

C. franchetii (E), 10 ft., greyish leaves and orange-red fruits.

C. frigida (D), 20 ft. or more, bears masses of crimson berries.

C. horizontalis (D), 1 to 1½ ft., spreads horizontally and bears small leaves, twigs and branches arranged like a herring-bone, red berries and colourful autumn leaves. This species is useful for covering man-hole covers or banks; it can also be grown at the foot of a wall.

C. lactea (E), 12 ft., has larger leaves than most cotoneasters, grey underneath, and bright red berries.

C. simensis, 10 ft., a deciduous or semi-evergreen shrub. A fine hedging plant.

CRATAEGUS (THORN, HAWTHORN, QUICK, MAY) (D)

All are perfectly hardy and will grow in any soil. Plant in October to February. Among the most ornamental are:

Crataegus oxyacantha coccinea plena (Paul's double scarlet thorn), 20 ft. or more eventually, very similar to the native quickthorn, bears long-lasting, double red flowers in May.

C. a. muskei, 15 to 20 ft., less common than *C. oxyacantha*, double pink flowers in May.

CUPRESSUS (CYPRESS) (E)

Plant from September to November in deep, loamy soil.

Cupressus arizonica conica, 30 to 40 ft., conical in shape with blue-green foliage, is a better specimen than:

C. macrocarpa (Monterey cypress), 60 to 90 ft., which, although hardy in inland districts, has a habit of dying back, and is therefore not recommended for screens and hedges except for coastal districts.

CYTISUS (BROOM) (D)

There are so many brooms available that selection is very much a matter of personal choice from nurserymen's stocks.



CERODENDRUM BUNGEI



Height 20 ft. or more

CRATAEGUS
OXYACANTHA COCCINEA PLENA
Paul's double scarlet thorn



Height 3-4 ft.

DAPHNE MEZEUREUM—mezezon

These pea-flowered shrubs often have fragrant flowers in early summer, sometimes in one colour but frequently with parts of the flower in different colours, such as yellow and crimson. All thrive in full sun and dry, stony soils. Plant out when young from pots, from October to December. Among the best are:

Cytinus albus, 10 ft., white flowers.

C. battandieri, 10 to 12 ft., silvery leaves and thick spikes of yellow flowers.

C. Johnson's Crimson, 6 ft., crimson flowers.

C. kewensis, 1 ft. or more, 4 or 5 ft. across, pale yellow flowers, a lovely dwarf kind.

C. Lord Lambourne, 5 ft., crimson and cream flowers.

C. Porlock, 2 to 4 ft., fragrant yellow flowers, but not hardy everywhere.

C. praecox, 6 ft., yellow and cream.

C. scoparius, 5 to 10 ft., the common yellow broom, flowering a little earlier than other kinds, from April to July.

DABOECIA (ST. DABEOC'S HEATH) (E)

Plant in September, October, March or April in lime-free soil.

Daboecia cantabrica, 1½ ft., numerous rose-purple flowers from June to November.

D.c. alba, white flowers.

D.c. bicolor, unusual in that it bears both white and rosy-purple flowers on the same plant.

DAPHNE (D and E)

Most daphnes bear very fragrant flowers. There are many kinds and some are rather difficult to grow. Plant in a well-drained soil in October, November, March or April.

Some that are easy to grow are:

Daphne blagayana (E), 9 to 10 in., a semi-prostrate kind with very fragrant creamy flowers from March to April, suitable for the rock garden.

D. burkwoodii (D), 3 to 4 ft., of spreading habit, fragrant mauve flowers in late May.

D. mezereum (mezezon) (D), 3 or 4 ft., the most common, bears sweetly scented, purplish-red flowers in February and March on the leafless branches. There is a white variety, *album*. Needs no pruning.

D. odora aureo-marginata (E), 2 to 3 ft., with yellow-edged leaves and delightfully fragrant, reddish-purple flowers in late winter. Needs the protection of a wall, especially in colder districts.

DEUTZIA (D)

Deutzias are free-flowering in midsummer and easy to grow. They must be planted in sheltered positions to guard them from late frosts. Plant from October to February.

Deutzia magnifica, 6 or 7 ft., a profusion of double white flowers.

D. Mont Rose, 6 ft., rosy-pink flowers.

D. scabra, 10 ft., clusters of single white flowers. This specimen and its varieties are charming shrubs, free-flowering in midsummer and easy to grow.

D.s. Codsall Pink, double rosy-purple flowers.

D.s. Pride of Rochester, double white flowers, the backs of the petals being rose-flushed.

ERICA (HEATH) (E)

Ericas, if carefully chosen, will provide the garden with flowers throughout the year. Most ericas must be grown in lime-free soil, with sedge peat and leaf mould worked in when planting in spring. Trim the plants with shears in April to encourage new flowering growths.

Three kinds will tolerate lime and will grow practically anywhere:

Erica carnea, up to 1 ft., rose-pink flowers in February, and its numerous varieties with pink, rosy-pink, carmine, red or white flowers. Of the latter, the white *E.c.* Springwood is the best.

E. darleyensis, 1½ ft., rosy-purple flowers in winter.

E. mediterranea, 4 ft., rose-red flowers in spring, and several varieties in white or pink, some more compact than the type plant.

Among the best of the lime-hating heaths are:

E. ciliaris (Dorset heath), 1 ft., rosy-red flowers in summer.

E. cinerea, 1 ft., in shades of red, pink, purple or white according to variety. June to September.

E. tetralix (cross-leaved heath), 9 to 18 in. according to variety, white, purple, pink or crimson flowers from June to October.

E. vagans (Cornish heath), 1 to 1½ ft., sprays of flowers in red, pink or white according to variety. August to October.

ESCALLONIA (D and E)

Most of the cultivated escallonias are evergreen, flowering in summer, hardiest near the sea where they are often used for hedges. A few are reasonably hardy inland, including the semi-evergreen *E. langleyensis*, but away from the sea most kinds do better if protected by a wall. Prune after flowering to cut away the flowered growths. Plant October or April.

Escallonia C. F. Ball (E), 6 ft. or more, crimson flowers.

E. Donard Brilliance (E), 5 to 6 ft., crimson flowers.

E. Donard Seedling (E), 9 to 10 ft., with fragrant, white, pink-flushed flowers.

E. langleyensis (semi-evergreen), 6 ft. or more, with arching branches of bright red flowers.

EUCRYPHIA (E)

These beautiful shrubs grow easily in most soils, except very chalky ones, if sedge peat and leaf mould are added. Some species are not hardy everywhere and need warm positions. Plant in spring.

Eucryphia cordifolia, 10 to 15 ft., white flowers from September to October, will grow in chalky soil but is slightly tender except in the south and west.

E. glutinosa, semi-evergreen, 15 ft. or more, large white flowers in late summer.

E. nymansensis, 30 ft., hardy in most places, is columnar in shape and bears great white, fragrant flowers with gold-tipped stamens from July to September.

EUONYMUS (D and E)

Grown for their foliage and fruits, these are hardy shrubs for any soil including chalky ones. Plant deciduous species in September, October or November, and evergreen species in September, October, March or April.

Euonymus europaeus (common spindle

tree) (D), 20 to 25 ft., orange seeds in pink seed capsules in autumn.

E. japonicus (E), 10 ft., often used for evergreen hedges.

E. macrophyllus albus, 4 to 5 ft., silver leaves, makes a fine specimen.

E. ovatus-aureus, 4 to 5 ft., gold leaves, also makes a fine specimen.

E. latifolius (D), 10 ft., larger fruits than *E. europaeus*, good autumn leaf colour.

E. radicans Silver Queen (E), 1 ft., silver, one of the best varieties of *E. radicans*.

FATSIA (E)

Fatsia japonica, 7 to 8 ft., enormous ivy-shaped leaves, is a fine shrub for shade. Established plants bear large heads of milky-white flowers in September and October. This shrub is not particular about soil and does not need pruning. Plant in May.

FORSYTHIA (D)

Immediately after flowering prune all kinds, reducing the old flowered wood to encourage the production of new wood for flowering the following spring. They are not particular about soil. Plant from October to February.

Forsythia intermedia spectabilis, 10 ft., one of the best specimens, has branches wreathed in rich yellow flowers.

F.l. Lynwood, larger flowers with



Height 10 ft.

EUONYMUS JAPONICUS

broader petals, borne equally profusely.

F. ovata, 5 ft., primrose-yellow flowers in March.

F. suspensa, 6 to 12 ft., pale yellow flowers in March and April. This makes a good wall specimen and does well against a north wall.

FUCHSIA (D)

Although fuchsias grow well near the sea, there are several kinds that will grow well inland and, although frost is liable to cut them back to the ground, they spring again from the base to produce long, woody, flowering shoots. They will bear their daintily skirted flowers very freely for many months through the summer and autumn.

All will grow to about 5 ft. in any soil but benefit from feeding with well-rotted compost and from hard pruning in the spring if they have not been cut back by frost. Plant from October to April.



Height 10 ft.

CITISUS ALBUS

Fuchsia magellanica, carmine and purple flowers.

F.m. riccartonii, a common hardy variety, red and purple flowers.

Good varieties are:

Brilliant, scarlet and purple flowers.

Chillerton Beauty, white and violet flowers.

Madame Cornelissen, white and rose-coloured flowers.

Mrs. Popple, with larger flowers in carmine and violet.

GAULTHERIA (E)

These small, spreading shrubs, usually 1 ft. or less in height, bear drooping, white flowers in June or July and berries of various colours. They are suitable for ground-cover work. Lime-hating, they thrive in a sedge-peat soil in partial woodland shade. Plant from September to November or from March to May.

Gaultheria cuneata, pure white berries.

G. miqueliana, white or pink berries.

G. procumbens, red berries.

G. shallon, purple berries.

G. sinensis, blue berries.

G. tetramera, 3 ft., blue berries.

G. veitchiana, 3 ft., procumbent, with blue berries.

GENISTA (D)

These are related to the brooms (*Cytisus*) and thrive in dry, stony soils in hot positions. Plant from October to March.

Genista aethnensis (Mount Etna broom), 10 to 12 ft., bears fragrant golden-yellow flowers in July.

G. lydia, 2 to 3 ft., bears bright yellow flowers profusely in May and June.

GINKGO (MAIDENHAIR TREE) (D)

An unusual tree, deciduous although coniferous, of considerable botanical and ornamental interest, with lobed, fan-shaped leaves, resembling those of the maidenhair fern, but on a much larger scale. Plant from October to February.

Ginkgo biloba, 60 ft. on maturity, an excellent lawn specimen and town tree, pyramidal in habit. The leaves colour well in autumn to a lovely clear yellow.

G.b. fastigiata, the upright growing form.



Height 15 ft. or more

EUCRYPHIA GLUTINOSA

GLEDITSCHIA (HONEY LOCUST) (D)

Gleditsia triacanthos, 30 ft., a fine specimen tree, has attractive feathery leaves, spiny branches and greenish flowers in summer followed by twisted brown seed-pods over 1 ft. long. Not particular about soil but should be planted in a sheltered position in colder districts. A good town tree. Plant from October to February.

HALESIA (SILVER BELL, SNOWDROP TREE) (D)

Halesia carolina, 20 ft., a vigorous shrub, called the snowdrop tree because, when established, it bears bell-shaped white flowers in profusion in April or May. Looks most attractive if the branches are left unpruned so that they sweep down to the ground. Plant from October to February in a light soil and in a sheltered position.

HAMAMELIS (WITCH-HAZEL) (D)

The following witch-hazels are not fussy about soil. Plant in winter.

Hamamelis japonica arborea, 12 to 20 ft., purple calyces and yellow flowers with petals slightly longer than those of *H. mollis* from December to February.

H. mollis, 6 to 8 ft. or more, a favourite winter-flowering shrub, bears fragrant, narrow-petalled, yellow flowers on the bare branches in December and January.

H.m. pallida, paler flowers.

HEBE (E)

Formerly included in veronica, these slightly tender shrubs are now placed in a genus of their own to distinguish them from the herbaceous veronics. They thrive near the sea and in sunny, sheltered inland districts and are not fussy about soil. Plant in September or April.

Among the hardiest are the hybrids:

H. Autumn Glory, 2 ft., violet flowers continuously through the summer.

H. Marjorie, 3 ft., pale violet flowers from July to September.

H. Midsummer Beauty, 4 to 5 ft., long spikes of small lavender-purple flowers all the summer.

H. Simon Deleaux, 2 ft., deep crimson flowers in summer.

Several very fine species include:

H. salicifolia, 5 to 10 ft., bears long spikes of white flowers in late summer. Grows best near the sea.

HIBISCUS (D)

The large mallow-like flowers, borne from late summer onward, are the attraction of these shrubs, which grow from 8 to 10 ft. Plant in October in warm, protected sites in full sun, in a good soil.

Flower colours vary according to variety.

Among the best kinds are:

Hibiscus syriacus Coeleste, deep blue, single flowers.

H.s. Duc de Brabant, double red blooms.

H.s. elegantissimus, double white flowers marked with maroon in the centre.

H.s. Snowdrift, fine single white flowers a little earlier than most varieties.

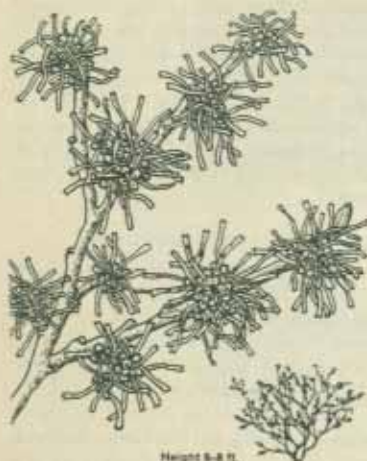
H.s. Woodbridge, large flowers, rose-pink marked with maroon.

HIPPOPHAE (SEA BUCKTHORN) (D)

Hippophae rhamnoides, 12 ft. or more, one of the best of the hardy, silver-leaved shrubs, is often seen as a hedge plant near the coast. After the leaves have fallen, and provided a male plant has also been planted, attractive orange berries are borne abundantly on the female plant and persist throughout the winter as they are not touched by birds. Plant between October and February.

HYDRANGEA (D)

Except in very cold, exposed gardens, many hydrangeas are hardy if planted in sheltered positions in deep, rich soil, either from October to November or from March to April.



Height 8-8 ft.

HAMAMELIS MOLLIS—Witch-hazel



Height 18 ins.

HYPERICUM CALYCINUM—rose of Sharon

Varieties that are blue on acid soils are usually pink or crimson on alkaline soils, and as they are so attractive it is scarcely worth trying to blue them with aluminium sulphate as is so often recommended, since large quantities applied at frequent intervals are often necessary. Some kinds never blue.

The lace-cap varieties with flat heads in which the outer rings of sterile flowers contrast with the inner small fertile flowers are very attractive.

Drastic pruning is not needed, but last year's shoots of *Hydrangea paniculata grandiflora* can be cut by half in early spring.

Hydrangea macrophylla, up to 10 ft., and its many varieties, are the garden hydrangeas, with large globular heads of white, blue or pink flowers in June or July.

H. paniculata grandiflora, 7 to 8 ft., pointed spikes of creamy flowers in August and September which turn pink as they age.

H. villosa, 6 to 8 ft., hairy leaves, and flowers in flat heads with bright blue fertile flowers in the centre and large, flat, lavender-blue ones on the outside. The flowers are borne in August.

HYPERICUM (ST. JOHN'S WORT) (D and E)

The shrubby St. John's worts are attractive plants, usually with large, golden-

yellow flowers with a central brush of stamens in late summer. Plant from October to November or from February to March in a well-drained soil.

Hypericum calycinum (rose of Sharon) (E), 1½ ft., flowers all the summer, and grows well in shade and on dry, chalky soils, but must be planted carefully as it is inclined to spread unduly. Clip drastically each spring once established.

H. moserianum (E), 1½ ft., with 3-in. wide flowers from July to October, suitable for ground cover when planted closely.

H. patulum Hidcote (E), 5 to 6 ft., an elegant hybrid, with large, saucer-shaped flowers. Needs a little shelter in exposed gardens.

H. Rowallane Hybrid (E), 7 to 8 ft. in mild districts, probably the best hypericum produced so far. Its 2½- to 3-in. wide flowers are borne profusely. Needs a little shelter in exposed gardens.

INDIGOFERA (INDIGO) (D)

Indigofera gerardiana, 4 to 8 ft. (grows to its full height if against a wall), an attractive, quite hardy shrub, with long shoots bearing leaves made up of small leaflets and short spikes of purple pea-flowers after midsummer. Plant from October to February in a sheltered position or against



Height 12 ft. or more

HIPPOPHAE RHAMNOIDES—sea buckthorn

a wall to prevent damage by frost. Cut back shoots to ground level in the winter if planted in the open.

JUNIPERUS (JUNIPER) (E)

Junipers thrive in most soils but particularly in chalk. Plant in September, October or April.

Juniperus communis, 40 ft., too tall for most gardens.

J. c. compressa (Noah's ark juniper), grows very slowly to 1 or 2 ft., a cone-shaped variety.

J. c. hibernica, 12 ft. eventually, a dark green specimen tree often seen on lawns or in formal gardens.

J. pfitzeriana, a prostrate form, which produces spreading, fan-shaped growths pendulous at the tips.

J. sabina tamariscifolia, a prostrate form.

KALMIA (E)

These shrubs belong to the same family as the rhododendrons, and need the same lime-free, peaty soil. They are ideal shrubs planted on a bank where the flowers can be looked at from below. Plant in September, October, April or May.

Kalmia angustifolia, 3 ft., a spreading bush. Its rose-coloured flowers borne in June are not quite as attractive as those of the calico bush.

K. latifolia (calico bush), 8 to 10 ft., one of the finest shrubs, with clusters of pink flowers shaped like spinning-tops in May and June.

KERRIA (D)

Kerrias are not particular about soil and are planted from October to March, preferably against walls or fences. Prune in May, cutting the old or weak shoots only. Both the following specimens will grow to 6 ft., or to 8 ft. if planted in sheltered positions.

Kerria japonica (jew's mallow), produces long, green, woody stems covered with single golden-yellow flowers in May, after the forsythias and before the lilacs.

K. j. flore plena (bachelor's buttons), the double form of *K. japonica* and the better plant. It bears orange-yellow flowers which are almost globular.

LABURNUM (D)

Laburnums thrive in any soil. They grow rapidly from seed, although sometimes they are not very long-lived. Plant from October to March.

Laburnum alpinum (scotch laburnum), 15 ft., yellow flowers in June.

L. anagyroides (common laburnum), 20 ft., one of the joys of the spring garden with its golden-yellow pea-flowers which are borne very freely in May.

L. vossii, 20 ft., a hybrid that bears trails of flowers 9 in. long in June.

There is also the most unusual graft hybrid between a cytisus and a laburnum:

Laburnocytisus adami, 20 ft. or more; the flowers, borne in spring, may be the purplish flowers of the cytisus, the yellow flowers of the laburnum, or the purplish-pink flowers of the laburnocytisus.

LAURUS (E)

Laurus nobilis (sweet bay tree), 20 ft. or more, often grown as a clipped ornamental tree in pots or tubs or on open ground. If left alone it grows to a handsome bush with heavily aromatic leaves, often used for flavouring. The greenish-yellow flowers are small but are borne profusely in early summer and are followed by large black fruits. Plant in September, March or April in ordinary soil, or, if to be grown in tubs, in John Innes potting compost, and trim between May and July.

LAVANDULA (LAVENDER) (E)

Lavandula spica, the well-loved English lavender, reaches 3 to 4 ft. when bearing its flower spikes, and is often used for internal hedges or grown as a specimen. Even out of flower it is valuable for its silvery-grey foliage. All the varieties flower in June and July. Plant in March or September in an ordinary soil. Varieties include:

L. s. nana (Munstead Dwarf), 1 ft., deep lavender flowers.

L. s. nana atropurpurea (Hidcote Variety), 15 in., dark violet flowers.

L. s. rosea, 2 ft., lilac-pink flowers.

L. vera nana alba, 1 ft., white flowers, a variety of the French lavender.



FATSIA JAPONICA



KALMIA LATIFOLIA—calico bush

LEYCESTERIA (HIMALAYAN HONEYSUCKLE) (D)

Leycesteria formosa, 6 ft., green-stemmed shrub, with drooping clusters of white flowers surrounded by burgundy-coloured bracts from June to early September. The flowers are followed by succulent black berries, but the bracts remain. In cold districts the shrub is cut by frost but springs again from the base, and benefits from pruning in spring to encourage growth of new wood. It is an attractive, easily grown shrub and is not particular about soil. Plant in October, November, February or March.

LIPPIA (D)

Lippia citriodora (lemon-scented verbena), 10 to 15 ft., bears lilac-coloured flowers in August, and is grown mainly for the fresh, lemony fragrance of its crushed leaves. Is slightly tender and needs greenhouse protection in the north and in cold districts. Plant in a light soil in March.

LUPINUS (E)

Plant out from pots when young, either in October or April, in hot, dry, sunny

position. The plant makes a tap-root and must be staked, as the root system is not strong enough to anchor the shrub against the wind.

Lupinus arboreus (tree lupin), 6 or 7 ft. in 1 or 2 years, sometimes short-lived. Bears short spikes of fragrant, yellow pea-flowers during the summer.

L. Golden Spire, deep yellow flowers.

L. Snow Queen, white flowers.

MAGNOLIA (D and E)

Magnolias are the aristocrats of shrubs, and most of them are not difficult to grow even in small gardens. Some flower when young and when no more than 1 ft. tall. Plant in March or April in a deep, sandy soil, or on a heavy soil if it has been lightened at planting time and plenty of peat and leaf mould has been added. Mulch annually with the same materials.

They thrive in the shelter of other trees, and the evergreen kinds are usually grown against walls, except in very mild places. Magnolias that are suitable for most gardens are:

Magnolia denudata (D), 25 to 30 ft. in

PHILADELPHUS (MOCK ORANGE) (D)

The well-loved mock orange, which bears very fragrant flowers, is often incorrectly called "syringa", the latin name of the lilac. Plant in a good garden soil from October to February. Prune after flowering by removing some of the old flowered shoots.

Philadelphus coronarius, 10 ft., a leafy shrub with small, creamy-white, very fragrant flowers in early June.

P. c. aureus, 5 to 8 ft., greenish-gold leaves and white flowers.

P. purpureo-maculatus, 6 to 8 ft. or more, white flowers with purple-blotched centres. The largest flowers are found among the hybrids, and the following kinds, which unlike some hybrids have a true strong fragrance, are recommended:

Beaueclerk, 6 to 8 ft., white flowers with purple centres.

Belle Etoile, 6 to 8 ft., white flowers with purple centres.

Enchantment, 6 to 8 ft., double white flowers.



PHILADELPHUS CORONARIUS
mock orange

Sybille, 6 to 8 ft., bearing white flowers with purple centres on arching branches.

PICEA (SPRUCE) (E)

Plant spruces in a moist ordinary soil from October to April.

There are several dwarf spruces suitable as specimen plants or for the rock garden:

P. abies gregoryana, 1½ ft., a broad, mound-like tree.

P. albertiana conica, 4 or 5 ft., a cone-shaped tree.

PINUS (PINE) (E)

Pines are too large for the average garden, although old specimens of the Scots pine, towering 70 to 80 ft. in the air, are very decorative in large gardens. Plant pines in a sandy soil in September or November. There is also a dwarf Scots pine, which is more suitable for the small garden:

Pinus sylvestris beauronensis, 4 ft., a rounded tree.

POTENTILLA (SHRUBBY CINQUEFOIL) (D)

These are pleasant little shrubs, usually 3 to 4 ft. tall, which flower very freely, bearing masses of typical cinquefoil flowers all through the summer. They are not fussy about soil but do better on light soils in full sun. Plant from November to February. Among the best are the varieties of *Potentilla fruticosa*, which are listed below:

Potentilla fruticosa farreri, 2 ft., with 1-in. wide golden flowers May to September only.

P. f. Katherine Dykes, 5 ft., lemon-yellow flowers.

P. f. ochroleuca, 2 ft., creamy flowers.

P. f. vilmoriniana, 3 to 4 ft., a decorative plant with silvered leaves and cream flowers.

PRUNUS (D and E)

The prunus family is very large and diverse. It contains the cherries, plums, almonds, peaches, apricots and several of the laurels. All grow well in ordinary soil, which needs liming from time to time if the land is not already chalky. Little pruning is needed except when the



PAEONIA LUTEA

PAEONIA SUFFRUTICOSA—Moutan paeony

plants are used for hedging purposes. Plant from October to February.

SPECIES OF CHERRY (D) Many of the Japanese flowering cherries are decorative small trees, 15 to 20 ft. tall, bearing great quantities of double flowers in white or shades of pink from April to May, and having such names as Hokusai, Kanzan, Ojochin and Tai-haku. These are suitable for small gardens as specimen trees. There are also fastigate, flat-topped and weeping forms.

Another popular cherry is:

Prunus subhirtella autumnalis, 20 to 30 ft., producing its white, semi-double flowers from late November until February when undeterred by frost and rough weather.

FLOWERING ALMOND AND PEACH (D) *Prunus persica* Aurora and Clara Meyer, 15 to 20 ft., bear double pink flowers, and have the advantage of producing edible fruit.

P. triloba flore pleno, 8 ft., small rosette-like pink flowers all along the branches in March and April, lends itself to wall-training or growing in the open.

FLOWERING PLUM (D) The best flowering plums are distinguished by their coloured leaves, which make them decorative from spring to autumn:

P. blireiana, 15 to 20 ft., coppery-red leaves and double pink flowers in spring.

P. cerasifera nigra, 15 to 25 ft., maroon leaves and pink flowers in spring, often used for hedging.

COMMON LAUREL (E) *P. laurocerasus*, 20 ft., has dull white flowers in April followed by black fruit. This species is often used for hedging.

P. lusitanica (Portugal laurel), 10 to 25 ft., white flowers in June, is hardy and is also used for hedging.

PSEUDOTSUGA (E)

Pseudotsugas do not do as well on chalky soils as on others. They are planted in April.

Pseudotsuga glauca fletcheri, 3 ft., a dwarf tree, with greyish-green needles.

P. taxifolia (syn. *P. douglasii*) (Douglas fir), 100 to 200 ft., a tall specimen tree for the large garden, but is also adaptable for hedges and screens; if planted closely a tall, dense screen is produced very quickly.

QUERCUS (OAK) (D and E)

There are many beautiful oak trees, some with leaves that colour well in autumn, but, except for the *Quercus ilex* often used

for hedging, they are all too large for most gardens.

Quercus ilex (holm or evergreen oak), (E) 60 ft., shining dark green, long, oval leaves with wavy margins. It is not fussy about soil and grows particularly well near the coast. Plant from September to November or in April.

RHUS (D)

To this family belong the sumachs and the beautiful smoke tree. The name smoke tree refers to the cloudy grey, feathery flower sprays which envelop established bushes in midsummer. The sumachs, beautiful though they are, are apt to spread by suckers unless controlled. Plant from October to February.



RIBES SANGUINEUM—flowering currant

R. cotinus foliis purpureis Notcutt's Variety, 10 ft. in time, has leaves that remain deep purple until they drop in autumn. The best form of the smoke tree.

Rhus typhina (stag's horn sumach), 12 to 15 ft., noted for brilliantly tinted autumn leaves, which change from deep purple to bright red, and for the dark crimson clusters of fruit on the female plant.

R. laciniata, 10 ft., similar to *R. typhina*,

except that its leaves are more finely cut, and turn yellow in autumn.

RIBES (FLOWERING CURRANT) (D)

Plant these shrubs in ordinary soil in a sunny position from October to February.

Ribes aureum (Buffalo currant), 6 ft., golden flowers and black fruits. Its flowers, good for cutting, are more pleasantly scented than those of *R. sanguineum*.

R. sanguineum, 8 ft. or more, bears multitudes of rose-red flowers in short, hanging clusters in May, and is one of the most reliable of spring-flowering shrubs. The feline smell of the flowers becomes more pleasant soon after they have been cut.

R.s. Edward VII, deep crimson flowers.

R.s. Pulborough Scarlet, scarlet flowers.

ROBINIA (FALSE ACACIA) (D)

These false acacias grow well in dry soils, and established trees have a most attractive lacey bark. Plant from October to February.

Robinia kelseyi, 10 ft., bears rosy-pink flowers in June, and is more suitable for a small garden than *R. pseudoacacia*.

R. pseudoacacia (false acacia or locust tree), 60 ft., attractive leaves split into leaflets; bears trails of white pea-flowers in June when established. Excellent tree for towns.

ROSA (ROSE) (D and E)

The hybrid tea and other bedding roses are discussed in *Roses*, but many roses are worth growing as shrubs, either with other flowering shrubs or as isolated specimens. These include the species roses and also the so-called old-fashioned roses, which are becoming more popular. Many of them have a short period of flowering in May or June, others flower until well into the autumn. Plant in November or from February to March in deep, rich, loamy soil, dressed with decayed manure or rotted compost.

All the roses listed below are deciduous and grow to approximately 5 or 6 ft. There are a great many more in cultivation, and it is always worth visiting a shrub nursery in the summer to see the rose collection. Among those that flower in June are:

Rosa alba semi-plena (white rose of York), white flowers.

R. centifolia cristata (crested moss or Chapeau de Napoleon), pink flowers.

R. gallica versicolor (syn. *Rosamundi*), striped red and white flowers.

R. spinosissima Frühlingsmorgen, single pink flowers.

Among those that flower in June and July are:

R. rugosa Frau Dagmar Hastrup, large single red flowers.

R.r. Pink Grootendorst, small flowers with fringed petals in clusters.

Some that flower all summer are:

R. chinensis Fellemburg, crimson double flowers in clusters and purplish leaves.

R. Penelope, semi-double pink flowers.

R. Prosperity, double white flowers.

R. Wilhelm, semi-double deep red flowers.

ROSMARINUS (ROSEMARY) (E)

Rosmarinus officinalis, 4 to 5 ft., has been cultivated since the 16th century for its aromatic, grey-green leaves, and is often used as a hedging plant for internal hedges. It bears violet-blue flowers in May and June. Plant in April in a hot, dry soil.

R.o. albus, the white form. There are several named varieties differing mainly in the colour of the flowers, such as:

R.o. Miss Jessup's Upright, deep blue, more upright than the other varieties.

RUBUS (D)

Included in this group are the blackberries and loganberries, and also some decorative shrubs. All grow to about 6 to 8 ft. and are not particular about soil.

The following three kinds have stems covered with a pure-white wax, and are useful for winter decoration.

Rubus biflorus, white flowers in July.

R. cockburnianus, purple flowers in June.

R. lasiostylus, purplish flowers in June.

R. ulmifolius bellidiflorus, sprays of double pink, bachelor's button flowers in July, is an attractive bramble, though without the white stems.

SALIX (WILLOW) (D)

Willows are generally fast-growing trees which thrive in a damp soil. Plant from

October to March. The best garden willows are:

Salix alba (white willow), 15 to 80 ft., an attractive native tree; makes a large specimen but can be severely pollarded.

S. vitellina britzensis, grown for its remarkable bright red young shoots, which are very conspicuous in winter. Prune hard each year to keep it low and to produce the best colour on the new growths, or pollard when it is full grown.

S. v. pendula (a weeping willow), 65 ft., looks at its best beside a pool.

SAMBUCUS (ELDER) (D)

The golden elders are very attractive and are not particular about soil. Plant from October to March.



ROSA RUGOSA—Frau Dagmar Hastrup

Sambucus nigra aurea (golden-leaved elder) grows rapidly to 10 or 12 ft., and is a relative of the common elder.

S. racemosa plumosa aurea, 8 to 10 ft., grows slowly, and has finely cut golden leaves.

SANTOLINA (LAVENDER COTTON) (E)

These dwarf shrubs are grown for their silvery-white, finely cut leaves. They prefer a light soil and a sunny position. Plant



SPARTIUM JUNCHEUM—Spanish broom

in September, October, March or April. Both the kinds listed below produce myriads of rayless, yellow daisy-flowers in summer, which are of little decorative value and can be trimmed off to preserve the silvery-white effect of the leaves.

Santolina chamaecyparissus, 1½ ft., makes a delightful low hedge.

S. neapolitana, 2 to 2½ ft.

SENECIO (SHRUBBY RAGWORT) (E)

Senecio laxifolius, 3 to 5 ft., another shrub cultivated mainly for its grey-green leaves, which are white on the underside.



VIBURNUM TINUS—laurustinus

It produces pretty yellow daisy-flowers for many weeks during the summer, is frequently planted in parks and public gardens, and is used for roadside planting in many places. It is not perfectly hardy in exposed districts but is easily propagated by cuttings in a cold frame. Plant in an ordinary soil in April, preferably in a sunny position.

SKIMMIA (E)

These symmetrical bushes, 4 to 5 ft. tall, are grown for the brightness of their berries, which remain on the plants through the winter. They grow in most ordinary soils provided these are not too dry, and in sun or partial shade. Plant in October, March or April.

Skimmia foremanii, a hermaphrodite form, bears berries freely.

S. japonica, berries are freely borne on the female plants if a male plant is also grown in the garden.

SORBARIA (D)

Plant in deep, rich soils containing plenty of moisture, in a sunny position. Cut out the old flowering shoots in February to keep the plants at a moderate height.

Sorbaria aitchisonii, 8 to 10 ft., a beautiful form, with red stems and plumes of white flowers in July and August.

S. arborea (false spiraea), 12 to 15 ft., topped by spectacular plumes of creamy flowers in July and August. It is related to the spiraeas, but has leaves divided into leaflets, and its plumes of flowers are similar to those of the herbaceous spiraeas (*astilbes*) though much larger.

SORBUS (D)

These are small or medium-sized trees, grown mainly for the colour of their leaves in autumn and for their berries. Plant from November to February in ordinary, well-drained soil.

Sorbus aucuparia (rowan or mountain ash), 30 ft. eventually, makes a fine specimen, and is grown for its feathery leaves and freely borne orange berries.

S. cashmeriana, 20 ft. or more, large white fruits.

S. decora, 25 to 30 ft., red fruits.

S. hupehensis, 25 ft., white fruits which turn pale pink.

SPARTIUM (SPANISH BROOM) (E)

Spartium junceum, 9 to 10 ft., the only species, is here classified as evergreen because the long, whippy flowering shoots remain green, although its leaves are rarely seen except on young plants. The main flush of large, yellow, fragrant pea-flowers is in the summer, but odd flowers appear at almost any time.

Prune established plants well to make them bushy and, if they are used for hedging, to keep them low. Sometimes the plants are badly cut by severe winters, but this only has the same effect as hard pruning and new growth always bursts in the spring. Plant from October to March in ordinary soil on a dry, sunny bank.

SPIRAEA (D)

Several spiraeas are popular shrubs and most are easily grown in ordinary garden soil. Plant from September to March.

Spiraea arguta, 6 to 8 ft., popularly called the bridal wreath, as its thin twigs are wreathed in small white flowers in May.

S. japonica Anthony Waterer, 3 to 4 ft., flat heads of carmine flowers from July to August; must be pruned hard in April.

S. prunifolia plena, 6 ft., bears small double white flowers on its slender twigs in May. Good autumn colour.

S. thunbergii, 5 ft., bears white flowers in April, and is grown for the scarlet and orange colour of its leaves in autumn.

SYRINGA (LILAC) (D)

The lilacs are well-loved shrubs which grow from 8 to 12 ft. high, and flower in late April or early May. Plant from October to February in a sunny position, in a good soil fed occasionally with liquid manure or mulched with rotted compost. Prune moderately after flowering to remove dead flower heads, thin out any weak growths, and remove all suckers from named varieties. There is quite a range of colour among the hybrids.

Recommended double varieties of *Syringa vulgaris* are:

Charles Joly, dark red flowers.

Madame Lemoine, pure white flowers.

President Grey, lilac flowers, which are carried in very large clusters.



Height 5 ft.

SPIRAEA THUNBERGII



Height 6-7 ft.

WEIGELA Abel Carrière

Recommended single varieties of *S. vulgaris* are:

Etna, wine-purple flowers.

Jan van Tol, white flowers.

Marechal Foch, large clusters of carmine-rose flowers.

Souvenir de Louis Spaeth, dark red flowers.

TAMARIX (TAMARISK) (D)

Tamarisks are usually seen near the coast, but they are hardy enough inland in the midlands and south of the British Isles. They are graceful shrubs, with feathery flower sprays on long, arching branches. Those that are commonly grown reach 12 ft. or more in height, but can be kept lower by pruning. Plant from September to April in ordinary or very sandy soil.

Tamarix parviflora, deep pink flowers in May.

T. pentandra, pink flowers in late summer.

TAXUS (YEW) (E)

All yews grow well in a chalky soil, although they are not really particular. Plant from September to November or from April to May.



VACCINIUM CORYMBOSUM
American blueberry

Taxus baccata (English yew), up to 30 ft., produces red-fleshed fruits on mature trees and handsome dark green foliage. It is one of the finest slow-growing evergreens, useful for hedges or planting as a specimen, and can be allowed to grow naturally or be clipped for topiary work.

There are various golden yews, which are lighter in tone:

T.b. elegantissima, a compact tree with golden leaves.

T.b. fastigiata aurea, a golden form of the Irish yew, grows as an upright rather than a spreading tree.

T.b. nana, a dwarf, slow-growing form with upright-growing branches.

T.b. pygmaea, the smallest of the dwarf varieties, grows in the shape of a bun.

THUJA (ARBOR-VITAE) (E)

These trees, sometimes spelt *thuya*, are fine hedging evergreens and make equally good isolated specimens, particularly in their golden or variegated forms. They are not fussy about soil. Plant September to November or February to April.

Thuja occidentalis, 60 ft., often used for hedging.

T.o. Rheingold, the beautiful golden form, pyramidal in shape.

T.o. spiralis, with spirally arranged growths, makes an interesting specimen.

T.o. filiformis, slender, drooping growths.

T.o. rosedalis, rarely more than 3 ft., a dwarf kind with heather-like leaves which turn to bronze with age, a habit shared with other arbor-vitae.

ULEX (GORSE) (E)

The gorses are here classed as evergreens although the leaves are never seen, except in very young plants, as each one is changed into a formidable spine. All thrive in hot, dry soils.

Ulex europaeus (common gorse, furze or whin), 3 to 6 ft., a fine golden pea-flowered plant, a blaze of colour in April, with a sprinkling of flowers all through the year. It is an impenetrable hedging plant, particularly useful against stock.

U.e. plenus, fragrant, double flowers mainly in spring; surpasses *U. europaeus* as a specimen.

VACCINIUM (D and E)

These belong to the same lime-hating family as the heaths and lings, and are among the few shrubs that thrive in boggy soils provided they are peaty. They bear edible berries and include the cranberries, blueberries and the native whortleberry. Plant from October to April.

Vaccinium arctostaphylos (Caucasian whortleberry) (D), 9 to 10 ft. eventually, probably the best, and worth growing where it can be given the right conditions. It bears small, greenish-white flowers in June followed by large, shining, oval black berries. In autumn its leaves turn a purplish-red.

V. corymbosum (D), 6 ft., pinkish flowers in May, followed by bluish-black berries.

VIBURNUM (D and E)

Viburnums are some of the most useful garden shrubs. They are not difficult to grow and many have fragrant white flowers, some of them flowering in the winter. Plant in a good, moist, garden soil in September, October or April.

Among the winter-flowering kinds are:

Viburnum bodnantense (D), 10 ft., clusters of fragrant pink flowers.

V. fragrans (D), 6 to 9 ft., a sweetly-scented kind with small clusters of pinkish flowers on the ends of the shoots from November onward. It is worth seeing this in flower before buying, as some strains flower less well than others.

V. tinus (laurustinus) (E), 8 ft. or more eventually, bears 4-in. wide clusters of pink-budded, white flowers throughout the winter. Sometimes used for hedging.

Among the best of the spring- and early summer-flowering kinds are:

V. carlesii (D), 5 to 6 ft., rounded clusters of fragrant white flowers.

V. opulus (guelder rose) (D), 12 ft., white flowers and succulent orange and red berries. Leaves colour well in autumn.

V.o. sterile (snowball bush) (D), 12 to 15 ft., bears large, globular heads of greenish-white flowers but no berries.

V. tomentosum mariesii (D), 8 to 10 ft., one of the finest viburnums, makes a wide-spread bush with branches arranged in



Height 4 ft.
ZENOBIA SPECIOSA

tiers and held almost horizontally, along which are borne the flat heads of white flowers in June. The fertile inner florets are surrounded by conspicuous, flat, sterile florets.

WEIGELA (D)

These beautiful spring-flowering shrubs are often called diervillas. They bear trumpet-shaped flowers in great abundance in various shades of pink or red. All grow well in good soil and need pruning after the flowers are over to remove old, flowered wood. Among the best are:

W. Abel Carrière, 6 to 7 ft., rose-pink.

W. Bristol Ruby, 6 to 8 ft., red.

W. Eva Rathke, 4 to 5 ft., crimson.

W. florida variegata, 6 to 8 ft., variegated leaves edged with silver, and pale pink flowers.

W. Newport Red, 5 to 6 ft., rich red.

ZENOBIA (D)

Zenobia speciosa, one of the most beautiful shrubs, although it is not often grown. Plant in September, October, March or April in a lime-free soil, preferably in a sedge-peaty or sandy loam in a slightly sheltered position. In these conditions it will grow to not less than 4 ft. and produce its abundant clusters of bell-shaped flowers, similar to those of lily-of-the-valley, in June and July. The leaves and branches are covered with a powdery, bluish-grey bloom.

SHRUBS AND TREES FOR CHALKY SOILS

All these plants will also do well on other types of soil.

Berberis (D and E)	Euonymus (D and E)	Prunus (D and E)
Buddleia	Forsythia	Rhus
Caryopteris	Fuchsia	Ribes
Chaenomeles	Hebe (E)	Rosa
Choisya (E)	Hibiscus	Rosmarinus (E)
Cistus (E)	Hypericum (D and E)	Sambucus
Clematis (D and E)	Kerria	Santolina (E)
Colutea	Laburnum	<i>Senecio laxifolius</i> (E)
Cotoneaster (D and E)	Lavandula (E)	<i>Spartium junceum</i> (E)
Crataegus	Lonicera (D and E)	Thuja (E)
Cytisus	Philadelphus	Ulex (E)
Deutzia	Potentilla	Viburnum (some E)
Escallonia (D and E)		Weigela

SHRUBS AND TREES FOR PEATY SOILS

Arbutus (E)	*Gaultheria (E)	*Pernettya (E)
*Azalea (D and E)	Hydrangea	*Rhododendron (E)
*Calluna (E)	*Kalmia (E)	*Vaccinium
*Daboecia (E)	*Magnolia (E)	(D and E)
*Erica (E) (most)	Mahonia (E)	*Zenobia
	* Lime-hating shrubs	

SHRUBS AND TREES FOR TOWN GARDENS

Amelanchier	Euonymus (D and E)	Prunus (D and E)
Arbutus (E)	Fatsia (E)	Pyracantha (E)
Aucuba (E)	Forsythia	Rhododendron (E)
Berberis (D and E)	Fuchsia	Rhus
Buddleia	Ginkgo	Ribes
Catalpa	Hebe (E) (some)	Robinia
Cercis	Hibiscus	Rosa
Chaenomeles	Hydrangea	Syringa
Colutea	Kerria	Taxus (E)
Cotoneaster (D and E)	Laburnum	Thuja (E)
Crataegus	Magnolia (D and E)	<i>Viburnum opulus</i>
<i>Daphne mezereum</i>	<i>Olearia hoastii</i> (E)	<i>Viburnum tinus</i> (E)
Deutzia	Philadelphus	Weigela

SHRUBS FOR SHADE AND SEMI-SHADE

<i>Aucuba</i> (E)	<i>Gaultheria</i> (E)	<i>Prunus laurocerasus</i> (E)
<i>Azalea</i> (D and E)	<i>Hamamelis</i>	<i>Prunus lusitanica</i> (E)
<i>Berberis darwinii</i> (E)	<i>Hydrangea</i>	<i>Pyracantha</i> (E)
<i>Camellia</i> (E)	<i>Hypericum</i> (E)	<i>Rhododendron</i> (E)
<i>Choisya</i> (E)	<i>Ilex aquifolium</i> (E)	<i>Rubus</i>
<i>Cotoneaster simonsii</i>	<i>Kerria</i>	<i>Skimmia japonica</i> (E)
<i>Euonymus radicans</i> (E)	<i>Olearia haastii</i> (E)	<i>Syringa</i>
<i>Forsythia intermedia spectabilis</i>	<i>Pernettya</i> (E)	<i>Viburnum tinus</i> (E)

SHRUBS FOR POOR SOILS AND DRY PLACES

<i>Cistus</i> (E)	<i>Genista</i>	<i>Santolina</i> (E)
<i>Colutea</i>	<i>Rosmarinus</i> (E)	<i>Spartium junceum</i> (E)
<i>Cytisus</i>		<i>Ulex</i> (E)

SHRUBS FOR AUTUMN COLOUR

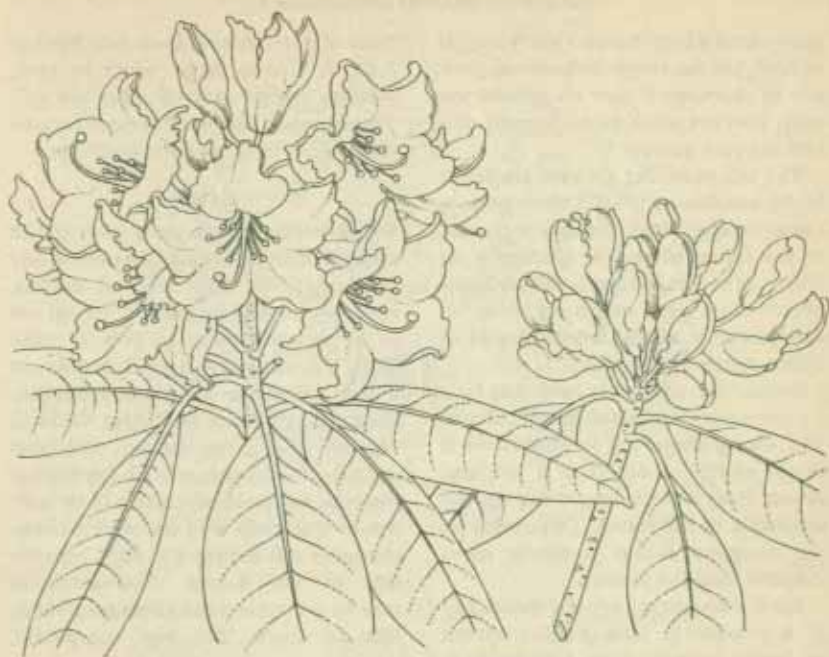
<i>All species of:</i>	<i>Certain species of:</i>
<i>Acer</i>	<i>Berberis</i> (D and E)
<i>Amelanchier</i>	<i>Euonymus</i> (D and E)
<i>Ginkgo</i>	<i>Sorbus</i>
<i>Hamamelis</i>	<i>Spiraea</i>
<i>Rhus</i>	<i>Vaccinium</i> (D and E)
<i>Mahonia japonica</i> (E)	<i>Viburnum</i>



GENISTA



AZALEA AMOENUM



RHODODENDRON—*Jacksonii*

Rhododendrons and Azaleas

THE rhododendron is the most decorative of all evergreen flowering shrubs. The first to be grown in Great Britain, introduced over 300 years ago, was called Alpine Rose, a low-growing shrub with pink flowers which comes from the mountains of Switzerland. At the other extreme is a species called *Rhododendron sinogrande*, with leaves over 2 ft. long and 1 ft. wide, from the forests of north-eastern Burma, south-eastern Tibet and Yunnan. Hundreds of other species in all shapes, sizes and colours have come from America, India, China, Japan, Russia; and one growing in Asia Minor,

the Caucasus and Armenia—*R. ponticum*—has become naturalized in many parts of the British Isles.

R. ponticum is now used mainly for hedge-making and screening, and was one of the parents of the first hybrid ever to be raised, the work of a nurseryman in the Mile End Road, London, in 1820. Since that time so many hybrids have been bred that they now far outnumber the species.

From this vast range of different plants it is possible to select those that are suitable for all kinds of gardens and for any position. The more tender should be

grown only where there is a heavy annual rainfall, but the tough little dwarfs grow out of character if they are treated too well; they are more suited to poor soils and the rock garden.

The tall, rambling growers are better in the woodland garden. Others grow in a neat, compact shape and may be planted in the mixed border, as specimens on lawns, or in pots or tubs. Some are more effective in a mass, others are better on their own, or against a background of different trees and shrubs.

Besides this variation in habit they have a great range of leaf patterns and colours. The young growth of some varieties is bright silver, on others it is red, and several have a thick brown felt on the underside of the leaves. This beauty in the evergreen foliage is almost more valuable than the flowers.

But the flowers are equally varied, and it is possible to have rhododendrons in flower outside from Christmas to August in all colours from pure white to a dark purple that is almost black. This wide range makes careful colour selection particularly important.

AZALEAS

Technically, azaleas are rhododendrons. There is no botanical difference. But the plants that make up a large section of the great tribe of rhododendrons have been called azaleas.

They fall into two main groups: the deciduous varieties and the evergreens, often known as the Japanese azaleas.

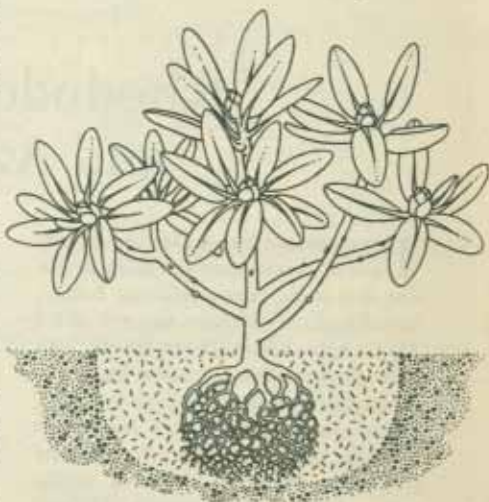
Many of those that lose their leaves do so in a fine burst of autumn colour—an added attraction to the plants. The flowers range from white through yellow, pink and orange to red. Some varieties have a wonderful scent. They start flowering in May and continue until the middle of June.

The evergreens are neat bushes with a

mass of small flowers from late April to June in colours from white to pink, salmon, orange and red. They are particularly useful for small gardens because they do not outgrow their positions.

SOIL

Rhododendrons will grow only on an acid soil. If lime or chalk is present in any form there is little hope of success, except by making up banks of special soil or by growing them in pots or tubs. There are many ways in which to discover if soil is suitable for rhododendrons; the simplest of all is to observe the local vegetation—if gorse, heather, pine-trees and silver birch are growing in the district, then the soil is almost certain to be acid. Another method is to test with a cheap chemical soil-testing kit. It is possible that in the future rhododendrons may be grown in a soil containing some lime or chalk. The new compound



PLANTING A RHODODENDRON

Prepare a hole deep enough to bring the old planting-mark on the stem level with the soil surface. Put peat or leaf mould round the roots, fill in the hole and tread down firmly.



RHODODENDRON
Britannia

Sequestrene 138 Fe enables them to take up the iron in the soil which is normally "locked out" by the chalk.

PLANTING

Dig the ground well and work in some well-rotted cow manure or lime-free compost. This should be done a month before planting, which may be at any time in open weather from the end of September to the middle of April.

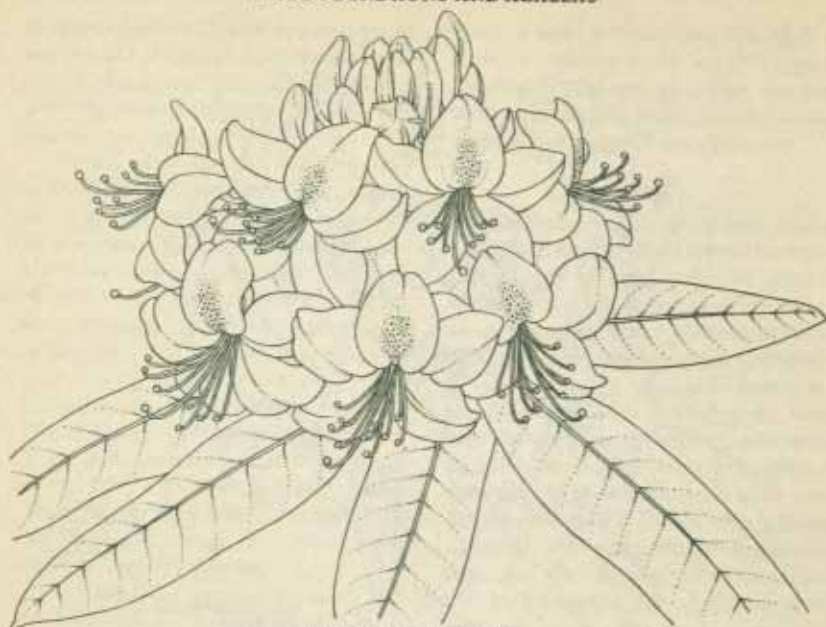
Rhododendrons are surface rooting and should not be planted deep; the same depth as before is a good guide, so look for the old planting-mark and plant so that it remains at soil level. Dig out a hole in the prepared ground, try it for depth by holding the plant in it with the roots just resting on the bottom. When the depth is right put peat or leaf mould round the roots (not underneath),

fill in the hole and then tread firmly.

Azaleas do not need peat as much as rhododendrons; they seem better able to root in ordinary soil. But firm treading is important for both—at the time of planting and about six weeks later. On heavy soil make only a shallow hole, put in the plant and finish off by covering the root ball with a mulch of peat or leaf mould.

MANAGEMENT

Pick off the dead flowers as soon as they are over. This will allow the new growth to develop and form next year's flower buds. In the spring give a mulch of peat or leaf mould, mixed with well-rotted cow manure, if available. Do this only when the ground is damp. Do not prune unless the plants grow so tall as to become unkempt. But if they do, cut them



RHODODENDRON—Starfish

over in a regular pattern with secateurs. All the branches must be cut or the sap will rush to those that are left, giving a more unbalanced plant than before.

RECOMMENDED VARIETIES

RHODODENDRONS

The following hardy hybrid rhododendrons are all easy to grow and very decorative. The heights given are those to which the plants should grow from 15- to 18-in. plants in ten years under normal garden conditions.

Alice, 5 ft. Big pink flowers in mid-May.

Britannia, 3 to 4 ft. Compact growing. Gloxinia-shaped, scarlet flowers in late May.

Chionoides, 3 ft. Bushy variety with dark leaves. Creamy-white flowers in early June.

Christmas Cheer, 3 to 4 ft. Neat grower. Pink flowers in March and April.

Cynthia, 5 ft. Very reliable. Crimson flowers in May.

Earl of Donoughmore, 4 to 5 ft. New. Brilliant red flowers in late May.

Goldsworth Orange, 3 to 4 ft. A compact bush. Light orange flowers in late June.

Goldsworth Yellow, 4 ft. Pink buds which open to yellow in mid-May.

Jacksonii, 3 ft. Bushy. Pink flowers with deeper markings in March and April.

Jean Mary Montague, 4 ft. Bright scarlet flowers in early May.

Kluis Sensation, 4 to 5 ft. Compact. Intense scarlet flowers in June. Needs a little shade.

Kluis Triumph, 5 ft. Dark red flowers of good texture in May.

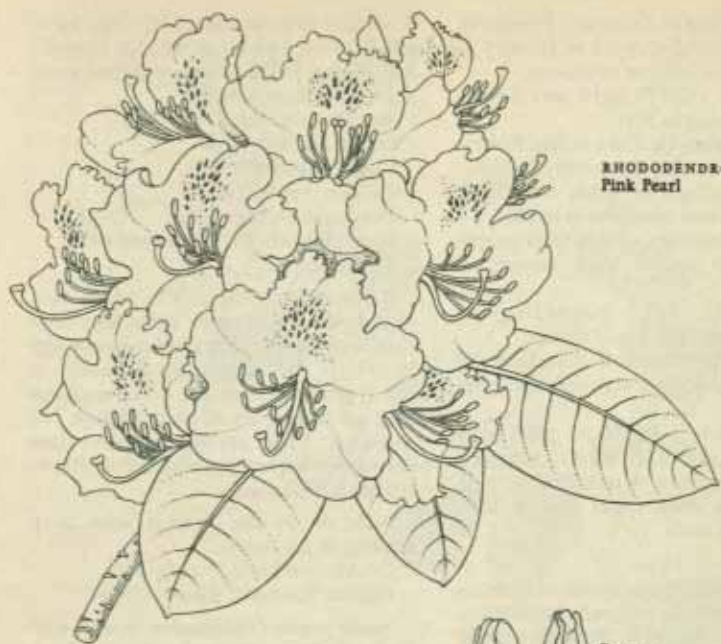
Moser's Maroon, 5 to 6 ft. Deep red flowers in June. Leaves are red when young.

Mother of Pearl, 4 to 5 ft. Blush-pink flowers turning white in May.

Mrs. R. S. Holford, 4 to 5 ft. Salmon flowers in June. Opens slowly and lasts well.

Mrs. Wm. Agnew, 5 ft. Pink flowers with yellow eye in June.

RHODODENDRONS AND AZALEAS



RHODODENDRON
Pink Pearl

AZALEA PONTICA



Nobleanum, 4 ft. Compact. Flowers in various shades of crimson in January to March. One of the first to bloom.

Pink Pearl, 4 to 5 ft. Light pink flowers and deeper buds in May.

Princess Elizabeth, 5 to 6 ft. Red flowers with lighter centres in late May to June.

Professor Hugo de Vries, 5 ft. Dark pink flowers and deeper buds in May.

Purple Splendour, 4 to 5 ft. Dark purple flowers with almost black centres in May.

Scandinavia, 4 to 5 ft. Bushy. Deep red flowers in late May. Good foliage.

Souvenir of Anthony Waterer, 4 to 5 ft. Salmon-pink flowers with yellow centres in late May.

Starfish, 4 to 5 ft. Bright pink, star-shaped flowers and red buds in May.

Sweet Simplicity, 4 to 5 ft. Pale pink flowers with deep edges in late May. Makes a fine bush.

AZALEAS

In the following list of deciduous azaleas the popular names are given first as these plants will be found in catalogues under "Azaleas" rather than "Rhododendrons". The correct botanical name is added in brackets. Unless otherwise stated they will all reach a height of about 4 ft. in ten years from a 1½- to 2-ft. plant.

Azalea Ghent hybrids. Flowers late May, very hardy, and generally reach from 6 to 8 ft.

Altaclarensis Sunbeam. Rich yellow, orange flare.

Coccinea speciosa. Brilliant orange-red.

Daviesii. Cream, well scented.

Raphael de Smet. Pink, double.

Azalea Knap Hill and Exbury Strain. These may be obtained as mixed seedlings or selected to colour. They have large

flowers in large trusses in May and June, good colour and scent, and an autumn leaf display. There are many named sorts, a selection from which is:

Annabella. Orange.

Cecile. Salmon pink.

Gog. Tangerine.

Golden Oriole. Yellow.

Hiawatha. Orange-red.

Silver Slipper. White, flushed pink.

Tunis. Scarlet.

Azalea mollis seedlings, 4 to 8 ft. A race of hybrids flowering in early May that may be obtained either as mixed seedlings, in which the predominant colour is the typical flame shade, or as seedlings selected to colours of pink, orange, red or yellow. These are less expensive than the named varieties of which the following are a selection:

Alice de Steurs. Apricot with deep shading in the centre.

Dr. M. Oosthoek. Orange-red.

Golden Sunlight. Warm yellow.

Azalea pontica (*Rhododendron luteum*), 6 to 12 ft. Golden-yellow flowers in May. Wonderfully scented.

Azalea vaseyi (*Rhododendron vaseyi*) (Pink Shell Azalea), 8 to 10 ft. Pale pink flowers in early May.

Azalea viscosa (*Rhododendron viscosum*), 6 to 8 ft. White flowers in June. Very sweetly scented.

The following dwarf evergreen azaleas will not exceed 3 ft. in height in ten years under normal open-garden conditions.

Azalea amoenum (*Rhododendron obtusum amoenum*). Shades of pink, deepening to magenta.

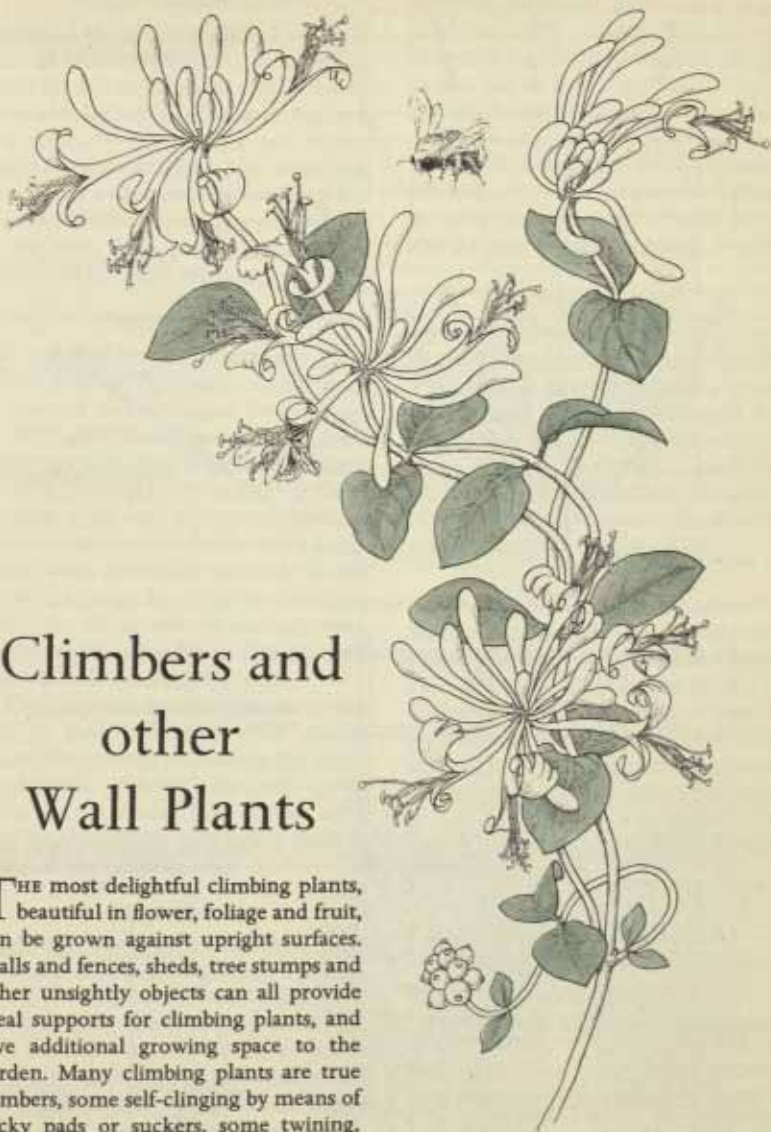
Hinodegiri. Bright red.

Palestrina. White.

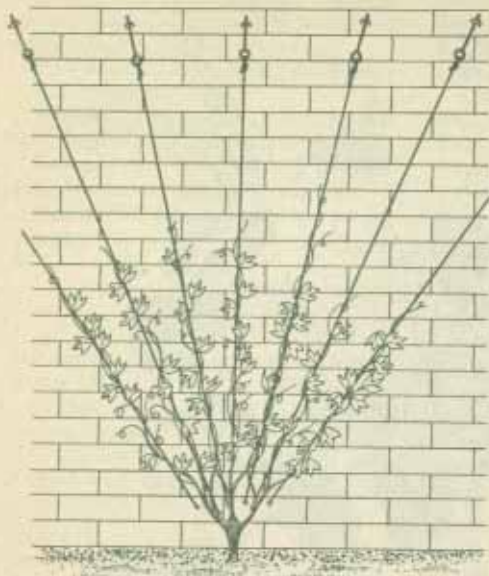
Willy. Pink.

Climbers and other Wall Plants

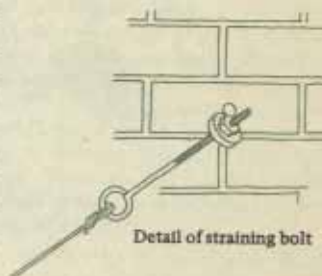
THE most delightful climbing plants, beautiful in flower, foliage and fruit, can be grown against upright surfaces. Walls and fences, sheds, tree stumps and other unsightly objects can all provide ideal supports for climbing plants, and give additional growing space to the garden. Many climbing plants are true climbers, some self-clinging by means of sticky pads or suckers, some twining, others clinging by means of tendrils. There are also some woody or semi-woody shrubs which grow more successfully against walls than in the open.



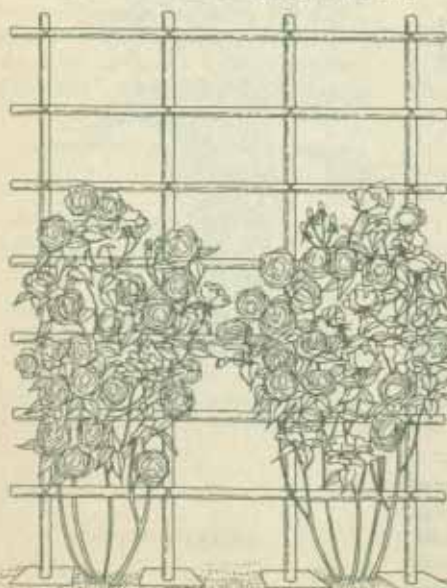
LONICERA PERICLYMENUM



TWO WAYS OF SUPPORTING CLIMBING PLANTS

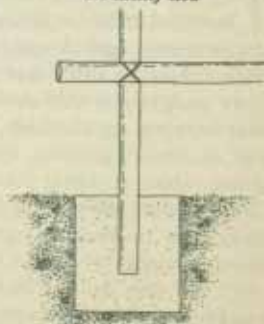


Training a shrub across a wall, using strained wires



Climbing plants trained against strongly-made trellis-work

Sink the trellis uprights in concrete and ensure that all joints are firmly tied



SOIL PREPARATION

Nearly all the plants described here will grow in any normal garden soil, though often the soil at the foot of walls is very poor and dry and needs improving. It is best either to remove the soil to the depth of a foot and replace it with fresh soil mixed with moisture-retaining leaf mould, rotted compost or sedge peat, or to dig wide, deep, planting holes to be filled with the same mixture.

SUPPORTS

Put supports for the plants into place before planting. They may consist of plastic-covered wire netting of heavy gauge, or strongly made trellis-work, both spaced an inch or so away from the wall to allow growths room to develop. Treat wooden trellis with a copper naphthenate wood preservative before it is put up. Stout wire, preferably covered, is also suitable, and can be stretched across the face of the wall at intervals and supported by special vine eyes driven into the wall and kept taut by straining bolts.

Woody shrubs can be fastened to the wall by putting loops of fabric shreds round the growths and nailing the fabric to the wall with ordinary nails, or by using special square-headed wall nails with lead tags which only lightly grip the stems of the plants.

PLANTING

Plant from October to March in well-prepared holes, leaving about 6 in. between the wall and the plant. Spread the roots roughly fanwise away from the wall and cover them firmly. With clematis it is important not to kink the stems.

It is a good plan to provide all plants with some temporary support in the form of canes until they reach the wires or trellis, and to provide shade for their roots, either by putting a large stone over the soil which covers the roots, or by

planting temporary plants such as annuals or bedding plants in front of them. Most twining plants grow rapidly, whereas the rest or softer growing ones are slower and the evergreens slowest of all.

When a selection of plants is put in at the foot of a wall, they should be about 8 ft. apart, then thinned later if necessary. In many cases this will be unnecessary and the wall will be adequately covered.

WATERING

Because of the overhang of the roof above, the soil immediately surrounding a house often receives little rain. It may be necessary to water frequently and thoroughly, but this can be obviated to some extent by planting in moisture-retaining soil and mulching the surface of the soil round the base of the plant in spring before the soil dries out.

PRUNING

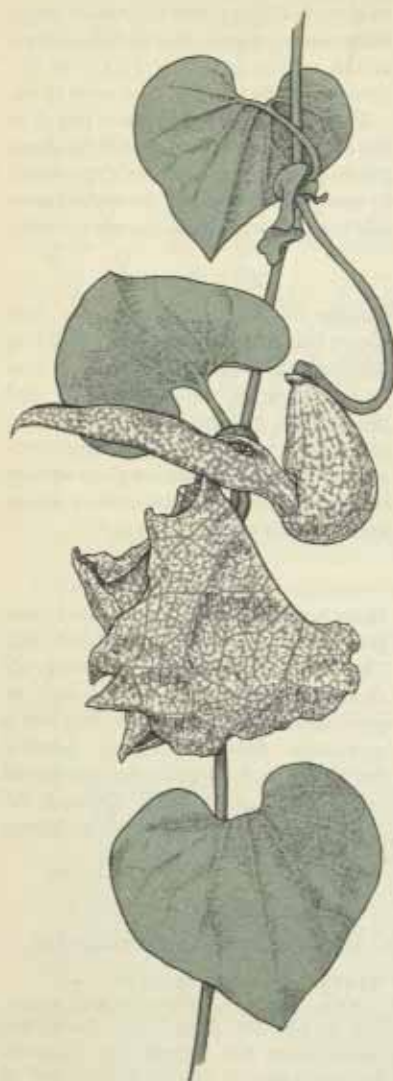
Many wall plants grow rapidly and need pruning to keep them within bounds. This should be done in the spring, although it is often necessary to train in growths at other times of the year, when unwanted, forward-pointing growths can be removed, particularly from shrubs trained flat against walls. Clematis require special pruning methods and these are described below.

SUGGESTED PLANTS

D = deciduous (leaf-losing) E = evergreen

AKEBIA (SEMI-EVERGREEN)

Akebia quinata, a twining plant, attractive in leaf and flower. The leaves are divided into five leaflets. The fragrant, brownish-purple flowers are carried in drooping clusters in April. They are occasionally followed by sausage-shaped, violet-purple fruits up to 4 in. long, particularly after a warm summer. Needs a warm wall. Very useful plant for training over porches and arches. When the



ARISTOLOCHIA MACROPHYLLA

growth becomes entangled cut right down to the base in winter. This can be done safely every three or four years.

ARISTOLOCHIA (D)

Aristolochia macrophylla (Dutchman's pipe), a rampant twiner. The large heart-shaped or kidney-shaped leaves are attractive. It blooms at midsummer but the green and yellowish-brown flowers, tubular in shape and bent like a meerschäum pipe, are unusual rather than colourful. A warm wall is preferable. Plant either in October or November or not until March. Because it produces such rampant long growths it is suitable for a pergola, and is often chosen to grow at the foot of a tall tree, where the growths can climb among the branches.

BERBERIDOPSIS (CORAL PLANT) (E)

Berberidopsis corallina, a most attractive shrub with semi-twining growths for a wall of any aspect in the milder parts of the British Isles. It has leathery, dark green leaves and drooping clusters of deep-crimson flowers from July onward. Prefers a lime-free soil to which a little leaf mould has been added. Routine pruning is unnecessary, except for shortening the main branches in late winter to keep the plant within bounds.

CAMPsis (D)

These are self-clinging climbers with small aerial roots like the ivy, and will grow best by a warm sunny wall where they may climb to 15 to 20 ft. in time. They flower in late summer and early autumn. If the lateral growths are pruned in autumn to two or three buds, not only will the plant be kept within its limits but flowering will be encouraged.

Campsis grandiflora, clusters of orange and red flowers.

C. radicans, orange and scarlet flowers.

C.r. Madame Galen, salmon flowers.

CEANOTHUS (D and E)

The hardier *ceanothus* can be grown in the open. They are more often trained against walls and are not much tied in but are allowed to make loose growth.

Ceanothus burkwoodii (E), rich blue flowers in summer and autumn.

C. Delight (E), one of the hardiest kinds, rich blue flowers in spring.

C. dentatus (E), bright blue flowers in spring.

C. Gloire de Versailles (D), powder-blue flowers in summer and autumn.

C. Indigo (D), a dark blue summer-flowering kind.

C. Perle Rose (D), rosy-carmine flowers in summer.

C. rigidus (E), purplish-blue flowers in spring.

C. thyrsoflorus (E), hardier than most, with bright blue flowers in summer.

C. viticinctus (E), another hardier kind, with flowers of a deep, rich blue.

CHAENOMELES (JAPONICA) (D)

Chaenomeles speciosa, formerly known as *C. lagenaria* and *Cydonia japonica*, one of the most popular and commonly grown wall plants. Flowers vary from orange-scarlet to white according to variety, and appear in late winter. Often goes on flowering into June. Grows without support, but lends itself to training against walls, as do the following varieties:

C.s. Apple Blossom, pink and white flowers.

C.s. atrococcinea, dark crimson flowers.

C.s. Knaphill Scarlet, flowers more orange than scarlet.

C.s. nivalis, white flowers.

C.s. Rowallane Seedling, rosy-crimson, large-flowered.

CHIMONANTHUS (WINTER SWEET) (D)

A good winter-flowering shrub providing exquisite fragrance.

Chimonanthus praecox, usually trained against a wall. Its waxy flowers, which are yellow with purple flashes, appear on the branches in winter, often by Christmas. A plant will eventually occupy a space 7 or 8 ft. square. Ordinary soil enriched with compost suits it best.

CLEMATIS (D and E)

Clematis are not fussy about soil, although they prefer some mortar rubble if possible in the planting soil. Keep their roots in the shade. If planted on the north sides of low walls their growths can find their way into the sunlight to flower. If



CLEMATIS—Nelly Moser

planted on south or west sides of walls, shade their bases in some way, either by a low shrub or by placing a large flat stone over the roots. Support them with wires or trellis. Excellent for growing over dead trees.

Although clematis have a habit of dying back for no apparent reason and through no fault of the gardener, they are plants with which to persevere. Species and varieties worth growing and which need little pruning other than the removal of dead wood and the shortening of unwanted growths are:

Clematis armandii (E), leathery green leaves and large white flowers in April.

C. flammula (D), fragrant, small, white flowers from August to October. Prune hard annually in February.

C. florida bicolor (D), white and purple flowers in July.

C. macropetala (D), violet-blue flowers in spring and early summer.

C. montana rubens (D), rosy-pink flowers in great profusion in May.

C. tangutica (D), yellow, thick-petalled, lantern-shaped flowers in September.

The pruning of the large-flowered hybrids differs with their various groups. The *patens* and *florida* groups need pruning immediately after flowering, by cutting back the stems that have flowered to a pair of buds.

The following recommended varieties in the *patens* group flower in May and June:

Barbara Jackman (D), petunia flowers, with plum-coloured bars.

Edouard Desfosse (D), dark mauve flowers with darker bars.

Lasurster (D), purplish-blue flowers.

Mrs. George Jackman (D), white.

Nelly Moser (D), mauvy-pink flowers with carmine bar.

The *florida* group includes:

Belle of Woking (D), pale mauve, double flowers.

Countess of Lovelace (D), bluish-lilac, double flowers.

Duchess of Edinburgh (D), white, double flowers.

Lucie Lemoine (D), white, double flowers.

In February prune the old growths of *jackmanii* and *viticella* close to the base of the previous year's growth, and cut the *texensis* group back to live wood.

The *jackmanii* group includes varieties which bear large flowers from late summer to autumn. Some of the best are:

Comtesse de Bouchaud (D), pinky-mauve flowers.

Gipsy Queen (D), dark purple flowers.

Jackmanii (D), violet-blue flowers.

Perle D'Azur (D), light blue flowers.

Star of India (D), violet flowers with red bars.

The *viticella* group includes the following varieties, which flower from July to September:

Ascotensis (D), bright blue flowers.

Ernest Markham (D), red flowers, shaded magenta.

Lady Betty Balfour (D), violet-blue flowers.

Margot Koster (D), rosy-purple flowers.

Royal Velours (D), deep purple flowers.

Ville de Lyon (D), carmine-red flowers.

Outstanding in the *texensis* group are:

Countess of Onslow (D), violet-purple flowers, banded scarlet, in August and September.

Gravetye Beauty (D), rich red flowers in August and September.

The *lanuginosa* group may be pruned after flowering in the same way as the *patens* and *florida* groups, when they will flower in spring, or they can be cut hard back like the *jackmanii* and *viticella* groups, to induce flowering in summer or early autumn. The *lanuginosa* group includes:

Beauty of Richmond (D), mauve flowers with darker bars.

Beauty of Worcester (D), violet-blue flowers.

Lady Northcliffe (D), lavender flowers.

Lord Neville (D), plum-red flowers with deeper bar.

Mrs. Cholmondeley (D), light blue flowers.

W. E. Gladstone (D), lavender flowers.

COTONEASTER (D and E)

Cotoneasters vary tremendously in form but the following are excellent self-

supporting shrubs for north and east walls, forming flat, fan-shaped growths of up to 6 ft. sq., and producing an abundance of small pinkish-white flowers in summer and red berries in winter.

Cotoneaster horizontalis (D).

C. microphylla (E).

ECCREMOCARPUS

(CHILEAN GLORY FLOWER) (D)

Hardy in the midlands and south, although sometimes cut to the ground by severe frosts.

Eccremocarpus scaber, a delightful tendril-climber, which grows rapidly and sometimes reaches 6 or 8 ft. in the first year. This is inevitably cut by frost, but new shoots form the following spring. It bears small leaves and clusters of tubular orange-red flowers all summer. Grows easily from seed and is not particular about soil, but prefers a warm wall.

GARRYA (SILK TASSEL BUSH) (E)

Garrya elliptica, a most decorative winter shrub, hardy enough in all but the coldest districts. In February the male plants produce an abundance of 6- to 12-in. long silky, grey-green catkins. Does reasonably well against north and east walls, but produces catkins more freely when planted against south and west walls.

HEDERA (IVY) (E)

Grows where most plants fail, self-clinging, ideal for north and east walls. The common ivy is available in various colour forms. Among the best varieties are:

Hedera helix aureo-variegata, leaves flushed with yellow.

H.h. cavendishii, slow-growing, with silver variegation.

H.h. marginata minor, small leaves, cream variegation.

HYDRANGEA (D)

Few gardeners seem to grow the delightful climbing hydrangea, *Hydrangea petiolaris*, a self-clinging, hardy plant, vigorous enough to cover the side of a house and suitable for any wall aspect and soil. It bears the typical white heads of hydrangea flowers in summer. The young leaves and growths are an attractive red.



PASSIFLORA CAERULEA

JASMINUM (JASMINE) (D and E)

None of the following is fussy about soil, but all need support, as they are not true climbers, but wall shrubs.

Jasminum nudiflorum (D), the beautiful and popular winter jasmine which produces its bright yellow flowers from November to March. Does well on north walls.

J. officinale (D), the summer-flowering jessamine, with fragrant white flowers from June to September which sometimes reaches 20 ft.; it is best in the larger-flowered form *affine*, the blooms of which are flushed with pink.

J. polyanthum (E), fragrant white flowers, is less hardy. Does well on sheltered walls.

LATHYRUS (D)

None of the following is fussy about soil, but all prefer a sunny aspect, and flower in July. They are attractive, perennial tendrill-climbers.

Lathyrus latifolius (everlasting pea), rose, pink and white varieties.

L. rotundifolius, rose flowers.

L. sylvestris, red flowers, variegated with violet, green and crimson.

LONICERA (HONEYSUCKLE) (D and E)

These fragrant-flowered twiners, favourites for walls or fences, all do well in shade.

Lonicera brownii fuchsoides, semi-evergreen, orange-scarlet flowers, July and August.

L. henryi (E), dark green leaves, reddish flowers in June.

L. japonica (E), very fragrant, creamy flowers, which turn a deeper shade on maturity and bloom all summer.

L. j. aureo-reticulata (E), a foliage plant with gold-netted leaves.

L. j. halliana (E), white flowers, yellowing with age, in summer.

L. periclymenum (woodbine) (D), the wild honeysuckle found in the hedgerows and flowering from July to September.

L. p. serotina (late Dutch honeysuckle) (D), reddish-purple and yellow flowers from July to September.

MAGNOLIA (see Shrubs and Trees)**PASSIFLORA (PASSION FLOWER) (E)**

Passiflora caerulea, fairly hardy except in the coldest situations, is one of the most

strangely attractive of all climbers. It is a tendrill-climber, grows vigorously in the warmer areas, and in summer bears numerous, slightly fragrant flowers, blue, white and purple, the parts of which, according to legend, represent the instruments of the Crucifixion. Its handsome, yellow, egg-shaped fruits are inedible.

POLYGONUM (D)

Polygonum baldschuanicum (Russian vine), a rampant twiner and scrambler, really suitable only for places where it can be allowed to spread at will. Probably the fastest-growing plant of its kind. Quickly covers walls, sheds, garages or trees, and bears trails of white, pink-flushed flowers in summer and autumn. Does best in sun.

PYRACANTHA (FIRE THORN) (E)

These shrubs do well against north and east walls. The white flowers are insignificant, but the red or orange berries are very decorative in winter and are freely borne and last well. The best are:

Pyracantha atalantioides, crimson berries

P. coccinea lalandii, orange-red berries.

P. crenulata, yellow berries.

P. rogersiana, orange-red berries.

ROSA (ROSE) (D and E)

Climbing and rambler roses are discussed fully in *Roses*. The following are less usual kinds, all of which flower in the height of summer.

Rosa banksiae (Banksian rose) (D), thornless, single or double yellow or white flowers. Best on a warm wall.

R. bracteata (Macartney rose) (E), single white flowers, not too hardy but suitable for warm west and south walls.

R. filipes Kiftgate Variety (D), one of the best, with extremely fragrant creamy-white flowers, borne in immense quantities on plants 30 ft. high.

R. gigantea (D), large, very pale yellow, single flowers.

R. moschata (the musk rose) (D), very vigorous, may reach 50 ft. or more, single white flowers.

SOLANUM (D and E)

This is not a plant for cold areas, and



SOLANUM CRISPUM AUTUMNALE

always needs to be protected by a wall.

Solanum crispum autumnale (Chilean potato tree) (E), purplish-blue flowers with prominent yellow centres reminiscent of the potato flower, borne abundantly throughout the summer.

S. jasminoides (potato vine), a semi-evergreen with grey-blue flowers which start in mid-June and bloom until the autumn frosts. Grows up to 20 ft. and is vigorous, requiring drastic pruning each February.

S. j. album, a white-flowered variety, with all the characteristics of the type.

TROPAEOLUM

(SCOTTISH FLAME FLOWER) (D)

Tropaeolum speciosum, flourishes in Scotland, but also does well elsewhere when established. It has slender growths, delicate leaves and bright scarlet flowers in the height of summer. It likes a cool root run, the shade of shrubs, rich soil and an undisturbed site.

VITIS (VINE) (D)

Some of these plants have been given other names, including ampelopsis and parthenocissus, but they are treated here as one group. All do well in ordinary soil. Their flowers are insignificant, but the plants are grown for their outstanding foliage effect. Slow growing for the first

year or two, after which they can cover a building. The leaves are deeply divided and a fresh good green when young, turning to really strong reds in the late summer and autumn.

Vitis coignetiae, leaves 1 ft. across, a beautiful tendrill-climber.

V. henryana, leaves variegated with white and purple, self-clinging, best on a west or north-west wall.

V. inconstans (usually mistakenly described as Virginia creeper), self-clinging, wonderful colouring.

V. quinquefolia (Virginia creeper), a self-clinging climber which, like many other kinds, has brilliant autumn leaves.

V. vinifera purpurea, a purple-leaved grape vine, tendrill clinging.

WISTERIA (D)

The wisterias are among the best of all wall shrubs, and flourish in sun and in a good soil. They can be trained to cover very large areas and live to a great age.

All the following flower in May and June:

Wisteria floribunda macrobotrys, exceeds *W. sinensis* in interest if not in beauty. Carries its pale lilac flowers in 3 ft. long trails.

W. sinensis, 1 ft. long trails of fragrant mauve or white flowers.

W. venusta, pure white, large-flowered.

HEDGES

NOTHING gives a garden an air of good grooming more than a well-kept hedge. It can be grown to provide shelter by forming a screen, or to make a boundary or an impenetrable barrier; it can comprise deciduous or evergreen plants, some of which may bear flowers or fruit, or have colourful foliage; and it can be anything from 1 to 15 ft. or more in height.

Hedges of such plants as raspberries, artemisia and rosemary are often used to divide one part of the garden from another, and are known as internal hedges. Lower-growing plants, like lavender and dwarf box, are used as borders for driveways or flower beds, while taller and more densely growing plants, such as laurel and yew, can be grown to form a boundary or screen.

Select plants, therefore, according to requirements and the site.

Choose evergreens to provide a year-round wind-break and screen, and flowering or coloured-foliage plants for an attractive background.

PREPARATION OF THE SITE

The site should be prepared at least a month before planting.

Clear a strip of ground 1½ to 2 yds. wide along the line of the proposed hedge; it is most important to remove all perennial weeds. Double dig the ground the length of the strip, incorporating well-rotted compost or old manure at the rate of two bucketfuls to each trench opened. If the land is badly drained, place brushwood over the bottom spit of soil before replacing the top spit.

NUMBER OF PLANTS REQUIRED

Estimate the number of plants required by measuring the length of the proposed hedge and allowing for plants spaced according to the planting instructions given in the following list. Order about six extra plants, and plant them together in a group at one end of the row so that they can be used as replacements in case of any failure among the young plants in the hedge. They will grow to be the same height and be used to the same conditions as the rest of the plants in the hedge.

PLANTING

Stretch two garden lines down the centre of the prepared strip of ground to mark the sides of a trench 1 to 1½ ft. wide. Dig the trench 1 ft. deep, throwing out the soil on either side. If there is a lawn on one side, place the soil on sacking to protect the grass, or throw all the soil on the other side of the trench. Fork over the base of the trench, and sprinkle it with a well-balanced fertilizer, such as National Growmore, at the rate of 4 oz. per sq. yd.

As the plants are put in, the correct distance apart, replace the soil round the roots little by little and firm it with the heel. Firm planting is essential. Rake over the top-soil so that it looks neat and level.

Newly planted hedges should not need support if the plants are small enough, and if the ground has been well firmed during planting. But wire mesh fencing is sometimes helpful as temporary support in exposed places, or wires can be stretched taut between posts at either end of the hedge.

MAINTENANCE

Take great care of newly-planted hedges for the first two or three years. Water whenever necessary, and mulch with leaf mould or well-rotted compost. Replace any dead plants with those from the group at the end of the hedge.

Trim young plants only when necessary for shaping, and always use secateurs on large-leaved plants, such as laurel, to avoid damaging the leaf blades. Once established, other plants can be trimmed with shears or a mechanical hedge trimmer. Deciduous hedges will need more clipping in the early stages than evergreens, although all will need more frequent clipping when young than when they are established. Privet and *Lonicera nitida*, in particular, should be prevented from growing too high when young, otherwise the base of the hedge will be bare. Individual clipping requirements are noted in the list that follows.

Always keep the base of the hedge clear of weeds. Brambles and wild roses can be a serious threat to established hedges. A mulch of well-rotted leaf mould applied to clean soil helps to stifle weeds and keeps the ground cool and moist.

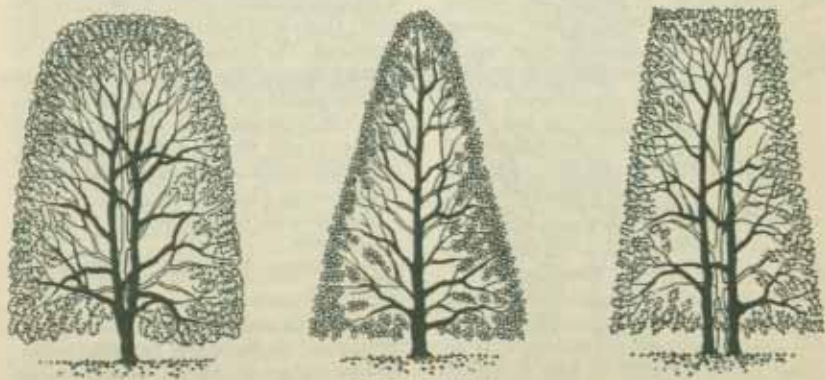
RENOVATING

Apart from conifers, most of which are in any case short-lived, overgrown, straggly hedges can be cut back in March to encourage the plants to break lower down and become bushy again, or they can be laid in February or March. This is a skilled job and consists of cutting away unnecessary growth and half-severing the rest at ground level. These branches are then laid at an angle of 45° to the ground and woven back and forth between stakes driven into the ground at intervals along the length of the hedge.

Fill small gaps by putting in a short stake and fastening to it young growth from the hedge, thus encouraging it to grow across the gap. If the gap is a large one, insert a new, young plant.

SHAPING AND TOPIARY

Train and shape the hedge according to individual taste and requirements. Keep it broad at the base and, ideally, taper it slightly towards the top; never allow the top to become wider than the base. Box, yew and holly particularly lend themselves to shaping, and also to topiary, the ancient art of clipping shrubs



HEDGE SHAPING

Three suggestions for shaping hedges, each showing the ideal broad base, tapering towards the top. Left: round-headed; centre: wedge-shaped; right: flat-headed

HEDGES

ARTEMISIA
ABROTANUM



FORSYTHIA INTERMEDIA

into ornamental shapes. This is an artificial way of growing otherwise attractive shrubs, and there are still many intricate examples in Great Britain and many adherents to the art.

SUGGESTED HEDGE PLANTS

D=deciduous E=evergreen

Many shrubs make useful and attractive screens if planted in rows, but the following are particularly adaptable to close planting, and in many cases to close clipping. Further description of most of these will be found in *Shrubs and Trees*, although their height and other characteristics, as well as their requirements, are not necessarily the same when they are planted as hedges.

ARTEMISIA (D)

Artemisia abrotanum (southernwood, lad's love, old man), 2 to 3 ft., frequently planted as an internal hedge or as a border to the herb garden. Its fragrant foliage is soft and feathery, pale silvery-green when young and a dark blue-green later in the season. Plant in October or March, about 1 ft. apart. Trim lightly in early April if necessary, though not during the first year after planting.

AUCUBA (E)

Aucuba japonica, 6 to 9 ft., a hardy shrub with unimpressive white flowers in summer; thrives in either sunny or shaded positions. The female form bears scarlet berries during the winter if male and female plants are grown together. Plant 2 to 3 ft. apart in early autumn or late spring, in any type of soil. Clip in April, preferably with secateurs to avoid slashing the large, shiny, leathery leaves.

A. j. fructu-albo bears white fruits instead of red ones.

A. j. variegata has golden markings on the leaves.

BERBERIS (D and E)

Several of the berberises are ideal for informal hedges, and provide both flowers in May and well-coloured foliage in autumn. The stems of most berberises are armed with sharp spines. Trim the

evergreen species in April. The deciduous kinds are not, of course, as attractive in winter as the evergreens.

Berberis darwinii (E), 3 to 7 ft. Small, dark green, glossy leaves; the orange flowers marked with red appear in May, and in autumn the purplish berries are equally striking. Plant between October and April, 1½ to 2 ft. apart.

B. stenophylla (E), 6 to 10 ft. Dark green, spiny leaves, glaucous on the undersides. Yellow-orange flowers in May and blue, grape-like berries later in the year. Plant 1½ ft. apart between October and April. Trim as the flowers fade unless the effect of the berries is required. If the hedge grows too vigorously, cut it back severely in April.

B. thunbergii (D), 4 to 6 ft., can be relied upon to provide really good autumn colour, with its bright scarlet berries accompanied by flaming red foliage. The red and yellow flowers appear in May. Plant 1 to 1½ ft. apart in winter and trim in February, but not during the first year after planting.

B. t. atropurpurea (D), 3 to 4 ft., a slightly smaller version of *B. thunbergii*, with purple foliage in autumn, which is even more brilliant than that of the type.

BUXUS (BOX) (E)

One of the best and most popular evergreen hedging plants. Box hedges last for many years and provide an even background and an impenetrable barrier.

Buxus sempervirens, up to 8 ft., very hardy and slow growing. Lends itself to close clipping, and is the most popular plant for topiary. Plant 1 to 2 ft. apart in April or October. Trim in the summer, more than once if necessary. Some nurseries will sell this box by the yard of plants. It should be trimmed closely throughout the summer.

B. s. aurea-maculata, The golden variegated leaves are attractive, and this form has considerable contemporary appeal.

B. s. suffruticosa, up to 1½ ft., a dwarf shrub widely used for miniature hedges and for edging parterres and the older vegetable gardens. Plant in April, late September or October about 3 in. apart.

CARPINUS (HORNBEAM) (D)

Carpinus betulus, up to 10 ft. Good bright green leaves, prominently veined, and pointed. A tree when allowed to grow naturally. Plant in winter 1 ft. apart, or in double staggered rows, leaving 9 in. between the rows and 1½ ft. between the plants in each row. Clip lightly in July when young and, once the hedge is established, fairly drastically in August.

CEANOTHUS (D and E)

For mild or very sheltered areas the blue-flowered *ceanothus* makes an ideal hedging plant. Plant pot-grown plants 2 ft. apart, preferably in April.

Ceanothus delilanus (D), 4 to 6 ft. The best varieties are *C. d. Gloire de Versailles*, with powder-blue flowers, and *C. d. Indigo*, with deep blue flowers, both blooming from July to September. Fairly bushy growth, which can be cut quite severely in March. Thrives on poor and chalky soil.

C. dentatus (E), 5 to 6 ft. The mid-blue flowers bloom a little earlier than those of *C. delilanus*, and the plants make a more informal hedge. Do not clip, but prune with care in early spring. A particularly good plant for seaside districts.

CHOISYA (E)

Choisya ternata, 3 to 5 ft., makes an excellent sweet-smelling, flowering hedge for milder districts. The abundant white flowers borne in late April and early May occasionally appear again later in the year. It flourishes in towns, and in all types of soil, and can be pruned fairly hard after flowering. Plant 15 in. apart in late September, October or April, but do not expect flowers for the first year or two.

CORYLUS (HAZEL) (D)

Corylus avellana (hazel or cob-nut), up to 10 ft., with its well-known "lamb's tails" (catkins) in mid-winter, is an excellent plant for a mixed hedge. Tolerates a wide range of soils and situations. Used alone, it makes an attractive summer hedge but should be limited to about 7 ft. in height. Clip in February or March as soon as the catkins have started to shrivel. Plant from October to March, 1½ ft. apart.

COTONEASTER (D and E)

The dark green foliage, which varies greatly from one species to another, is the chief attraction of the cotoneaster. The small white flowers in summer are followed by handsome red berries in autumn and winter.

Cotoneaster franchetii (E). 6 ft., makes a graceful hedge, with its silver-grey foliage. The white flowers in June are tinged with pink; the berries that follow are red. Plant from October to April 1½ ft. apart in good deep soil. Do not clip.

C. simonsii (semi-E), 5 to 7 ft. An upright shrub that responds well to close clipping and provides an excellent hedge for wind-swept and seaside districts. The foliage turns bright red in the autumn. If clipped after flowering, the orange berries are forfeited. Plant from October to March, 1½ ft. apart.

CRATAEGUS (HAWTHORN) (D)

A plant that has been used as an impenetrable hedge for centuries. It was used to enclose cattle, and its English name is derived from *haga*, a yard (*haga-thorn*). Up to 15 ft.

Crataegus oxyacantha and its red form *C. o. coccinea* are the plants commonly used. Can be closely clipped and shaped throughout the summer. Plant in winter, 10 in. apart; if cut back to within 9 in. of the ground in the following March, the young plants will break at the bottom and form a well-clothed hedge. Old hedges or those that are too high should be laid during the same month.

CYTISUS (BROOM) (D)

A good plant for light, sandy soils. It provides an evergreen effect, for the stems remain green in winter even after the leaves have dropped. The decorative flowers belong to the pea family. Plant pot-grown plants 1 to 1½ ft. apart in winter, and trim after flowering.

Cytisus andreanus, 6 ft. Crimson and yellow flowers in May.

C. burkwoodii, 5 ft. Dark red flowers in June. A neat bushy plant.

C. scoparius, 5 ft. Yellow flowers in May and particularly bright green stems.

FAGUS (BEECH) (D)

Fagus sylvatica (common beech), up to 10 ft. Makes a graceful tree when allowed to grow naturally, also makes an excellent hedge and can be very closely clipped. Small plants 1 ft. high will grow quickly if given careful attention, reaching a height of 4 ft. in four or five years. Plant in winter 1 to 1½ ft. apart in a single row, or in double staggered rows, leaving 15 in. between the plants and 10 in. between the rows. Do not clip for a year or two after planting, and then only very lightly in July for a further two years. Established hedges should be clipped in August. When grown as a hedge, beech is marcescent, that is, its leaves become papery and brown in winter but remain on the plant until the new leaves appear in the spring.

F. s. purpurea (copper beech). The foliage, almost pink when young and deepening with age to a dark purple, is most attractive and makes an excellent decorative background in a garden. Treatment as for *F. sylvatica*.

FORSYTHIA (D)

Makes a decorative and informal hedge, and provides a welcome splash of colour in early spring.

Forsythia intermedia, 5 to 7 ft. Provide some support for the young plants by stretching wires tautly along the line of the hedge. The yellow flowers appear before the leaves, in March, or at the end of February in mild years. Can either be clipped or left to grow more gracefully and pruned hard in April, after flowering. Plant small plants in winter, 1 to 1½ ft. apart.

F. s. spectabilis, 4 to 6 ft. The flowers are slightly deeper in colour than those of *F. intermedia* and probably a little more profuse, especially in hard winters. Treatment as for the type.

FUCHSIA (D)

In mild or seaside districts, fuchsia makes a flowering hedge that is really decorative rather than merely useful.

Fuchsia magellanica, 2 to 5 ft. This plant is particularly well known in Cornwall,

HEDGES

where it grows naturally as a lax hedge producing an abundance of carmine and purple flowers in summer. Plant out pot-grown plants 1 to 1½ ft. apart in May. They grow quickly and if frosted can be cut right back to ground level. They will break again in the same year and form flowering shoots up to 2½ or 3 ft. high. Do not trim an established hedge, but cut back some growth each year in April. Will tolerate a range of soil but needs full sunshine.

F. m. riccartonii, 4 to 7 ft., is very popular as a hedge and hardier than *F. magellanica*, though treated in the same way.

HYDRANGEA (D)

Hydrangeas are not suitable for cold gardens, but in sheltered districts they make an arresting summer-flowering hedge.

Hydrangea macrophylla (syn. *H. hortensis*), 3 to 6 ft., remains attractive as the flower-heads dry gradually, turning deeper shades of blue and purple until the frost comes. Ideal for town gardens and for the seaside, but not in shade or windy positions. Hydrangeas need some cossetting for the first two or three winters. The pink-flowered kinds are usually hardier than those with blue flowers. Plant named varieties 3 ft. apart in March or April. On lime-free soil, hydrangea colourant can be used to change the flower colour of some varieties. Those with pink flowers respond best, especially:

Ami Pasquier, 3½ ft. Deep crimson flowers change to plum-purple.

Bouquet Rose, 5 ft. Pale pink flowers change to sky blue.

Leopold III, 5 ft. Large peach-pink flowers change to sky blue.

ILEX (HOLLY) (E)

One of the slowest-growing but longest-lived evergreens, well worth planting for its well-groomed appearance all year round. It forms a tough barrier, provides a complete screen, and is very hardy in all districts. Holly flourishes even in shady positions and in any type of soil, but the ground should be well prepared before planting. Plant 10-in. plants in late September, October or April, 1½ ft. apart. Give

HYDRANGEA
MACROPHYLLA



FUCHSIA
MAGELLANICA

HEDGES

EVACANTHA
ROGERSIANA



LAVANDULA
SPICA

a mulch of well-rotted compost or leaf mould for the first three or four summers after planting. Prune very judiciously for the first few years in April; well-formed hedges will withstand severe annual clipping. Up to 15 ft.

Ilex aquifolium (common holly), with its shining, dark green leaves, is an excellent hedging plant, as are its varieties:

I. a. aurea marginata, with golden margins on the leaves, and

I. a. polycarpa laevigata, which has paler green foliage than the type.

LAUREL (see *Prunus*)

LAVANDULA (LAVENDER) (E)

The fragrant, grey-green lavender is ideal for informal, low hedges or those bordering paths or driveways. The foliage remains grey in winter. Purple or, rarely, pink flowers in July. The spiky flower stalks, which give the plant the appearance of a pin-cushion, should be clipped back with shears after flowering. Trim the hedge in March. Plant rooted cuttings in March or April 9 in. apart. Bought plants up to 9 or 10 in. high can be planted the same distance apart in March, or even during the winter in mild districts, although frost may then cause heavy losses. Mulch with spent hops or leaf mould for the first year or two. The bushes tend to grow leggy, and their usefulness as hedge plants is short-lived.

Lavandula spica (old English lavender), 3 to 4 ft. Very sweet-smelling flowers in July.

L. l. Folgate, 1 to 1½ ft., has very silvery-grey foliage and deep-coloured flowers in August.

L. s. Grappenhall, 3 ft., has large blue flowers.

L. vera, 2½ ft., the so-called Dutch or French lavender, has broader foliage and long-lasting flowers.

LIGUSTRUM (FRIVET) (semi-E)

The most ubiquitous hedge plant in the British Isles. It will tolerate a smoky atmosphere, wind, poor soil, and considerable neglect, and produces fragrant, dull white flowers in late July and August. 3 to 10 ft.

Ligustrum ovalifolium (common privet). Put in young plants 1 ft. apart in winter. Cut back to 9 in. from the ground in the first March. Later trim carefully, and once the hedge has thickened and become established, cut and shape severely several times during the summer.

L. o. aureum (golden privet), similar to the type in growth and treatment. If leaves revert to green, cut out the shoots concerned carefully with secateurs.

LONICERA (E)

Lonicera nitida (Chinese honeysuckle), 4 to 6 ft. This is not a climbing species like most other honeysuckles, but a shrub with tiny, dark green, oval leaves. It makes a close hedge, beautifully firm when closely clipped. Plant small plants about 1 ft. apart from late September to April, and cut them back to within 1 ft. of the ground immediately after planting. Trim lightly for the first year or two, but several times during the growing season once the hedge is established.

PRUNUS (D and E)

Some of the deciduous cherries like *Prunus cerasifera* and *P. avium* make quite pleasing hedges, but the most useful member of the family is the evergreen laurel.

Prunus laurocerasus (laurel) (E), 5 to 15 ft. A hardy and popular shrub with thick leathery leaves, which makes an excellent wind-break. It flourishes in almost any soil and tolerates shade as well as full sun. Plant in October or April, 2 to 2½ ft. apart, using if possible plants that are not more than 1½ ft. high. White flowers in April are followed by black fruits. Clip in April or July, ideally with secateurs to avoid slashing the leaves.

P. lusitanica (Portugal laurel) (E), 10 to 15 ft. Dark green, glossy leaves. The white flowers in June are followed by purple fruits if the long flower sprays are not clipped away when the hedge is trimmed in July. Trim with secateurs to avoid spoiling the large leaves. Plant in September, October or April, 2 to 2½ ft. apart.

PYRACANTHA (FIRE THORN) (E)

The bright green, leathery leaves make

an attractive hedge whether the plants are clipped or not. The flowers are greenish-cream in June, and the red or orange berries persist for most of the winter. Trim in April, but do not clip too closely, otherwise flowers and berries will be sparse. 8 to 15 ft.

Pyracantha rogersiana and its yellow-berried form *P. r. fructu-luteo* are quick-growing plants if the ground is well prepared, and if rotted compost is forked into the topsoil for three or four years after planting. A temporary support such as a wire fence may be necessary to prevent damage by wind. Not hardy in the north of the British Isles. Plant 1-ft. high plants in September, October or April, 1½ to 3 ft. apart.

QUERCUS (OAK) (D and E)

Quercus ilex (holm oak or evergreen oak) (E), up to 15 ft., quite unlike all other species of oak, with glossy, dark, oval leaves. Plant small pot-grown plants not more than 1½ ft. tall in late September, October or April, 2 ft. apart; mulch and protect them until they settle down. The evergreen oak grows quickly, can be clipped in April into a hedge of wall-like proportions, and lasts well. It is very hardy, does well on gravel and sand, and is suited to coastal and windswept districts.

Q. pedunculata (syn. *Q. robur*) (D). The common oak is usually used only in a mixed hedge, with hawthorn, hazel and beech. It then keeps its dead brown leaves throughout the winter, although it is deciduous when grown as a tree. Up to 15 ft. Plant from October to March.

ROSA (D)

Several species of rose can be used to make attractive flowering hedges. Plant 2½ ft. apart in November if possible, though all roses may be planted throughout the winter provided there is no frost. The following make attractive screens when left to grow naturally, and only need pruning in March. 5 to 8 ft.

Rosa hugonis, fine green foliage and single yellow flowers.

R. moyesii, single dark red flowers followed by enormous pitcher-shaped

fruits. Has a particularly good variety, *Geranium*.

Floribunda roses make most successful and decorative hedges, 3 to 4½ ft. high, and need very little pruning. They benefit from mulching with leaf mould or rotted compost in summer. Plant only one variety in a hedge, otherwise uneven growth will produce a poor effect. Varieties recommended for flower colour are:

Frensham, deep blood-red.

Masquerade, opens yellow and turns first pink and then flame as it grows.

Orange Triumph, fiery scarlet.

Sundance, yellow ageing to pink and salmon, pale foliage.

Vogue, coral-rose with copper-tinted foliage.

Musk rose hybrids form compact bushes not unlike the floribundas, and flower from June to September at a height of 4 to 6 ft. They have a sweet, musky scent and require very little pruning. Recommended varieties are:

Cornelia, coppery-apricot in bud, ageing to buff-pink, double flowers.

Pax, cream buds opening pure white.

Penelope, salmon-pink in bud, opening to double flowers, cream with a pink flush.

Prosperity, dark foliage, very free flowering, double flowers, buff-yellow opening deep cream.

ROSMARINUS (ROSEMARY) (E)

Rosmarinus officinalis, 3 to 4 ft., flourishes in mild and coastal areas, and likes well-drained or chalky soil and as much sunshine as possible. It bears blue flowers in early May and is very fragrant. Pinch out the tips of the shoots from time to time to keep the plants bushy.

R. a. Miss Jessup is the best variety and makes an excellent internal hedge. Plant in September or April, 1 to 1½ ft. apart.

SYRINGA (LILAC) (D)

Syringa vulgaris, up to 7 ft. Lilac is usually grown for its flowers, and named varieties are obtainable in mauve, purple, pink, red and white. When grown as a formal hedge, and not as a screen, it is usually clipped after flowering. It responds

well to clipping but forms numerous suckers, and it is a tedious and uncomfortable job to remove them. An expensive proposition for a hedge of any length. Plant during the winter, 2½ to 3 ft. apart.

TAMARIX (TAMARISK) (D and E)

A very graceful, feathery plant, excellent for seaside districts, since it withstands salt winds admirably. Inland, it thrives even in poor and limy soil. Clipping in February or March will improve its appearance.

Tamarix anglica (E), 8 ft., a fairly erect plant. Pinkish-white flowers in July and August. New wood is reddish-brown. Plant small specimens from October to March 1½ to 2 ft. apart.

T. gallica (semi-E). Similar in habit and height to *T. anglica*, but the young wood is darker, making an even sharper contrast with the fresh green, feathery foliage. Plant from October to March.

ULMUS (ELM) (D)

Ulmus procera (syn. *U. campestris*). When planted as a hedge, the English elm grows rapidly up to 10 ft., tolerates adverse conditions, and withstands hard clipping at any time of the year. Put in young plants about 2 ft. high during the winter, spacing them 1½ to 2 ft. apart.

CONIFERS

With the exception of yew, conifers are not usually closely clipped, since they act primarily as screens and wind-breaks. Juniper and spruce are among the plants used in this way, and they provide a wide range of foliage colour. The treatment of these conifers and other kinds, both as hedges and screens, is described below.

CHAMAECYPARIS (FALSE CYPRESS) (E)

Chamaecyparis lawsoniana (syn. *Cupressus lawsoniana*). As a hedge, Lawson's cypress plants are restricted to between 10 and 15 ft. Plant in September or March, 1½ to 2 ft. apart. Trim them once they are established, if necessary as soon as June, but do not clip closely. Cones, which are glaucous at first and later brown, are produced only on plants that are allowed to grow

naturally. For screens up to 50 ft., plant about 5 ft. apart and remove alternate plants when the branches touch.

C. l. allumii has glaucous blue-green foliage and an attractive pyramidal habit. Tends to tolerate wind better than the type.

* *C. l.* Green Hedger has very attractive mid-green foliage.

C. l. lutea is a golden form, also tolerant of wind.

CUPRESSUS (CYPRESS) (E)

Cupressus macrocarpa (Monterey cypress). A quick-growing and very popular specimen for screens and hedges. For a hedge up to 15 ft., plant in March or April, 1½ ft. apart. Tends to die out at the base or turn completely brown if damaged by frost or cold winds. Do not clip, and after five or six years of age, do not prune. Will reach 80 ft. as a screen if planted 5 ft. apart. Remove alternate plants when the branches overlap.

C. m. lutea compacta, 5 to 6 ft. as a hedge. This is rather more expensive to buy than *C. macrocarpa*, but hardier, with beautiful green-gold foliage.

JUNIPERUS (E)

Plant transplanted juniper seedlings no larger than 12 to 15 in. high in October or April, 1½ to 2 ft. apart.

Juniperus communis (common juniper) provides a tough barrier, is very hardy, and is especially suited to chalk soils. Foliage is glaucous and resistant to cold winds. Slow growing. 6 to 10 ft. as a hedge but seldom used as a screen.

J. virginiana (pencil cedar), faster growing and not so selective of soil as *J. communis*, but demands good drainage. When planted 5 ft. apart as a screen, it makes attractive pyramidal bushes up to 20 ft. By trimming in late summer and autumn, however, the height can be restricted to make a thick, bushy hedge of 6 to 8 ft.

J. v. argentea is an attractive silver form.

PICEA (SPRUCE) (E)

Spruce is particularly suited to cold northerly regions or hill districts, where

TAMARIX ANGLICA



ROSMARINUS OFFICINALIS

HEDGES

THUJA OCCIDENTALIS



CHAMAECYPARIS LAWSONIANA ALLUMII

it may be planted as late as May or early June, but it is generally planted either in October or April. Although usually grown up to 50 ft. as a screen, spruce also makes an effective hedge up to 15 ft., or at most 20 ft. tall.

For a hedge, put in transplanted seedlings 2 ft. apart when they are 9 to 12 in. high. Mulch with leaf mould for the first two or three years. Between June and December, prune out any branches that grow out of proportion to the rest, and until the shape is established, maintain bushy growth by tipping back the leading shoots in autumn.

When planting spruce as a screen, put in the young plants 6 to 8 ft. apart when they are 3 ft. tall. Remove alternate trees when the branches overlap.

Picea abies (Norway or common spruce), an excellent background tree in cool, moist conditions inland. Dense, glossy, dark green foliage.

P. glauca (syn. *P. alba*) (white spruce), has very glaucous blue foliage, which gives it a grey, frosted appearance.

P. pungens, glaucous green leaves. This species is particularly susceptible to the green spruce aphid, and has two striking varieties,

P. p. argentea, silver-green.

P. p. glauca, blue.

TAXUS (YEW) (E)

Taxus baccata (English yew), very seldom planted as a screen but makes an excellent hedge, sturdy, solid and evergreen. Up to 15 ft. A long-lived plant, tolerant of chalky soil and wind, its main requirements are good drainage and a well-prepared site. Plant seedlings 1½ to 2 ft. apart in October or April, when they are about 1 ft. high.

Yew is not as slow growing as it is reputed to be if it is well mulched with rotted leaf mould or compost and watered well during the first two or three summers. The plant is poisonous to cattle. The foliage seems to thrive on close clipping, and famous topiary work has been carried out in clipped yew. Trim annually in August.

HEDGES

THUJA (ARBOR-VITAE) (E)

Thujas thrive on most well-drained soils but despise shallow, dry ones. They form excellent screens up to 35 ft. If carefully grown, some thujas also make good hedges; they grow quickly and can be clipped hard like yew.

Thuja occidentalis. The soft green foliage turns a rusty red in winter, reverting to green again in late spring. When bruised, this thuja emits a strong, tansy-like odour, particularly noticeable when clipping. For a hedge (5 to 10 ft.), put in 2- to 3-ft. high plants $1\frac{1}{2}$ to 2 ft. apart in October or April. Trim in early autumn. When planting a screen, insert the plants 6 to 9 ft. apart; the alternate ones need not necessarily be removed later.

T. plicata. For a hedge (6 to 20 ft.), put in small plants $1\frac{1}{2}$ to 2 ft. high in October or April, spacing them $1\frac{1}{2}$ to 2 ft. apart. Trim in late summer, with increasing severity as the plants grow, clipping only the sides until the required height is attained. Plants for screens should be put in 4 to 8 ft. apart; remove alternate plants when the branches touch.

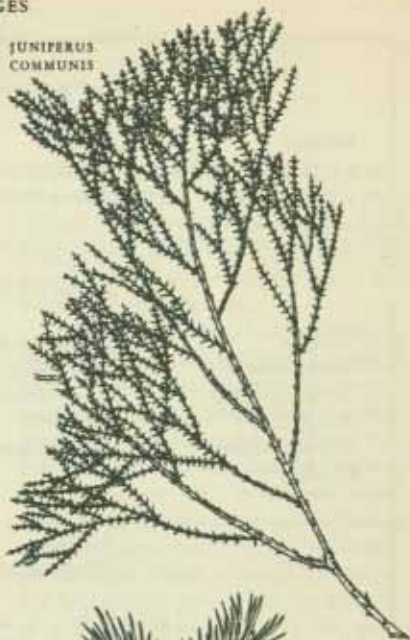
T. p. zebrina, a comparatively new, golden form. Up to 12 ft. as a hedge. Otherwise its characteristics and requirements are similar to those of *T. plicata*.

TSUGA (HEMLOCK SPRUCE) (E)

These extremely elegant trees are perhaps seen to best advantage as a screen, for their pyramidal shape contrasts well with their drooping branches. Tsugas like a moist soil and atmosphere, and benefit from watering in dry weather.

Tsuga albertiana (western hemlock) has most attractive foliage, dark green above and silvery-grey beneath. For a hedge, put in plants $1\frac{1}{2}$ to 2 ft. high in September or April, spacing them about 2 $\frac{1}{2}$ ft. apart. Until the hedge is established, simply restrict straggly growth with secateurs; later, clip in spring and summer. When planted as a screen, tsugas will grow up to 70 ft. Put in plants that are 3 ft. high, spacing them 3 ft. apart, and remove alternate plants when the branches begin to overlap.

JUNIPERUS
COMMUNIS



PICEA PUNGENS

HEDGES

FLOWERING HEDGES

Berberis	Fuchsia	Ligustrum (privet)
Crataegus (hawthorn)	Hydrangea	Rosa (rose)
Cytisus (broom)	Lavandula (lavender)	Tamarix (tamarisk)

EVERGREEN HEDGES

Aucuba	<i>Cotoneaster franchetii</i>	<i>Prunus lusitanica</i>
<i>Berberis darwinii</i>	Ilex (holly)	(Portugal laurel)
<i>Berberis stenophylla</i>	Lavandula (lavender)	Pyracantha (fire thorn)
Buxus (box)	Lonicera	<i>Quercus ilex</i> (holm oak)
<i>Ceanothus dentatus</i>	<i>Prunus laurocerasus</i> (laurel)	Rosmarinus (rosemary)
Choisya		<i>Tamarix anglica</i>

FRAGRANT HEDGES

Artemisia	Lavandula (lavender)
Choisya	Rosmarinus (rosemary)

MIXED HEDGES

Carpinus (hornbeam)	Fagus (beech)	Quercus (oak)
Corylus (hazel)	Ilex (holly)	Ulmus (elm)

HEDGES FOR THE SEASIDE

Aucuba	<i>Ceanothus dentatus</i>	Fuchsia
<i>Berberis darwinii</i>	<i>Cotoneaster simonsii</i>	Hydrangea
Buxus (box)		Tamarix (tamarisk)

CONIFEROUS HEDGES

Chamaecyparis	Juniperus (juniper)	Taxus (yew)
(false cypress)	Picea (spruce)	Thuja
Cupressus (cypress)		Tsuga (hemlock spruce)

FOLIAGE

LEAVES can supply all the colour a garden needs, and can make it look attractive all the year round. They can also be used as a background or as a complement to flowers, and striking effects can be achieved with their special qualities of texture, shape and size. Such colours as bronze, purple, gold and silver in varying shades can be brought to the garden by foliage plants. Another great virtue of foliage is that its colour usually lasts much longer than that of flowers, and, if a good selection of evergreen is used, the effect can last throughout the winter months.

Plants grown for foliage can range in size from the 100-ft.-high golden-leaved poplar (*Populus serotina aurea*) to the little golden creeping jenny which can bring

sunshine to a dark corner at the bottom of a wall. The crimson-leaved vine (*Vitis vinifera purpurea*) climbing up a light stone wall is just as effective as a massive copper beech (*Fagus sylvatica cuprea*) silhouetted against the sky.

Texture variations can be as telling as colour combinations. The soft woolly leaves of *Ballota pseudodictamnus* are in great contrast to the large shining leaves of the bergenias, and the smooth waxy leaves of *Sedum spectabile* need the relief of something light and dainty such as *Alchemilla alpina*, with its silver-edged leaves. Shapes of plants are important too. The coloured-leaved sages (*Salvia officinalis purpurascens* and *S.o. icterina*) make rounded hummocks of purple or gold, and they are good foils for the towering cardoon (*Cynara*

ROSMARINUS—Corsican Blue

MAHONIA
JAPONICA

STACHYS LANATA

DIANTHUS

HERA CUPRESSOIDES

ACANTHUS SPINOSUS

Evergreen plants soften the effect of stone and give permanent interest to a paved terrace

FOLIAGE

Foliage plants of varying colour and texture grouped together provide an excellent background for flowers



cardunculus) or slightly smaller globe artichoke (*C. scolymus*).

A golden-leaved shrub is often as colourful as a plant with golden flowers. A single specimen of the golden privet (*Ligustrum ovalifolium aureo-marginatum*) trained against a house wall provides brilliant colour in the winter and from the distance looks like a golden-flowered jasmine. *Elaeagnus pungens variegata* brings sunshine to a dark corner and the golden *Cupressus macrocarpa* grown in a prominent position is a most cheerful sight in the dark days of winter. The little golden *Lonicera nitida* Baggeson's Gold grows so slowly that it is not too big for a large rock garden and makes a pleasant informal shape. Gold

and green are a pleasant combination and in a herb garden golden marjoram (*Origanum vulgare aureum*) grown inside small box hedges is very beautiful, particularly in the summer when the marjoram is the same height as the box.

Crimson and silver can make a most striking picture and there are many ways of growing them together. The crimson-leaved bugle (*Ajuga reptans atropurpurea*) makes a wonderful carpet round the silver-leaved *Senecio laxifolius* or *S. greyii* and soon grows so densely that no weeds can penetrate. The purple rhus (*Rhus cotinus foliis purpureis*) with its clouds of tiny purple flowers combines well with *Artemisia stelleriana*, with its rather large silver leaves; the purple-leaved berberis (*Berberis*

thunbergii atropurpurea) needs a light and feathery silver plant—*Artemisia absinthium* Lambrook Silver or the lacy *Senecio leucostachys* make good companions. The purple phormium (*Phormium tenax purpureum*) is such a handsome plant that it needs to stand alone, but a silver carpet is attractive. For this *Stachys lanata* can be used, but all the flower spikes should be kept cut; nothing should complicate the clean lines of the phormium.

For the front of a border, several foliage plants of about the same height, planted together so that the colours are blended, make an original and pleasing scheme. The glaucous-leaved *Othonnopsis cheirifolia* never grows more than about a foot high and it spreads by layering itself to the ground. Its small, yellow daisy flowers are quite pleasant and go well with the small, ivory flowers of *Anaphalis triplinervis*, which makes a silver rosette. A mound of golden sage (*Salvia officinalis icterina aurea*) that is not allowed to get too big, a small bushy plant

of *Ruta graveolens* Jackman's Blue, with its blue leaves, and the soft, green, folded leaves of *Alchemilla mollis* complete a satisfying arrangement.

Different coloured leaves as ground cover can lighten a dark corner of the garden or bring interest to a planting of shrubs after the flowers are over. The variegated mints, *Mentha rotundifolia variegata*, with white variegations on pale green leaves, and the golden ginger mint, *M. gentilis aurea*, increase quite quickly and should be kept low by cutting off flower stems, while the variegated form of *Veronica gentianoides* has bright silver edgings to its shiny, dark leaves and makes a dense, flat carpet.

Planting round a house needs to be permanent and great care should be taken to choose plants whose foliage will blend with the colour of the house walls. Against red brick particular care must be taken, and the tough, silver-leaved shrub *Senecio laxifolius* is a good choice, but



Foliage plants in this group give mauve, gold and silver effects throughout the year

it may be better not to allow it to open its bright yellow flowers. *Atriplex halimus* is another good choice, or *Cotoneaster horizontalis* could be used. Between taller plants, the low-growing glaucous hebe (*Hebe pageana*) could be planted to spill over the path, or the incense-scented *H. cupressoides* used against the house. Most foliage shows up well against stone and the bright bronze of *Cassinia fulvida* is effective. *Coronilla glauca* can be trained against a house wall and will produce its yellow pea-like flowers in winter, and *Hebe colensoi glauca* makes an attractive small shrub for such a position. Tamarisk is lovely against a white wall.

Some of the plants grown for foliage are worthy of key positions in the garden. The weeping pear (*Pyrus salicifolia pendula*) is excellent as a specimen tree, and the towering cotton thistle (*Onopordon arabicum*) looks best against a dark background, such as a yew hedge. The euphorbias are beautiful all the time and produce their great heads of love-bird green flowers very early in the year; they show up best on paved terraces or courtyards, in important corners, or at the foot of a wall or steps, where they have the scene to themselves. They will grow in sun or shade and in any soil that is not too rich.

Variegated shrubs give great relief among darker foliage, and a small variegated plant, such as variegated rue, can be almost as colourful as a clump of deep cream flowers. As a general rule plants with silver variegated foliage do best in shade, and those with golden variegations are usually brighter in full sun.

When planting for foliage effect, it is best to put the evergreen plants in places where they will be seen most, and the plants that lose their leaves in less conspicuous spots. The hostas have leaves as beautiful as any in the garden and they are lovely throughout the summer; but

they are not attractive when they die off in autumn, and disappear completely in winter. Hostas therefore need a position where their decaying is not conspicuous. The same thing applies to shrubs that lose their leaves, and to rather tender plants that may not survive the winter.

Great use can be made of foliage plants as a background for other things. If spaces are left for annuals, for instance, among permanent plants with good leaves, the whole effect is more pleasing and it will not matter too much if the annual plants are not a success. Some flowers look best when grown by themselves, but there are very few that are not more beautiful with a complement of really lovely leaves.

RECOMMENDED PLANTS

The following list of foliage plants is divided into colour groups; further subdivisions classify them as trees, shrubs, climbers and herbaceous plants. Cultural details are given for those that are not more fully described in other chapters, such as *Shrubs and Trees* and *Climbers and other Wall Plants*.

The heights given are the maximum ones that the plants might attain; but trees, in particular, have not been recommended unless they are worth using before reaching their eventual heights. The spread of particularly wide-growing plants is indicated immediately after the height (e.g. *Magnolia grandiflora*, up to 30 ft., s. 25 to 35 ft.).

BRONZE AND PURPLE

TREES AND SHRUBS

Acer (maple). Japanese maples are beautiful shrubs with delicate leaves in shades of red, bronze and purple. Among good varieties with bronze or purple foliage are *Acer palmatum dissectum atropurpureum*, 10 to 20 ft., s. 15 to 25 ft., *A.p. linearilobum* Major Halswell, *A.p. linearilobum atropurpureum* and *A.p. purpureum elegans*. *A. platanoides* Crimson King (syn. *A.p. Goldsworth Purple*), 60 ft., s. 40 to 50 ft., the

purple-leaved form of the Norway Maple, makes a magnificent tree with large, glossy leaves in deep purple.

Berberis thunbergii atropurpurea, 4 ft., s. 5 to 6 ft., is a useful shrub for the mixed border where it can be used as a foil for lighter colours. Its rich purple foliage turns scarlet in autumn and the berries turn red and remain until the leaves have fallen. The compact form, *B. atropurpurea nana*, makes a neat rounded bush that is not too large for a rock garden or bank.

Corylus purpurea, 4 ft., s. 3 ft., the purple-leaved filbert, is dwarf and compact. It does not fruit very often but its rich, dark foliage is very handsome.

Fagus sylvatica cuprea (copper beech), 70 to 80 ft., s. 60 to 70 ft., is one of the best purple-leaved trees and is very attractive as a sapling. It can be pruned to reasonable proportions or trimmed to a hedge. *F. s. pendula*, 10 ft., is the weeping form. Beeches are hardy trees which are raised easily from seed planted in a sandy, chalky or gravelly-loam soil from October to February.

Malus aldenhamensis, up to 30 ft., s. 30 ft., flowers late and has plum-coloured leaves and red flowers. *M. eleyi*, up to 30 ft., makes a slender tree, with wine-red flowers, coppery-crimson leaves and dark red fruits. *M. Nicotina*, a fairly recent introduction, has crimson leaves and pink flowers, while *M. purpurea*, 30 to 40 ft., s. 30 to 35 ft., has leaves that are purplish-green and flowers that are rosy-crimson.

Phormium tenax purpureum (New Zealand flax), 8 to 9 ft., should be planted where the afternoon sun can shine through its bronzy-purple, sword-like leaves. Grows well in rich, loamy soil in milder parts of the British Isles. Sow seeds in pots in March and plant out in May. Cover in hard weather.

Prunus. There are several members of this family with purple leaves. *Prunus cerasifera atropurpurea* (syn. *P. pissardii*), 15 to 25 ft., s. 15 to 20 ft., the old purple-leaved plum, tends to become brownish-crimson. The smallest is *P. cistena* (crimson dwarf),

about 1½ ft., s. 2 ft., with red, almost transparent leaves, and white flowers. *P. folius purpureus*, the purple peach, makes a small tree with rich red leaves. *P. nigra*, 12 ft., s. 12 ft., has intensely dark, almost black, crimson foliage. *P. spinosa rosea*, 8 to 10 ft., s. 6 to 8 ft., the purple-leaved sloe, makes a good small tree for the smaller garden. It bears pale pink flowers and light crimson leaves which turn a soft matt purple.

Rhus cotinus (smoke tree), up to 10 ft., s. 10 ft., is probably the most spectacular of all purple-foliaged shrubs and *R. c. folius purpureus* Notcutt's Variety, is the most striking of them all. The leaves are the deepest plum-purple, veined and edged with crimson in autumn, and the clouds of tiny flowers are the same colour as the leaves.

Rosa rubrifolia, 5 to 8 ft., s. 5 ft., both stems and leaves are purple, with a plum-like bloom, and large hips follow the single pink roses. Plant so as to give room for its arching sprays of graceful foliage.

Salvia officinalis purpurascens, 1 ft., s. 3 ft., makes a mound of soft purple foliage, bluish in winter and rich violet in spring.

CLIMBER

Vitis vinifera purpurea, the crimson-leaved vine, which bears small, edible, black grapes, is particularly striking against stone walls.

HERBACEOUS

Acaena inermis is the bronze-leaved form of this industrious little carpeter, and has spiny crimson burrs in July and August. Grows well from seed planted from October to April in ordinary well-drained soil in a rock garden or in shade.

Ajuga reptans atropurpurea, makes a rich bronzy-purple carpet, and is striking under silver-leaved shrubs. It is invasive and needs cutting back.

Astilbe Fanal, 3 ft., with its purple feathery leaves and crimson flowers, makes a rich pool of colour. *A. Gloria Purpurea*, 2½ ft., bears bronze leaves and deep pink flowers.

Ferula (fennel). The feathery aromatic foliage of this useful herb is particularly

effective in the bronze form. *Ferula communis purpurea*, 5 ft., s. 2 ft., looks like purple smoke with occasional glints of crimson, and makes a rich background for dark crimson roses or pinks. It seeds very generously if the flower heads are allowed to remain on the plant. Plant from November to March in any soil.

Geranium sessiliflorum nigricans, has dark purplish leaves and small white flowers, and grows close to the ground.

Ligularia clivorum Othello, 4 ft., the large heart-shaped leaves are purple and the big, yellow, daisy flowers show up well against them.

Lobelia fulgens, 1 to 3 ft., has beetroot-coloured leaves and brilliant scarlet flowers.

Montbretia Solfaterre, 1½ ft. Its bronze leaves and jaunty yellow flowers make this a most unusual and exciting addition to the late summer garden.

Plantago major rubrifolia, 7 in., the purple-leaved plantain, produces beetroot-coloured leaves throughout the season. Grows in any soil but as it seeds itself liberally it is best if planted in odd corners. Plant in autumn or spring.

Primula Garryarde. This strain of primula has purple leaves, and includes Guinivere with pink flowers, Crimson and Victory with red, and Sir Galahad with white. All grow to about 6 in. high.

Sedum. There are two good sedums with purple foliage: *Sedum album murale*, 2 in., is a neat little stonecrop for growing on ledges, while *S. maximum atropurpureum*, 3 ft., is one of the largest in the family, with leaves, stems and flowers of rich mahogany colour.

Sempervivum arachnoideum stansfieldii, 3 in., and *S. montanum rubrum*, 6 in., both have red leaves and make wonderful colour on wall ledges, or grown between stones in the rock garden.

Viola labradorica purpurea, a pretty little violet with purple leaves and lavender-blue flowers, makes delightful ground cover under light-coloured plants.

ANNUAL

Atriplex hortensis rubra (red mountain orach), 6 ft., s. 1 ft., looks very sumptuous

with the sun shining through its large crimson leaves. Plant seeds at intervals from March onward in any soil. When the seedlings reach 3 in. thin to 1½ ft. apart.

GLAUCOUS

CONIFERS

Cedrus atlantica glauca, over 60 ft., with bluish foliage, is the most impressive of the glaucous conifers and can be pruned to make a broad tree if the garden is small. Among the cypresses there are: *Chamaecyparis lawsoniana columnaris glauca*, usually kept to 20 ft. in British Isles, C.I. Triomphe de Boskoop, deep grey-blue, and C.I. fletcheri, bluish-green, can be kept as a symmetrical dwarf if clipped. *Picea pungens glauca moerheimii*, 3 ft., s. 3 ft., the blue Colorado spruce, is bright silver-blue and grows very slowly to form a small dense tree.

For covering the ground there are: *Picea pungens procumbens*, and also *Sequoia sempervirens glauca-prostrata* (the low-growing form of the gigantic Californian redwood), which grows well in a deep loam soil in a sunny position and should be planted from September to October or from April to May.

OTHER SHRUBS

Coronilla glauca, 5 to 9 ft., s. 4 to 8 ft., does particularly well by the sea but it will grow inland in a sheltered corner and produce yellow vetch-like flowers all through the year. The form C. Valentina makes a dwarf bush and has more silvery foliage. Plant in October.

Eucalyptus gunnii, up to 50 ft., s. 6 ft., in Britain, is the hardiest of the family and will succeed in most districts against a south wall in a rather rich soil composed of loam, decayed manure and charcoal. If it grows too high the main stem can be cut and new growth will soon disguise the operation. Plant in spring or autumn.

Hebe colensoi glauca, 2 ft., s. 2 ft., is a dense little shrub with blue-grey leaves, *H. pageana* is similar but with less narrow leaves, and *H. pinguifolia*, 1 to 3 ft., s. 2 ft., has glaucous rounded leaves rather like those of eucalyptus. *H. cupressoides*, 3 to 6 ft., s. 4 ft., looks like a small cypress,

smells like incense and is covered with tiny lavender flowers in July.

Romneya (Californian tree poppy). This genus has handsome, glaucous, lobed leaves and large white flowers, with conspicuous yellow centres. The following need light soil and a sunny position and should be planted from April to May: *Romneya coulteri*, 6 to 8 ft., s. 5 ft., and its improved forms *R. hybrida*, 3 ft., and *R. trichocalyx*, 5 ft.

HERBACEOUS

Dianthus (pinks) have very good glaucous foliage and clumps of them are attractive in the garden even when the plants are not in flower. Pinks grow particularly well in a limy soil. (See *Alpines for the Rock Garden* and *Hardy Perennials*.)

Eryngium maritimum (sea holly), 1½ ft., has the bluest leaves of all the eryngiums, and will sometimes grow well at the edge of a gravel path.

Euphorbia. This genus has foliage that varies from green to glaucous. *Euphorbia biglandulosa*, 2 ft., and the smaller *E. myrsinites*, which are the most blue-grey, are prostrate in habit and never happier than when sunning themselves on a flat stone facing south. Plant from October to March in ordinary soil in dry borders, banks or sunny rock gardens.

Hosta glauca (syn. *Funkia sieboldiana*), 1 to 2 ft., has large heart-shaped, blue-green leaves, crinkled and veined to a fascinating pattern. Flowers can be lilac or white.

Iris germanica, 2 ft., in its many forms has beautiful sword-like glaucous leaves which are handsome when rising beside a path or among plants of rounded shape.

Othomopsis cheirifolia, up to 1 ft., has glaucous paddle-shaped leaves arranged in layered bunches on each side of its long stems, and fleshy, yellow, daisy flowers. It is useful at the front of the border, in walls or for covering banks, and should be planted in light loamy soil in a warm position in spring or autumn. Often needs protection in winter.

Rudbeckia maxima, 4 to 6 ft., s. 4 ft., with its long glaucous leaves and black-coned yellow flowers is a striking plant when given enough space and a moist position.

Ruta graveolens Jackman's Blue (rue or herb of grace), 3 ft., with its ferny blue leaves, is the best form of this aromatic plant. It makes a lovely pool of colour and can be used as a low hedge.

Sedum spectabile (Ice plant), 1 ft., has waxy glaucous leaves which remain attractive throughout the year, and flowers in varying shades of pink. *S. roseum* (so called because of the colour of its roots), 6 in., has lemon-yellow flowers and is a neat glaucous plant for growing between stones.

Thalictrum glaucum has bold glaucous foliage on 5-ft. stems, topped with fluffy sulphur-yellow flowers in July.

Tropaeolum polyphyllum, a trailing plant, has long stems ruffled with delicate glaucous leaves and golden flowers. It is a wonderful plant for draping over a bank but is not always easy to establish. Plant from August to November in a warm, sunny position in well-drained soil. Once settled it will reappear regularly each year.

GOLDEN

SHRUBS

Arundinaria auricoma, a dwarf bamboo which seldom exceeds 3 ft., has brilliantly striped golden foliage, and is slow to increase.

Cassinia fulvida (golden heather), up to 6 ft., is a neat evergreen shrub with tiny leaves of burnished gold and ivory flowers. It can be cut down each spring to keep it compact and bushy. Plant in the autumn in peaty or open loamy soil in a warm and sheltered position.

Chamaecyparis. The golden varieties give radiant colour throughout the year and are particularly valuable in the winter. The best of the *Chamaecyparis lawsoniana* group are *C.l. darleyensis*, 7 ft., *C.l. Golden King*, 6 ft., and *C.l. stewartii*, 5 ft.

Cupressus macrocarpa Donard Gold, 30 to 50 ft., and *C.m. lutea compacta*, 15 ft., give an impression of sunshine to the garden all through the year.

Euonymus japonicus, 10 ft., is a good-tempered evergreen shrub for town or coast, and will stand severe clipping. *E.j. aureus*,

FOLIAGE



FAGUS SYLVATICA CUPREA



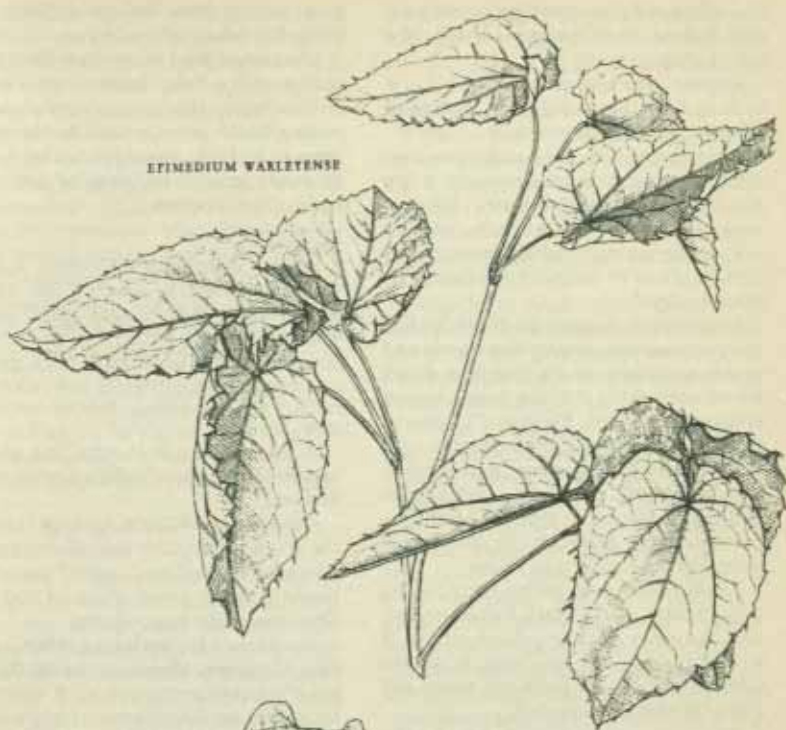
VITIS VINIFERA PURPUREA



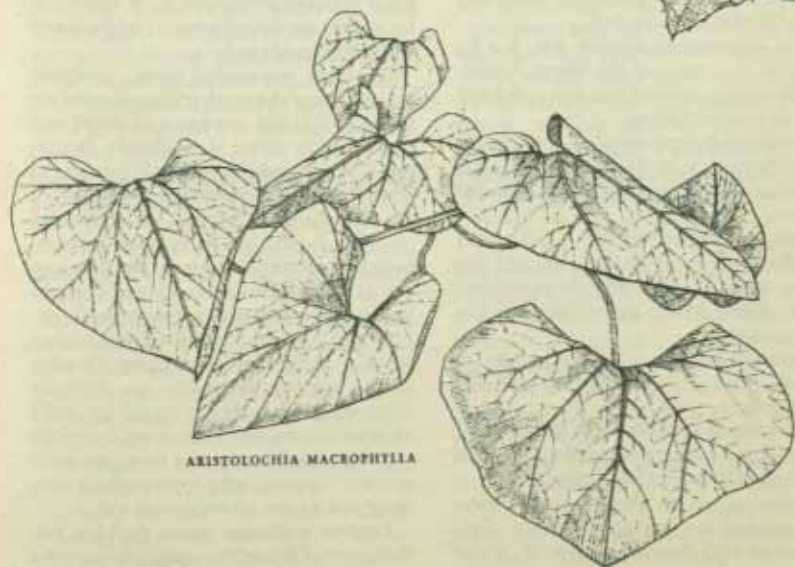
RHUS COTINUS

FOLIAGE

EPIMEDIUM VARLEYENSE



ARISTOLOCHIA MACROPHYLLA



5 to 6 ft., s. 4 ft., has small golden leaves; in *E. j. ovatus-aureus*, 5 to 6 ft., s. 4 ft., the leaves are larger.

Juniperus pfitzeriana aurea, about 3 ft., s. 10 ft. in time, has soft golden plumes of foliage spreading horizontally.

Ligustrum (privet) is quick growing, evergreen and excellent for shade. A few plants of the golden form, *Ligustrum ovalifolium aureo-marginatum*, 12 ft., s. 10 to 12 ft., bring warmth and lightness to dull corners. Plant in ordinary soil from October to April.

Lonicera nitida Baggesson's Gold, unlike the green variety, grows very slowly and makes a pleasant, small, specimen shrub where something striking in the way of contrast is needed. Plant in October or April in ordinary well-drained soil.

Philadelphus coronarius aureus (golden mock orange), 5 to 8 ft., s. 4 to 6 ft., is bright gold early in the year but the leaves tend to become more green as the season advances or if it is grown in shade.

Populus serotina aurea, 100 to 130 ft., is the golden form of the black Italian poplar, and has leaves of clear golden-yellow. It is fairly slow growing and is always attractive. Plant in ordinary moist soil from October to February.

Ribes sanguineum brocklebankii, 8 ft., s. 8 ft., the golden version of the North American flowering currant, has beautiful and reliable golden foliage.

Robinia pseudacacia aurea (golden acacia), needs great care in its early stages, as its stems are very brittle and easily damaged by wind.

Salvia officinalis ictorina, 1 ft., s. 3 ft., gives the effect of a golden bush, although the leaves are grey-green heavily variegated with yellow, which gets brighter as the days get colder.

Sambucus nigra aurea (golden elder), 10 to 12 ft., s. 8 ft., has pure yellow, unvariegated foliage.

Taxus baccata fastigiata aurea, up to 50 ft., the golden Irish yew, is particularly good when used formally for emphasis.

Thymus vulgaris aurea is the golden form of common thyme, and makes a thick carpet of rich bronze-yellow. *T. nitidus*

aureus is a golden variegated form and looks like a tiny yellow shrub.

Ulmus carpinifolia sarniensis aurea (Dickson's golden elm), a slender tree with bright golden leaves that grows very slowly—even after 30 years it will not be more than 12 ft. high. Plant from October to February in any well-drained soil in an open sunny position.

CLIMBER

Hedera Buttercup (Golden Cloud, Russell's Gold) is one of the small-leaved ivies, with bright gold leaves, which are more brilliant in the winter. It is suitable for growing in rock garden crevices and is brightest in full sun.

HERBACEOUS

Achillea argentea aurea, 6 in., is a golden version of the dwarf achillea, with white flowers.

Filipendula ulmaria aurea (golden spiraea), 2 to 3 ft., is particularly beautiful in spring, when its divided and veined leaves are bright gold; it grows paler in the sun. The flowers are insignificant.

Hosta aurea, 1 ft., has large golden leaves, and *H. fortunei albopicta*, 1 to 1½ ft., has golden leaves margined with green. In both cases the leaves become more green as the season advances.

Lysimachia nummularia aurea (creeping Jenny), keeps the vivid yellow of its leaves throughout the season and brightens dull corners under dark shrubs. It prefers a damp position but will grow anywhere, even in crevices in shady walls.

Milium effusum aureum, 1 ft., often referred to as Mr. Bowles's golden grass, keeps its brilliant colour throughout the year and brings sunshine to dark corners. Plant in shady, moist places in spring or autumn.

Origanum vulgare aureum (golden marjoram), 1 ft., grows in two forms. One has small, pointed leaves like an ordinary marjoram, but without its robust habit of growth, the other has round, slightly curled, golden leaves and increases quite quickly. Grows easily from seed or cuttings in a warm, well-drained soil.

Pyrethrum parthenium aureum (golden feverfew) (syn. *Chrysanthemum parthenium aureum*),

up to 3 ft., has soft yellow leaves and small white flowers and is effective as an edging or among darker-leaved plants. *P.p. aureum* Golden Moss is very dwarf, and *P.p. aureum selaginoides* even smaller.

Valeriana plu aurea, 3 ft., has golden leaves at the beginning of the season, darkening to green in the summer and its flowers are white on 10-in. stalks. It is a hardy perennial that grows easily from seed in any soil in a sunny border. Plant September to April.

Veronica teucrium Trehane, the golden-leaved veronica, makes a mat about 6 in. high with bright blue flowers.

ANNUAL

Atriplex hortensis cupreata, 6 ft., is a form with yellow leaves that is very useful for indoor decoration as well as in the garden. (See *Atriplex hortensis rubra*, page 566.)

GREEN

SHRUBS

Artemisia abrotanum (southernwood or lad's love), 3 to 4 ft., s. 3 ft., has fine, dark, grey-green foliage and makes a neat symmetrical bush if cut down each spring.

Arundinaria fastuosa, 20 ft., *A. murielae*, up to 13 ft., and *A. nitida*, 10 ft. (bamboos), have infinite grace with their smooth straight stems and fluttering leaves, and can be relied on not to become too rampant.

Aucuba japonica, 6 ft., s. 6 ft., is still one of the best evergreen shrubs for poor soil and deep shade.

Bupleurum fruticosum, 5 to 10 ft., s. 6 to 8 ft., has beautiful grey-green leaves with a matt surface, and yellow-green flowers. It is a good plant for seaside gardens and grows particularly well on chalk. Plant in October or April.

Camellia. If given woodland conditions camellias are as hardy as laurels, and their dark, shining leaves are always beautiful. (See *Shrubs and Trees* for varieties.)

Choisya ternata (Mexican orange blossom), 6 ft., s. 5 ft., brings a lighter, brighter shade of green into the garden and bears pure white fragrant flowers.

Euphorbia characias, 3 to 4 ft., s. 4 ft., *E. robbiae*, 2½ ft., and *E. wulfenii*, 5 ft., s. 5 ft., have great architectural beauty and their

stout stems are close-packed with handsome green or grey-green leaves throughout the year. The great mop-heads of love-bird green flowers are an added attraction. (See *Euphorbia*, page 567.)

Fatsyhedera lizei, 8 to 10 ft., s. 8 ft., a cross between *Hedera hibernica* and *Fatsia japonica*, has a loose habit and enormous glossy leaves, and looks effective tumbling down a shady bank. It is quite hardy and vigorous, and is useful in shady places. Plant in late autumn.

Ginkgo biloba (maidenhair tree), 60 ft. eventually, has most beautiful fan-shaped leaves in soft grey-green, which turn yellow in autumn. It is attractive even when a small tree.

Juniperus communis, 12 ft., s. 4 ft., is one of the brightest of the green conifers and makes a striking upright tree.

Magnolia grandiflora, up to 30 ft., s. 25 to 35 ft., is slow growing, but *M.g. Exmouth Variety*, which flowers earlier than the type, can be grown in the open. It bears beautiful, large, rounded, rich green leaves, shiny above and covered with rusty-chestnut down underneath.

Mahonia japonica, 6 ft., s. 8 ft., used to be known as *Berberis bealei* and is now sometimes listed as *Mahonia japonica bealei*. It has large leathery green leaves, as spiny as holly, which sometimes turn crimson in the autumn. Its flowers are borne in winter, in long racemes, and are pale yellow with a strong scent of lily-of-the-valley. It does best in light shade with a cool, peaty soil, but will grow anywhere.

Phlomis fruticosa (Jerusalem sage), 2 to 4 ft., bears beautiful soft grey-green leaves and yellow whorled flowers in July. The leaves of *P. chrysophylla*, 2½ to 3 ft., s. 3½ to 4½ ft., are a little warmer in tone, and in *P. italica*, 3 ft., s. 3 ft., which bears pink flowers, they are smaller and paler. Plant from October to April in a well-drained, light or chalky loam soil in a sunny position.

Pittosporum tenuifolium (syn. *P. mayi*), up to 30 ft., is the hardest of this genus and, with its pale willow-green leaves and slender black stems, is one of the most beautiful shrubs for foliage. Will only survive in

the south or south-west of the British Isles. Plant in April in a well-drained chalky soil.

Rosmarinus Corsican Blue, 3½ to 6 ft. eventually, has rather narrow leaves that are strongly aromatic and a rich shade of grey-green. The bush, which is good grown against a wall, has a bushy spreading habit and has porcelain blue flowers over a long period. *R. officinalis*, 4 to 7 ft., s. 5 ft., with soft grey-green aromatic foliage, is lovely against stone, and the prostrate form *R.o. prostratus* can be used in dry soil on top of a wall. Pinch out the tips of young shoots to prevent straggling.

Salvia angustifolia, 1 ft., has narrow green leaves, *S. officinalis*, 1 ft., makes an informal spreading bush in soft grey-green. The form with white flowers, *S.o. albilflora*, has particularly good foliage.

Sorbaria arborea glabrata is not unlike a spiraea, with long pointed leaflets strikingly veined. Cut to ground level each spring so that the shrub will make up to 5 ft. of new growth, with spikes of creamy-white flowers at the tips.

Tamarix Pink Cascade, 12 to 15 ft., s. 15 to 18 ft., is a good form, with lacy foliage and long sprays of rose-pink flowers. Is particularly attractive against a white wall, which shows up its misty foliage and delicately coloured flowers.

Viburnum davidii grows horizontally and is particularly useful for covering banks, where its very dark, prominently veined leaves show up well. To get bright blue berries, male and female plants must be planted together.

Vinca major, 1 to 2 ft., is the plant to use when a curtain of evergreen shining foliage is required. It never varies and can be used to cover banks, clamber up trees or thicken the base of a hedge that has become threadbare. *V. minor*, 1 to 1½ ft., has leaves of the same dark polished green and, though they are smaller, they soon thicken into an impenetrable carpet. Plant in ordinary soil in April.

CLIMBERS

Aristolochia macrophylla has large heart-shaped leaves throughout the summer.

Hedera (ivy) has no rival when an evergreen self-clinging climber is needed to cover high walls or clothe bare places under trees where nothing else will grow. *Hedera colchica* and *H. hibernica* have large leaves, *H. deltoides* (Mr. Bowles's shield ivy) is dark and blunt, and *H. cristata*, *H.c. Green Ripple* and *H.c. Curly Locks* have waved edges to their leaves.

Hydrangea petiolaris, 60 to 80 ft., the climbing hydrangea, is self-clinging. It bears large glossy leaves, and grows horizontally as well as vertically. Does well on a high north wall.

HERBACEOUS

Acanthus mollis, 3 to 4 ft., has large glossy leaves and whitish flowers. *A. spinosus*, 3 to 4 ft., has more finely divided leaves, which are viciously spiny, and spikes of purplish-white hooded flowers, well protected with spiny bracts.

Alchemilla alpina, 6 in., has leaves edged with white which are smaller and darker than those of *A. mollis*. The flowers are silver-green. *A. mollis* (lady's smock), 2 ft., seeds itself with abandon. The grey-green leaves are pleated like a fan, and they enhance the sprays of tiny yellowish-green flowers.

Angelica archangelica, 5 to 6 ft., s. 4 ft., has an opulent air, with large pale leaves, thick stems and transparent bracts. It is magnificent in June when topped with large spherical heads of pale green.

Bergenia. This genus provides some of the most solid, satisfactory foliage in the garden. The large rounded leaves are glossy and evergreen and turn crimson in winter, and the large heads of pink, red or purple flowers are most attractive in early spring. *Bergenia cordifolia*, 9 in., and *B. crassifolia*, 1 ft., have large leathery leaves, *B. heesiana*, 9 in., has upright leaves which become beetroot-red in winter. *B. delbees*, 1 ft., has the largest leaves of all but they are rather flimsy and the plant needs a sheltered site.

Brunnera macrophylla (syn. *Anchusa myosotidiflora*), 1 to 1½ ft., has large, hairy, heart-shaped leaves which make a dense background for the airy sprays of forget-me-not-like flowers.

Curtonus paniculatus (syn. *Antholyza paniculata*), 3 ft., s. 2 ft., is like a giant montbretia with wider grooved leaves, which looks very striking in the border. Its arching arms of dark orange flowers are most handsome, and make good skeletons when the flowers are over.

Eomecon chionanthum (poppy of the dawn, cyclamen poppy), 1 to 2 ft., has unusual foliage, tufted and palmately-veined on translucent stems. Plant in winter in sandy-peat soil, in a sunny, well-drained border. Water freely in dry weather.

Epimedium. Will grow anywhere but prefers a little shade. The delicate leaves flutter on wiry stems and turn to lovely shades of gold and orange in the winter. Most species have smooth heart-shaped leaves but in the orange-flowered *Epimedium warleyense*, 8 to 22 in., they are waved at the edges. Plant in autumn or spring.

Filipendula hexapetala, 2 to 3 ft., is a good ground cover plant with fine ferny foliage and sprays of double white flowers.

Geranium. This colourful genus has good leaves, and when the flowers are rather small as in *Geranium phaeum*, 2 ft., *G. punctatum*, 1½ ft., and *G. reflexum*, 1½ ft., the foliage is particularly good. In *G. ibericum*, 20 in., the leaves are dark and hairy as a background for rich blue flowers, and in *G. macrorrhizum*, 1½ ft., they turn to vivid autumn tints. The soft-grey leaves of *G. renardii*, 10 in., show up the pale flowers.

Gunnera manicata, 8 to 10 ft., a very individual plant, has rhubarb-like leaves, root stocks covered with brown "fur" and bottle-brush flowers that turn from green to dull red.

Helleborus corsicus, 2 to 3 ft., s. 2 ft., has beautiful, holly-like, grey-green leaves with conspicuous veins, and will grow in poor soil in the open. *H. foetidus*, 2 to 3 ft., and *H. orientalis*, 1 to 2 ft., are attractive evergreen plants for a shady position. They will grow in any soil but prefer it to be moist and well drained. Plant in October, November or March and do not disturb after planting. Top-dress with well-rotted compost after flowering and water in dry weather.

Heracleum mantegazzianum, 12 ft., s. 4 ft., is

like a gigantic cow parsley and gives a tropical effect to a woodland planting. It is an inveterate seeder and wise gardeners remove the seed heads before they are ripe. Plant in October and November in any soil.

Hosta fortunei, 1½ ft., *H. lancifolia*, 9 in., s. 12 in., *H. ventricosa*, 1 to 2 ft., are among the best of the green-leaved hostas. *H. plantaginea*, 1 to 2 ft., has pale green leaves and likes a sunny position. Hostas have the most luxuriant foliage if they are grown in shade, but they flower better in a more open position.

Kirengeshoma palmata, 2 to 4 ft., comes from Japan and, with its angled leaves, black stems and yellow shuttlecock flowers, is a plant of great character. It needs a lime-tree soil, and a fairly moist position in half shade. Plant in spring.

Macleaya cordata (syn. *Bocconia cordata*), 5 to 8 ft., is a handsome plant with soft, silver-lined, grey-green leaves, and plumes of small buff flowers.

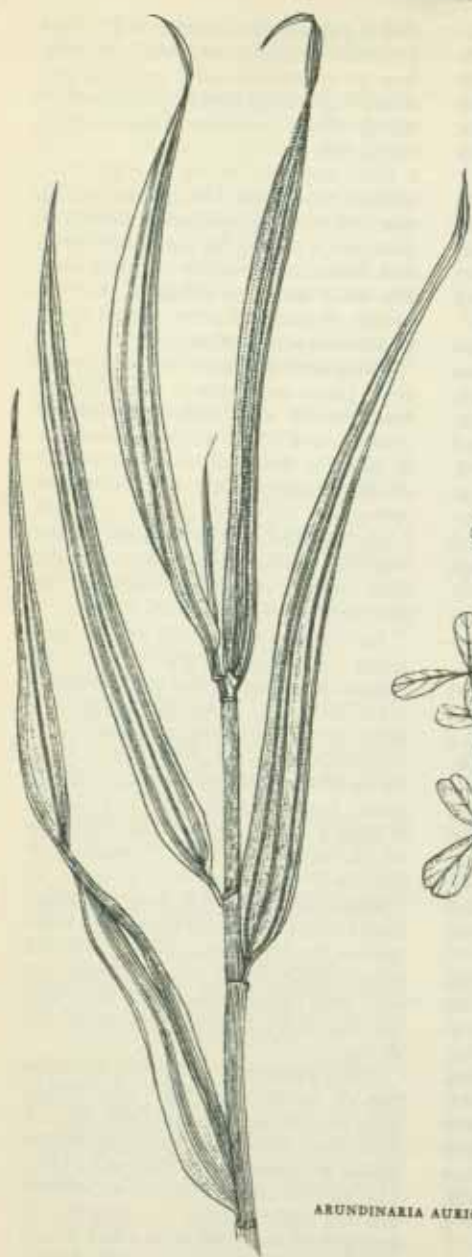
Pachysandra terminalis, up to 1 ft., has fleshy stems and evergreen leaves with insignificant flowers and is a good carpeter. Plant from November to February in moist loam in a shady position.

Rheum palmatum, 5 ft., has a spike of rich raspberry-coloured flowers and handsome leaves with a crimson lining. It likes a damp position but will grow in any soil. Plant from November to February.

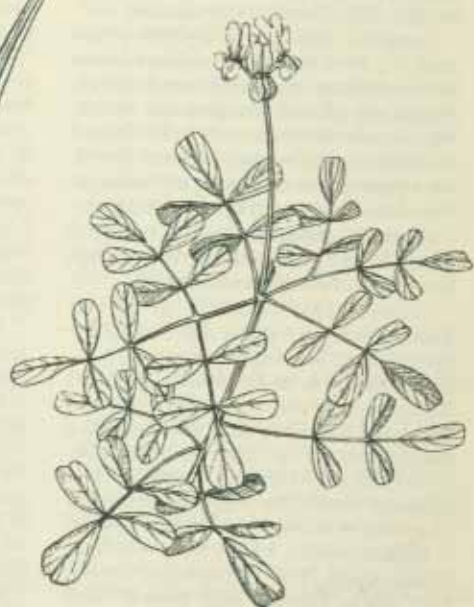
Selinum carvifolium, 3½ ft., is a rare British native plant which is a handsome addition to the woodland garden. Its broad ferny leaves have a wide span and are dark green, showing up well the flat heads of white flowers on red stems.

Tellima grandiflora, 2 ft., is like a heuchera but its leaves are larger and beautifully etched with black. They are soft pink when young and turn magnificent shades of crimson in autumn and winter. The flowers are pale green on tall and graceful spikes. Plant in autumn or spring in ordinary soil in sun or shade or in wild gardens.

FOLIAGE



ARUNDINARIA AURICOMA



CORONILLA GLAUCA

FOLIAGE

CORNUS ALBA SPAETHII



LYCHNIS CORONARIA



FATSHEDERA LIZEI VARIEGATA

SILVER

SHRUBS

Atriplex halimus, 4 to 8 ft., s. 6 ft., has slender silver leaves with a satiny texture, which look attractive with all flowers. It makes a wide spreading bush which can be cut down in spring. Grows well by the sea. (See page 566.)

Ballota pseudodictamnus, 2 ft., has the advantage of being evergreen and its small, woolly, silvery leaves are surprisingly tough. It has soft pink flowers which nestle in deep woolly calyces. Needs a well-drained ordinary soil and a sunny position. Plant in spring or autumn.

Convolvulus cneorum, 1 to 3 ft., has narrow leaves covered with silvery, silky hairs, and blush-pink flowers opening from pink buds.

Helichrysum angustifolium, 1 ft., smells of curry, particularly in hot sun. It has silver leaves and burnished gold flower heads. *H. plicatum*, 2 to 3 ft., makes a loose bush with long narrow leaves and flat gold heads. *H. trilineatum*, 2 ft., s. 2 ft., is more compact, with tiny three-veined leaves and small, yellow, plush flowers.

Olearia mollis, 2 to 3 ft., s. 2½ ft., one of the most attractive of the daisy bushes, has silver leaves and white flowers. *O. semidentata*, 8 ft., has larger, whiter leaves with purple-centred lilac flowers.

Pyrus salicifolia pendula (weeping pear), 15 to 25 ft., s. 20 to 30 ft., could easily be taken for a small silver willow. It has cream flowers and looks well at the end of a path or formally in pairs in front of a house. Plant from November to February in an ordinary soil.

Santolina chamaecyparissus, 1½ to 2½ ft., is a neat plant and is useful as a hedge. *S.c. nana* is even smaller and can be planted in a rock garden. *S. neapolitana*, 2 ft., has the most silvery foliage of the cotton lavenders. The form with pale flowers, *S. sulphureum*, 1½ ft., is particularly useful.

Senecio cineraria (syn. *S. maritima*), 1 to 2 ft., is a true perennial but is usually used as a bedding plant. *S.c.* Silver Filigree has particularly delicate leaves and *S.c.* White Diamond has wide, white foliage and is hardy. *S. greyii*, 3 ft., s. 4 ft., and *S. laxifolius*,

2 to 3 ft., s. 3 ft., are hardy shrubs with leathery silver leaves and golden flowers. *S. leucostachys*, 2 to 3 ft., s. 3 ft., needs a south wall even in the west, but it is worth keeping it going from cuttings for it has beautiful lacy foliage and ivory flowers. *S. monroi*, 2 to 6 ft., s. 5 ft., is not very hardy but its wavy, silver-lined leaves are attractive.

Sorbus aria lutescens (whitebeam), 20 ft., s. 20 ft., in time. Its silver foliage is particularly lovely when it unfolds in April and lasts well in water. The white flowers are followed by scarlet berries.

HERBACEOUS

Achillea clavennae (syn. *A. argentea*), 6 in., silver foliage and white flowers, is suitable for the rock garden or front of a border. *A. clypeolata*, 20 in., has the whitest, most refined foliage of the silver achilleas, but it is not as hardy as *A. Moonshine*. *A. Flowers of Sulphur*, 2 ft., has deep ivory flowers and silver-grey leaves. *A. Moonshine*, 2 ft., has a bushy habit and golden flowers. *A. taygetea*, 1½ ft., is similar to *A. Flowers of Sulphur*. *A. wilczekii* is similar to *A. argentea*.

Anaphalis margaritacea, 15 in., silver leaves, has running roots and little to show in winter. *A. triplinervis*, 1 ft., is the most adaptable of this family, with its ivory "everlasting" daisy flowers, and makes a neat evergreen clump. *A. yedoensis* is similar to *A. margaritacea* but taller.

Anthemis cupaniana, 1 to 1½ ft., is more grey than silver but is useful in many places, including walls and pavings, and its white flowers are continuous.

Artemisia absinthium Lambrook Silver, 3 ft., is an improved form of *A. absinthium*, and makes a big mound of frothy silver foliage with flowers like mimosa. Other artemisias with filigree foliage are: *A. canescens*, 1 ft., *A. discolor*, 2 ft., *A. splendens*, up to 1 ft., and *A. versicolor*, 2 ft. *A. ludoviciana*, 3 ft., and *A. Silver Queen* have tall spikes of white leaves, and both "run" to a certain extent. *A. stelleriana*, 1 ft., is prostrate and has large white leaves rather like those of a chrysanthemum.

Chrysanthemum haradjani is low growing and makes a flat mat of silver leaves fringed to the centre veins.

Cynara cardunculus (cardoon), 5 ft., s. 4 ft., usually produces its young leaves in autumn after the flower spikes with their small blue thistle flowers have been cut down, and the large clump of elegant silver foliage continues all through the winter. *C. scolymos* (globe artichoke), 3 to 6 ft., s. 4 ft., has equally handsome silver leaves and flower heads which are beautiful at every stage.

Helianthemum. The Bride, Chocolate Blotch, Fire Dragon and *H. rhodanthecarneum* are among the rock roses with silver foliage. If the plants are trimmed after flowering they make neat mounds of silver, rarely more than 1 ft. high.

Hieracium pilosella is a silver carpenter, with typical lemon-yellow hawkweed flowers. It makes neat rosettes on the ends of long stalks which arch and root where they come to rest. *H. waldsteinii*, 1 ft., has broad white leaves, but the flowers are insignificant and should be cut off. Plant in October or March in ordinary soil on sunny banks.

Lychnis coronaria, 1½ ft., though a typical cottage-garden plant, is worthy of any garden because of its evergreen silver-grey rosettes, and branching flower spikes in magenta or white. *L. flos-jovis*, 6 in., has bright pink flowers.

Onopordon arabicum (cotton thistle), 8 to 10 ft., s. 8 ft., is a biennial, but seeds itself liberally. Its glistening spiny leaves and small thistle flowers are magnificent in the right setting. Plant seeds ½ in. deep in ordinary soil in sunny position in March, and transplant in September.

Potentilla argyrophylla, 2 to 3 ft., has silver-strawberry leaves and either yellow or crimson flowers, and looks well at the front of the border. *P. fragiformis*, 8 in., is also silver with rather hairy leaves and golden-yellow flowers, and is small enough for the rock garden.

Salvia argentea, up to 3 ft., has lovely leaves thickly covered with silver down, and tall spikes of pure white flowers.

Stachys lanata (donkey's ears, lamb's tongue), 1 to 1½ ft., is one of the best silver plants in the garden, with its carpets of evergreen leaves and tall spikes of soft

pink flowers. Plant in ordinary soil as edging plants in autumn or spring.

Verbascum bombyciferum, 12 ft., s. 3 ft., is particularly lovely in winter when its rosettes of large silver leaves cover the soil; in summer, tall down-coated spikes are encrusted with yellow flowers. *V. haensleri*, 8 ft., s. 2 ft., is silver too, with pale yellow flowers, but the silver leaves are smooth and unfelted—and not so tempting to slugs.

Veronica incana, 1½ ft., looks lovely pouring over the edge of a wall, and its silver-grey foliage makes a good background for spikes of violet-blue flowers.

TRICOLOUR

SHRUBS AND TREES

Acer pseudoplatanus brilliantissimum, up to 100 ft., s. 80 ft., grows slowly and has foliage suffused with pink and cream, which is particularly bright in the young growth.

Fuchsia magellanica versicolor, 5 ft., s. 8 ft., is a graceful bush with silver-variegated leaves touched with pink, and carmine and purple flowers.

Hypericum moserianum tricolor, 1½ ft., s. 2 ft., has arching branches and makes effective ground cover with its white, cherry and green variegated leaves.

Populus candicans Aurora, 15 to 20 ft., s. 8 ft., but usually much smaller, has large leaves variegated with pink and cream. The variegation is particularly brilliant when the tree has been severely winter-pruned. Plant in ordinary moist soil from October to February, and prune from November to February.

Salvia officinalis tricolor, 1 ft., is an attractive purple sage with cream, pink and sometimes green variegated leaves.

CLIMBERS

Actinidia kolomikta, 10 to 20 ft., has purple leaves, the lower half of which are splashed with pink and white, and looks effective on a wall. Plant in a loamy soil from October to March.

Hedera Gloire de Marengo, is a strong, high climber, and has large leaves splashed with cream and pink.

Jasminum officinale tricolor, up to 20 ft., a most attractive form of the cottage-garden jasmine, has cream and pink variegated leaves, particularly good in the early growth.

Vitis henryana, 10 ft., is related to the Virginia creeper and has attractive variegations of white and pink, which are more prominent when the climber is grown in partial shade.

HERBACEOUS

Asuga reptans variegata, 6 in., a neater plant than the other bugles, has leaves heavily variegated with cream which become pink-flushed in cold weather.

Nepeta hederacea variegata (syn. *Glechoma hederacea variegata*), is an extremely attractive form of ground ivy, with cream and mauve leaves, and lavender flowers. It is quite hardy and makes a most effective ground cover plant. Plant in ordinary light sandy soil from October to March.

Polygonum cuspidatum variegatum, 6 to 9 ft., s. 8 ft., has early growth that is brilliant cerise, and later the large leaves are most spectacular with their bold splashes of bright pink, cream and soft green. Plant in ordinary soil from October to November or from March to April.

VARIEGATED

SHRUBS

Buxus sempervirens elegantissima is a dwarf form of box with silver-margined narrow leaves. Plant in any reasonably good soil in spring or autumn.

Cornus alba elegantissima, 10 ft., s. 12 ft., with its silver-striped leaves, is good in a mixed border, as is *C. a. spaethii*, with leaves striped with gold. *C. alternifolia variegata*, up to 20 ft., s. 20 ft., has lovely silver and grey-green leaves on horizontal branches. *C. mas variegata*, 15 ft., s. 12 ft., has yellow flowers on bare stems in mid-winter and red fruit in autumn as well as variegated leaves. Most cornus varieties are grown mainly for their foliage as the small white flowers are not important.

Cotoneaster horizontalis variegata, 1 to 1½ ft., grows more slowly than the green form and makes a very pleasing shrub for growing against walls or for ground cover.

Daphne cneorum variegatum, a procumbent shrub, has neat gold and green leaves and cerise flowers; in *D. mezereum variegatum*, 3 to 4 ft., the variegation is cream and more distinct.

Elaeagnus pungens aureo-variegata, up to 15 ft., s. 12 ft., is the most spectacular variegated shrub, with bright green leaves splashed with yellow and gold which become brighter as the weather gets colder. In *E. p. dicksoni* the colouring is reversed, and *E. p. frederici* and *E. p. variegata* are both variegated with cream. Plant in April or September in ordinary soil in a sunny position.

Euonymus buxifolius, 1 to 1½ ft., can be variegated with white and grey or with gold. The broad-leaved *E. japonicus*, 10 ft., s. 8 ft., is a beautiful plant with leaves broadly edged with white, and the variegated form of *E. radicans variegatus*, 1 ft., can be used as ground cover or on a wall.

Fatsyhedera lizei has a charming variegated form, *F. l. variegata*, which grows far more slowly than the green-leaved plant. (See page 571.)

Ilex (holly) brightens the winter scene when its leaves are variegated with silver as in *Ilex aquifolium argentea marginata*, 30 to 80 ft., s. 20 to 30 ft., eventually, and *I. a. argentea regina* (Silver Queen), and also when they are gold margined as in *I. a. aurea marginata* and *I. a. aurea regina* (Golden Queen) or blotched with gold as in *I. a. ferax aurea* (hedgehog holly).

Kerria japonica variegata (syn. *K. j. picta*) has single golden flowers and graceful arching stems. It makes a 3- to 4-ft.-high spreading bush suitable for a mixed border.

Philadelphus Innocence, 4 ft., s. 3 ft., has large and fragrant single flowers and leaves heavily variegated with cream. Like many variegated plants it is less vigorous than the type and remains a smallish shrub.

Sambucus nigra aurea-marginata, up to 12 ft., is an elder that is suitable for any garden. The leaves are large and margined with bright yellow, and the shrub is very handsome where it is allowed enough room to grow naturally.

Symphoricarpos orbiculatus variegatus, 3 to 7 ft., s. 2 to 6 ft., makes a pleasant little shrub to grow amongst flowers, with its golden leaves netted with black. Plant in ordinary soil in sunny or shady borders from October to February.

Veronica andersonii, 4 to 6 ft., has rather large leaves. In *V. elliptica*, up to 20 ft., the foliage is neat and rounded, and *V. speciosa*, up to 5 ft., makes a dwarf shrub with blue flowers. The variegated veronicas are very useful among flowers or other shrubs and in cold districts should be kept going with cuttings.

CLIMBERS

Hedera canariensis variegata and *H. colchica dentata variegata* are two lovely variegated forms of hederas with long leaves. There are also various forms of the smaller ivies that are recommended, such as *H. helix* Silver Queen, with silver and grey leaves and *H. h.* Jubilee with gold and dark green leaves.

HERBACEOUS

Arrhenatherum elatius bulbosum variegatum, 9 to 12 in., is a dwarf grass with whitish striped leaves.

Geranium macrorrhizum variegatum, 1½ ft., with cream markings on its leaves, grows rather slowly and is worthy of a place in the rock garden.

Glyceria aquatica variegata, 2 ft., is a silver variegated grass.

Hosta japonica albo-marginata, 1 ft., and *H. fortunei albo-marginata* (syn. *H. crispula*), 1½ ft., have leaves margined with white. *H. f. albopicta*, 1 to 1½ ft., is pale gold edged with green, and *H. undulata* (syn. *H. medio-variegata*), 1½ ft., has twisted leaves variegated with white.

Lamium galeobdolon variegatum, 1 to 1½ ft., has yellow flowers and prefers a light soil. *L. maculatum*, 1 to 1½ ft., has purple, pink or white flowers and likes a moist soil, and *L. m. aureum* has golden leaves striped with silver.

Lamiaceae are evergreen and are excellent ground cover plants. Plant in October or March.

Linaria annua variegata (honesty), 1½ to 2 ft., with boldly variegated leaves can be very effective and reproduces itself each

year. Plant in ordinary soil, preferably sandy, in autumn or spring.

Marrubium variegatum is a pleasant variation of horehound, and makes a mound of delicate cream and pale green foliage. Plant in ordinary soil in a sunny position in March or April.

Mentha gentilis aurea (golden mint), 1 to 1½ ft., has vivid gold and green leaves; *M. rotundifolia variegata*, up to 2 ft., is white and pale green, with a woolly texture.

Miscanthus sinensis variegatus, 5 to 6 ft., is a grass with lines of yellow running crosswise on the leaves.

Phalaris arundinacea picta (syn. *P. a. variegata*), 4 ft., a grass with white striped foliage.

Phlox has at least two variegated forms, Border Gem, 2½ ft., with deep violet flowers, and Norah Leigh, 1½ ft., with leaves that are sometimes all white.

Pulmonaria saccharata, 1 ft., has beautiful, long, heavily marbled leaves, with large white spots on a very dark background.

Ruta graveolens variegata is as easy to grow as ordinary rue and the leaves look like a clump of pale yellow flowers.

Scrophularia aquatica variegata, 3 to 4 ft., the variegated figwort, is evergreen. Its flowers are insignificant and are usually removed. It is hardy and will grow in any soil. Plant in the spring.

Sedum spectabile variegatum, 20 in., has as much cream as green in its leaves and is very striking.

Symphytum officinale variegatum, 5 to 6 ft., has large leaves heavily splashed with cream and is good for bold relief. Grows well in any soil even under the shade of trees. Plant October to November or March to April.

Veronica gentianoides variegata, 2 ft., has silver variegations in its glossy leaves. The stems are striped with white and the tiny leaves that grow up them are also silver variegated.

Vinca major elegantissima, looks as though its large glossy leaves have been splashed with cream paint. Two variegated forms of *V. minor* are *V. m. argenteo-variegata*, silver variegated, and *V. m. aurea-variegata*, golden variegated. (See page 572.)

FERNS



PHYLITIS
SCOLOPENDRIUM
CRISPUM



CRYPTOGRAMMA CRISPA

FERNS

HARDY FERNS

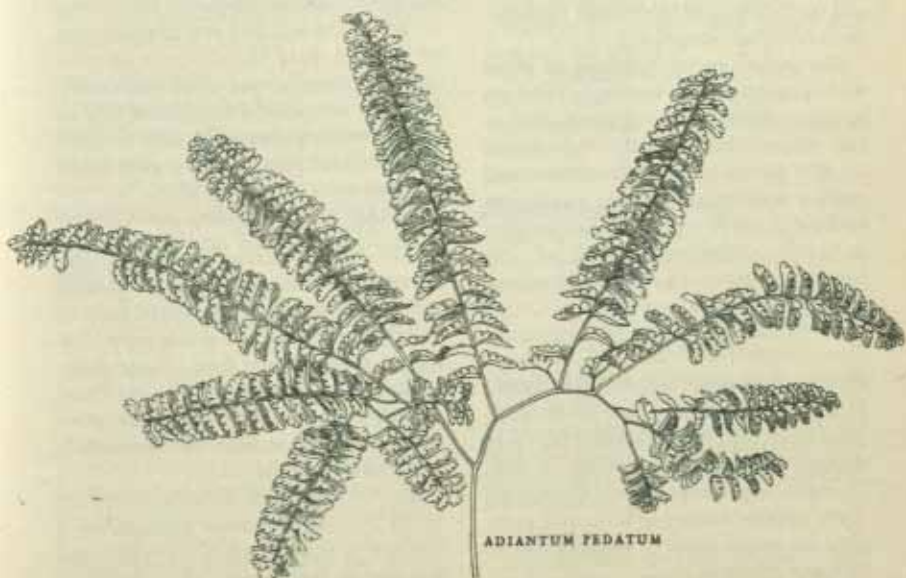
HOWEVER well planned a garden may be, some borders will face north. There can be few gardens, therefore, which do not possess a spot in which ferns would flourish, since while there are a few ferns that will tolerate a certain amount of sunshine, there are none which demand it as an essential.

Many of the loveliest fern varieties were originally found growing in the wild among their more prosaic relations. Others have originated as seedlings in the gardens or nurseries of growers. Some of these varieties are so fine and lacy in appearance that they rival the choicest

exotic ferns that have to be nursed in heated greenhouses.

Even in the industrial areas of the north many excellent collections of ferns are grown in what can only be described as backyard conditions—places where direct sunlight never penetrates, and where the cultivation of flowering plants strains the patience and skill of the most ardent enthusiast.

In common with most garden plants, hardy ferns well repay careful cultivation. Study of their individual requirements is more important than expensive outlay. The greatest attribute of hardy ferns,



ADIANTUM PEDATUM

however, is their undemanding nature.

It is possible for some specimens to remain undisturbed in the garden for twenty years or more, during which time an annual cutting away of the previous year's fronds, occasional weeding, and an autumn top dressing of leaf soil, sifted peat and wood ash at $\frac{1}{4}$ lb. per sq. yd. are the main cultural requirements. Yet from early spring, when the young fronds begin to unfurl, until autumn frosts cut down the deciduous kinds, such as osmundas, athyriums and lastreas, they reveal fresh charm almost daily. Polypodiums, phyllitises and polystichums, being evergreen, retain their beauty far into the winter months.

TWO KINDS OF GROWTH

All ferns belong to one or other of two well-defined groups.

The first group bear their fronds in a circlet round a central crown or caudex, that is, in a shuttlecock or wastepaper-basket-like arrangement. The male fern and the lady fern of the English countryside are typical examples.

The second group embraces all those with a creeping root system, which can be either slightly above ground level or just below the ground. Such plants usually scramble in all directions and require somewhat different conditions to those in the first group. The common polypody (*Polypodium vulgare*) of the Devonshire lanes is a typical example of this second group.

CULTIVATION

Choose a site which is not only protected from strong sunshine, but is also sheltered from cold spring winds which may damage the tender young fronds. Drought, especially during the winter, is the greatest enemy of ferns and probably the major cause of disappointment to many growers.

PREPARATION OF THE GROUND

Careful preparation of the soil before planting is essential. Remember that ferns are woodland plants and in nature grow in a spongy carpet of rotted leaf humus that has accumulated through the years. They cannot stand a heavy soil and neither do they like chalk. Dig the soil deeply, and incorporate with it a liberal supply of retentive organic material so that food and moisture are conserved. Rotted garden compost, peat or peat moss litter, spent hops or well-rotted leaves are ideal.

PLANTING

Plant all hardy ferns during the dormant period, normally between mid-October and March. Small specimens can be moved with care at other seasons, but do not disturb any fern whilst the new fronds are unfurling. At this critical period the young tender stems are very brittle and easily damaged.

Plant ferns with rhizomatous rootstocks so that the rhizomes are on the surface of the soil and any fibrous roots are covered. Keep the rhizomes in position with large stones until established. Plant the non-rhizomatous kind so that the crowns are just level with the soil surface. Never plant any fern with its old planting mark below the soil.

MANAGEMENT

As the plants become established, frequent top dressing with any of the organic materials mentioned above will help to maintain moisture and at the same time supply natural plant food. Never apply artificial fertilizers in any form. These quickly react on the plants, which grow luxuriantly for a time but ultimately turn brown and die.

Give an occasional dressing of mature wood ash and an annual application of old soot to improve both the colour and the size of the fronds. The nearer the



DRYOPTERIS FILIX-MAS

approach to the natural conditions under which the plants grow wild, the greater will be the success and the fewer the disappointments.

PROPAGATION

The little spores which grow on the backs of the fronds will produce small plants, which in turn produce ferns as we know them. But the propagation of ferns is complicated, and is really work for a specialist. For this reason it is not dealt with here.

RECOMMENDED PLANTS

ADIANTUM

Adiantum pedatum (North American maidenhair), 12 to 18 in., a graceful plant and long familiar to British gardeners; perhaps the most beautiful of all hardy ferns. One of the first American plants to be introduced into the British Isles, having been discovered by John Tradescant in 1637. The young, delicate, light green fronds appear very early in the spring and are carried on slender chestnut-

brown stems arising from a slowly creeping rootstock.

A.p. japonicum, 3 ft., from Japan, is distinguished by its rosy-pink fronds and stems in the spring.

A.p. klondyke, about 2½ ft., even more beautiful than the type, is named after the district of its origin. Has umbrella-like fronds of delicate lacy texture, poised on slender, ebony-black stems.

ALLOSURUS (see *Cryptogramma*)

ATHYRIUM

Athyrium filix-femina (lady fern), the loveliest of all ferns native to Great Britain, seen at its best when planted in colonies and interspersed with anemones and rosy cranesbills. Grows freely when well established, the lacy pale green fronds rising at times to 3 or 4 ft. Many of its forms are even more beautiful than the type and have crested, tasselled, finely cut hair-like segments, or congested and mossy fronds.

CRYPTOGRAMMA

Cryptogramma crispa (syn. *Allosurus crispus*) (parsley fern), about 6 in., an elegant

little plant, bright and green during summer with a resemblance to parsley at first sight. It has two kinds of fronds, the fertile, nearly triangular in outline, and the barren, broad and flat. The stems are rather slender and very brittle.

DENNSTAEDTIA

Dennstaedtia punctilobula (hay-scented fern), another North American species. The 2-ft. fronds are graceful and feathery and when dry have the refreshing smell of new-mown hay. It increases very quickly by underground runners, a dense mat soon forming whether it grows in full sun or part shade.

DRYOPTERIS

Dryopteris filix-mas (syn. *Lastrea filix-mas*) (male fern), the best known of all hardy ferns, deriving its common name from its robust, sturdy growth. A well-grown specimen is particularly handsome with graceful, delicate pale green fronds attaining a height of 2½ to 3 ft. In early spring, when they start to develop, the fronds are curled round like the flutings of a snail shell and are protected from the rain and wind by large, chaffy, light brown hairs.

D.f. foliosa, 2 to 3 ft., stems thickly covered with dark brown scales and overlapping foliage arranged like roof-tiles.

D.f. furcans, 2 to 3 ft., leaflets divided, mostly once, but occasionally twice or even three times, so that it somewhat resembles a fish tail.

D.f. polydactyla, 2 to 3 ft., each branchlet is divided towards the apex and again sub-divided, eventually forming a crisp tassel.

D.f. robustissima, 4 ft. or more, the best fern for sunless town gardens. Plant where it has ample room to develop and can remain undisturbed for many years.

ONOCLEA

Onoclea sensibilis (sensitive fern), a delightful North American plant. Grows in fairly dry shade or moist sunny conditions, but preferably by the waterside where its creeping rhizomes (which carry two kinds of fronds) can scramble in and out of the water. Its sterile fronds

are dark and broadly segmented. The fertile fronds are 1½ to 2 ft. high with the segments rolled up into bead-like bodies.

OSMUNDA

Osmunda cinnamomea, fronds 2 to 3 ft. long and 6 to 8 in. broad, a native of the U.S.A. and Canada.

O. claytoniana, fronds 1 ft. long and 8 to 12 in. broad, also a native of the U.S.A. and Canada.

O. regalis (royal or flowering fern), the most conspicuous of all native hardy ferns, attains majestic proportions. Easily cultivated in any moist place, such as the side of a lake, stream or artificial pool. Its fronds, a delicate pale green in spring, changing with the approach of autumn to light russet-brown, are of two kinds, the fertile, approximately 3 ft. long, and the barren, which are more numerous, about 5 ft. or more.

PHYLLITIS

Phyllitis scolopendrium (syn. *Scolopendrium vulgare*) (hart's-tongue fern), readily distinguishable from any other species by its evergreen, strap-shaped leaves, which vary in length from 1 to 1½ ft., and contrast beautifully with the feathery appearance of other ferns. One of the few adaptable ferns, finding a home on walls, by the waterside or in the border (either in full sun or part shade). Can also be grown as a pot plant in the house. There are many varieties, of which *P.s. crispum* is the most commonly grown.

P.s. crispum, 1½ ft., paler green, more delicate in texture, and beautifully crimped along the leaf margins. There are also forms with baby plantlets on the fronds. These are easily separated and can, with care, be grown on to adult stage.

POLYSTICHUM

Polystichum setigerum (syn. *P. angulare*), 2 to 3 ft., one of the best ferns for the shady garden. Its luxuriant evergreen fronds arise from a nest of rusty membranous scales. The many varieties and forms of this elegant plant are all good and since they are unaffected by extreme seasonal variations, they increase in size and beauty year after year.

GREENHOUSE FERNS

Ferns have a wide geographical distribution, their species and varieties in nearly 10,000 different kinds being found almost throughout the whole world. Stretching sparsely from the Arctic to extreme density in the tropics, these flowerless plants favour islands and coastal areas more than inland territories.

Usually they flourish under moist conditions, especially in the highland districts of the tropics, the majority being shade loving, and a few strictly aquatic. Species vary from minute moss-like plants a fraction of an inch high to palm-like giants towering to 80 ft. or more in the misty, cooler districts of the sub-tropical forests. Many of these tree ferns have spread to the more temperate regions and are to be found in the favoured coastal areas of New Zealand and Australia.

Some are epiphytic and live a mistletoe-like existence in the rain forest, entangled and entwined with vines and climbers, where they provide a snug retreat for the enormous tree spiders that infest these areas.

These ferns of the tropics and sub-tropics are the greenhouse ferns of temperate zones. To cultivate them successfully it is necessary to emulate the conditions under which they grow naturally and to endeavour to foster in the greenhouse the moist, humid, sunless but light conditions so essential to their well-being.

THE FERN HOUSE

There are species that will grow in a greenhouse containing a miscellaneous collection of flowering plants, but when a choice and interesting assortment is desired, it is preferable to devote a house to ferns alone.

The house should be sited with a northern exposure and be shaded from the south, thus ensuring long daylight with protection from scorching sunshine. Though ferns appreciate shade, ample light is necessary in order to develop colour and substance.

The average summer temperature (built up by sun heat) of such a greenhouse is about 60° F. (16° C.). This will certainly drop in autumn, when the house should be kept cool and drier; coddling the plants is unnecessary and undesirable, although the house must be kept frost-proof. During the winter, therefore, provide sufficient artificial heat to exclude frost. Too much heat will encourage premature growth, especially in maidenhair ferns.

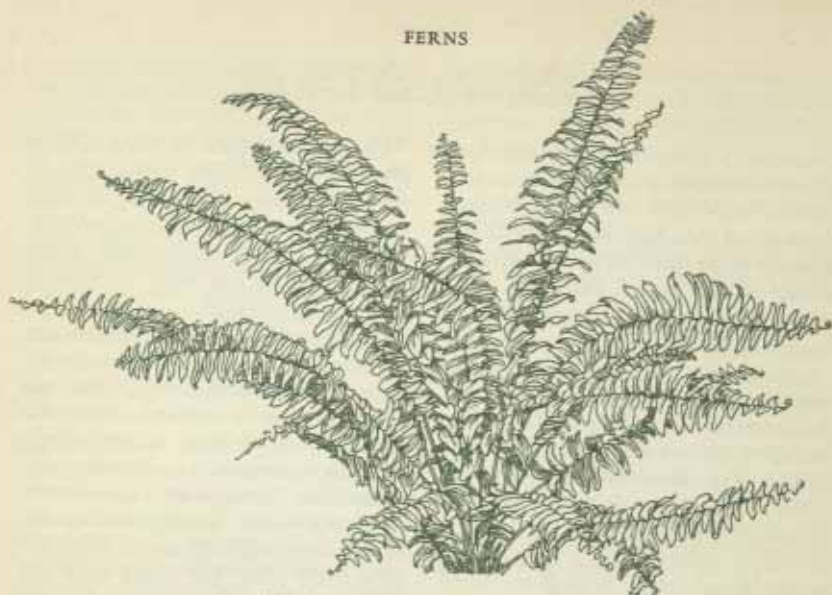
A minimum of warmth only is required in mild weather, raised during cold spells to an average temperature of 45 to 50° F. (7 to 10° C.).

Any form of heating can be employed, including oil stoves, but oil fumes affect some plants, so keep the stove scrupulously clean and use only the best oil. Electricity is the easiest to manage and maintain.

Never allow the atmosphere of a fern house to become hot and dry; give air whenever possible during the growing season (roughly from March to September). Water the plants freely, gradually decreasing the supply at the approach of autumn until winter, when very little water will be required, and then only when dryness is obvious.

CULTIVATION

As in the case of hardy ferns propagation is a job for the specialist, and most amateurs will buy their specimens already potted. The ferns will, however,



NEPHROLEPIS EXALTATA BOSTONIENSIS

need repotting from time to time. In a heated greenhouse this can be done at any time of the year.

When a fern has completely filled its pot with roots, move it on to the next size of pot. Be sure the pot is clean inside and out, and place crocks in the bottom to ensure good drainage. Use soil that is similar to that in which the plant would grow in its natural surroundings. It should be light, fibrous, spongy and capable of retaining moisture without becoming soggy or solid. Good materials are clean fibrous loam, peat, granulated sphagnum peat, leaf mould, silver sand, and granulated charcoal or brick rubble. Experience will show what proportions are best for any particular type of fern. Always plant loosely.

RECOMMENDED PLANTS

The plants listed below are all suitable for growing under the conditions described. Those species that demand continuous heat the whole year round are not included.

Too often the range of ferns seen in an amateur's greenhouse consists solely of the plants most commonly offered for sale in shops, including *Pteris cretica*, *Cyrtomium falcatum*, *Asplenium bulbiferum* and *Adiantum cuneatum*, all excellent plants. Although they provide a good backbone for a collection, some of the following will widen the scope.

ADIANTUM (MAIDENHAIR FERN)

These ferns, 6 in. to 3 ft. high, with their graceful habit and pleasing colour tones, are probably the most popular in cultivation.

Adiantum caudatum, one of the smaller species, with graceful fronds, not exceeding 1 ft. in length, beautifully cut and fringed, with baby plantlets at the tips of the mature leaves. These plantlets can be pegged down to form new plants and later severed from the parent and potted separately. Excellent for greenhouse hanging baskets or for standing on the bench on an upturned pot or similar object.

A. flabellulatum, sometimes listed as hardy and may be so in favoured localities, but usually grown in a greenhouse,



PLATYCERIUM
BIFURCATUM

where it reaches majestic proportions, the fronds ascending to 2 ft. or more and nearly 1½ ft. across.

A. roseum, a dwarf kind, with fronds 4 to 6 in. long. Worthy of consideration for its colour tones, being a pleasing pink when young, changing to delicate green with age.

A. rubellum, similar to *A. roseum*.

A. tinctorum wagneri (syn. *A. decorum*), fronds up to 15 in. long, delicate rosy-red when young, later changing to bright green.

A. venustum, from the Himalayas. Hardy outdoors in the south of England, but seen at its best when grown in a greenhouse, either in pots or pans or planted out beneath the greenhouse staging. Soon forms a dense colony by means of underground runners, each arching frond, about 1 ft. long, sequined with hundreds of tiny bright green leaflets.

ASPLENIUM

There are nearly 800 members of this genus scattered across the world, many making excellent greenhouse plants. The fronds are evergreen and have a leathery texture.

Asplenium bulbiferum, 1 to 2 ft., the commonest variety.

A. viviparum, 1 to 2 ft., an attractive plant.

BLECHNUM

Blechnum gibbum, one of the best of this extensive family, the long, arching fronds often reaching 2½ to 3 ft. in length.

B.g. bellii, forked fronds, each densely tasselled at the apex.

B.g. tinctorum, young fronds are tinged with pink.

CYRTOMIUM

In common with most ferns from Japan, this plant is evergreen.

Cyrtomium falcatum (holly fern), bears thick, tough, spiny leaves with a polished surface, which normally reach about 1½ ft. high; of the several varieties the best is *C.f. pendulum*.

DAVALLIA

All the davallias are beautiful plants of easy cultivation in a greenhouse. The following are good subjects for hanging baskets and are rhizomatous.

Davallia bullata (squirrel's foot fern), up to 1 ft. high.

D. canariensis (hare's foot fern), 1 to 1½ ft., owes its common name to the appearance of the growths of the root-stock, which curve over the sides of the pot.

LYGODIUM

A remarkable family of climbing ferns, making especially attractive growths when allowed to twine on wires or string in the greenhouse.

Lygodium japonicum, attractive and easily managed, with almost leaf-like fronds. Can scramble from 8 to 10 ft.

L. palmatum (the Hartford fern), 5 to 6 ft., the best known.

L. scandens, similar to *L. japonicum*.

MICROLEPIA

Plants with very finely divided, broadly toothed foliage carried on hairy stems.



PTERIS BIAURITA

There are about 25 sorts, of which the following are the best:

Microlepia marginata, 1½ to 2 ft.

M. platyphylla, 2 to 3 ft.

NEPHROLEPIS

One of the most popular of greenhouse ferns and can also be grown as a house plant.

Nephrolepis exaltata (sword fern), fronds 2 ft. long and from 3 to 6 in. broad, and therefore the one best adapted to general cultivation. Its many beautiful varieties, including *N.e. bostoniensis*, are all well adapted to hanging baskets.

PELLAEA

A very interesting group of low-growing ferns with leathery fronds, of neat habit and easy cultivation.

Pellaea andromedifolia (coffee fern), a native of the U.S.A., has very scaly, reddish-brown stems about 1 ft. long.

P. atropurpurea, 5 to 6 in., purple stems; a very slow grower.

P. dealbata, 6-in. chestnut-brown stems and pale green foliage, which appears to be heavily dusted with white powder beneath.

PLATYCERIUM (ELK'S-HORN OR STAG'S-HORN FERN)

These are among the most beautiful and distinct of all ferns. The fronds are forked, giving the plants a noble antler-like appearance, which with their epiphytial habit attracts immediate attention. All come from the tropics except *Platycerium bifurcatum*, which comes from Australia.

Platycerium bifurcatum (syn. *P. alcorni*), the easiest to cultivate, makes a good house plant, and can exist for years on a branch of wood if sprayed frequently with soft water.

POLYPODIUM

A few members of this extensive family are well adapted to greenhouse cultivation, chiefly *Polypodium aureum* and its varieties.

Polypodium aureum, from Australia, has creeping stems clothed with bright rusty scales, and handsome lobed foliage which may easily exceed 2 ft. in length and spread to 10 ft. across.

P.a. areolatum, smaller, glaucous fronds.

P.a. mayi, silvery fronds with purple veins.

PTERIS

Pteris biauurita, a variable species which has produced many outstanding ferns, especially in colour variation. All graceful with individual fronds up to 1 ft. long.

P.b. argentea, prominent white line along the middle of each frond.

P.b. quadrilaurita, white markings.

P.b. tricolor, fronds red when young but later developing silvery markings towards the sides of the red mid-ribs.

VITTARIA

Vittaria lineata (Florida ribbon fern), long fronds up to 1½ to 2 ft. which are attractive and grass-like with distinct parallel lines seaming each edge.

Ornamental Grasses

THE APPEAL of ornamental grasses is two-fold: they can be grown for their decorative effect either as foliage and flower in the garden or for winter decoration after they have been dried.

The wild species and even the cultivated cereals are ornamental; barley is frequently used for flower decoration and can be bleached and dried, while oats and wheat can also be used.

The popularity of both fresh and dried grasses has increased considerably during recent years as their grace and beauty have become more widely recognized.

CULTIVATION

A selection of perennial grasses can be found in some of the hardy plant lists, and a fair range of annuals is offered in seed lists which specialize in the less common plants.

Most of the ornamental grasses are sown in late April, because the soil would be too cold any earlier in the year. There are, however, a few of the more hardy species that produce stronger and larger plants if they are sown in the autumn.

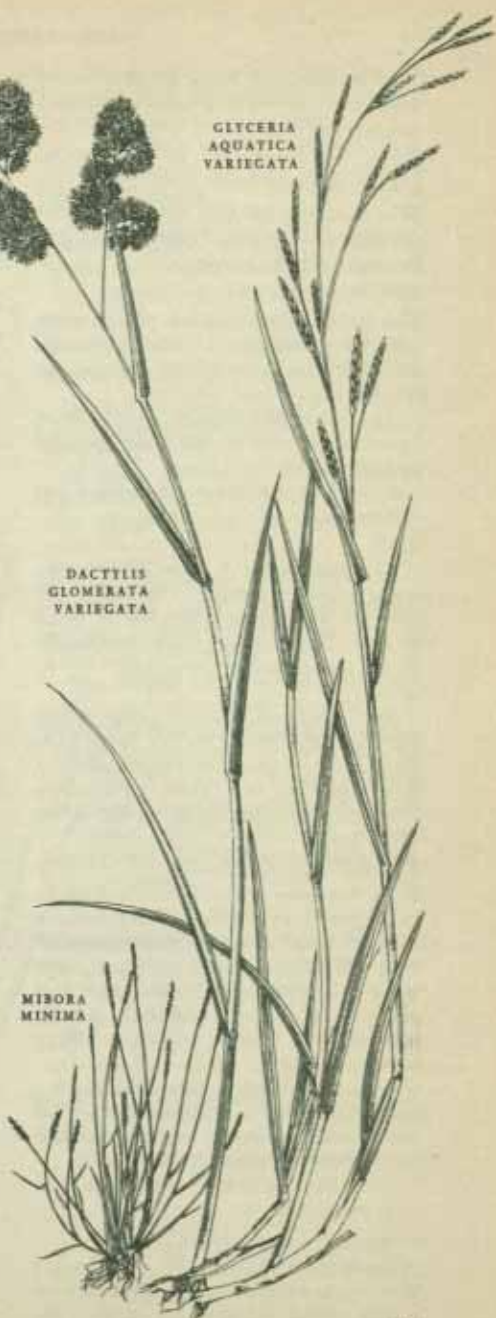
All the plants must have ample room to develop, and it is therefore essential that the seedlings are well thinned out. Insufficient thinning is a great fault in cultivation.

If the grasses have been grown for drying, cut them before they reach maturity. Most grasses are best dried under cool, airy conditions and not in the full glare of the sun, which tends to make them brittle.

GLYCERIA
AQUATICA
VARIEGATA

DACTYLIS
GLOMERATA
VARIEGATA

MISORA
MINIMA



When dry, put them in bunches in vases, and keep them where mice cannot reach them.

The following list of ornamental grasses contains both those grown for garden decoration and those grown for cutting and drying. Some grasses can be used for both purposes.

AGROSTIS (BENT GRASS)

This genus provides some of the most beautiful grasses, with feathery, graceful flower spikes. Many species are used for fine lawns.

Agrostis nebulosa (cloud grass), from Spain, 1½ ft., one of the most graceful annual grasses.

A. pulchella, similar to *A. nebulosa* but not so tall.

AIRA

Aira capillaris (syn. *A. elegans*) (hair grass), from southern Europe, 1 ft., light and graceful with loose panicles of small flowers. Frequently grown specifically for drying for winter bouquets.

APERA

Apera spica-venti (wind grass), from Europe and Siberia, 2 to 3 ft., large panicles of small green or purple awns, is now common as a weed, particularly amongst corn. Usually dried for winter decoration.

ARUNDINARIA (BAMBOO)

These bamboos are evergreen and range in height from 3 to 20 ft., and prefer a moist but not wet soil. Once established they will often spread very rapidly and must either be planted where this does not matter or kept within bounds by pruning with a spade every year. Plant in April and May.

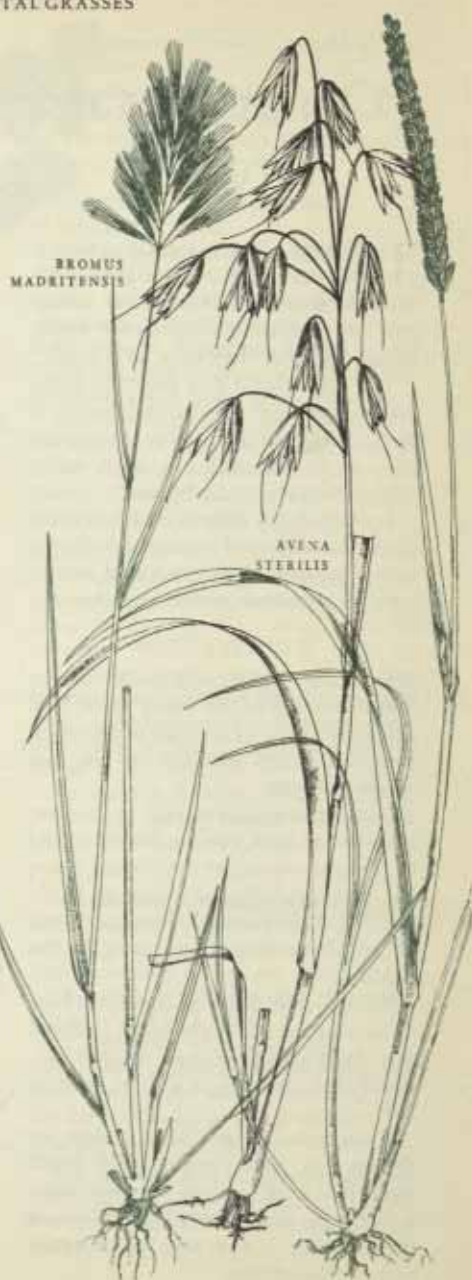
Arundinaria nitida (syn. *Sinarundinaria nitida*), from China, 10 ft., delicately beautiful with slender purplish stems and small leaves. Fairly compact in habit.

A. simoni, 15 to 20 ft.

A. vagans, 3 ft.

ARUNDO

Arundo conspicua, from New Zealand, 6 to 8 ft., a tufted, perennial grass with long, curved foliage, not unlike the



ORNAMENTAL GRASSES

APERA
SPICA-VENTI

HOLCUS
MOLLIS
VARIEGATA

BRIZA
MEDIA

pampas grass in habit and flower although it flowers earlier. Except in mild areas needs winter protection.

A. donax, from southern Europe, 10 to 12 ft. if conditions are favourable, not too hardy a perennial.

A.d. variegata, 10 to 12 ft., one of the most beautiful of all grasses, with leaves striped with creamy-white, is ideal for a conservatory or cool house where there is sufficient space. Only successfully wintered in a warm, secluded corner.

AVENA

Avena sativa, 2 ft., the botanical name for the oat, one of the most important cereals.

A. sterilis (animated oat), from the Mediterranean region, 2 ft. The awns are very susceptible to climatic changes which cause the seed to move.

BRIZA (QUAKING OR PEARL GRASS)

These have large, flat, heart-shaped flowers on slender stalks which swing gracefully in the wind.

Briza maxima, from the Mediterranean region and the Canary Isles, 12 in. or more. Treat as a half-hardy annual and sow in the open from late April onward.

B. media, 8 or 9 in., a native, perennial grass with a smaller head than *B. maxima*.

B. minor or *B. gracilis*, from western Europe and the Mediterranean region, 12 in., an annual.

BROMUS (BROME GRASS)

These grasses are numerous, but only two or three are cultivated. They are graceful, brownish, and grow to approximately 1½ to 2 ft.

Bromus briziformis, from the Caucasus, an annual and, together with *B. japonicus*, is the most commonly grown.

B. japonicus, from central Europe, a biennial.

B. madritensis, a native annual, tufted and decorative.

COIX

Coix lacryma-jobi (Job's tears), from the East Indies, 1 ft. (much taller if grown under glass), a perennial but not hardy. It must be grown either under glass or

raised in heat and planted out in May. In sub-tropical climates it is cultivated for its bone-hard, pearly-grey seeds which are used for decoration.

CORTADERIA (PAMPAS GRASS)

The tall, handsome plumes of the pampas grass of temperate South America are very common in all localities. This has been described as "the grandest ornamental plant yet discovered".

Cortaderia argentea, 9 to 10 ft., silver plumes, is best suited to planting as an isolated specimen, preferably in a lawn, to show off its full shape and beauty. For decorative work the plumes must be cut while still young, or they tend to fluff out.

C. carminea rendatleri, 3 to 4 ft., a rosy-pink form suitable for the small garden.

C. pumila, 3 to 4 ft., suitable for the small garden.

ELYMUS

Elymus arenarius (lyme grass), from Europe and Asia, 3 ft. when in flower, a strong-growing, glaucous-leaved perennial. A valuable maritime plant, it is too vigorous and spreading for a small garden, and is used for binding and fixing sand dunes.

ERAGROSTIS

This is a large genus, and several species with light, graceful flowers are generally dried for winter decoration.

Eragrostis interrupta (syn. *E. elegans*) (love grass), from Brazil, 1 ft., purple in colour, and the best known of the species.

ERIANTHUS

Erianthus ravennae (woolly beard grass), from southern Europe, 4 ft., a long-lived perennial, and a smaller version of the pampas grass. Its plumes are dried for winter decoration.

FESTUCA

Festuca ovina glauca, from cool parts of the world, 6 in., a striking plant with blue-grey, needle-like foliage. It is grown mainly for decoration.

F. punctoria, from Greece, about 1 ft., an uncommon species, has stiff grey foliage

like the quills of a porcupine. The flowers are also stiff and erect.

F. rubra, from cool parts of the world, 1½ ft., was much used in the days when ribbon borders were popular, and though fairly uncommon is still grown.

LAGURUS

Lagurus ovatus (hare's tail grass), from southern Europe, 1 ft., an annual which has a soft, white, egg-shaped head not unlike a rabbit's or hare's tail. Grows best in a warm place.

LAMARCKIA

Lamarckia aurea, from the Mediterranean region, 9 in., an annual with a one-sided panicle of golden flowers.

MIBORA

Mibora minima, from southern Europe and north-west Africa, 1 to 2 in., an annual, is the only grass which is small enough to use in a rock garden. It has fine, hair-like foliage and slender, graceful flower heads. Sometimes used to follow dwarf bulbs.

PANICUM

Panicum capillare, from northern hemisphere, 1½ ft., a strong-growing annual with broad foliage and clouds of tiny flowers, which are usually purple. Once sown it will invariably self-sow and perpetuate itself.

PENNISETUM

Pennisetum villosum (syn. *P. longistylum*), from Abyssinia, 2 ft., twisted, plume-like flowers which are about 4 in. long and usually purple.

STIPA

Stipa arundinacea (syn. *Apera arundinacea*), from New Zealand, 4 ft., a grass with large panicles of purple-brown awns.

S. calamagrostis, from southern Europe, 4 ft., a hardy perennial which dries well for winter use.

S. gigantea, from Spain, 3 ft., can be very striking either in the garden or dried for indoor decoration.

S. pennata (feather grass), from Europe and Siberia, 2 ft., has an inflorescence which is completely covered with fine, silky hairs.

VARIEGATED GRASSES

The variegated group of grasses contains a number of useful, hardy perennial plants which have been in cultivation for a very long time. Some are used both in bedding schemes and in foliage groups. They range from a few inches to 10 ft. high.

ALOPECURUS

Alopecurus pratensis aureus (foxtail grass), 1 ft., the best of the yellow-striped forms, was formerly used mainly in foliage, bedding and park displays.

ARRHENATHERUM

Arrhenatherum elatius bulbosum (syn. *A. avenaceum bulbosum*) (false oat grass), a native, 4 ft. when in flower, also known as onion grass because of its swollen bulbous stem base.

A.e.b. variegatum, 4 ft. when in flower, very striking in early spring when the white stripes in the young foliage make a strong contrast. This contrast is less apparent when it reaches maturity.

ARUNDO

Arundo donax variegata (giant reed), from the Mediterranean, 10 or 12 ft. when grown in a warm corner or cool greenhouse, the largest of all the variegated grasses and, if cultivated in the right conditions, the most beautiful. It is not, however, completely hardy so it is advisable to grow plants under glass and propagate from them annually, planting out in late April or May.

DACTYLIS

Dactylis glomerata variegata (cocksfoot grass), a native, 1 to 2½ ft., usually grown in public gardens and parks.

GLYCERIA (MANNA GRASS)

Glyceria aquatica variegata, a native, 2 ft., silver variegated and a very striking aquatic plant. It is at its best in a bog garden, although it may be grown in damp and moisture-retentive soils.

HOLCUS

Holcus mollis variegata, a native, 8 in., the smallest of the silver variegated

grasses, is often used as an edging plant. On some soils it can spread and become invasive.

MISCANTHUS

Miscanthus sinensis gracillimus (syn. *Eulalia japonica*), from China and Japan, 5 or 6 ft., often used as a pot plant to brighten show groups. It is a hardy plant, at least in the south of England, and, where conditions are favourable, will develop into large clumps.

M.s. striatis (syn. *M.s. variegatus*), has vertical prominent white stripes.

M.s. zebrinus (syn. *M.s. zonatus*), has horizontal bands of yellow.

MOLINIA

Molinia caerulea aurea variegata, 1½ ft., small and of compact habit, with a graceful inflorescence. It has yellow-striped foliage and flower stems.

OPLISMENUS

Oplismenus hirtellus, from the West Indies, widely grown as a pot plant under glass as it is not hardy enough for outdoor cultivation. The leaves are about 2 in. long and the flowers are insignificant. The variegated green, pink and white foliage is often used for flower baskets and for edging purposes in decorative arrangements.

PHALARIS

Phalaris arundinacea picta (syn. *P.a. variegata*), a native, the familiar ribbon grass or gardener's garters, about 4 ft. high when in flower, and at its best in the spring when its white-striped foliage is conspicuous.

SPARTINA

Spartina pectinata aurea-lineata, from North America, 4 ft., has a prominent gold stripe running down the centre of the leaf.

ZEA

Zea mays gracillima (Indian corn), 3 to 8 ft., has white-striped leaves.

Z.m. quadricolor (Indian corn), 3 to 10 ft. A good strain of this plant can produce striping in green, white, yellow or pink.

Lawn Making and Maintenance

A TEMPERATE climate and the correct choice of grasses are essential for a good lawn. In addition, careful initial preparation of the ground and regular attention all the year round will be needed if a rich green sward is to be achieved.

PLANNING A NEW LAWN

Allow adequate time for ground preparation whether the lawn is to be sown, turfed or planted with stolons. First consider the layout and after this has been determined attend to the important matters of levelling, drainage and soil.

LEVELLING

Unless the lawn is required for games, it need not be level or even sloping regularly, though steep banks should be avoided. If a flat surface is wanted, drive in pegs 10 to 12 ft. apart, adjusting them by means of a long straight edge and spirit level.

To level large areas, or to create a particular slope, use an engineer's level and intervening pegs as described in *General Soil Operations*.

Where levelling involves more than a trivial alteration in contours, first take off the top-soil to a depth of 6 in. and put it on one side. Then move the subsoil as necessary, excavating material from high places to fill hollows.

After making the subsoil perfectly level, restore the top-soil evenly over the entire area. Put all soil down in layers 3 or 4 in. thick, consolidating each layer by treading and rolling.

DRAINAGE

Artificial drainage is required before a good lawn can be established on clay soil. It may take the form of trenches filled with rubble or stone, or a comprehensive system of 3- or 4-in. land drains, leading to a suitable outlet. In exceptionally heavy soil, the most thorough procedure is to place a layer of clinker or graded stone between the subsoil and top-soil, supplemented by land drains as necessary.

SOIL

Make the layer of top-soil uniform over the whole site. On areas where the top-soil is shallow, grass will not thrive and the lawn will be spoilt by marked variations in the appearance of the turf. From 4 to 6 in. of top-soil is sufficient for average sites, but on gravel or sand it is better to have 9 in. of loamy top-soil over the natural foundation.

Very heavy soil should, if possible, be covered with several inches of light loam. If this is impracticable, the surface can be considerably improved by incorporating sharp sand, coke breeze, charcoal, or similar materials.

PREPARATORY WORK

Where no levelling is required, dig the ground to a depth of 6 to 9 in., removing all large stones, weed-roots and other rubbish. Incorporate organic material or other dressing suitable for the soil, and when the ground is dry, make the bed firm, first by treading and then by rolling.

LAWN MAKING AND MAINTENANCE

Weeds may spring up from seeds in the soil, and these must be destroyed; but do not attempt any deep cultivation at the last moment as this will only bring up fresh weed seeds.

MANURE

Well-rotted farmyard manure can be used at the rate of one cubic yd. for every 100 sq. yds.

Other organic dressings include: hop manure (1 lb. per sq. yd.); processed sewage (2 to 4 lb. per sq. yd.); fine peat (4 lb. per sq. yd.). Equal parts of fine peat and sewage often prove an excellent substitute for rotted manure. Such dressings are particularly advantageous where the soil is light and deficient in organic matter.

A few days before sowing, rake in a good compound fertilizer at 2 to 4 oz. per sq. yd. A mixture of 15 per cent sulphate of ammonia, 35 per cent dried blood, 20 per cent superphosphate, 25 per cent bone meal and 5 per cent sulphate of potash is suitable for average soils.

LIME REQUIREMENT

Soil acidity is measured with a soil indicator. A slightly acid soil reaction (pH 5.5 to 6.0) favours the finer grasses, but undue acidity is undesirable especially at sowing time.

Where the reaction is pH 5.5 or lower apply up to $\frac{3}{4}$ lb. of chalk or ground limestone per sq. yd. on sandy soil, or a similar amount of slaked lime (calcium hydrate) on clay loam.

FINAL PREPARATION

A wide, short-toothed rake and a light roller (about 3 cwt.) are the most suitable implements for the final stages. Rake frequently and, if the ground is dry, follow raking with the roller, in a different direction each time. During this final preparation try to keep a layer of fine loose soil at the top.

CHOICE OF SEED

The fine fescues make the best ornamental lawns where soil conditions are good and drainage satisfactory. Add browntop for hard-wearing fine turf and for shaded positions. On poor soil include browntop and meadow grass. Crested dogstail can be used if the turf is to receive very hard wear; it is not a particularly fine grass but has a durable character and thrives on thin, alkaline soil.

Lawn mixtures containing perennial ryegrass produce good durable turf, provided the correct varieties are employed and there is sufficient "bottom" grass in the mixture. But they give a high rate of growth and need mowing frequently.

SOWING

The most suitable periods for sowing are from the middle of March to early May, and from mid-August to the end of September. A good plant is often obtained from an October seeding, but success depends upon weather conditions. Spring seeding is preferable on heavy soils, but sow in the autumn on light soils when there is usually sufficient moisture to ensure quick germination, and the warm soil promotes rapid development of the grass.

Two ounces of seed per sq. yd. or 5 cwt. per acre ensures a dense turf in the shortest possible period. Where time is not important and the ground is clean, a seeding of 1 to $1\frac{1}{2}$ oz. per sq. yd. should eventually produce a sound turf.

To ensure even sowing divide the area by string into equal rectangles and allocate the seed accordingly. In any case halve the required amount of seed and make two sowings; then areas that have been missed or only thinly seeded can be clearly seen when the second sowing is made.

To discourage birds and soil pests dust

LAWN MAKING AND MAINTENANCE

TYPICAL LAWN MIXTURES

(percentages by weight)

	<i>Finest Lawns</i>	<i>Fine Lawns subject to wear</i>	<i>Lawns on poor soil</i>	<i>Lawns on very poor soil or subject to hard wear</i>	<i>Lawns and Playing Grounds subject to very hard wear</i>	<i>General purpose, grass walks, etc.</i>
Chewings fescue	50	50	35	30	20	
Creeping red fescue	25	25	25	20	10	20
Sea-marsh red fescue or *Fine-leaved fescue	25					
Browntop		25	20	10	10	10
Rough-stalked meadow grass or *Smooth-stalked meadow grass			20		10	10
Crested dogstail				40		10
Fine-leaved perennial ryegrass					50	25
New Zealand perennial ryegrass						25
*For very light soil						

the seed with red lead before sowing, or treat it with impregnated peat (one handful per lb.).

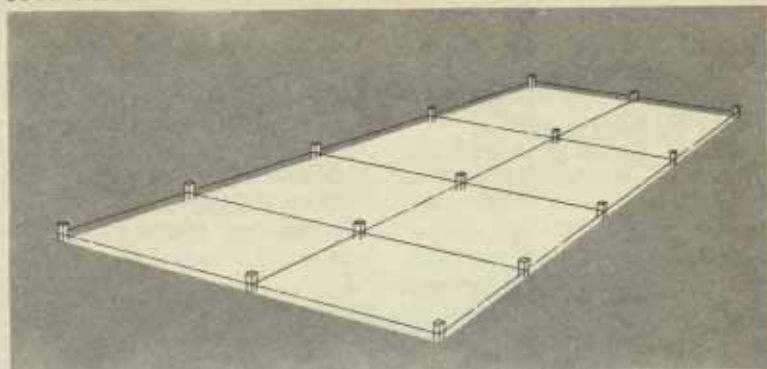
Sow by hand, or by means of one of the small fertilizer distributors adapted for the purpose. Lightly rake to cover the seed and, if possible, give a thin top dressing of sifted soil (or sharp sand for

heavy soil) to protect any seed that remains exposed. Finish with a light rolling in two directions if the ground is dry. Heavy soil brought to a fine tilth, is better left unrolled or it may cake.

If desired, pre-emergent spraying with a suitable weedkiller can be carried out at sowing time. In this case do not rake

LAWN MAKING AND MAINTENANCE

SOWING A LAWN



To make even sowing of seed easier, mark equal-sized rectangles on the lawn area with string and sow equal amounts of seed in each block

the seed in at all but lightly roll it in and cover it with $\frac{1}{4}$ -in. top dressing of sterilized soil or sand.

The progress of spring-sown lawns is greatly influenced by weather conditions, and in some years there may be delay in germination. Watering to germinate the seed may cause the seedlings to die, but once the young grass has appeared, liberal and frequent watering will hasten turf establishment in dry weather.

LAYING TURF

Turf may be laid at any time from the end of September to early March during suitable weather. Do not lay turf when the soil is sodden after heavy rain, or during frosty weather. Prepare the ground as for a sown lawn.

To simplify the work of laying, bring each piece of turf to a uniform thickness by inverting it in a shallow three-sided box and cutting off the surplus soil by running a large knife across the top. It is wise to examine each piece for weeds.

Lay turf in rows like brickwork with the ends of the turves in any one row opposite the centres of turves in the adjacent row. Press each piece firmly into

position, and keep a heap of sifted soil at hand for smoothing out irregularities in the surface as the turf is laid. The beating of turf into position with a wooden beater is sometimes advocated, but this operation is easily overdone, and it is better to press each piece against its neighbour by hand as the work proceeds.

As soon as laying is completed, spread a dressing of fine soil over the entire area and brush it into any crevices. Wherever the plant is thin, sow grass seeds. Finish with a double roll, making the second rolling cross the first at right-angles.

Leave newly-laid turf untouched for three to four weeks, to give the roots time to become established in the underlying soil. Use a light roller at intervals during suitable weather, but do not bring a heavy roller into use until late spring. A dressing of a good compound fertilizer in April will be valuable for lawns laid during the previous winter.

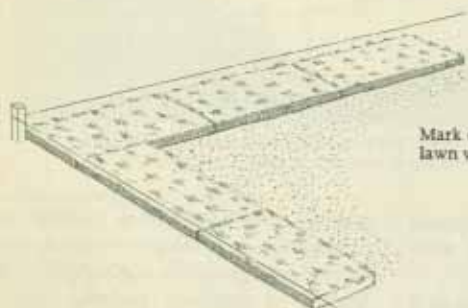
Turves are commonly cut in 3 by 1 ft. sections and rolled up for convenience in transport. For precise work, it is better to use shorter lengths, about 2 by 1 ft. or squares measuring 1 by 1 ft., which can be kept flat. Turves laid aside for later

LAWN MAKING AND MAINTENANCE

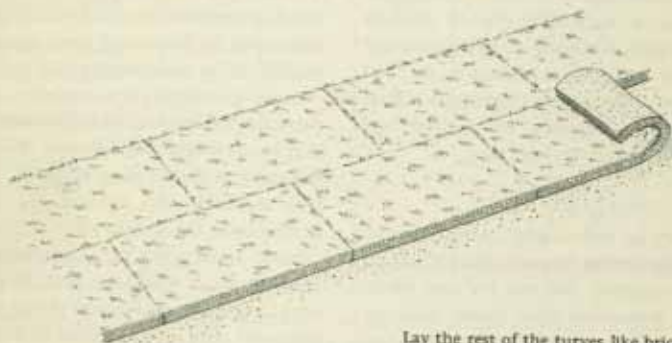
LAYING TURF



To ensure uniformity of thickness, lay each turf grass-side down in a three-sided box of the correct depth and cut off the surplus soil with a knife



Mark out each right-angled corner of the lawn with pegs and line, using a set square



Lay the rest of the turves like brickwork with the ends in one row against the centres of the turves in the next row, starting every other row with a half turf

use should not be stacked in heaps for more than a day or two, or decomposition may set in. If it is impossible to proceed with laying immediately, set out the turves singly.

Turf for lawns should consist largely of red fescue and browntop, preferably

on a light loam soil free from excess fibre, with a minimum of coarse grass.

Turf cut from selected areas of seaside marshland is sometimes used for lawns where a particularly fine texture is desired, but it is very expensive and needs special maintenance.

VEGETATIVE PROPAGATION

Lawns are sometimes formed by planting off-shoots or stolon cuttings of certain types of creeping bent grass (*Agrostis stolonifera*). The turf produced in this way has a spongy character and usually shows some corrugation. Mowing is needed less often than with normal lawn grass, but frequent edging is required to prevent runners from spreading over adjacent ground where they are not wanted.

Preparation of the ground is exactly as for seed or turf. The off-shoots are available either in little bundles or in soil pots. Plant the off-shoots in spring or autumn in holes about 1 in. deep at 6- to 12-in. intervals, allowing one bundle or pot to each hole. Cover with fine soil and make firm by treading in or rolling.

A lawn planted in this way should not be allowed to dry out during the first few weeks. Until the turf knits closely keep the plot clear of weeds and roll to keep the stolons down.

Selective weed-killer can be used six months after planting.

An alternative method is to cut the off-shoots into small pieces and scatter them evenly over the ground, following with a top dressing of fine soil $\frac{1}{2}$ in. to $\frac{3}{4}$ in. deep. Do not rake the surface after planting, but finish with a good rolling if the ground is dry.

During the development period, mow regularly with the mower knives set about $1\frac{1}{2}$ in. high. After the turf is established, mow weekly or fortnightly with the knives set at $\frac{1}{2}$ in. to $\frac{3}{4}$ in. high while the grass is in active growth. Do not permit it to grow more than an inch high but avoid very close mowing, which causes too much defoliation and leaves the runners bare.

Lawns produced by vegetative propagation should have frequent top dressing with compost or soil.

TREATMENT OF A SOWN LAWN

When the grass is 2 to 3 in. high, pick off any large stones or other debris and roll carefully and slowly with a light roller, choosing a time when the ground is dry.

Two or three days after rolling mow the grass, using a light, free-running machine (preferably of the side-wheel type) with the knives set high. The best way to produce dense turf in the shortest time is frequent mowing, but always at a moderate height. For the whole of the first summer do not cut the lawn more closely than about 1 in.

WEEDING

Many of the weeds springing up in newly sown turf are annuals such as groundsel, goosefoot, chickweed, mayweed and shepherd's purse, and although they may appear to retard the growth of the grass, they do not survive regular mowing. On no account allow annuals to seed.

Later on, plantains, dandelions, buttercups and other perennial weeds may appear. With care they can be uprooted by hand without much disturbance, but prevent damage to the new lawn by treading on boards laid on the surface.

When the grass is three or four months old, selective weedkiller can be used to deal with perennial weeds. Do not use lawn sand preparations until the turf is 12 months old.

During the first weeks examine the turf for coarse grasses. When the plants are young these grasses can be extracted quite easily and there is little eruption of the surface. If left, they may form large patches requiring drastic action.

ESTABLISHED LAWNS

To retain the verdure of the turf, and its uniform quality, a lawn should be mown and rolled judiciously, aerated regularly, brushed and raked, top dressed, weeded and kept free of pests and fungi.

MOWING

Cut the grass as often as possible, certainly twice a week or more during periods of very active growth. For fine ornamental turf the mower should not be set below $\frac{1}{2}$ in., or about $\frac{1}{4}$ in. for stronger-growing turf. Grass cut shorter than this will need extra fertilizing, top dressing and weed-control.

Keep the grass down to about 1 in. in winter, and avoid excessive growth in spring, otherwise there will be a severe strain on machinery when regular cutting is resumed, and a risk of damage to the turf.

To maintain an even sward, vary the direction of mowing from time to time, so that the turf does not develop a "grain". During very dry periods, leave the grass cuttings on the surface, provided the turf is free from weeds and weed-grasses. At other times always use the grass box, as a continual return of grass mowings ultimately leads to a soft, weak turf and encourages worms and fungus.

ROLLING

In spring, roll the lawn well to counter-act the disturbances of winter. Unless this is done, the grass will adapt itself to new contours as it grows. The purpose of rolling is to anchor the grass firmly in the soil; it will not correct permanent undulations, which should be dealt with by

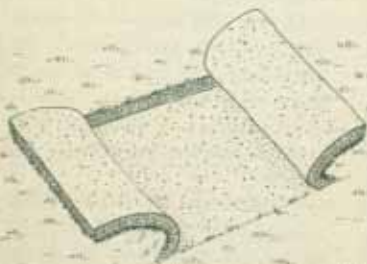
lifting and relaying the turf, or by the more gradual process of top dressing hollow places with equal parts of soil and sand.

UNDULATION

Work to correct undulation is usually carried out during the non-growing period. Cut the turf to be lifted into foot squares with an edging iron and keep them flat while the surface underneath is adjusted. Turf relaid on a hard surface never really thrives, so dig the ground to a depth of 3 or 4 in., break it up well, tread it down firmly and rake it level, adding or removing soil as necessary. Then press the turf firmly into position, roll and give a brushed-in top dressing of fine soil.

To correct small inequalities, cut parallel lines across the area 10 to 12 in. apart, and make one cut across the centre at right-angles; then loosen the turf with a turving iron and roll it back from the centre without cutting it away completely. Make the bed level and carefully restore the turf, cutting off any excess length.

The filling of slight hollows may start in October, when $\frac{1}{4}$ -in. depth of sand and soil can be applied where necessary. Give a further top dressing as required, allowing an interval of four to six weeks for the grass to grow through. Work in each dressing by means of a piece of wood



LEVELLING SMALL HOLLOWES AND MOUNDS

Make three cuts, like a letter H, across the affected area. Loosen the turf and roll it back from the centre. Level the soil, then carefully restore the turf and cut off any excess length

with a straight edge and then give a good brushing. It helps if a fork is driven in as deeply as possible and at close intervals wherever there are hollows. Raise the turf slightly by pressing on the handle before applying the top dressing.

Small mounds can often be reduced by using a hollow-tine fork freely in autumn and winter. After removing the cores of soil, tread down or roll.

BRUSHING

Brush the turf well in spring to remove winter debris, and whenever possible brush or use a lawn rake lightly before mowing. This is important where creeping weeds have to be dealt with, and is a deterrent against fungus. The labour of brushing is greatly minimized by using a leaf sweeper.

Rake the turf more vigorously in spring and autumn to clear such debris as dead herbage and creeping stems.

AERATION

Most lawns need regular aeration by making holes in the surface with a spiked implement. This not only improves surface drainage but also enables the soil to take in more air, and the turf to benefit from improved chemical conditions. Aeration also enables a top dressing to become more readily absorbed, while in summer it makes a lawn more receptive to rainfall or watering.

Ideally, aeration should be carried out when the soil is at its most receptive—moist but not saturated. During very wet periods there is serious risk of producing an opposite effect by compacting the walls of the aeration holes.

Carry out deep spiking in autumn or winter with a suitable fork or an aerating machine with hinged tines about 4 in. long, and continue surface aeration right through the growing season. A lawn aerator with short fixed teeth is very suitable for light aeration, although a spiker-slitter is more efficient and its

slicing action is very effective against clover and other creeping weeds.

TOP DRESSING

An abundance of weeds and a general lack of colour and body in the grass indicate the need for top dressing. Constant recurrence of fungus disease on fine swards is also associated with low fertility.

All lawns need a basic dressing of a good compound fertilizer in early April, or a little later if the weather does not favour growth. Two or three oz. per sq. yd. of a spring dressing made up of sulphate of ammonia (15 per cent), dried blood or hoof and horn (20 per cent), superphosphate (20 per cent), bone meal or flour (35 per cent), sulphate of potash (5 per cent) and sulphate of iron (5 per cent), would be appropriate, either alone or mixed with three times its bulk of clean, sifted soil or compost.

Where lawns are closely mown or intensively used, give supplementary dressings during May, June and July. These may consist of $\frac{1}{4}$ oz. per sq. yd. of the spring mixture, or $\frac{1}{4}$ oz. per sq. yd. of sulphate of ammonia. Bulk with fine, dry sand, peat or other suitable carrier and apply in showery weather, or water in well.

Well-prepared rotted compost is a valuable dressing for most lawns. It assists in building up a fertile surface, improves the level and protects the vital growing region at the base of the turf.

Compost in this case is a mixture of two parts by bulk of clean top-soil with one part each of organic material and gritty lime-free sand. Well-rotted manure, leaf mould, fine peat, hop manure and processed sewage are useful organics. Apply 4 to 5 lb. per sq. yd. in late autumn and repeat at monthly intervals in the winter where the soil is very poor. It is important that each dressing should be brushed in and be properly absorbed before the next is applied.

LAWN MAKING AND MAINTENANCE

WEED CONTROL

Direct measures against weeds include various lawn sand preparations and the many selective weedkillers available.

Use lawn sand for daisy, mouse-ear chickweed, speedwell and parsley piert. Apply during spring and autumn, using from 2 to 4 oz. per sq. yd. according to weed density. Clover and pearlwort, which are among the worst enemies of fine turf, often need a combination of lawn sand, selective weedkiller and surface aeration.













Plantain, dandelion, buttercup and cat's-ear respond better to selective weedkiller, which is obtainable in many forms. Those containing 2,4-D are useful for most broad-leaved weeds, but the MCPA and CMPP types are usually more effective against pearlwort, clover

and other creeping weeds, although repetitive application may be necessary. More powerful forms of selective weedkiller are available for coarse vegetation and are sometimes used on lawns, but they may cause long-term scarring of the grass.

The best period for applying a selective weedkiller is May to July. Carry out treatment in fairly warm, settled weather (but not drought), but do not mow just beforehand or for at least two days afterwards. It is important to follow the maker's directions accurately. Apply the solution as a fine spray. Calm weather is essential to avoid drift of vapour, which could easily damage near-by plants, trees and shrubs.

The general effect of weed treatment, particularly the various forms of lawn

LAWN WEEDS AND THEIR CONTROL

DAISY 	MOUSE-EAR CHICKWEED 	SPEEDWELL 	PARSLEY PIERT 
CONTROL: LAWN SAND			
PLANTAIN 	DANDELION 	BUTTERCUP 	CAT'S-EAR 
CONTROL: SELECTIVE WEEDKILLER			
WHITE-CLOVER 	PEARLWORT 	SELF-HEAL 	WOODRUSH 
CONTROL: Both LAWN SAND and SELECTIVE WEEDKILLER may be required			

sand, may be to cause bare patches and some discoloration. During subsequent weeks, the grasses will gradually extend over bare patches, but it may be necessary to carry out some seeding the following autumn for complete reinstatement.

MOSS

Although easily destroyed with the various preparations available, moss will recur if the underlying cause is not located and dealt with adequately.

Sometimes moss is only a temporary winter growth, due to excess moisture. A more persistent type of moss, associated with a sparse covering of grass, is due to soil impoverishment. Moss may also result from lack of subsoil drainage, or a compacted surface due to prolonged saturation, heavy traffic or over-rolling. In such circumstances, an improvement in drainage may be needed, while every effort should be made to establish a more porous surface by aeration and the application of sharp, gritty sand.

An over-acid condition, especially on peaty soil, often gives rise to crops of moss which persist until the acidity is reduced by liming.

SOIL PESTS AND FUNGUS DISEASES

Worms are a source of considerable trouble and should be dealt with by means of mowrah meal or other non-poisonous wormkiller applied to the surface in humid weather.

Leather-jacket grubs may also be very troublesome, especially during the dormant period. They feed on the roots of the grass at a time when its recuperative powers are low and in some cases may cause total destruction.

Leather-jackets are larvae of the "daddy-long-legs" or crane fly. The adult flies can often be seen during August and September flying over the turf with a "hopping" movement. Each female is capable of laying 200 or 300 eggs, and the

grubs, which hatch in about ten days, feed on the roots of the grasses until the following April or May. Several hundred can sometimes be found in a square yard of turf.

A test by watering-in an expellent, such as Sunningdale Solution, will show whether leather-jackets are present. If more than 20 or 30 are found per sq. yd., apply a D.D.T. or B.H.C. preparation (see *Garden Pests*).

Lawns are subject to fungus attack especially when the grass is unhealthy owing to poor soil conditions. By far the most common disease of fine turf is corticium (red thread), which is more frequent during summer or early autumn. It takes the form of pink or red gelatinous growths attached to the stems and leaves of the grass, sometimes joining the blades together. Thin short attachments of a similar colour also stand out prominently from the withered leaves. The discoloration caused is whitish-brown, but not well defined. Fortunately, the effect is not fatal, although corticium can make a lawn look unsightly.

Sharply defined brown patches, with subsidence and collapse of the turf, may be due to fusarium. This disease is at its worst during dull, humid periods in late autumn and winter, and is often fatal.

Adequate balanced fertilizing, thorough aeration and brushing or switching all do much to maintain healthy turf and prevent the incidence of fungus. When it is present, spray weekly with Bordeaux malachite mixture, allowing 1 lb. of the dry powder to 500 sq. yds. The rate of dilution with water is not important, provided there is sufficient to coat the grass leaves with solution. Other remedies include mercurial preparations of both organic and inorganic types, sulphate of iron and Cheshunt compound. Samples of infected turf should be submitted to a

specialist firm for investigation so that the correct treatment may be applied.

OTHER HAZARDS

There are other causes of discoloration on lawns, including large stones just beneath the turf, patches of subsoil at the surface, hollows where water collects, uneven distribution of artificial fertilizers and scalding by animals. There may also be direct damage by toxic materials.

EDGES AND VERGES

Always keep lawn edges trim and neat. There are various machines, both manual and power-operated, to ease the tedious work of edging. They all require a firm margin on which to work efficiently, and the edging iron should therefore be used every spring to reinstate the edge. It is useful to pull the handle of the tool towards the operator a little in order to leave a slight outward slope on the edging.

Broken places are best reinstated by cutting out sections of turf and relaying with the inside edge out; fill the hole which is left behind firmly with soil and sand in equal amounts and reseed as necessary.

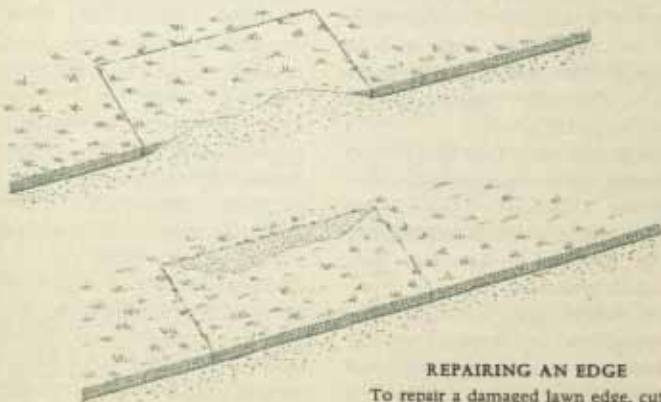
Verges and grass walks add much to the charm of a garden, but need careful maintenance. Mowing should be frequent but not severe, retaining a height of $\frac{1}{2}$ in. to $\frac{3}{4}$ in. according to weather conditions and type of turf.

Special attention to the edges is necessary, as depression is bound to occur eventually especially if adjacent borders are at a lower level, and periodic edging may reduce the width appreciably. Lift the marginal strip of turf and as often as necessary relay it after adjustment of the level. This task gives an opportunity for restoring the width of the verge by setting the relaid turf farther out. Fill the gap which is left firmly and seed it.

SHADED LAWNS

It is always difficult to maintain good turf under trees and shrubs, for they rob the soil of moisture and food materials, shut out sunshine, cause damage by rain drip and sometimes shed leaves which are destructive.

Mow turf in shaded situations regularly, but allow it to grow longer than is usual for lawns in the open. The minimum height recommended is 1 in., but



REPAIRING AN EDGE

To repair a damaged lawn edge, cut out the affected turf, and relay it with the good edge out; fill the hole firmly with equal parts soil and sand; reseed

from 2 to 3 in. is better, especially if the areas are naturalized by planting bulbs.

Sweep up fallen leaves and conifer spines frequently, and apply moss destroyer as necessary. Dress directly overhanging areas with carbonate of lime every two or three years, late autumn or early winter being the best time. The amount usually required is 2 or 3 oz. per sq. yd., applied after any bare ground has been lightly forked over. In spring, apply a liberal dressing of fertilizer and renovate bare patches by sowing seed of a suitable mixture of grasses a day or two later. In very unfavourable spots, annual reseed-ing may be the only solution.

RENOVATION OF A LAWN

Lawns rapidly become thin and bare if maintenance problems are not satisfactorily solved, or if there are poor soil conditions. Damage also results from severe wear or a compacted surface. Fungus and insect attack cause deterioration, as does the close proximity of trees. Severe damage or extremely difficult soil conditions may call for complete reconstruction, but in most other cases mechanical treatment of the surface, liberal top dressing and the sowing of suitable renovating grass seeds will re-instate the turf.

August and September are excellent months during which to undertake the renovation of unsatisfactory turf. The soil is then warm and there is usually sufficient moisture to ensure rapid germination of grass seed. Also, weeds are less in evidence during autumn than in spring.

The first step is to deal with moss and weeds. Apply the normal moss destroyer in spring or autumn; mercurized moss-killer can be used at almost any time of the year. Many weeds are susceptible to lawn sand preparations applied in dry weather during autumn.

The next step is to loosen the surface, after closely mowing any grass there may be. The vigorous use of a wire-toothed rake or wheeled scarifier will relieve surface congestion and is an essential prelude to the sowing of grass seed. If the soil is compacted, penetrate it more deeply with a suitable hand fork or machine aerator.

Follow surface disturbance with a good dressing of fertilizer, and returf or seed as necessary, allowing 2 oz. of the latter per sq. yd. for bare ground, and from $\frac{1}{2}$ to 1 oz. per sq. yd. for thin places. Cover the seed lightly with fine soil or sand, and complete by rolling firmly.

Following renovation, lightly roll the lawn when the new grass is $1\frac{1}{2}$ in. high, and mow as necessary, but for some time keep the knives of the machine high— $\frac{1}{2}$ to $\frac{3}{4}$ in. is appropriate until the new grass is well established.

Close cutting soon after seed renovation is a frequent cause of failure as it destroys the young plants.

LAWN MOWERS

Among the wide range of machinery available for cutting lawns, the choice usually lies between the side-wheel mower, the roller-cum-mower machine and the rotary mower. Rotary mowers are always power-driven, but manual, petrol or electricity-driven versions of the two other types are available.

SIDE-WHEEL MACHINES

Side-wheel mowers are light to use. Those with three or four blades will cut grass up to 6 in. high and cope with undulating surfaces, slopes and banks. Those with more blades give a better finish, but are not suitable for rough work. The side-wheel mower has the advantage that the small roller which regulates the height of cut is behind the cutting cylinder; therefore the grass is not pressed down before the knives reach it, as in the

case of the machine with the land roller. The side-wheel machine is particularly suitable for grass which has become tough and for mowing lawns in which clover and other creeping weed has been raked up. It is also useful for the early spring cutting of grass that has become tufted.

The drawback of many side-wheel mowers is that they cannot be driven to the edge of a lawn, because the cutting cylinder lies within the driving wheels. But it is possible to obtain a form of side-wheel mower in which the cutters do extend beyond the width of the driving wheels.

Hand-operated side-wheel machines with a cutting width of up to 17 in. are useful for lawns and other turf surfaces that get limited attention. Powered side-wheel machines up to 27 in. wide are often used for verges and other areas of rough grass, football pitches and cricket outfields. It is claimed that some of these powered side-wheel machines will deal with grass up to 16 in. high.

ROLLER MACHINES

The roller-cum-mower machine gives a superior finish to that given by the side-wheel machine and is the universal choice for better-class lawns and fine turf playing surfaces. This machine will mow to the extreme edge, and may be set to a fine limit of cut.

In choosing the size of machine and deciding whether it is to be manual or motorized, the chief thing to consider is the extent of the area to be dealt with. A hand mower will deal with 40 to 50 sq. yds. per hour for every inch of its width; thus a 12-in. machine cuts from 500 to 600 sq. yds. hourly.

As a general principle, it is wise to choose a machine that will do all the lawn mowing in less than half a day.

The powered roller machine may be obtained in two forms. In one, the cutting

cylinder and land rollers are fully mechanized, so that all the operator has to do is to steer the machine and control its speed; in the other only the cutting cylinder is powered, which gives great flexibility of control. Machines of this type are used on fine turf surfaces where the quality of the result is largely determined by the pace at which the machine is pushed. For example, a machine with a 10-knife cylinder turning to 2,000 revolutions per minute will give 115 cuts per yard when propelled at 3 miles per hour, and this is considered to be a very high standard.

Many of the popular motor mowers are provided with dual control, so that the roller drive may be released when awkward places have to be negotiated or where a specially fine finish to the lawn is desired.

In the case of fully-gearred machines and all hand-operated mowers, the standard of finish of the cut grass is regulated by the ratio of the speed of the cutter to the driving wheels or land roller and by the number of knives in the cutting cylinder.

Low-priced machines and equipment for long grass provide from three to five knives on the cutting cylinder, but six knives will usually give a smoother cut. In the case of specially fine surfaces, from 10 to 12 knives are recommended. The number of cuts per yard indicates the machine's character. For rough work, 20 to 30 cuts per yard will suffice, while the average for general lawn purposes is 40 to 60 cuts per yard. For fine turf surfaces, a machine giving 80 to 100 cuts per yard is desirable.

While the roller-cum-mower is the most popular machine for lawns, it has the disadvantage that the small height-control roller in front of the cutting cylinder may leave a poor finish unless the machine is put over the grass more than

once. This is particularly the case when flower stalks and running stems have been allowed to develop, or where creeping weeds are troublesome. But it is often possible to remove the front rollers and substitute small side rollers or castors with which to regulate the height of cut.

ROTARY MOWERS

The rotary type of mower cuts the grass with small circular disks or knives attached to a blade revolving horizontally just above the ground at high speed. This simple form of mechanism requires only limited maintenance; the cutters are inexpensive and can be readily replaced. The cut grass is either left on the ground or collected by suction, but the size of a rotary machine which will collect grass cuttings is limited. The height of cut is instantly adjustable and the machine will mow close to fences and walls.

The horizontal rotary mower will keep a lawn in good order although it may not cut as keenly as a cylinder machine. It has no roller, but is a multi-purpose machine capable of dealing with rough grass as well as lawn turf.

SOURCES OF POWER

Petrol engines: The simple and economical motive force of the petrol engine can be obtained in the miniature two-stroke and four-stroke patterns.

The four-stroke engine is usually more reliable, starts more easily and needs less maintenance.

With the two-stroke, accuracy in the petrol-oil mixture and frequent cleaning of the sparking plug are vital to reliable running.

Electricity: The electric motor is silent and smooth in operation, with no starting difficulties if the carbon brushes are cleaned occasionally. The trailing cable is a disadvantage as it can get in the machine's path, but once the technique for handling it is mastered an electric mower provides a reliable and often less expensive means of cutting lawns of moderate size that are reasonably close to a power source.

One type of machine is powered by electric batteries, which obviates the nuisance of a trailing cable, and the batteries can be recharged by an ordinary battery charger.

MOTOR MOWER CAPABILITIES

	Average working day (6 hours running)	Suitable for
14 in. motor mower	1½ acres	¼-½ acre
16 in. " "	3 acres	½-1 acre
20 in. " "	3½ acres	1-1½ acres
24 in. " "	4-5 acres	1½-2 acres
30 in. " "	6-7 acres	2-3 acres
36 in. " "	8-9 acres	3-4 acres
40 in. " "	10 acres	4-5 acres
42 in. " "	12 acres	5-6 acres

POINTS TO REMEMBER

Successful mowing and the long life of mowers depend largely on these points:

1. Make sure that the cutting height is correct and the same on both sides of the machine.

2. See that the cylinder spins freely, just touching the bottom plate along its entire length.

Test the cylinder fairly frequently, as precise adjustment is important. If there is an appreciable gap between the cylinder knives and the bottom blade, the grass will not be cut cleanly and the lawn will have an unsightly, tufted appearance. If the adjustment is too close, the machine will not operate freely and there will be undue wear.

3. Oil the knives frequently, if possible

after each mowing. Remember that it is not grass cutting which spoils the knives, but rust caused by dampness.

With regular oiling a mower will cut successfully for long periods without regrounding. It is important to use a special rust-proof oil.

4. Attend to the grease points and oil supply as necessary, and keep the mower free of grass cuttings and other debris. A 1½-in. dry paint brush and an old screw-driver are useful tools for cleaning.

5. With a two-stroke machine keep the motor running after the petrol tap is turned off, so that the carburettor is drained of the petrol-oil mixture. This will help to ensure easy starting on the next occasion.

Lawns for Recreation

MANY lawns serve a double purpose; apart from being an ornament they provide the perfect surface for playing ball games. Undoubtedly the most popular lawn game is tennis, but where space is limited, or contours are difficult, other games may be played.

The turf on playing areas requires special attention, in addition to the normal care discussed in *Lawn Making and Maintenance*.

Close mowing is needed, but should be compensated by regular dressings of fertilizer and soil compost. To maintain healthy grass, the extra rolling required on many playing lawns should be offset by adequate aeration. As far as possible, all rolling should be done when the surface is dry and the underlying soil a little moist. Light raking during the summer and more vigorous use of the rake at the end of the season will all help to keep the surface firm. It is particularly

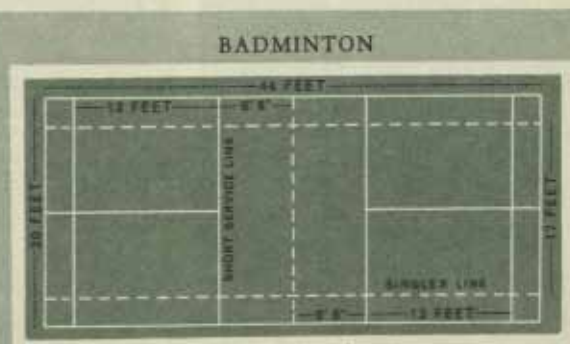
important to eradicate all earthworms.

Lawns used for games need frequent watering in dry weather. This may lead to some loss of soluble plant food; it should be restored as described under the heading "Top Dressing" in *Lawn Making and Maintenance*.

The damage caused by play can be repaired by seeding or turfing at the end of the summer. Spring renovation is seldom satisfactory, unless there is time for the new grass to become well established before play begins.

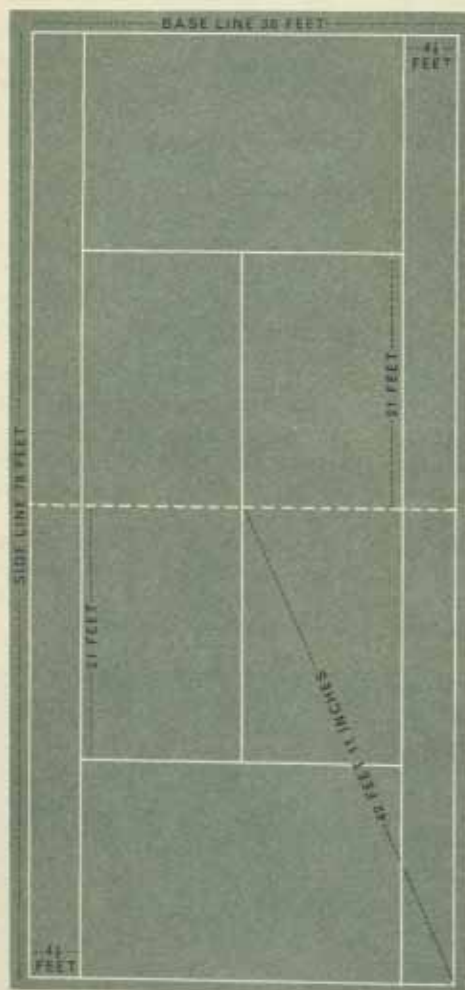
Areas used for croquet or bowls require even more intensive treatment. The surface will need frequent close mowing, far greater attention to fertilizer treatment, careful rolling and regular aeration.

An annual top dressing of well-matured compost or clean soil and sand preserves the level of the lawn and nourishes and protects the grass.



A badminton court should measure 44 by 20 ft. for doubles play; and

where space is restricted a singles court 39 by 17 ft. can be marked out.



LAWN TENNIS

A good grass tennis court has an even surface, preferably with a slight cross-fall, adequate drainage, and a good depth of top-soil. A court running north and south receives the best light for afternoon and evening play. The playing area is 78 by 36 ft. and ideally there should be a run-back of 21 ft. at each end, and side margins of 12 ft. An area of about 108 by 54 ft. will house a court big enough for private play, and a court for slow or junior play could be as small as 100 by 50 ft.

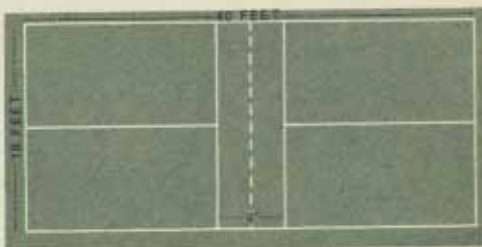


PADDER TENNIS

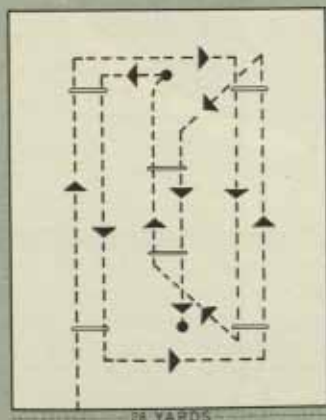
In an area too small for a lawn tennis court, a padder tennis court, 39 by 18 ft., may be laid. The game is played over a low net with a tennis ball and wooden bats.

TENNI-QUOITS

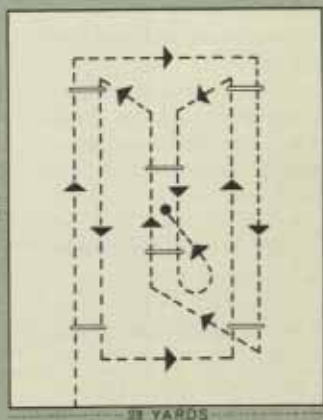
A tenni-quoits pitch is another good substitute for a full-size lawn tennis court if space is limited. It should measure 40 by 18 ft.



CROQUET



A croquet lawn should be as near dead level as possible. The maximum size of the lawn is 35 by 28 yds., but considerably smaller areas can



be used for family play. The pegs and hoops are set out at 7-yd. intervals, with a marginal space up to 7 yds. wide left all round the lawn.

GOLF

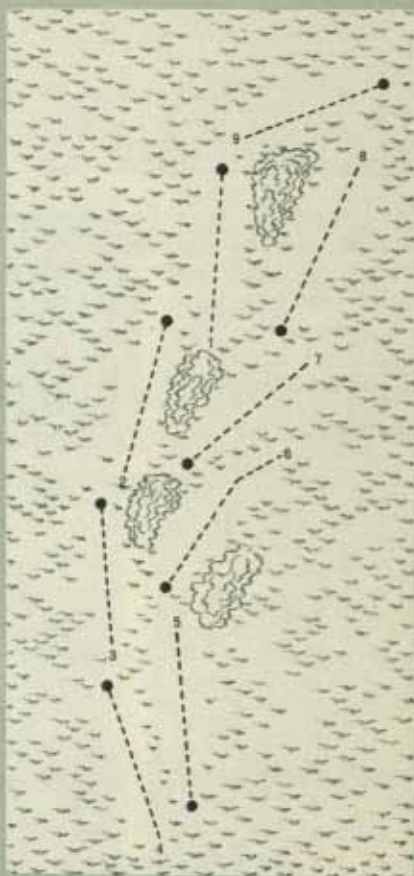
Lawns of any shape and almost any dimensions will serve for golf practice if the turf is fine and the surface true enough for the ball to run evenly. The turf should be free of patches of weeds, tufts of coarse grass, and small bare places.

A sloping surface will add interest to the game, but the undulation should be slight or it will exasperate the players and make the lawn difficult to maintain.

The playing area should be treated as an ordinary lawn, with rather more attention to careful and accurate mowing and top dressing.

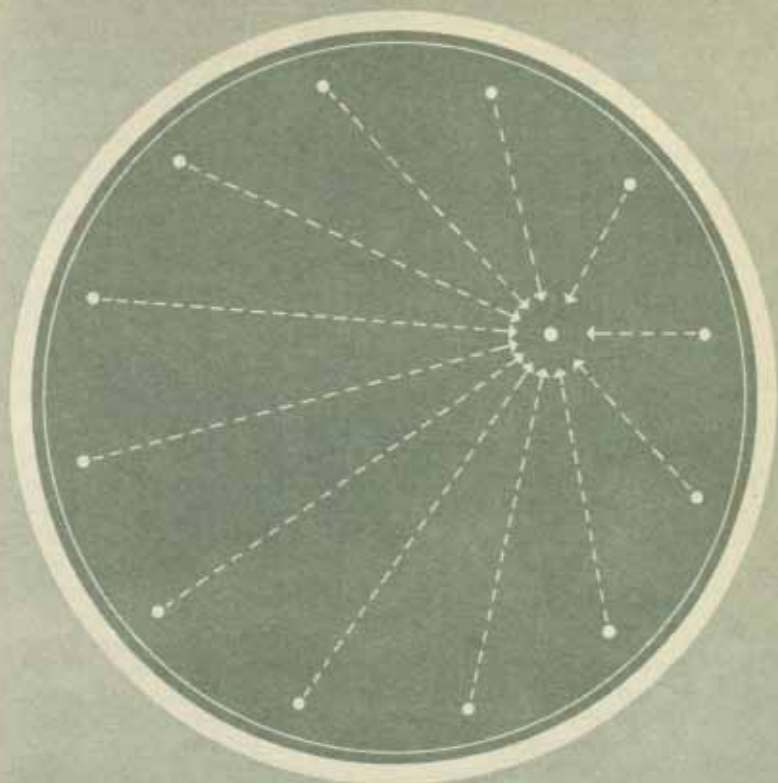
Frequent aeration is also important for areas which are likely to become unduly compressed, such as teeing and holing points. Higher ground showing discolouration in dry weather should be spiked from time to time. Regular watering is essential unless there is sufficient rainfall, and the playing areas should be arranged so that the layout may be changed whenever the turf shows signs of undue wear.

A ring turf-renovator or hole cutter will not only cut a new hole but also furnish a plug of turf to make good the surface at the old hole.



PUTTING COURSE

An area of 1,000 sq. yds. or more can be laid out as a putting course. Spaces between the "fairways" should be filled with longer grass or with small shrubs. Fairways may vary in length between 12 and 60 ft. Adjacent holes ought to be at least 10 ft. apart.



CLOCK GOLF

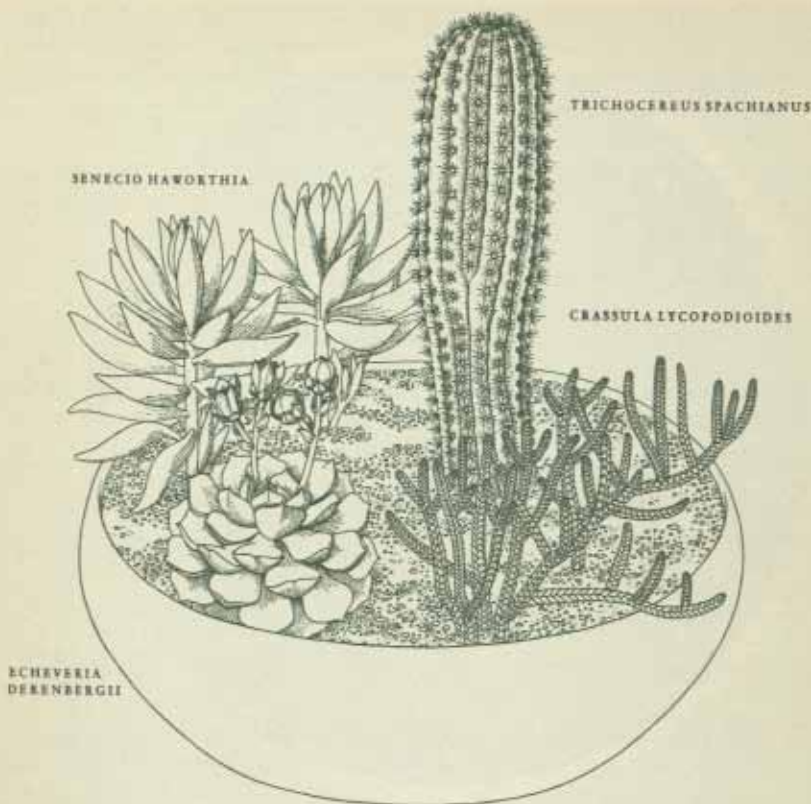
For "clock golf", a single hole is placed eccentrically within a ring of teeing points more or less evenly spaced round the perimeter, thus

giving shots of varying lengths. The number and position of the teeing points will depend on the shape of the lawn and its contours.

BOWLS

To enjoy bowls, a dead level green is essential, as falls in any direction detract from the game. The close, true sward that allows woods to run

smoothly requires good drainage and turf of fine composition. A standard single bowling rink is 19 to 21 ft. wide and may be from 99 to 132 ft. long.



Cacti and Succulents

PLANTS with green leaves that are left in the sun without water ordinarily flag in a few hours, and die within a few days. Plants that live in a hot, dry climate, however, manage to survive, because they are able to adapt themselves to their environment by, for instance, passing the dry seasons as leafless shrubs, as dry bulbs, or as seeds. Cacti and other succulent plants store moisture in the tissues in their stems or leaves,

or in both, during the rainy periods.

Succulent plants are not found in very dry areas, but in semi-deserts, where there are long, dry periods alternating with shorter, wet ones. When rain falls, the plant tissues tend to swell and the moisture is retained in the plant if it has been adapted to prevent evaporation, either by a protective covering such as a layer of wax or hairs, or by a reduction of the surface area. Since the smallest surface

area for a given volume is a sphere, succulent plants tend to be spherical.

Many of the cacti are of this form, at least when young. The stem is swollen but there are no leaves, or only a few small ones, when growth begins each year, and these soon fall. In an ordinary plant, the leaves contain a green substance (chlorophyll) by means of which, in the presence of daylight, the plant can make use of the various food materials taken in by its roots; but when leaves are absent, their functions must be taken over by the stem. Stem succulents are, therefore, usually green, though in age the basal portion may become corky.

In many plants, water is stored in the leaves, which in extreme cases may become spherical, but, as in the case of *Comophytum*, a pair of leaves may be joined so closely into a top-shaped body that only a slit across the top of the body indicates its dual origin.

In leaf succulents, the stem is often much reduced, so that the leaves are crowded together to form a rosette. An advantage of this formation is that the overlapping leaves prevent each other, and also the soil below, from drying out too rapidly.

Apart from the plants in which water-storage is definitely in stem or leaf, there are a number of kinds where both stem and leaf are slightly succulent. Many of these show surface adaptations which make them very decorative and well worth growing.

Succulent plants are sometimes found where there is a physiological drought, although not a real one. For instance, on the salt marshes in Great Britain there are several species such as marsh samphire (*Salicornia herbacea*) and sea-kale (*Crambe maritima*). These succulents cannot absorb all the moisture they require through their roots because of the salt contained in the water. Much the same

thing occurs in cold regions where the low temperature prevents the absorption of water; the houseleek (*Sempervivum*) grows in these conditions.

It is unfortunate that the name "cactus" is often given to succulent plants that do not belong to the cactus family, because they will probably need watering at a different time of year.

The true desert cacti are not difficult to recognize; they are all stem succulents, without leaves, and generally with spines which arise from special organs known as areoles. These are small protuberances arranged regularly on the surface of the plant, generally bearing wool or hairs as well as a number of spines. The spines in the centre of an areole may differ from the radial ones and are characteristic of the plant, so that a cactus can often be identified by the spines when no flowers are present.

The only plants with which cacti are likely to be confused are some of the euphorbias (spurges), which also have round or columnar stems without leaves. When spines are present on euphorbias they do not arise from an areole but appear in pairs or singly at regular positions up the ribs of the stem.

Another type of cactus from tropical forests, known as epiphytic cacti because they grow on trees, have thinner, more slender stems, which, in some species, are flattened; but even in these plants, though the spines are not well developed, they come from small areoles, often in the crenations along the edge of the stems. This type is sometimes called "leaf-cactus", but this name is misleading for, though perhaps leaf-like in appearance, the plants consist of leafless stems.

CULTIVATION

Cacti and other succulent plants are not difficult to grow if the reason for their unusual form is remembered; they need

an alternation of wet and dry periods, such as they would get in their native habitats, and they prefer this at the correct time of year, depending on their country of origin. Rest true desert cacti from October to March and during this period give them no water; many of them will stand (and some even prefer) a cool temperature when resting, but protect them from frost.

Plants with very succulent leaves and much reduced stems need a definite resting period of some weeks or months, but this will not necessarily be in winter; many, but not all, succulents from South Africa, where the seasons are the reverse of ours, prefer to grow during our winter and rest in our summer.

Semi-succulents—plants with both stem and leaf slightly succulent—do not need such a definite period of rest but prefer less water after flowering.

Cacti are accommodating plants, and can be kept in a greenhouse, frame, living-room, or even out of doors. They do, however, need plenty of light. If they are being grown in the living-room, keep them as near to the window as possible, but give them some ventilation if they are in hot sun or there will be a risk of burning. Stand individual pots on a saucer, or in an ornamental pot containing some gravel or granite chips, so that the pot does not remain standing in any excess water that runs through. Turn the pots occasionally, otherwise the plants will be drawn towards the light and their shape spoilt.

Cacti benefit from being out of doors in the summer provided there is no long wet spell. Bring them back into the house or keep them under glass if it rains.

POTTING

POTS

Succulent plants are generally grown in pots, which may be either the usual red

porous clay type or plastic. In many ways, the latter give better results provided it is realized that very much less water is required, since there is no evaporation through the sides of a plastic pot. In either case there should be a drainage hole at the base. Cover this hole with broken crocks to prevent the soil washing through.

The size of the pot should be such that the plant has sufficient space, but it should not be too large or the soil will remain too wet if not penetrated by roots in a few weeks.

POTTING COMPOST

Plants that live in a desert are not growing in very poor soil; it may be sandy and loose but, since there is not much rain to wash out the plant foods it contains, it may be fairly rich in mineral salts. But there will be no humus, because there are few shrubs whose fallen leaves could make a contribution to the soil. For this reason do not add leaf mould to potting soil for desert cacti. They like an open soil through which water drains rapidly and this is best made up of good loam mixed with coarse sand.

Most succulent plants do very well in John Innes potting compost, which can be purchased from most nurserymen in small quantities. Add some coarse sand to the compost for the more highly succulent plants.

REPOTTING

Plants acquired from a reliable source should not need repotting for some time, but if the soil does not dry out in a few days after watering, turn the plant out and make sure that the roots are sound. They should look clean and "plump"; if they are shrivelled they are not healthy roots. Disentangle the roots carefully, remove any damaged portions and repot in fresh soil.

Repot young plants annually, or as soon as their roots have filled the pot, moving them into a larger pot. Do not repot adult plants every year unless it appears necessary, for the root tips, through which the plant absorbs nourishment from the soil, are sure to be damaged during the process and the plant will receive a check in consequence. Large plants seldom need repotting; it is sufficient to remove the top layer of soil carefully and replace it with fresh soil.

WATERING

This is an important operation and one which often presents difficulties to beginners. It is essential to remember that plants become succulent as a result of wet and dry periods and these should be maintained in cultivation. For very highly adapted plants whose stems and leaves are much thickened, the time of year and the duration of the wet period are important. It must always coincide with the growing period.

Plants grown in a greenhouse, where heat is available in cold weather, can be given what they want when they want it. But for plants grown in the living-room, where the temperature and ventilation are arranged to suit the human occupants, a compromise must be effected. Plants such as the desert cacti, which need resting in winter, are better in cooler conditions, so remove them, if possible, to an unheated room for the rest period; if kept in the living-room, a little water may be necessary to prevent the stems shrinking unduly.

The best way to learn how to water is by studying the plant itself. Most plants will start into growth whether they are watered or not, so as soon as new growth is seen, give the plants a little water. Once they are growing freely, resume normal watering. A good supply once a week is better than frequent dribbles, but

never give water when the soil is still wet. If a plant such as a desert cactus has been kept quite dry for some time, stand the pot in water until it soaks up to the surface, so that the whole ball of soil becomes evenly moist.

Water semi-succulents throughout the year, but give them less water when they are not growing actively, usually after flowering.

PROPAGATION

SEED

Most succulent plants are easily raised from seed, and if the seed is obtained from a reliable source the plants should be true to type.

Do not sow seeds until about May if heat is not available. Sow them earlier in a specially constructed propagating box (see *Garden Construction and Electricity in the Garden*) if a temperature of 50 to 55° F. (10 to 13° C.) can be maintained. Seeds sown in a higher temperature may germinate more rapidly, but the seedlings are more difficult to grow on. Distribute the seed evenly over the surface of the soil; if the seeds are larger than pinheads cover them with a light sifting of fine soil.

Provided they are not overcrowded, leave small seedlings, which are difficult to handle, in the seed pan for a year, until the next growing period arrives, but do not allow them to get dry or growth will be checked.

If there are a number of seedlings, prick them out together into one pan rather than into separate pots as it will be easier to keep them moist, but when the seedlings are definitely making progress, make the second pricking out into individual pots.

CUTTINGS

Another method of propagation is by cuttings. Where side branches can be removed without spoiling the parent

plant, they can be rooted separately. Break them off at a joint or cut neatly with a sharp knife. If the flesh is moist, leave the cut surfaces to dry for a day or two before putting the cuttings into a cutting-box. The best rooting material is a mixture of medium grade sedge peat and fine sand, which is easy to keep moist.

If a fair-sized box or seed pan is filled with this mixture, a number of cuttings of all types can be put in, and the mixture will keep in good condition for months while a succession of cuttings are rooted in it, as space allows. Label all cuttings.

It is not necessary to cover the box with glass, as is usual with cuttings of soft-leaved plants, for succulents do not wilt easily and there is less danger of rot if there is plenty of air round them. Never take cuttings out to see how they are getting on as this may easily destroy embryo roots; wait for signs of growth at the top of the cutting, then lift it out carefully and repot.

LEAF CUTTINGS

A number of succulent plants, such as *Echeveria*, *Sedum*, *Crassula* and *Haworthia*, can be propagated from single leaves. Carefully detach the leaves from the stem—do not cut them off. Lay them on the sand and peat mixture so that the base of the leaf is just covered; in time a young plant will develop. Do not detach the old leaf until it has dried up, even if the new plantlet is sufficiently rooted to be potted up separately.

OFFSETS

Some succulents make offsets round the base of the plant. If these are left, a fine clump will form, as this is the natural way for such a plant to grow. If extra plants are wanted, some of these offsets can be detached; and if, as will often be found, they have already made some roots, pot them up straight away; if there are no roots, treat them as cuttings.

PESTS AND DISEASES

PESTS

Succulent plants do not suffer greatly from pests, but if any insects are found, remove them at once with tweezers or a paint brush.

The commonest pest is the mealy bug, a small whitish insect rather like a tiny woodlouse. This lays eggs in cocoons that look like cotton wool, both the insect and the eggs being easily visible. Since mealy bugs are covered with wax, most insecticides do not kill them; a solution that dissolves wax would do so, but the plant might also be damaged. The only remedy is to remove the bugs with a brush.

An easily recognized insect, the root mealy bug, is sometimes found as white threads and nodules among the roots when repotting; brush the roots under running water until all traces of the bugs are removed and then repot in fresh soil and a clean pot.

Scale insects may occasionally be found. Remove them immediately, for they are sucking insects and may damage the surface of the plant. The insect itself is quite soft and is covered with a horny shell which it clamps down on the plant, but if the shell is moved, the insect dies. This pest is also difficult to kill with an insecticide but is easy to remove with a small blunt instrument.

Red spider (which is not a spider but a mite) is not common but can do considerable damage where it occurs, especially as the insect is so small that it is rarely noticed until the stem is badly damaged. It usually occurs on plants that have been kept in a very dry atmosphere or have been grown too "soft", either by being kept in an overwarm room or by overwatering. Spraying with water or dusting with derris powder will destroy the pest but the damage to the stem remains.

DISEASES

Diseases are not common among well-grown succulents, but damage caused by accident may set up rot in the tissues; scrape the damaged part away, treat the surface with flowers of sulphur, and the plant will generally heal. Where the base of a plant has become rotten through excess water in the soil, it may be found that the roots have also suffered, in which case cut off the top of the plant above the rotten portion, treat with flowers of sulphur and re-root as a cutting.

SUCCULENT PLANTS IN CULTIVATION

Succulent plants are classed together because they resemble each other in their adaptation to dry conditions, but they do not all belong to the same plant family. There are 24 families in which some degree of succulence is found but only three—*Cactaceae*, *Crassulaceae* and *Mesembryanthemaceae*—in which all the plants are succulent.

A large number of succulent plants are now grown, and if the generic, or first Latin name of a plant is known, some idea of the type of plant can be obtained.

In the following list the *probable* time of flowering for most of the plants is indicated in brackets after the generic name. It is, however, impossible to be exact, since the flowering time alters according to the treatment given. It also depends on the weather and especially on the amount of sunshine the plant gets. All the species in a genus may not flower at the same time, especially if they come from different climates. This is particularly the case with *Crassula*; there is no time in the year when none of the species is flowering.

In succulents, it is the plant itself that is of chief importance; if flowers come, they are a welcome addition, but many do not flower regularly and some never reach flowering size in this country.

Similarly, it is impossible to predict the height of most succulents. In cultivation, one can find good representatives of the same plant which vary widely in size according to age and cultural conditions, and to give the height that plants attain in their natural surroundings would be misleading.

ADROMISCHUS (summer)

These small South African plants with thick leaves and short woody stems were at one time included in *Cotyledon* but can be distinguished from that family by their small flowers in slender spikes.

Adromischus cristatus, thick, green, hairy leaves on thin stalks, the wide top edge thinner and wavy; stems short, stout and covered with dry, brown, aerial roots.

A. festivus (formerly *A. caeperi*), larger leaves than *A. cristatus*, narrowed to the base, grey-green with darker markings.

A. leucophyllus, short woody stems bearing thin-edged round or oval leaves covered with a white, waxy coating.

AEONIUM (summer)

Related to *Sempervivum* but forming shrubs with woody stems. Not hardy since they come from the Canary Isles.

Aeonium arboreum, compact rosettes of green leaves on branched stems.

A. atropurpureum, similar to *A. arboreum* but has dark purple leaves.

A. domesticum (syn. *Aichryson domesticum*), shrublet with much-branched stem and small rosettes of roundish, hairy leaves towards the tips; small yellow flowers.

A. tabulaeforme, almost stemless, with numerous leaves symmetrically arranged in flat rosettes up to 10 in. across; a pyramidal inflorescence rises from centre, after which the rosette dies. Can be raised from seed to flower in two or three years.

AGAVE

Natives of America. The leaves are thick, usually tapering, sometimes with spiny edges, and are held in rosettes, usually on short stems. When fully grown most of them are extremely large plants but small specimens are very attractive and grow slowly.

Agave americana, spreading, greyish-green leaves. Several varieties have yellow, white or pinkish longitudinal stripes along leaves.

ALOE (winter or spring)

Natives of Africa, these plants vary in size, some having stems, others none; some species, where the stem increases in height, become trees in their native land. The leaves are thick and tapering, sometimes with spiny edges, and are held in rosettes; flowers usually orange or red. Winter growers, the aloes need less water in summer. Repot in September.

Aloe arborescens, even young plants develop a stem; slender leaves have stout spines along edges.

A. aristata, one of the smaller species. The stem never lengthens but branches at ground level forming clumps. Numerous small, incurved leaves, dark green with white edges and spines on back and edge. Sometimes mistaken for a

haworthia until it produces its annual spike of typical red aloe flowers.

A. saponaria, also short-stemmed and forms offsets, but leaves are fewer and much larger, pale green with white oblong spots arranged in bands.

A. variegata (partridge-breasted aloe), quite distinct, as the leaves stand more or less erect, arranged in three rows, keeled on the outside, dark green with white teeth along edge, and transverse rows of white spots in irregular bands. Red flowers on loose spike about 1 ft. high.

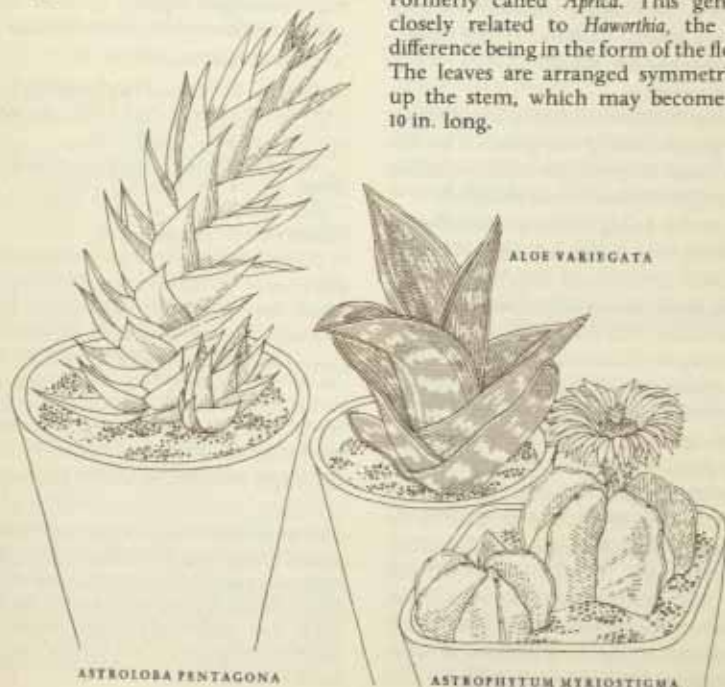
APOROCACTUS (summer)

One of the cacti that grow on trees; the long slender stems are ribbed and covered with fine spines.

Aporocactus flagelliformis (rat's tail cactus), usually grown as a hanging plant; slender, carmine flowers borne towards the base of the stems.

ASTROLOBA (spring and summer)

Formerly called *Aprica*. This genus is closely related to *Haworthia*, the chief difference being in the form of the flower. The leaves are arranged symmetrically up the stem, which may become 6 to 10 in. long.



ASTROLOBA PENTAGONA

ASTROPHYTUM MYRIOSTIGMA

CACTI AND SUCCULENTS

Astroloba pentagona, five rows of leaves, wide at the base, green, thick, firm and terminating in a sharp tip.

A. spiralis, similar; its five rows of leaves are spiralled and blue-grey in colour.

ASTROPHYTUM (summer)

This cactus is low-growing and globular in shape, but may become cylindrical with age. There are usually five to eight ribs only; the areoles are close-set along the ribs and the whole surface is covered with tiny white flakes. The large yellow flowers are borne in the centre of the plant.

Astrophytum capricorne, has eight ribs, and woolly areoles bearing a number of twisted spines.

A. myriostigma (bishop's cap), usually four or five ribs but no spines.

BRYOPHYLLUM

See under *KALANCHOE*; the two genera are now usually amalgamated.

CARALLUMA (summer)

Related to the stapelias, these plants have stout, four- to six-angled leafless stems and small star-shaped flowers.

Caralluma europaea, the commonest species; with four-angled stems and

clusters of small, pale yellow flowers banded with purple.

CEPHALOCEREUS

A large genus of columnar cacti, which normally reach a considerable height; the ribbed stems are generally hairy.

Cephalocereus senilis (old man cactus) is best known. Has a green ribbed body wrapped in long white hairs. Decorative even when small.

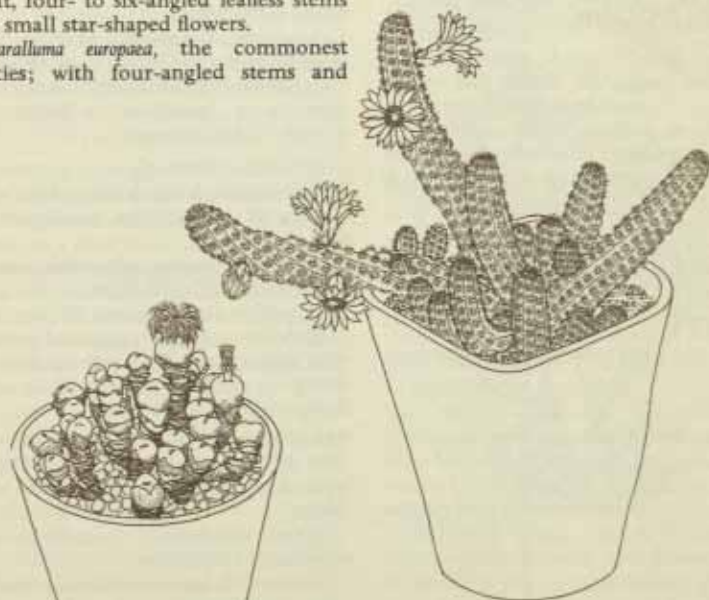
CEREUS (summer)

This name was formerly used to include most columnar cacti but is now reserved for a few species only, which bear large, funnel-shaped flowers that open at night.

Cereus azureus and *C. coeruleus*, have blue bloom on young stems; must be about 1 ft. tall before their white flowers are produced.

CEROPEGIA (summer)

Mostly climbing plants with the exception of two from the Canary Isles: *C. dichotoma* and *C. fusca*.



CONOPHYTUM GLOBOSUM

CHAMAECEREUS SILVESTRII

Ceropegia dichotoma, stout, erect stems, leafless for most of the year; curiously shaped yellow flowers.

C. fusca, similar to *C. dichotoma*, but with chocolate-coloured flowers.

C. woodii, a trailing plant with thin stems rising from a corm, and bearing small heart-shaped leaves, dark green with silvery markings and purple undersides.

CHAMAECECEUS (spring)

Chamaecereus silvestrii, small-growing cecereus with prostrate stems, which are brittle and break off easily but can be re-rooted. Comparatively large, erect orange or scarlet flowers.

CLEISTOCACTUS (summer)

One of the columnar cerei with thin, branching stems, the spiny areoles being close together. The flowers are small and do not open wide.

Cleistocactus straussii, stems slender and erect, entirely covered with white spines, flowers carmine.

CONOPHYTUM (autumn)

These are mimicry mesembryantheums, each pair of leaves being so closely

joined that a small top-shaped body with a slit across the upper surface is formed; the surface may be flat, curved or lobed. The flowers emerge through the slit, after which the plant divides. Keep the plants completely dry from December until June, by which time the outer pair of leaves should have dried up to a papery skin, which splits when growth begins. This is a large genus of some two hundred species.

Conophytum calculus, round green head, without markings, and yellow flowers.

C. frutescens, one of the lobed-top type, and the earliest to bloom. The orange flowers may appear before watering.

C. globosum, similar in colour to *C. calculus* but larger and kidney-shaped with mauve flowers.

CORYPHANTHA (summer)

Round or cylindrical plants, a few inches across, solitary or in clumps. At one time included in *Mammillaria*, these cacti are distinguished by the groove on the upper side of each tubercle; one or more of the spines is hooked.

Coryphantha elephantidens, spherical, with large tubercles and white wool on top.

C. vivipara, smaller than *C. elephantidens*, with more cylindrical tubercles; it quickly makes clumps.

COTYLEDON (summer)

Woody shrubs from South Africa with slightly succulent leaves, usually attractively coloured.

Cotyledon orbiculata, roundish, grey-green leaves with red edges.

C. undulata, leaves rather thicker than *C. orbiculata*, with a wavy edge and covered with white meal. Does not produce its orange or reddish, bell-shaped, hanging flowers until it is a fair size.

GRASSULA

This genus includes a wide variety of types found in South and South-west Africa.

Crassula arborescens, a large shrub resembling a cotyledon.

C. cooperi, forms mats of small rosettes of prettily marked leaves.

C. falcata, a tall plant with narrow



CRASSULA
PORTULACA

greyish leaves, turned on edge; a wide head of bright red flowers in summer terminates the stem, which later branches.

C. lycopodioides, branching stems covered with overlapping, tiny, dark green, pointed leaves.

C. portulaca (often erroneously called *C. argentea*), a large shrub resembling a cotyledon.

C. sarcocaulis, small shrub with tiny blue-green leaves and bunches of pink flowers on ends of branches. Hardy in sheltered places.

C. schmidtii, low, branching stems with rosettes of leaves, the centres of which elongate into inflorescences bearing small red flowers.

DOLICHOTHELE (summer)

Formerly included in *Mammillaria*, these cacti have longer tubercles of softer texture than that genus.

Dolichothele longimamma, glaucous tubercles up to 2 in. long. Produces large yellow flowers freely.

DROSANTHEMUM (summer)

One of the mesembryanthemums characterized by the glistening papillae on the leaves.

Drosanthemum floribundum, forms cushions of prostrate stems. Flowers very freely, often in first year from seed.

ECHEVERIA (spring)

In this American genus the leaves are in rosettes, either stemless or on branching stems; as a rule they have a coating of wax or hairs on the surface, which makes them very decorative; the flowers are red or orange, in loose, few-flowered sprays.

Echeveria derenbergii, glaucous blue leaves in rosettes a few inches across with red edges, and bright orange flowers.

E. gibbiflora, a much larger plant than *E. derenbergii*, with rosettes carried on branching stems.

E. carunculata, similar to type but centre of leaf puckered.

E. metallica, similar to type but has dark reddish-purple leaves.

E. glauca (sometimes regarded as variety of *E. secunda*), well-known species, at one time used in formal bedding, compact



EPHIPHYLLUM HYBRID

rosettes about 4 in. across, rounded leaves with short tips, blue-grey with reddish margins.

E. harmsii (once known as *Oliveranthus elegans*), a small, erect shrub with hairy leaves in loose rosettes. Bright red flowers about 1 in. long, one to three together on short stems.

E. leucotricha, hairy leaves, mostly silvery but brown on edges; does not flower easily in this country.

E. pulvinata, low, branching stems with rosettes of green hairy leaves, with crimson edges and large orange flowers.

ECHINOCACTUS (summer)

Echinocactus grusonii (barrel cactus), is the best known of this genus. The stem, at first spherical, becomes cylindrical with age, with many ribs and golden spines. Large specimens are sometimes seen but even small ones are very attractive.

ECHINOCEREUS (summer)

This cactus somewhat resembles the columnar cerei, but though some species may become cylindrical in time, they never form columns. The flowers are usually very large and showy.

Echinocereus delaetii, ribbed, cylindrical stem entirely covered with white hairs; it resembles young specimens of *Cephalocereus senilis*.

E. rigidissimus, (rainbow cactus), short



GYMNOCALYCIUM MULTIFLORUM



FAUCARIA TIGRINA

stiff spines flattened against the stem, alternate zones being white and red—hence the common name.

ECHINOPSIS (summer)

Spherical cacti with straight ribs, sometimes divided into tubercles; offsets are produced freely. The flowers are very large with long tubes, white or pink. There has been much hybridization, and it is doubtful if the plants now in cultivation are true species.

Echinopsis eyriesii, a round plant with flowers up to 10 in. long, white with green throat.

E. multiplex, a globular plant with pink flowers.

E. oxygonia, similar to *E. multiplex*.

EPIPHYLLUM (spring)

Formerly known as *Phyllocactus*, these are epiphytic, not desert, cacti. The stems are flattened, often wavy or notched along the edge, with very small spines, if any, in the notches. The flowers are large and showy; most of the plants in cultivation are hybrids, often with other genera.

EUPHORBIA (spring)

This large genus is world-wide in its distribution but only a few of the species are succulent; some, from South Africa, are often mistaken for cacti because of their columnar, spiny stems, but they belong to a quite distinct plant family, as

can be seen by their flowers, which are quite small and insignificant. A milky juice or latex exudes if the skin is broken, and in some cases this is poisonous.

Euphorbia caput-medusae, cylindrical, spineless branches rise from a large central head, a new ring of branches being formed annually.

E. grandicornis, angular stems, and spines in pairs along the angles.

E. heptagona, ribbed columnar stems with solitary spines along angles.

E. horrida similar to *E. heptagona*, but much stouter.

E. meloformis, has low stem, depressed in the centre, with about eight wide ribs. The male and female flowers grow on different plants, and the so-called spines are the remains of branching flower stalks that have become woody.

E. obesa, round when young, becoming cylindrical; ribs more prominent at the top, and its grey surface is covered with dull purple, transverse lines.

E. pseudocactus, similar to *E. grandicornis*.

E. splendens, not really a succulent, but often grown as such. Has branching stems with irregularly scattered spines; bright green, oval leaves near tips of branches during growing period. Flowers small, but surrounded by two conspicuous bright red bracts.

E. submamillaris, similar to *E. heptagona* but smaller and freely branching.



GASTERIA VERRUCOSA



EUPHORBIA MELOFORMIS

E. tirucalli, erect stems, leafless and spineless.

E. virosa, similar to *E. grandicornis*.

FAUCARIA (autumn)

These low-growing mesembryanthemums have two or three pairs of thick leaves at right angles to each other; they are keeled at the back, with a fringe of teeth along each edge.

Faucaria tigrina, with large, stemless, bright yellow flowers, and leaves $1\frac{1}{2}$ to 2 in. long.

F. tuberculosa, similar to *F. tigrina* but the leaves are not so long; short stout teeth occur on the back as well as on the edges of the leaves.

FENESTRARIA (summer)

Mesembryanthemums, known as "window plants" because of the translucent upper surface of the erect, cylindrical leaves, which are held in rosettes.

Fenestraria aurantiaca has large yellow flowers.

F. rhopalophylla has large white flowers.

FEROACTUS (summer)

These large spherical cacti do not make offsets. The ribs are well developed and the spines are stout, sometimes flattened, and usually curved or hooked.

Feroactus rectispinus, unusually long spines, up to 5 in.

F. wislizenii, very stout, with flattened central spines.

GASTERIA (spring)

Related to the aloes and haworthias, these plants can generally be recognized by the leaves, which are arranged in two ranks instead of in a rosette, with no stem. The flowers are small, tubular with a swollen base, reddish with green tips, and hang from long, arching flower stems.

Gasteria disticha, short, broad, dark green leaves patterned in white.

G. verrucosa, leaves about 6 in. long and more pointed than *G. disticha*, greyish-green with white dots.

GLOTTIPHYLLUM (summer)

Mesembryanthemums with soft-fleshed, green leaves closely packed in two ranks along short stems that are often prostrate. The flowers, which appear in September, are very large.

Glottiphyllum depressum, translucent green leaves and yellow flowers up to 2 in. across.

G. linguiforme, wider leaves and larger yellow flowers, but many plants under this name are hybrids.

GRAFTOPETALUM (spring)

This genus from Mexico is closely related to *Echeveria*.

Graptopetalum amethystinum has very thick bluish-grey leaves, flushed with amethyst, on a stout, branching stem; small white flowers held in a loose cluster.

CACTI AND SUCCULENTS

GYMNOCALYCIUM (summer)

Natives of Argentina and Bolivia, these cacti form low, spherical plants with wide ribs divided into tubercles characterized by a chin-like projection below the areole; the spines are very variable and the white, pink or occasionally yellowish flowers are freely produced and usually large.

Gymnocalycium mihanovichii, an interesting species, as the spherical body has alternate zones of light and dark green, resembling *Euphorbia meloformis*. Diameter about 2 in.

G. multiflorum, a large bluish-green plant, about 4 or 5 in. across with eight or nine stout, curved spines in each areole; pink flowers 2 in. across.

G. quehlianum, much smaller than *G. multiflorum*, though the flower is large.

HAWORTHIA (spring)

This genus from South and South-west Africa is related to the aloes, but the plants are smaller, the leaves in rosettes and the small white flowers are held in long, loose inflorescences. These plants grow mostly in winter and need less water in summer. Repot in September.

All of the following except *Haworthia cymbiformis* have thick skins and grow well in the sun.

Haworthia coarctata, leaves are often reddish and incurved.

H. cymbiformis, very succulent, stemless with rosettes of softer leaves. Prefers slight shade.

H. margaritifera, has dark green leaves with raised white dots on back and front.

H. reinwardtii, similar to *H. margaritifera* but with broader, shorter leaves.

H. tessellata, a distinctive plant; small, low rosettes composed of a few very thick leaves with tips recurved; the surface is covered with a network of fine lines.

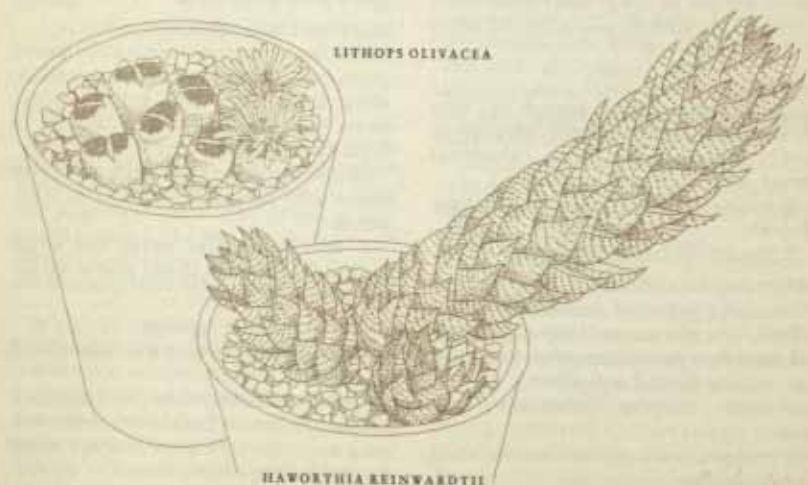
KALANCHOE (spring)

This genus, which includes plants formerly known as *Bryophyllum*, comes chiefly from Madagascar and other tropical areas; the plants need moister conditions than most succulents but grow quite well in a cool greenhouse or living-room.

Kalanchoe blossfeldiana, clusters of bright red flowers. By selection a number of distinct varieties have been obtained.

K. daigremontiana, produces plantlets along the notched edges of the large triangular leaves. Often seen as small specimens but if potted up into richer soil, will grow more freely and flower in a year or two.

K. tomentosa, leaves covered with silvery



hairs, brown along the edges, and held in loose rosettes on branching stems. Does not flower in the British Isles.

K. tubiflora, similar to *K. daigremontiana* but produces plantlets only at the tips of its narrow leaves.

KLEINIA

This name is often used for plants that are now generally referred to as *Senecio*.

LAMPRANTHUS (summer)

A large genus which includes many of the shrubby mesembryanthemums. Often used for summer bedding, especially near the sea, the following can all be grown in pots but tend to become straggly, when they should be started again from cuttings.

Lampranthus aureus, yellow flowers.

L. blaudus, large, pale pink flowers.

L. coccineus, taller than *L. blaudus*, with red flowers.

LEMAIREOCEREUS

Columnar cerei found in both Mexico and Peru, with large felted areoles and numerous stout spines.

Lemaireocereus marginatus, dark green stems with five or six ribs along which woolly areoles are very close together.

L. pruinosus, the new growth at the top is glaucous blue. Stout little plants can be obtained from seed in two or three years.

LITHOPS (PEBBLE PLANT) (autumn)

These mimicry mesembryanthemums have one pair of leaves, united to form a top-shaped body. In Nature only the upper surface, which is often beautifully marked, appears above the ground, but in cultivation it is safer not to plant so deeply. The flowers, which may be white or yellow, emerge through the slit across the top. The plants should be kept completely dry during the resting period, from December to about May.

Lithops bella, pale grey with a sunken brown and yellow patterning on the surface, and white flowers.

L. leslei, olive-green with red patches and yellow flowers.

L. olivacea, one of the "windowed plants", the centre of each lobe being translucent.

L. opica, differs from other lithops in having a deep cleft between the two lobes, which gape open and have translucent tips; colour normally grey, but there is a purplish-red variety.

LOBIVIA (summer)

Formerly included in *Echinopsis*, these cacti are medium-sized, round or cylindrical, usually very spiny, and make offsets round the base. They flower freely, the flowers being usually yellow, sometimes orange or red.

Lobivia aurea, large funnel-shaped yellow flowers.

L. flammatimensis, variable—flowers may be yellow, orange, pink or blood-red.

L. pentlandii, rather larger; branches to form clumps of orange or red flowers.

LOPHOPHORA (summer)

This curious cactus from Mexico and Texas forms a low head, depressed in the centre, on a large tap root. Its few ribs are rounded, divided into low tubercles, and there are no spines in the areoles, only tufts of wool. The small pink or white flowers emerge from the woolly centre and are followed by little red fruits. This plant has been used by the Mexican Indians in their rites, for it contains alkaloids that produce hallucinations; it is known as peyote or mescal buttons.

MAMMILLARIA (summer)

This North American genus is a large one; the plants vary in size but are mostly round or cylindrical, sometimes solitary but more often making offsets or forming clumps. They are characterized by spiral rows of tubercles instead of straight ribs. There is an areole on the top of each tubercle and the spines vary in size and colour; in some kinds there is wool in the axils as well as in the areoles. The flowers are small and produced in rings round the plant, not in the centre. In some the sap is watery but in others it is milky.

Mammillaria appplanata, hemispherical, with large green tubercles and white flowers; milky sap.

M. bombycina, a slow-growing type, with hooked central spines; attractive, with red flowers; watery sap.

M. elongata, a small type with golden spines. There are a number of varieties in which the colour of the spines varies; watery sap.

M. gracilis, a small plant, branching freely on the sides to form groups about 3 or 4 in. across; radial spines are white but centrals, which do not appear until the plant reaches flowering size, are brown; watery sap.

M. magnimamma, a variable species with round, green stems; much white wool in the centre and on the areoles; flowers creamy-yellow; milky sap.

M. plumosa, a small plant, 1 in. or so across, completely covered with soft feathery spines; it forms clumps but does not flower in cultivation; watery sap.

MESEMBRYANTHEMUM

This name is applied to many plants that belong to the family *Mesembryanthemaceae*, especially to the shrubby types. They all come from South and South-west Africa. Details of some of the genera into which the family is divided will be found under: *Conophytum*, *Drosanthemum*, *Faucaria*, *Fenestraria*, *Glotiophyllum*, *Lampranthus*, *Lithops* and *Pleiospilos*.

NOTOCACTUS (summer)

This group from South America includes round and cylindrical cacti with ribs in tubercles and large yellow flowers.

Notocactus apricus, globular, with stout, reddish, central spines.

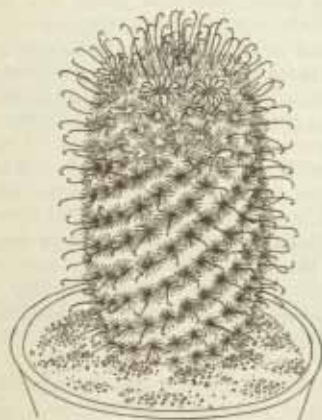
N. leninghausii, a tall-growing plant with golden, bristle-like spines.

OPUNTIA (summer)

This is a large group of cacti found all over America but the types differ in different areas. The stems are jointed and the joints may be flattened, cylindrical or globose. The spines vary in number and type. The characteristic of this genus is that tufts of barbed bristles called glochids are also produced in each areole; as these easily become detached, the plants should be handled with care, for owing to their barbed tips, the glochids are difficult to get out of the skin. To remove them from the skin, press adhesive plaster down over them, and then carefully peel off. Many of the flat-jointed plants make large bushes. Most opuntias do not flower freely in cultivation.

Opuntia cylindrica, cylindrical stems with lozenge-shaped protuberances bearing areoles but few spines.

O. ficus-indica (Indian fig), a large plant, naturalized in southern Europe and cultivated for its fruit; its oval pads may be up to 1 ft. long.



MAMMILLARIA BOMBYCINA



OPUNTIA MICRODASY VAR. RUFIDA

O. microdasys, smaller than *O. ficus-indica*, with no spines but tufts of glochids that look like plush, and are white, yellow or reddish according to variety.

O. polyantha, flat oval pads about 4 in. long, bearing yellow spines; produces yellow flowers regularly.

OREOCEREUS

A genus of columnar cacti from South America, which have ribbed stems divided into tubercles; there are few spines but a large number of long hairs which wrap round the plant.

Oreocereus celsianus, white hairs and yellow spines.

O. trollii, silky white hairs which almost cover the plant, and golden-reddish spines.

PACHYPHYTUM (spring)

These Mexican plants are closely related to *Echeveria* but the glaucous leaves are very thick, club-shaped and arranged in a loose rosette up a short, stout stem. The flowers are small.

Pachyphytum compactum, very close rosettes 1 to 2 in. across, dark red flowers with greenish tips.

P. oviferum, larger leaves than *P. compactum*,

more loosely arranged, and with a dense white coating; scarlet flowers.

PARODIA (summer)

These small South American cacti have straight or spiral ribs divided into tubercles and the areoles near the centre have much white wool; the flowers are large, red or orange, and freely produced.

Parodia microserma, a round plant, elongated when old; makes offsets round the base by which it can be propagated.

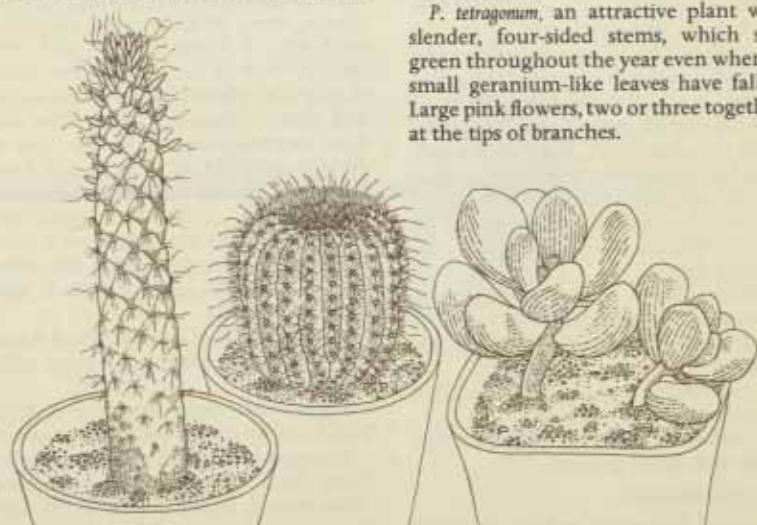
P. nívosa, an attractive little plant with snow-white wool at the top. Does not produce offsets so freely as *P. microserma*.

PELARGONIUM (spring and autumn)

These plants from South Africa are not markedly succulent; some have succulent stems like the common garden geranium, which is a pelargonium, and a few have thick, woody stems which act as storage organs, leaves appearing only in the growing season.

Pelargonium echinatum, thick woody stem, produces hairy, heart-shaped leaves in autumn, which is the beginning of the growing period; flowers are small and lilac coloured.

P. tetragonum, an attractive plant with slender, four-sided stems, which stay green throughout the year even when its small geranium-like leaves have fallen. Large pink flowers, two or three together, at the tips of branches.



OFUNTIA CYLINDRICA

NOTOCACTUS
LENINGHAUSII

PACHYPHYTUM OVIFERUM



SEDUM GUATEMALENSE

PLEIOSPILOS (autumn)

These mesembryanthemums usually consist of a single pair of thick leaves which look like chunks of stone; the large yellow flowers appear between the leaves in autumn at the end of the growing season, which starts during the summer. During the resting period keep the plants completely dry. Even when a new pair of leaves begins to grow in the centre, give no water until the old pair begins to dry up. They will then have passed on the nourishment stored in them to the growing pair.

Pleiospilos holstii. Its leaves, which are brownish-green with dark dots, are about 3 in. long and broad, with the lower side rounded.

P. neltii, similar to *P. holstii*, but each leaf is the shape of half a sphere.

P. simulans, its leaves are very thick, but spread out on the ground.

REBUTIA (summer)

A South American genus of small, spherical cacti, which usually make

offsets from the base or sides of the plant; the flowers spring from old areoles, near the base in some species.

Rebutia minuscula looks like a small green golf ball; bears a large number of scarlet flowers with slender tubes.

R. senilis, similar to *R. minuscula*, but long white spines surround the plant.

RHIPSIDOPSIS (spring)

An epiphytic type of cactus from Brazil having freely branching, short, dark green or reddish stems with narrow, flat joints.

Rhipsalidopsis rosea, pink flowers (up to 1 in. across) produced freely at the tips in spring.

SCHLUMBERGERA (spring)

This epiphytic cactus has short, flattened, jointed stems with elongated areoles on the top from which flowers and new joints develop.

Schlumbergera gaertneri, (Easter cactus), has bright red flowers. There are a number of hybrids and varieties.

SEDUM (spring and summer)

This genus is widely distributed, but almost entirely in the northern hemisphere; many of the species, therefore, are hardy in Great Britain, and even though slightly succulent, are often regarded as alpine rather than succulent plants. Those that come from warmer countries, such as Mexico, can be grown out-of-doors if protected from frost, and some are very attractive, especially if grown in full sun when their colouring is at its best. There are a number of small types not unlike the native stone-crop (*Sedum acre*), such as *S. stahliae* and *S. guatemalense*.

Sedum dasyphyllum, a small plant whose tiny, bluish, succulent leaves tinge red in the sun.

S. guatemalense, fat, bronzy leaves about ½ in. long, becoming green if out of sun.

S. morganianum (burro's tail), a hanging plant from Mexico; small cylindrical, close-packed, bluish leaves along long stems ending in small bunches of pale pink flowers.

S. pachyphyllum, erect woody stems with slender club-shaped leaves towards the ends, pale glaucous green with red tips.

S. stahlii, prostrate stems with fat little reddish leaves.

SENECIO (summer and autumn)

This large genus includes plants of many kinds, including the common ground-sel; a few of the South African species are succulent, such as *Senecio articulata*.

Senecio articulata (syn. *Kleinia articulata*) (candle plant), keep dry from March to September to keep stems short and glaucous blue (watering will make them long and green); leaves and flowers appear on watering again in the autumn.

S. haworthia (syn. *K. tomentosa*), slow-growing, lovely plant, which branches from the base only; its long cylindrical leaves are wrapped in a felt of white hairs.

S. stapeliaeformis, four-angled, dark purplish-green stems; new growths tend to burrow underground before emerging and growing erect to end in orange-red heads of flowers.

STAPELIA (CARRION FLOWER) (autumn)

When their flowers open, these African plants have an unpleasant smell, which attracts blow-flies for pollination. The

stems are usually angular, leafless and rather soft in texture. Do not give them much water, but do not keep them completely dry when resting.

Stapelia variegata, stems smooth and erect with spreading teeth; five-pointed, star-shaped flowers at base, with wrinkled surface, yellow with purple markings.

TRICHOCEREUS

Columnar cacti from South America, which usually branch from the base; the spines are well developed and the white flowers, which are produced on old specimens only, open at night.

Trichocereus spachianus, a vigorous grower, used as grafting stock. Areoles close, with curly white wool and yellow-brown spines. Branches at base when about 12 in. high.

ZYGOCACTUS (winter)

Zygocactus truncatus (Christmas cactus), an epiphytic cactus with flattened, jointed stems, terminating in bright carmine flowers, two-lipped rather than regular, produced very early in the year. In summer give less water and put outside in the shade; bring in again before winter frosts and then, if necessary, repot in fresh soil.



ALOE ARISTATA

HOUSE PLANTS

UNTIL just after the Second World War, palms, ferns, aspidistras and a few seasonal flowering pot plants were the only plants available for interior decoration. Now, however, there exists a wide range of foliage pot plants grouped under the heading of house plants.

This change is due chiefly to the architects who designed post-war buildings on such simple and sometimes severe lines. The introduction of house plants

in a wide variety of form and colour provided both a new type of decoration with which to relieve the architectural simplicity of the home, and also a new form of art in the arrangement of house plants. Thanks to improved lighting and heating, many varieties formerly known strictly as conservatory or hot-house plants will now thrive as house plants. The kinds that are easier to grow will last for several years.



RHOICISSUS RHOMBOIDEA

FICUS ELASTICA DECORA



ARCHMIZA RHODOCYTANEA

CHOOSING HOUSE PLANTS

When choosing plants, consider first their shape, habit, texture and colouring in relation to the position they will occupy and in relation to each other. For a group of plants, choose a tall specimen to give height, a climbing variety, several bushy varieties, and the trailing variety to cascade over the edges of the container. Aim also for good contrasts of leaf shape and colour, choosing the fresh and subtle green-leaved varieties for single specimens in key positions. Use multiple wall-brackets rather than the type that holds a single plant, to allow scope for grouping and contrast.

TEMPERATURE

The next consideration is the temperature of the room in which the plants are to live. If the night temperature falls to between 45 and 50° F. (7 and 10° C.), choose only the tolerant kinds. If the minimum night temperature can be maintained at 50 to 60° F. (10 to 16° C.), intermediate plants may be used, and at higher night temperatures the delicate varieties as well.

HUMIDITY

Humidity is linked with temperature. The amount of moisture in the air is relatively greater at lower temperatures. Modern heating provides good warmth but often dries the atmosphere. It is important, therefore, to keep all plants out of range of radiation from a source of dry heat, such as a gas or electric fire or a coal fire. Never place a plant directly above a source of dry heat such as a radiator or convector. All house plants prefer humidity, and the delicate ones must have it to grow and thrive. Naturally a home cannot be turned into a steaming jungle, but plants can be helped in many ways without interfering with personal comfort.

An easy way to provide humidity is occasionally to spray over the leaves with tepid water, using an old scent spray or something similar. Sponging the leaves, both above and below, with tepid water and a clean sponge is equally effective. Fresh air is not essential to house plants, but opening the windows on a mild, damp day will serve the dual purpose of raising humidity and dispersing harmful gas or oil fumes. Always avoid draughts.

Another means of providing humidity is to place a layer of small pebbles or shingle in the bottom of a shallow tray or saucer about 1 in. deep. Fill this with water to just below the surface of the pebbles and stand the plant in its pot on the pebbles. When the plant is watered, the surplus will drain through to the pebble base, later evaporating to create the humid "micro-climate" the plant needs. Take care that the plant does not stand with its feet in water.

CONTAINERS

The best method of providing and conserving humidity is to group the plants in a container. A metal-lined trough or pottery bowl makes a good container, or, for those who prefer something a little more unusual, a deep copper pan or antique container can be used. Fill the container with moist peat, and plunge the plants into the peat up to the rim of their pots. Keep the plants in their pots so that they may be fed and watered according to their individual requirements.

Keep the peat in the container moist. The moisture will then evaporate slowly, forming a humid "micro-climate" round the plants, which will tend to form an umbrella of leaves over the peat to prevent the moisture from evaporating too rapidly. To provide humidity for a single plant, find a container with a larger diameter than that of the pot and pack moist peat in the space between the two.

LIGHT

Light is an important factor regulating plant growth, and the closer natural conditions can be simulated, the greater will be the success in growing house plants. Many varieties originate from the floors of great tropical forests, where the sunlight is filtered through the canopy of branches and leaves overhead. Most house plants, therefore, prefer shade or semi-shade. In winter, the deciduous forest trees shed their leaves, and more, though less intense, light reaches the floor of the forest. In winter, therefore, when the days are short, house plants need all the light they can get, and during the day should be moved nearer to a window.

Generally speaking, the green-leaved plants prefer a shaded position, and many will tolerate quite dark corners. The coloured-leaved or variegated varieties require more light to preserve their leaf colour, but no house plant, with the exception of *Sansevieria trifasciata laurentii* (mother-in-law's tongue), can withstand long periods of direct sunlight. A south-facing window is therefore not an ideal position for house plants, unless the sunlight is filtered by net curtaining or a venetian blind. Conservatories or green-houses containing house plants should be heavily shaded in spring and summer as a protection against strong sunlight; remove all shading, however, during the autumn and winter. Where the shading is of the type that is sprayed on to the glass outside, it should be renewed after heavy rainstorms. (See *The Use of Glass in the Garden*.)

A photographic light meter can be used as a means of checking the intensity of light reaching the leaves of house plants. On a Weston light meter, with bright summer sunlight outside giving a reading of 22, a reading of 12 to 14 in the greenhouse or home is ideal for most

green-leaved varieties, 14 to 16 for the coloured-leaved and variegated varieties, and 9 to 10 for varieties that need heavy shade. These readings are intended only as a simple guide, and do not provide the high degree of accuracy that would be required by scientists.

Artificial light as yet plays little part in plant growth indoors, although experiments with special lighting bulbs are being carried out.

WATERING

Correct watering is of supreme importance, and largely determines success or failure with house plants.

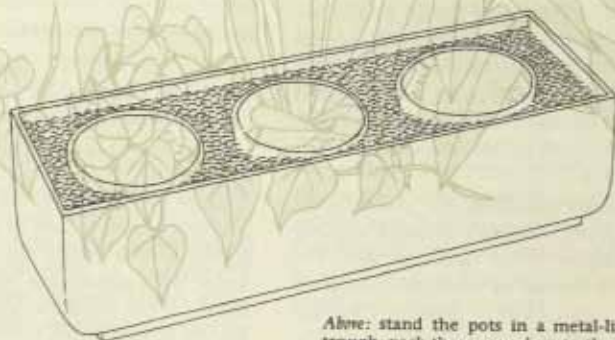
There are no cheap or readily available instruments for measuring the water content of the soil in the pot, and the practical methods used by gardeners and horticulturists should therefore be relied upon. With experience, one can quickly tell from the weight of the pot whether the soil is wet or dry, but a sharp rap on the side of the pot with the knuckles will confirm this. If the sound produced is a hollow ringing tone, the soil is dry; if it is only a dull thud, the soil is wet. This method can only be applied to clay pots. If the plant is in a plastic pot, the difference in weight between wet and dry is more apparent.

Another method of checking is to observe the colour of the surface soil. When wet, it is black or dark in colour; when the soil dries out, it becomes a greyish-white.

The last method is by touch. By pressing the tips of the fingers into the top-soil one can learn whether it is wet and soggy, moist, or hard and dry, by the resistance offered by the compost. The two extremes of wet and dry soil should always be avoided, the ideal being an intermediate, evenly-moist condition.

The amount of water required by house plants changes with the season, and even

TWO METHODS OF
PROVIDING HUMIDITY
FOR HOUSE PLANTS



Above: stand the pots in a metal-lined trough; pack them round up to the rim with peat, and keep it moist.

Below: place the pots on a layer of small pebbles or shingle in a shallow tray. Fill the tray with water to just below the level of the shingle, so that there is no danger of the pots standing in water.



between one home and another. During the period of vigorous growth in spring and summer, house plants require plenty of water, and the soil should not be allowed to dry out too much between waterings. In autumn, when growth slows down, watering should be reduced and care should be taken not to over-water. Throughout the winter, particularly during cold weather, the greatest care should be taken, as the plants have almost ceased to grow. In this semi-dormant period, allow the soil almost to dry out between waterings, and then give only sufficient water to maintain life, moistening the soil without making it wet. The golden rule at all times, particularly in winter, is *never water when the soil is wet*. Make a practice of watering early in the day, and drain off all surplus water before replacing the pot in position. Soft water is always preferable but not essential.

In winter, water the intermediate and delicate varieties with tepid water (at room temperature: about 70° F. or 21° C.). This treatment will benefit the easy varieties also. Cossetting house plants in winter, which usually means over-watering, often has fatal results. Neglecting them will do far less harm.

Where the room temperature drops sharply at night during cold weather, always remove a plant that is moist or wet to a warmer position. Plants left on window sills, between the curtains and the window, are in great danger of being damaged or killed by frost. Always bring them into the room at night.

Drooping of the leaves is usually a sign of excessive dryness. Never follow a period of dryness with heavy watering, as this can cause the loss of the lower leaves, but return gradually to normal watering.

Black or brown wet patches on the leaves or stem are often a sign of over-

watering in winter. If the lower part of the stem is affected fatal results may follow. If the leaves are affected, keep the plant almost dry for a while. Some leaves will certainly fall, but the life of the plant may be saved.

Before going away for any lengthy period in spring or summer, water all house plants thoroughly. Insert two small stakes in each pot, slightly taller than the plant, one at each side of the pot. Slip a polythene bag over the stakes and secure it to the pot with a rubber band. Place the plants in a position where they will not be exposed to strong sunlight. Moisture will then evaporate from the leaves, condense on the walls of the polythene bag and run down to the bottom of the bag, where it will be absorbed by the pot again.

The plants will be in an ideal atmosphere, with humidity and a simple self-watering device, which could be described as a miniature greenhouse.

FEEDING

Feeding is beneficial during the period of active growth from spring through summer to early autumn. In late autumn and winter, discontinue feeding altogether.

There are many good brands of house plant fertilizer available from florists or horticultural sundriesmen. Always follow the maker's instructions, for exceeding the stated dosage will only harm the plants. The small bottles of liquid fertilizer are perhaps the most convenient to use in the home. A few drops in water, according to the manufacturer's instructions, will ensure adequate feeding when watering.

A trap into which many inexperienced house plant enthusiasts fall is that of attributing the unhealthy appearance of a plant to starvation. Try to determine first whether the symptoms are due to

HOW TO REPOT A PLANT

1. Spread the fingers of one hand round the stem of the plant and invert the pot so that the ball of soil emerges intact
2. Tap the rim of the pot to loosen the plant, so that the ball of soil emerges intact
3. Stand the ball on a layer of potting compost, in a larger pot, so that the top is 1 in. below the rim.
4. Fill up with compost round the ball of soil, firming gently with the thumbs
5. Level the surface of the soil, and water the plant only sparingly for 3 to 4 weeks after repotting



damage by cold, over-watering, or excessive dryness. If these possibilities can be excluded, and if the roots are healthy and undamaged, then feed the plant, but remember that feeding a sick plant will make it worse.

Pale green leaves usually indicate the need for feeding, particularly if the plant is pot-bound (the pot being full of roots).

REPOTTING

Frequent repotting of house plants is quite unnecessary, and generally plants can stay in the same pots for 12 to 18 months. Most kinds will thrive in pots that appear too small for them, and plants that have filled their pots with roots will live on happily if they are fed regularly.

Late spring or early summer is the right time for repotting, as the roots then have time to become established in the new soil before the cold weather sets in.

Top-heaviness should be the main indication for repotting, but before repotting, inspect the ball of soil. This can be done by spreading the fingers of one hand on either side of the stem between the lower leaves and the top of the pot. Invert the pot, and tap the rim sharply two or three times. The soil ball will then fall out into the hand.

If the roots are obviously overcrowded or tangled round the outside of the soil ball, repotting into a one-size larger pot will be necessary. Cover the drainage hole of the larger pot with crocks, put some potting compost in the bottom, stand the soil ball in the centre, then fill up with potting compost and firm down.

If repotting is unnecessary, drop the ball back into the same pot and tap the base sharply once or twice. The plant should then be firmly in place, but if it is not, firm the soil with both thumbs.

As a general potting mixture a John

Innes compost with the addition of one-third part by volume of peat or leaf mould is recommended. This is a good standard compost available from most florists and horticultural sundriesmen, but any peaty compost will suffice as long as it has an open texture.

A good potting compost, suitable for most house plants, can be made from: 2 parts turfy loam, $1\frac{1}{2}$ parts leaf mould, 1 part washed sharp sand, $\frac{1}{4}$ part farmyard manure, $\frac{1}{4}$ part peat. (All parts by volume.)

The reaction should be slightly acid with a pH of $5\frac{1}{2}$ to 6. Add superphosphate at the rate per bushel recommended by the suppliers.

The potting mixture and the pot ball of the plant should be just moist. Water sparingly for a few weeks to encourage the roots to grow into the new soil.

Never repot a sick plant whose roots have been damaged by cold or bad watering, as this is the surest way to kill it.

PRUNING AND TRAINING

In the winter months, house plants tend to make long, thin, weak growth with small leaves. In spring, when vigorous growth resumes, this poor growth should be cut back as far as the good-sized, healthy leaves to improve the appearance and shape of the plant. Healthier and more robust side shoots will soon grow.

The variegated climbing and trailing varieties easily revert to all green leaves during the winter when the light is inadequate. In spring this green growth should be cut back to the last well variegated leaf in order to encourage variegated side shoots.

If a plant is growing too tall and a bushier shape is required, stop the growing shoots by pinching out the tips. This encourages the growth of side shoots and bushiness will soon result.

House plants are frequently seen trained up bamboo or trellis to form a



CLIMBER GROWN ON
MOSS-STICK

With thin florist's-wire, bind a layer of moist sphagnum moss round a stake, leaving only the pointed end of the stake free. Drive this end into the soil in the pot, so that the stake stands firm and upright, and tie the plant loosely to the stake. When the plant is watered, let some water trickle down the stake to keep the moss damp. Some climbing plants, particularly members of the arum family, produce aerial roots in the damp moss.

partial screen between two parts of a large room, and the climbing and trailing varieties lend themselves well to this practical and decorative use.

The foliage of many climbing plants, particularly members of the arum family,

can be improved by training them up a mossed-stake. Find a pliable stake somewhat taller than the plant, to allow for growth, and with thin florist's-wire bind a layer of moist sphagnum moss about 1 in. deep round its whole length, leaving the pointed bottom end free to be driven upright into the soil. Tie the plant to the stake, and keep the moss damp by allowing water to trickle down the stake from the top at each watering. The plant will soon produce aerial roots, which will root into the damp moss.

CLEANING

Regular sponging of the leaves with tepid water helps to prevent attacks by insect pests and provides the wash that indoor plants cannot get from rain.

To impart a gloss to smooth-leaved varieties, sponge with a mixture of equal parts of milk and water. Sponging with beer produces a similar effect, but leaves a strong aroma.

A useful preparation is an aerosol spray which imparts a thin, dust-resistant film of plastic to the surface of the leaves. A high gloss results, which lasts for several months. This spray can be used only on the tougher, smooth-leaved plants, and particularly improves the appearance of rubber plants (*Ficus elastica decora*) and monstera. Use the spray with care, and only out-of-doors, as it is inflammable, and if too much is inhaled it may leave a plastic deposit in the breathing system.

Clean the leaves of hairy-leaved plants with a soft brush such as a paint brush, or blow off accumulated dust. The same treatment is recommended for the leaves of varieties with silvery-grey peltate scales. These scales form the attractive silvery bandings on many members of the pineapple family (*Aechmea rhodocyanea*, etc.) and are easily rubbed off, so that the appearance of the plant is spoilt.

PESTS AND THEIR TREATMENT

Only rarely does an attack of pests constitute a serious menace to house plants. Sponging the upper and underside of the leaves regularly is the best preventive measure.

Specific pests and recommended treatments are listed below:

PEST	CONTROL
GREENFLY The most common pest. Entering through open windows or brought in on cut flowers during spring and summer, greenfly cluster on young shoots and distort growth.	Spray with liquid derris, which is non-poisonous, or use one of the garden aerosols. Remove bowls or tanks of fish from the room before using either treatment.
RED SPIDER Minute insects, rarely red, which attack the underside of the leaves, particularly in hot, dry conditions. The affected leaves first appear scattered with little yellow dots, and later become brittle and dry.	As for <i>Greenfly</i> .
SCALE Small, shield-shaped insects with immobile waxy shells, which cling to the veins on the underside of the leaf, mainly on the shrubby types of plant. Excrement from the insects appears as a black sticky deposit on the surface of the leaves below.	Wipe off the insects with a damp cloth. If difficult to dislodge, push off with thumb nail.
WHITE FLIES Tiny, moth-like flies, which appear in great number.	As for <i>Greenfly</i> .
MEALY BUG Small insects with a white, downy covering found mainly in stem joints and on the underside of leaves.	Wipe off with a damp cloth.
ANTS Sometimes accompany an attack of greenfly.	Put down a few drops of ant killer in the path of the ants.

WORMS are sometimes found in the soil in the pot. Do not destroy them, for although unpleasant, they keep the soil aerated and will not leave the pot.

POPULAR VARIETIES OF HOUSE PLANTS

AECHMEA RHODOCYANEA
(URN PLANT, EXOTIC BRUSH)

(*Bromeliaceae*) origin: Brazil

A highly decorative and popular member of the pineapple family. Grows as a dense rosette of leaves, each leaf being 2 to 3 in. wide and 1 to 1½ ft. long, with a saw-toothed edge. The leaves vary considerably in colour, but usually have either alternate bands of green and silver-grey or are almost entirely silver-grey. The silver-grey effect is produced by a mealy substance on the surface and underside of the leaves, and should never be rubbed off. Dust on the leaves may be blown off. A rosy-pink flower bract grows up from the centre of the rosette to about 1½ ft., ending in rose-pink spiky leaves, between which red and violet-blue flowers emerge. When the flowers die, pluck them from the bract, which will then remain pink for six to nine months. At about flowering time, the plant produces one to three offshoots. Leave these on the plant, which will die down after flowering and should be cut off near the base. The offshoots will then grow on the root system of the parent plant and will flower again in two to three years.

AGLAONEMA PSEUDO-BRACATEATUM
(FEATHER-LEAF)

(*Araceae*) origin: Malaya

A decorative, bushy plant, with spear-shaped leaves, about 9 in. long and 2 in. across, on short stems. Irregular golden-yellow markings along the centre of the leaf give way to grey-green and finally to dark green on the border of the leaf. A rather delicate plant requiring constant warmth and humidity in a draught-free, shady position. It needs plenty of water in summer but careful watering in winter with a minimum temperature of 55° F. (13° C.). Feed regularly with a liquid fertilizer in spring and summer.

ANTHURIUM SCHERZERIANUM
(FLAMINGO FLOWER, PIGGY-TAIL FLOWER)

(*Araceae*) origin: Costa Rica

An intermediate plant requiring some skill in cultivation, and one of the few grown for its flowers rather than its

foliage. Brilliant scarlet flowers 9 to 12 in. high push up through the lance-shaped, dark green leaves, which are about 6 to 8 in. tall. The spathe of the flower is similar in shape to a painter's palette, and the spadix, often curled like a corkscrew, stands stiff and erect from the upper end of the spathe like a paint brush fixed in the palette. To flower, the plant requires high temperatures (minimum 60° F. or 16° C.), great humidity, and shade. It also needs good drainage, and potting in an open-textured soil. Water frequently in hot weather or if in a hot dry room. Less water is required in winter, but never let the plant dry out. Always use rain-water for this variety, as hard water may cause the leaves to turn yellow.

APHELANDRA SQUARROSA LOUISAE
(ZEBRA PLANT, SAFFRON SPIKE)

(*Acanthaceae*) origin: Brazil

When purchased in bud or flower, the *aphelandra* should be regarded as a flowering plant which will have no decorative value when the flowers have fallen off; but when purchased as a foliage plant, not in flower, it may last some time as a house plant. Large lance-shaped leaves grow in pairs from the upright stem. The leaves are about 9 in. long and 4½ in. across, of a very dark shiny green, the main rib and side veins being emphasized by ivory-coloured stripes. The tubular yellow flowers grow either as a single spike at the top of the main stem or on several stem branches, and they emerge from a segmented bract shaped like a four-cornered pyramid. *Aphelandras* will grow under a variety of conditions, but ideally they like a semi-shaded position and to be kept evenly moist, with warmth in winter. When caring for an *aphelandra*, remember that the pot must be full of roots with very little soil, for until the plant has become "pot-bound" and starved, it will not flower. It will therefore need frequent watering to keep it evenly moist; in winter, however, when in a cool position, give only enough water to keep just moist. The leaves have a natural droop,

but this will become exaggerated if the plant is too dry. Sponging will keep the leaves fresh and free of dust, but take care not to cause physical damage to the leaves or brown patches will appear. Regular feeding with a liquid fertilizer is essential to keep the leaves dark green.

ARALIA SIEBOLDII (syn. *FATSIA JAPONICA*)
(CASTOR OIL PLANT)
(*Araliaceae*) origin: Japan

One of the easiest house plants, which can also be grown out-of-doors in a sheltered position. The leaves are large and shaped like the palm of a hand, with seven to nine lobes. Frequent feeding when in active growth keeps the leaves a good dark green. Attractive when about 1½ to 2 ft. high in a 5-in. pot. Prefers semi-shade, but can be gradually acclimatized to almost full light. Keep well watered in summer, but give less water in winter.

A.s. variegata. An intermediate plant, more delicate than the green-leaved variety. The variegation occurs at the tips of the lobes and leaf edges. In common with all variegated forms of plant, it can be propagated only from cuttings, otherwise the leaf markings are lost.

BEGONIA (*Begoniaceae*)

Begonia rex (fan plant) origin: Malaya. Truly the king of begonias. The flowers are insignificant, but the fan-shaped leaves display a wide range of colour combinations in intricate and delicate patterns. The surface of the leaf is hairy to prevent excessive transpiration, and the edges are toothed. Although classified as a delicate plant, it will last for a time in the house if humidity can be provided. An arrangement on a peat base in a bowl, or in a slightly cool position, is ideal. Always keep the plant moist, but do not over-water in winter. A draught-free, light position is advisable, though not in direct sunlight. A minimum temperature of 55° F. (13° C.) is essential.

B. masoniana (Iron Cross begonia) origin: Malaya. A striking variety with bright green leaves similar in shape to those of *B. rex*, but smaller and more rounded.

They are covered with rounded nodules, giving a moss-covered effect. In the middle of the leaf there is a clearly defined purplish cross. This plant requires similar treatment and conditions to *B. rex*, but it is rather slow growing and will benefit from feeding during the growing period.

CALATHEA LOUISAE (PRAYER PLANT)
(*Marantaceae*) origin: Brazil

One of the few calatheas to tolerate home conditions. Its lance-shaped leaves, about 7 in. long and 3 in. wide, lie flat by day and stand erect at night. They are medium green in colour with irregular variegation along the centre rib. The underside of the leaf is purple. The plant likes deep shade, and the leaves curl up and turn brown at the edges if exposed to too much light. It prefers warmth and as much humidity as possible. In winter this can be provided by standing the plant in its pot on a stand or block of wood in a bowl of hot water several times a week. The rising steam will provide the necessary humidity, but do not let the hot water touch the pot or the roots will be damaged.

CHLOROPHYTUM CAPENSE VARIEGATUM
(SPIDER PLANT, ST. BERNARD'S LILY,
WATERFALL PLANT)

(*Liliaceae*) origin: South Africa

An easy and popular variety, cultivated as a house plant since 1828. It grows as a dense cluster of narrow, gracefully arching leaves, each having a cream stripe down the centre. Will grow almost anywhere in the home, but requires plenty of water. The plant should be repotted when the tubers begin to push it up out of its pot. When the plant is mature in a 5-in. pot, it will produce what appear to be flower stems with little clusters of leaves at the ends. These are the young plants for increasing stock. Peg them down into small pots of soil as for the runners of a strawberry plant, and wait until they root before cutting the stem joined to the parent plant. Keep the soil in the small pots fairly dry until the young plants have rooted.

The three plants shown here illustrate some of the striking contrasts of colour and leaf shape to be found among house plants: the dark, shiny, lance-shaped leaves of *Aphelandra squarrosa louisae*; the fan-like foliage of *Begonia rex*, hairy and richly coloured; and the very graceful, arching leaves, striped with cream, of

Chlorophytum capense variegatum



BEGONIA REX



APHELANDRA
SQUARROSA LOUISAE



CHLOROPHYTUM CAPEENSE
VARIEGATUM

CISSUS ANTARCTICA (KANGAROO VINE)
(Vitaceae) origin: Australia

An easy plant popular for its climbing habit. The stems will readily attach themselves to trellis, cane or string supports by means of tendrils, and have been known to reach a length of 43 ft. or more. The dark green leaves are 2 to 3 in. long and 1 to 1½ in. wide, with serrated edges similar to an oak leaf. Tolerates almost any condition except cold below 45° F. (7° C.). Prefers a semi-shaded position and liberal watering in summer, and rather more light and less water in winter. Regular feeding in spring and summer promotes growth and keeps the foliage a healthy green.

COCOS WEDDELIANA (COCOA PALM)
(Palmaceae) origin: South America

A miniature palm with delicate, feathery leaves, which blends well with any plant arrangement or looks well on its own. It prefers semi-shade and damp air. Keep it

evenly moist in summer, but avoid over-watering in winter. Will withstand a range of temperatures, but prefers warmth and dislikes draughts.

CODIAEUM (syn. *CROTON*) (JOSEPH'S COAT)
(Euphorbiaceae) origin: S. India, Ceylon, Malaya, Pacific Islands

These plants, always referred to as crotons, are usually regarded as hot-house plants, but they will last for a considerable time in a well-heated room. Planted in a bowl or trough as part of a mixed arrangement, they receive the humidity they require, and have been known to last for over a year. This colourful and beautiful family includes numerous varieties, leaf shapes and colour combinations. Leaf shapes range from long, narrow and curling (corkscrew varieties) to wider and irregularly pointed (oak-leaf varieties) and elongated and oval (broad-leaf varieties). Colours range from bright yellow and green,

through red and green, red and pink, orange and red, to almost black, orange and red. The mid-rib and side veins determine the pattern in some varieties, but other intricate patterns have no regular form. All except two varieties are delicate, requiring warmth, humidity and good light, but not direct strong sunlight. Keep evenly moist at all times and provide warmth (minimum 60° F. or 16° C.) in winter. Feed during the growing season. The two exceptions are the intermediate varieties *C. variegatum pictum* and *C.v. pennick*. The first has a single stem with narrow ribbon-like leaves flecked with gold, and the second oval leaves about the size of a laurel leaf, which become patterned with bright and dark red when mature. Conditions required are similar to other crotons, but these two varieties will withstand slightly lower temperatures.

COLUMNNEA OERSTEDIANA (SCARLET TRAILS)

(Gesneriaceae) origin: Costa Rica

One of the best trailing house plants, either in a hanging pot or small hanging basket. Tiny green leaves densely cover the entire length of the long trailing stems. Produces brilliant scarlet tubular flowers in spring, which soon drop in a hot, dry atmosphere. Prefers 60° F. (16° C.) and humidity in a semi-shaded position. Keep the soil moist in summer, but allow to dry out between watering in winter.

CRYPTANTHUS (Bromeliaceae)

Cryptanthus bivittatus roseo-pictus (earth stars, chameleon plant) origin: Brazil. A small plant ideal for mixed arrangements in bowls or troughs, as it provides a contrast in height and form. The leaves, 3 to 6 in. long, are striped longitudinally in pale and mid-green, have crinkled edges and form a flat, star-shaped rosette. When moved to a light position, the leaves become richly suffused with pale pink and deep maroon. This process can be reversed by placing the plant in a dark or shady position. The plant will survive for weeks without water,

and will tolerate almost any condition. Ideally, keep the soil just moist in summer and on the dry side in winter. Stock is easily increased by removing and potting up the side shoots that appear after flowering. When a side shoot measures about 1½ in. in diameter, remove it by tugging the tip of its lowest leaf.

C. bromelioides tricolor (dracaena bromeliad) origin: Brazil. Perhaps the most popular of all cryptanthus for its grace and colouring. A star-shaped rosette is formed by the graceful, arching leaves, which are 1 in. wide and 6 to 10 in. long. Coloured cream with narrow green longitudinal stripes, they become richly suffused with bright pink at the edges and base in good light in spring and summer. Should the leaves turn brown at the edges, remove the affected area carefully with scissors. The plant prefers warmth, an ideal temperature being 60° F. (16° C.), but it will tolerate small variations in temperature and will survive for long periods without water. Keep the soil moist and the plant in a light position.

DIEFFENBACHIA (DUMB CANE) (Araceae)

Dieffenbachias are poisonous, and the leaves or stems should not be chewed or eaten. An old legend says that chewing the plant causes dumbness for several days, and that it was given to slaves as a punishment.

Dieffenbachia amoena, origin: tropical America. A good free-standing specimen plant with large, nearly oblong leaves varying from 6 to 10 in. in width and from 14 to 20 in. in length, and branching alternately from a thick stem. The leaves have irregular yellow and cream markings along the lines of the lateral veins on a mid-green background. This species is "tougher" than all other dieffenbachias. It will withstand temperatures down to 50° F. (10° C.) or lower if dry at the roots. Ideally this plant prefers humidity and warmth to maintain growth. It will shed its lower leaves from time to time with age, but this loss is more than compensated by the production of new leaves at the top. Will probably develop into a palm-shaped "tree".

D. picta, origin: Brazil. This is strictly a greenhouse plant, as warmth and humidity are essential. Provide a constant temperature of 50° F. (10° C.) or ideally, 60° F. (16° C.), and a semi-shaded or shaded position. Lance-shaped leaves grow from a thick stem or trunk. The dark green leaves, about 6 in. wide and 12 in. long, have cream markings between the side veins which form an almost completely cream area towards the centre vein. The bottom leaves will turn yellow and fall off naturally, but will be compensated by growth at the top, making an interesting tree-like plant. Related varieties include *D.p.* var. *Bausei*, *D.p.* var. *Jenmanii*, *D.p.* var. *memoria corsii*, *D.p.* var. *Oerstedii* and *D.p.* var. *Roehtsii*. These and other varieties are similar to *picta*, but they have different markings ranging from grey on a green background to dark green and white spots on a bright yellowish-green background, though the very striking *D.p.* var. *Oerstedii* has a dark green, almost black, leaf with a white centre vein.

DIPLADENIA ROSEA (PINK QUEEN OF RIO) (*Apocynaceae*) origin: Brazil

The woody stems produce oval green leaves about 3 in. long by 1 in. wide, and a profusion of showy, deep pink trumpet flowers in spring and summer. A delicate variety requiring a light position away from direct sunlight, together with warmth (60° F. or 16° C.) and humidity. The leaves will fall if the atmosphere is hot and dry. A draught-free position is essential. Rapidly succumbs to over-watering or dryness. A greenhouse or conservatory plant.

DRACAENA (*Liliaceae*)

Dracaena sanderi (variegated dragon tree) origin: Congo. Quite unlike the many other varieties of *dracaena*. The leaves, about 1 in. across and 6 to 8 in. long, grow at intervals from the straight stem rather like wheat. The centre of the leaf is greyish-green and the margin ivory-cream. An intermediate plant requiring semi-shade, a temperature of 50 to 60° F. (10 to 16° C.) and sufficient water to keep

the soil evenly moist. Often used in mixed arrangements.

D. terminalis (syn. *Cordyline terminalis*) (flaming dragon tree, tree of kings) origin: India, Malaya, Polynesia. This plant is essentially delicate, requiring greenhouse conditions, but it will tolerate home conditions for many months, and in a mixed arrangement may last for a year. The colouring of the leaves ranges from irregular patterns of bright red and green to pale pink and green.

Plants 1½ to 2 ft. high are usually available in 5-in. pots. They should be placed in a light position out of direct sunlight, or in semi-shade. Ideally, they should be in a temperature of 60° F. (16° C.), but they will withstand temperatures down to 50° F. (10° C.). Keep evenly moist and provide humidity if possible by plunging in peat or by placing in a mixed arrangement.

This species is prone to attack by red spider, especially when it is in a hot, dry atmosphere.

D.t. tricolor, has broad leaves with large areas of cream on green and vivid flashes of bright pink.

FATSHEDERA LIZEI (IVY TREE)

(*Araliaceae*) origin: France

A bi-generic hybrid resulting from a cross between *Fatsia* and *Hedera* (ivy). It is of erect, wiry growth on a single stem that requires a stick for support. The dark green leaves are shaped rather like those of the castor oil plant (*Aralia sieboldii*) but are smaller and have five points. One of the easiest of house plants, tolerant of almost any conditions and treatment, and also hardy out-of-doors. Keep moist, in semi-shade, and feed regularly during the growing season. Repot in spring or summer when the plant becomes too tall for the pot in which it is growing.

F.l. variegata. The variegation occurs as a broad cream margin round the edges of the leaves. Not quite as hardy as the green variety. In poor light in winter, in a hot, dry atmosphere, or if the plant is allowed to dry out, the lower leaves tend to turn brown and fall off. Should this happen, make a loop of galvanized wire and push



CODIAEUM (CROTON)

the ends into the soil. Train the stem round this loop, tying where necessary with raffia. The section with leaves will then cover the length of bare stem.

FICUS (FIG) (Moraceae)

If protected from draughts, ficus will tolerate both low and high temperatures, but they are happiest in a temperature

of 55 to 60° F. (13 to 16° C.). They will grow in all positions, but if in a light position should be moved to shade when new leaves emerge, as too much light, especially sunlight, will cause the leaves to be hard and small. They prefer to be evenly moist in spring and summer, but take care not to over-water in winter. Sponging

the leaves not only benefits the plants, but also improves the glossy appearance of the leaves.

Ficus benjamina (weeping fig) origin: India, Malaya. An attractive and highly individual plant. Its upright, woody stem and numerous branches covered with small dark green leaves give the impression of a graceful weeping tree. It requires a minimum temperature of 50° F. (10° C.) and should always be kept moist in summer, but allowed to almost dry out between waterings. Prefers a semi-shaded position out of direct sunlight. Some yellowing and dropping of the leaves may occur naturally in winter, but this loss will be more than replaced in the growing season.

F. elastica decora (rubber plant) origin:

Indonesia. A highly decorative and popular house plant. The dark green, leathery leaves grow spirally from an upright stem, each leaf being attached by a thin stalk about 1 in. long. The leaves are about 9 to 12 in. in length and 5 to 7 in. wide. During the growing months, the sheath containing the furled new leaf at the growing tip of the plant is coloured bright red, but it turns brown and falls off when the new leaf emerges. Remove it if it becomes lodged, as it may cause the new leaf to rot.

F.e. doescheri (variegated rubber plant) origin: U.S.A. The only large-leaved variegated ficus. Similar in appearance to *F.e. decora*, but the leaves are longer and narrower. The young leaves have broad, irregularly shaped cream markings round



DIEFFENBACHIA AMOENA



DRACAENA TERMINALIS TRICOLOR

the edges, which become narrower as the leaf matures. The centre of the leaf is of two shades of green in irregular patches. A striking and highly decorative though delicate plant, which requires warmth and humidity. Keep in a light position out of direct sunlight. Keep moist in summer and rather dry in winter; if the soil becomes really dry, however, the leaves will droop and may fall off. Take care also not to over-water this plant, or the edges of the leaves will turn brown. If this should happen, trim off the brown edges with scissors, and allow the plant to dry out almost completely before attempting to water it again.

F. pumila (creeping fig) origin: China, Japan. This climbing, creeping or trailing plant, with its thin stems and thick growth of elongated, heart-shaped leaves, is quite unlike other members of the family. The leaves are about $\frac{1}{2}$ in. across and 1 in. long. Unlike most house plants, it should always be kept moist. Never let the soil dry out. An occasional spray over the leaves and regular feeding during the growing season are beneficial. The plant will withstand moderate to cool temperatures, and in a cool greenhouse will climb a wall rapidly, supported by its aerial roots. It prefers a shaded or semi-shaded position.

F.p. variegata. This variegated form is dainty and highly decorative. The leaves are blotched with white, and although they tend to revert to green during the winter, the new growth in spring and summer will be variegated. Treatment and conditions as for *F. pumila*, but with more light (not direct sunlight).

FITTONIA ARGYRONEURA (SNAKE-SKIN PLANT)

(*Acanthaceae*) origin: Peru

A dwarf tropical plant, a prostrate grower and rather delicate. The leaves are roundish, about 3 to 4 in. long, and a medium green with silver veins, giving the effect of an intricate silver net over the leaf. Prefers deep shade and must be kept humid and warm (minimum 55° F. or 13° C.), but never hot. Will quickly die if allowed to dry out, but over-watering will have the same effect.

FURCRAEA SELLOA MARGINATA (SWORDFISH PLANT)

(*Amoryllidaceae*) origin: Guatemala

A remarkably easy and tolerant plant, composed of a rosette of rigid leaves with spiny tips and edges. In a 5-in. pot the leaves grow 1½ to 2 ft. long and 3 to 4 in. wide. The centre of the leaf is mid-green with slight irregular grey-green markings and margins and spines of creamy-yellow. Will tolerate sunlight or shade, serious neglect and periods of dryness, and will even withstand temperatures down to 40° F. (4° C.) if kept dry. Keep evenly moist in summer to promote growth.

HEDERA (IVY) (*Araliaceae*)

All varieties make easy house plants, and most are hardy out-of-doors.

THE GREEN-LEAVED IVIES

Keep in a shady corner. During the growing season feed regularly with a good liquid fertilizer, and keep moist. Allow almost to dry out between waterings in winter. All will tolerate a great deal of neglect or ill-treatment.

Hedera helix Chicago (English ivy) origin: Great Britain. One of the most popular house plants, mainly because of its vigorous growth and its tolerance of rough



FATSEDERA LIZEI VARIEGATA

treatment. It can be grown either as a climber or as a trailer and benefits from restrictive pruning during the growing season. It has the typical small leaf.

H.h. cristata (parsley ivy) origin: Europe, Asia, N. Africa. The leaves are almost round in shape with a heavily fringed edge similar to parsley. This variety, though unusual, is not highly decorative.

H.h. Green Ripple, origin: Europe, Asia, N. Africa. An increasingly popular variety, due to its remarkably pointed and dainty leaves.

H.h. minima (smallest of all) origin: Europe. Has a profusion of very small, thin leaves.

H.h. Nielson, origin: Europe, Asia, N. Africa. Similar to *H.h. Chicago*, but the leaves grow closer together on the stem

and may be a little smaller and darker in colour. A prolific and vigorous variety.

H.h. Ravenholst, origin: Europe, Asia, N. Africa. Has attractive large, dark green glossy leaves, almost heart-shaped and slightly pointed.

H.h. sagittaeifolia (arrowhead ivy) origin: Turkey. A popular variety with arrow-shaped leaves, the central lobes being elongated and triangular.

THE VARIEGATED-LEAVED IVIES

Generally slightly less tolerant of neglect than the green-leaved varieties, although they may still be classified as easy house plants. Keep them away from any source of dry heat. As with most other variegated-leaved varieties, they prefer good light, particularly in winter, but not direct sunlight. Feed regularly during the growing season with a good liquid fertilizer and keep moist, but allow almost to dry out between waterings in winter. Over-watering at this season often causes the variegated section of the leaf to turn brown. Some variegated varieties revert to green growth during the winter, and in early spring produce thin, spindly growth. Prune this as soon as the plant is growing vigorously. Pruning improves the shape of the plant and encourages self-branching. Some variegated varieties are sufficiently hardy to survive the winter in the garden if planted out early in the year.

Hedera canariensis A number of varieties originating in the Canary Islands, and known as Canary Island ivy or Canary ivy:

H.c. foliis variegatis. One of the showiest and most popular varieties. Its large, almost heart-shaped leaves have irregular markings of dark green and grey-green in the centre with a pale cream margin. A slow grower, which should not be over-watered or the leaves will turn brown.

H.c. Golden Leaf. The leaves are of similar size and shape to those of *H.c. foliis variegatis*. The leaf colouring, despite the name, is not golden, but bright green in the centre with an irregular dark

green margin. The stem and leaf stalks are red, a feature of great interest. A slow grower, which can, however, reach a height of 6 ft.

H.c. maculata. Size and shape of leaves similar to *H.c. foliis variegatis*, the bright green being flecked with golden-yellow. The leaves become a darker green with age. Decorative as a large specimen, as it can be anything from 4 to 6 ft. tall.

H. helix Fantasia, origin: Europe. Suitable for climbing or trailing. The tiny leaves are bright green, flecked with creamy white.

H.h. Glacier, origin: Europe, Asia, N. Africa. The small leaves are an effective silver-grey with a cream margin. Makes a good trailer. Will withstand frost and is therefore a good subject for window boxes out-of-doors. If the plant becomes straggly in the autumn, let it dry out and stand it outside in a sheltered position for the winter. Bring back into the house early in March, and water sufficiently to start growth again. Increase watering as growth progresses. The woody stems that have hardened outside during the winter will produce masses of tiny new leaves along their whole length.

H.h. Little Diamond, origin: Europe. An unusual ivy with small leaves coloured grey-green in the centre with an ivory margin. Most leaves are almost lance-shaped, but some are of a nearly conventional ivy shape.

H.h. Lutzii, origin: Europe, Asia, N. Africa. A small-leaved, bushy ivy. The basic colouring of the leaves varies from mid-green to a very light green, densely mottled with deeper green.

H.h. marmorata (Irish marbled ivy) origin: Ireland. A slow growing but beautifully marked variety, with attractive pink leaf stems. The leaves are almost as large as those of *canariensis* varieties, and have a marbled effect with patches of dark green on mid-green, or of green on ivory.

H.h. sagittaeifolia variegata (variegated arrowhead ivy) origin: Turkey. Similar in shape and size to the green-leaved *sagittaeifolia*. The leaves are mainly pale

cream with green markings in spring and summer. In the autumn and winter months the leaves may become rather green, due to poor light. They grow rather close together on the stem, giving a dense bushy effect.

H. jubilee Golden Heart, origin: Europe, Asia, N. Africa. A fascinating ivy with small leaves, each with a golden centre surrounded by a dark green margin. Normally a slow-growing variety, it seems to grow more quickly under cool conditions and in full light, but growth will then be rather thin with a long section of stem between each leaf.

MARANTA LEUCONEURA
KERCHOVEANA (PRAYER PLANT, RABBIT TRACKS)

(*Marantaceae*) origin: Brazil
An attractive but rather delicate plant requiring a little extra care. The leaves grow in a fairly dense rosette, the mature leaves lying prostrate and the new leaves standing furled and upright. About 5 in. long and 3 in. wide, the leaves are mid-green with symmetrical blotches of maroon-red on either side of the mid-rib between the side veins. Always keep the plant moist, warm and humid, in a shady, draught-free position. If subjected to too much light, the leaves will turn yellow.

MONSTERA DELICIOSA BORSIGIANA
(MEXICAN BREADFRUIT, SWISS CHEESE PLANT, WINDOW LEAF)

(*Araceae*) origin: Mexico
An accommodating and popular plant, with a thick round stem and drooping dark green leaves, which hang from side stems about 12 to 15 in. long. The leaves are about 12 in. long and 10 in. wide, and are an elongated heart-shape. They are deeply cut between the side veins almost to the mid-rib, and mature plants will, ideally, produce holes in the leaves near the mid-rib between the cuts. The serration of the leaves causes the plant to throw intriguing shadows when subjected to angled lighting. Thick aerial roots in search of support and moisture grow from the stem opposite to the leaf stems. Those near the bottom should be

trained down into the soil in the pot; those farther up the stem should be trained up a mossed stake as described in Pruning and Training. Frequent repotting is unnecessary unless the plant becomes top-heavy, and should then only be carried out in spring or early summer. If fed and watered regularly, a monstera will continue to grow in a small pot; one experimental specimen was kept in a 5-in. pot for four years, until it was over 7 ft. tall.

The plant likes shade or semi-shade, and should be moist but never too wet, particularly in winter. A temperature of 60° F. (16° C.) or over is ideal, but it will withstand lower temperatures. Feed regularly during the growing season with a liquid fertilizer; growth will cease during the winter. In the early part of the year some leaves will be without cuts or perforations, and although these will appear in leaves produced later, they will be less numerous if the plant is grown in the house than if it is raised in a greenhouse.

NEANTHE BELLA (PARLOUR PALM)
(*Palmaeae*) origin: Mexico

A slow-growing miniature palm that is quite easy to grow in the home. It has feathered leaves ranging from 4 to 8 in. in length and composed of individual leaves that become larger and coarser as the plant grows. Quite tolerant of a variety of conditions, but draughts will cause the leaves to go brown at the edges. Prefers warmth, semi-shade, and some humidity. Keep the soil evenly moist, but allow almost to dry out between waterings in winter.

NEOREGELIA CAROLINAE TRICOLOR
(CART-WHEEL PLANT)

(*Bromeliaceae*) origin: Brazil
Has a dense rosette in the form of a spray that flattens out prior to flowering. The strap-shaped leaves are 12 to 15 in. long and about 1 to 1½ in. wide. They are green with a cream centre and striped at the edges with fine green lines. The cream variegation becomes suffused with pink before the rosette flattens out. At the time of flowering, the short leaves and

VARIETIES OF IVY



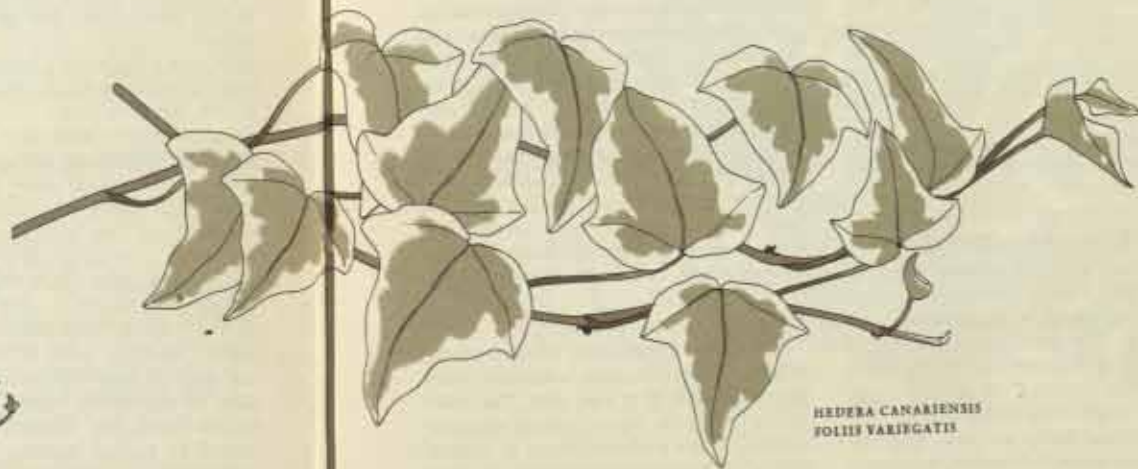
HEDERA HELIX LUTZII



HEDERA HELIX
Green Ripple



HEDERA HELIX
SAGITTATAEFOLIA



HEDERA CANARIENSIS
FOLIIS VARIEGATIS

the base of the larger leaves round the cup-shaped depression in the centre of the plant become a brilliant red. Even after its small pale lilac-blue flowers have died, the plant will retain its brilliant red centre for 12 months or more, and side shoots will grow up between the leaves. If left on the parent plant, these will flower again in one or two years according to conditions.

This is an easy plant, which prefers warmth and semi-shade or shade, but will tolerate a hot, dry atmosphere. Keep the centre cup filled with water and the soil in the pot just moist, but allow the soil to dry out between waterings in winter, when tepid water should be used. As the flowers die off, wash out the centre cup thoroughly every day, or a pungent odour will arise.

PEPEROMIA (PEPPER) (*Piperaceae*)

Most peppers appear as a short bush of thick fleshy leaves, indicating that they can store water and will withstand periods of dryness. Many of them produce several thin, erect flowers, like mouse-tails, which stand some 6 to 8 in. above the leaves and add considerable interest to the form of the plant. The flowers are whitish-cream in colour and are occasionally branched at the tip. *Peperomias* prefer moist soil, but must be allowed to dry out between waterings. In winter, keep them as dry as possible without causing damage to the roots. When water is necessary it should be tepid. The green- and grey-leaved varieties prefer shaded conditions, while the variegated-leaved varieties need more light, but not sunlight. All must have warmth in winter.

Peperomia caperata (little fantasy, emerald ripple) origin: Brazil. Produces a dense mass of small, heart-shaped leaves 1 to 1½ in. long. They are irregularly corrugated, and are coloured dark green and purple in the "valleys" of the corrugations, and bright emerald-green on the "hills". The leaf stalks are pink, and the overall effect is of a rich velvet. An intermediate plant, which produces whitish-cream flowers as described above.

P. glabella variegata (vanilla ice plant) origin: Central America. Grows as a bush, with pinkish, trailing stems that may be 6 to 8 in. long. The leaves are green with a cream margin. Requires warmth and humidity, and is not as easy to grow as the green-leaved variety.

P. hederatifolia (crinkled metal plant, ivy peperomia) origin: Brazil. Similar in leaf and habit to *P. caperata*. The heart-shaped leaves are crinkled and some 2 in. long and wide. They are pale grey in colour, and dark olive-green main veins form the "valleys" of the corrugations. Prefers shade and humidity.

P. magnoliaefolia (desert privet) origin: West Indies. A shrubby variety producing side shoots. The oval leaves are mid-green with an irregular cream margin. They are about 2 in. long and 1½ in. wide. An easy plant, which will tolerate varying conditions.

P.m. Green Gold, origin: West Indies. Identical to *P. magnoliaefolia*, except that the leaf has irregular patches of dark and light green on a yellowish-cream, almost golden, background.

P. sandersii (water-melon peperomia, rugby football plant) origin: Brazil. Forms a dense bush of leaves that are almost round but taper to a point at the end. The mature leaves are fleshy, and are about 3 in. long and 2 in. wide. They are silver in colour, with a dark green band along the main vein. An intermediate plant that requires more attention than most. Keep evenly moist with tepid water, and allow almost to dry out between each watering. Keep warm and fairly dry in winter, but never allow to dry out completely. Cold and/or over-watering will cause the leaves to turn black and rot off.

PHILODENDRON (*Araceae*)

Philodendron bipinnatifidum (finger plant) origin: Brazil. An easy, compact plant normally sold in a 5-in. pot. The mid-green, triangular leaves have an irregular serrated edge and rise from a central point. They are usually about 12 in. long and 9 in. across, but sometimes much larger. Place the plant in a semi-shaded



MONSTERA DELICIOSA BORSIGIANA

position in summer, and give it more light, though not direct sunlight, in winter. Keep evenly moist in summer, but allow almost to dry out between waterings in winter. Feed regularly during the growing season. This species grows slowly and the lower leaves may turn yellow and fall off, but are replaced by new and larger leaves.

P. melanochrysum (black velvet) origin: Colombia. A delicate climbing plant, which may be trained on a mossed stick as described in Pruning and Training. The heart-shaped leaves vary from 3 to 5 in. in length and have a most exotic appearance, with a velvety, very dark green, almost black surface and a deep golden underside. The plant requires moist conditions, a minimum temperature of 55° F. (13° C.), and a semi-shaded, draught-free position. Always water with tepid water.

P. scandens (sweetheart plant) origin: Puerto Rico, Panama. A popular and attractive climbing plant, which produces aerial roots at every leaf joint and will grow larger leaves if trained up a mossed stake as described in Pruning and Training. It has heart-shaped, dark green leaves some 3 to 4 in. long and 2½ to 3 in. wide, although they can be much larger in mature specimen plants. Will survive in almost any conditions, but thrives best in warmth and humidity. Likes a semi-shaded or shaded position and will tolerate quite dark corners. Prefers moderate watering and regular feeding during the summer. Keep the plant fairly dry in winter if in a cool position. During winter and early spring it tends to make weak, thin growth (elongated with small leaves), which should be removed to encourage fresh "breaks" and stronger growth.

P.s. variegatum. The variegation is usually confined to one half of each leaf and consists of green splashes on an almost white background. This variegation often causes severe distortion of the variegated half of the leaf and is almost certainly virus induced.

P. selloum, although this is almost

indistinguishable from *P. bipinnatifidum* when small, and is often sold as the same plant, it forms a trunk when larger, and has larger leaves, with deeper serrations.

P. wendlandii (bird's nest philodendron) origin: Costa Rica, Panama. An intermediate plant quite unlike other philodendrons in habit and leaf shape. The long, lance-shaped leaves are a glossy dark green, and stand up stiff and erect round a central point. The leaves of specimens in 6- or 7-in. pots reach a length of 20 to 24 in. and are some 3 to 3½ in. wide. The plant often produces an exciting cluster of two or three beautiful cream and deep red flowers in the centre of the cone of leaves. The flower has a stem about 3 in. long, and lasts for only about 24 hours when cut. The plant requires a semi-shaded position away from direct sunlight, and should be kept moist. Feed during the growing season, and never subject the plant to a temperature of less than 50° F. (10° C.).

PILEA CADIEREI NANA (ALUMINIUM PLANT)

(*Urticaceae*) origin: tropical America. A dwarf variety that has replaced the larger *P. cadieriei* in popularity. It grows as a low bush, and its leaves are 1½ to 2 in. long and about 1 in. across. They are dark green with bright silver markings on the raised areas of the quilted surface. A vigorous grower that requires regular feeding.

If growth becomes straggly, cut well back with scissors and pinch out the growing tips to keep the plant bushy. Keep in a semi-shaded or shaded position out of strong light, and water liberally. Will tolerate temperatures down to 45° F. (7° C.) and a variety of conditions.

PLATYCERUM BIFURCATUM (syn. *P. ALCICORNE*) (STAG'S HORN FERN)

(*Polypodiaceae*) origin: Australia. Popular for its long antler-shaped leaves, which contrast well with the rather severe lines of contemporary furniture and décor. An epiphytal plant that looks best hanging from a container or piece of bark on a wall. The leaves vary in length from 8 to 15 in. The fern also produces

smooth round leaves that fold back to form a cup round the roots. An intermediate plant requiring warmth and a shaded position. When the leaves droop, stand the pot in water and soak the soil well. Do not water again until the leaves droop once more.

RHODISSUS RHOMBOIDEA (GRAPE IVY)
(Vitaceae) origin: S. Africa (Natal)

An easy, bushy, and vigorous climber, which grows best up a trellis or framework of strings. Produces a cluster of climbing stems from which spring the leaf stalks, each with three leaflets on individual stalks. The deep green leaves are nearly rhomboidal in shape, with toothed edges, and are about 2½ to 3 in. long and 2 in. wide. The growing tips are covered by a fine silvery down, which becomes brown a little lower down before disappearing. An ideal plant for cool, shady positions in summer, although it prefers some warmth in winter. The leaves will turn pale or yellow in strong light. Keep the soil just moist, but take care not to over-water in winter. Pinching out the growing tips will make the plant bushy and improve its shape. Benefits from regular feeding during summer.

SAINTPAULIA IONANTHA (AFRICAN VIOLET)

(Gesneriaceae) origin: tropical E. Africa
One of the most popular flowering house plants, although it is a difficult subject in winter. When grown from seed, the oval leaves form a flattish rosette with the flowers in a raised central cluster, but when propagated from leaf cuttings, the leaves often grow in many directions from several crowns, with flowers between. The leaves vary considerably in size according to variety, but on a 3-in. stem they are usually about 2½ in. long and nearly 2 in. wide. The most popular flower colours are violet-blue, pink, and white. Pinch out the flowers as they die off, and keep the plant almost dry for a period of four to six weeks until more flower buds appear, then return to normal watering. This method will produce several flowerings in a season.

Always use tepid, soft water, and lift the leaves gently before pouring the water on to the soil in the pot. If water touches the leaves, it will cause unsightly marks. Saintpaulias quickly succumb to over-watering but do well if plunged, in their pots, into a container of moist peat. A minimum temperature of 55° F. (13° C.) and a shaded position are essential.

SANSEVIERIA TRIFASCIATA LAURENTII
(MOTHER-IN-LAW'S TONGUE, BOWSTRING HEMP, SNAKE PLANT)
(Liliaceae) origin: Congo

An extremely popular plant with stiff, upright, sword-shaped leaves, which have irregular horizontal bands of dark green and grey-green and a clearly defined yellow margin. They are thick and fleshy and range from 6 in. long in a 3-in. pot to 24 in. long in a 5-in. pot, and from 2 to 3 in. wide. The rhizomatous roots will persistently throw up side shoots, which may be left to grow in the same pot or cut off with as much root as



PEPEROMIA MAGNOLIAEFOLIA—Green Gold



PHILODENDRON BIPINNATIFIDUM

possible and potted separately. Never remove a side shoot until it is 10 to 12 in. long, and then tie it to a stick for support until rooted in its new pot. Tolerant of prolonged periods of neglect, the plant is happy in a sunny or a shaded position, and thrives in a hot, dry atmosphere. In an average room, it is sufficient to water once a week in the summer and every four weeks in the winter, although in a hot, dry atmosphere more frequent watering is necessary. The only hazard in growing this variety is the rotting of the leaves if the plant is exposed to frost or a combination of very low temperatures and wet soil.

SCHEFFLERA ACTINOPHYLLA
(UMBRELLA TREE, SUN-RAY PLANT)
(*Araliaceae*) origin: Australia, Java

The leaves of young plants are divided into three small leaflets, and of larger plants into five leaflets; these spring from the centre of the leaf stem rather like sun-rays. They are a pleasant mid-green in colour, oval in shape, and from 4 to 6 in. long and $1\frac{1}{2}$ to 2 in. wide. The plant likes humidity, a temperature of 50 to 55° F. (10 to 13° C.), and a semi-shaded position away from strong light or sunlight. Keep just moist in summer but allow almost to dry out between waterings in winter. Will shed its leaves

if allowed to dry out. Feed regularly during the growing season.

SCINDAPSUS AUREUS (DEVIL'S IVY)

(*Araceae*) origin: Solomon Islands

A climbing plant somewhat similar to the philodendron. The leaves are roundish heart-shaped, about 3½ in. long and 3 in. wide, and have a dark green background flecked with yellow. The leaves will be larger and more luxuriant if the plant's aerial roots are trained up a mossed stake (see Pruning and Training). Requires a warm, humid, draught-free position in semi-shade. Full light in winter will help the plant to maintain its variegation. Keep moist in summer, but take care not to over-water in winter. If the leaves droop when the soil is moist, allow to dry out before watering again.

S.a. Marble Queen. A variety with almost entirely white leaves flecked with green. Half of each leaf often provides a striking contrast by reverting to green. The variegated half of the leaf is nearly always smaller than the green half and sometimes slightly distorted, indicating that the variegation is virus induced. Conditions and treatment as for *S. aureus*, except that Marble Queen requires more light, or the leaves will revert to all green. Avoid strong light or direct sunlight. Green leaves can be cut out.

SEDUM SIEBOLDII MEDIO-VARIEGATUM
(VARIEGATED ICE PLANT, OCTOBER PLANT)

(*Crassulaceae*) origin: Japan

An extremely easy and attractive plant, which is also widely used in hanging baskets and out-of-doors window-boxes in summer. A bushy plant with long, thin stems surrounded at intervals by round, blue-grey leaves, variegated cream at the centre. If the plant becomes dry out-of-doors in hot sunshine, the leaves take on a deep reddish tinge. Pinkish-red flowers appear in the autumn before the plant dies down. The plant may then be left dry for the winter in a cool greenhouse or outside in a sheltered position. In early March repot into a pot one size larger and water, and growth will recommence.

Will withstand any conditions and treatment, from sunlight to shade and from over-watering to drought, but ideally the soil should be kept just moist and allowed to dry out completely between waterings. Will do best if kept in a cool place, but will tolerate a hot, dry atmosphere.

SPATHIPHYLLUM WALLISII (WHITE SAILS)

(*Araceae*) origin: Colombia

An easy, bushy plant with dark green, shiny, lance-shaped leaves, 5 to 6 in. long and 1 to 1½ in. wide, with thin, pointed tips. The plant is grown chiefly for its delicate white flowers, which rise up through the leaves on thin stems, and bloom at intervals between spring and autumn. The plant prefers shade, warmth and humidity, although it will tolerate temperatures down to 50° F. (10° C.) or a hot, dry atmosphere. Keep moist in winter, but give rather more water in summer and feed regularly.

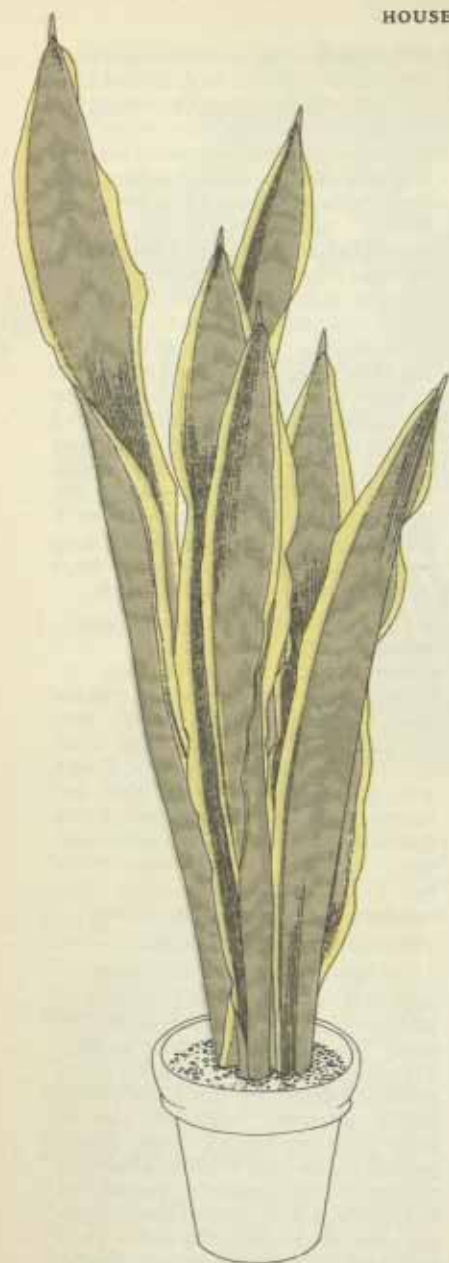
STENOCARPUS SINUATUS (CATHERINE-WHEEL PLANT)

(*Proteaceae*) origin: Australia

A really easy and increasingly popular plant, with an attractive, woody, tree-like stem. Its deeply incised leaves are 6 to 7 in. long and about 4 in. wide. Tinged with a ruddy brown when they first emerge, they later become pale green. Prefers a light, cool position away from direct sunlight. Keep the roots moist but do not over-water in winter. Feed regularly during the growing season.

TRADESCANTIA (*Commelinaceae*)

A number of varieties originating in Argentina and Brazil and known as wandering jew or wandering sailor. The family was named in honour of John Tradescant, gardener to Charles I, and provided possibly the first house plants. Several attractive variegated varieties make excellent trailing house plants, and can also be used in window-boxes or hanging baskets outside in summer. All will tolerate a wide range of temperature and retain their variegation best in good light away from direct sunlight. Ideally, keep moist, but an occasional period of



SANSEVIERIA TRIFASCIATA LAURENTII

dryness will not harm them. If the growth reverts to green in poor light, cut out the affected shoots, and move the plant to a lighter position. If the plant becomes thin and straggly, prune out the weak growth and push the growing tips, about 3 in. in length, into the soil in the same pot. In both cases the plant will soon become bushy again. Always grow tradescantias in poor soil and do not feed them.

Tradescantia Golden. Has medium-green, oval leaves approximately $1\frac{1}{2}$ in. long and $\frac{3}{4}$ in. across, with creamy-yellow longitudinal stripes.

T. Silver. The leaves are striped white on a medium green background and are slightly longer than the golden variety.

T. tricolor. A very popular variety. The leaf markings and size are similar to *T. Silver*, but the white stripes are suffused with a delicate pink.

VRIESIA SPLENDENS (ZEBRA PLANT, FLAMING SWORD)

(*Bromeliaceae*) origin: British Guiana

A really easy plant, with a rosette of strap-shaped leaves about 12 in. long and up to 3 in. wide. The leaves are dark green with irregular transverse bands of chocolate-maroon on the underside. The plant takes seven years to grow to flowering size from seed, but then produces a spectacular bract and flowers rising from $1\frac{1}{2}$ to 2 ft. The bright orange-red bract rises from the centre funnel of leaves, and is composed of many segments; between these the yellow, tubular flowers emerge. Keep the centre funnel filled with water and the roots just moist. The plant will tolerate periods of drought and varying light conditions except sunlight, but prefers semi-shade. It will withstand temperatures down to 40° F. (4° C.) if dry at the roots, and if it is not damaged by a hot, dry atmosphere or fumes.

ZEBRINA (*Commelinaceae*)

Several varieties similar in habit and leaf structure to the tradescantias and requiring the same conditions and treatment. They, too, originate in Argentina and Brazil and are known as wandering jew or wandering sailor.

Zebrina pendula. The leaves are about $2\frac{1}{2}$ in. long and $1\frac{1}{4}$ in. wide. They are silvery grey-green in colour with a deep green margin and a broad purple stripe down the centre.

Z. purpurea (syn. *Tradescantia purpurea*). A beautiful plant for a hanging basket where both the reddish-purple upper side and the more vivid purple underside of the leaves may be seen. Keep in a good light, and do not over-water or the

leaves may become green. Has delicate bluish-purple flowers in autumn.

Z. quadricolor. A magnificent variation of *Z. pendula*, with leaves striped in a silvered pinkish-cream, rosy-purple, dark green and silvery-green. Keep warm and in a good light, as the leaves tend to revert easily to the ordinary *Z. pendula*. This will almost certainly happen in winter, but the brilliant colours may reappear in the new spring growth.



SPATHIPHYLLUM WALLISII

HOUSE PLANTS

INDEX OF COMMON NAMES, BOTANICAL NAMES AND CLASSIFICATION OF HOUSE PLANTS

COMMON NAME	BOTANICAL NAME	CLASSIFICATION
African violet	<i>Saintpaulia ionantha</i>	delicate
Aluminium plant	<i>Pilea catteriei</i> nana	easy
Arrowhead ivy	<i>Hedera helix sagittifolia</i>	easy
Bird's nest philodendron	<i>Philodendron wendlandii</i>	intermediate
Black velvet	<i>Philodendron melanochrysum</i>	delicate
Bowstring hemp	<i>Sansevieria trifasciata laurentii</i>	easy
Canary (Island) ivy	<i>Hedera canariensis foliis variegatis</i> <i>Hedera canariensis</i> Golden Leaf <i>Hedera canariensis maculata</i>	easy easy easy
Cart-wheel plant	<i>Neoregelia carolinae tricolor</i>	easy
Castor oil plant	<i>Aralia sieboldii</i>	easy
Catherine-wheel plant	<i>Stenocarpus sinuatus</i>	easy
Chameleon plant	<i>Cryptanthus bivittatus roseo-pictus</i>	easy
Cocoa palm	<i>Cocos weddelliana</i>	easy
Creeping fig	<i>Ficus pumila</i>	easy
Crinkled metal plant	<i>Peperomia hederifolia</i>	intermediate
Croton	<i>Codiaeum</i> sps.	delicate
Desert privet	<i>Peperomia magnoliaefolia</i>	easy
Devil's ivy	<i>Scindapsus aureus</i>	intermediate
Dracaena bromeliad	<i>Cryptanthus (bromelioides) tricolor</i>	intermediate
Dumb cane	<i>Dieffenbachia</i> sps.	intermediate and delicate
Earth stars	<i>Cryptanthus bivittatus roseo-pictus</i>	easy
Emerald ripple	<i>Peperomia caperata</i>	intermediate
English ivy	<i>Hedera helix</i> Chicago	easy
Exotic brush	<i>Aechmea rhodocyanea</i>	easy
Fan plant	<i>Begonia rex</i>	delicate
Fantasia ivy	<i>Hedera helix</i> Fantasia	easy
Feather-leaf	<i>Aglaonema pseudo-braciatum</i>	delicate
Finger plant	<i>Philodendron bipinnatifidum</i>	easy
Flaming dragon tree	<i>Dracaena terminalis</i>	delicate
Flamingo flower	<i>Anthurium scherzerianum</i>	intermediate
Flaming sword	<i>Vriesea splendens</i>	easy
Glacier ivy	<i>Hedera helix</i> Glacier	easy
Golden heart ivy	<i>Hedera jubilee</i> Golden Heart	easy
Grape ivy	<i>Rhoicissus rhomboides</i>	easy
Green-gold pepper	<i>Peperomia magnoliaefolia</i> Green Gold	easy
Green ripple ivy	<i>Hedera helix</i> Green Ripple	easy

continued

INDEX OF COMMON NAMES, BOTANICAL NAMES AND CLASSIFICATION OF HOUSE PLANTS

COMMON NAME	BOTANICAL NAME	CLASSIFICATION
Irish marbled ivy	<i>Hedera helix marmorata</i>	easy
Iron Cross begonia	<i>Begonia maculata</i>	delicate
Ivy peperomia	<i>Peperomia hederacea</i>	intermediate
Ivy tree	<i>Fatsia lizei</i>	easy
Joseph's coat	<i>Cadiatum</i> sps.	delicate
Kangaroo vine	<i>Cissus antarctica</i>	easy
Little diamond ivy	<i>Hedera helix</i> Little Diamond	easy
Little fantasy	<i>Peperomia caperata</i>	intermediate
Lutzel's ivy	<i>Hedera helix</i> Lutzel	easy
Mexican breadfruit	<i>Monstera deliciosa borsigiana</i>	easy
Mother-in-law's tongue	<i>Sansevieria trifasciata laurentii</i>	easy
Nielson's ivy	<i>Hedera helix</i> Nielson	easy
October plant	<i>Sedum sieboldii media-variegatum</i>	easy
Parlour palm	<i>Neanthe bella</i>	easy
Parsley ivy	<i>Hedera helix cristata</i>	easy
Piggy-tail flower	<i>Anthurium scherzerianum</i>	intermediate
Pink queen of Rio	<i>Dipladenia rosea</i>	delicate
Prayer plant	<i>Calathea louisae</i>	intermediate
	<i>Maranta leuconeura kerchoviana</i>	delicate
	<i>Maranta leuconeura kerchoviana</i>	delicate
Rabbit tracks	<i>Hedera helix</i> Ravenholst	easy
Ravenholst's ivy	<i>Ficus elastica decora</i>	easy
Rubber plant	<i>Peperomia sandertii</i>	intermediate
Rugby football plant	<i>Aphelandra squarrosa louisae</i>	delicate
Saffron spike	<i>Chlorophytum capense variegatum</i>	easy
St. Bernard's lily	<i>Columnia acrostichum</i>	intermediate
Scarlet trails	<i>Hedera helix minima</i>	easy
Smallest of all	<i>Sansevieria trifasciata laurentii</i>	easy
Snake plant	<i>Fittonia argyrea</i>	delicate
Snake-skin plant	<i>Chlorophytum capense variegatum</i>	easy
Spider plant	<i>Platycentrum bifurcatum</i>	intermediate
Stag's horn fern	<i>Schefflera actinophylla</i>	easy
Sun-ray plant	<i>Philodendron scandens</i>	easy
Sweetheart plant	<i>Monstera deliciosa borsigiana</i>	easy
Swiss cheese plant	<i>Furcraea selina marginata</i>	easy
Swordfish plant	<i>Dracaena terminalis</i>	delicate
Tree of kings	<i>Schefflera actinophylla</i>	easy
Umbrella tree	<i>Aechmea rhodocyanea</i>	easy
Urn plant		

continued

INDEX OF COMMON NAMES, BOTANICAL NAMES AND CLASSIFICATION OF HOUSE PLANTS

COMMON NAME	BOTANICAL NAME	CLASSIFICATION
Vanilla ice plant	<i>Peperomia glabella variegata</i>	intermediate
Variegated arrowhead ivy	<i>Hedera helix sagittaeifolia variegata</i>	easy
Variegated castor oil plant	<i>Aralia sieboldii variegata</i>	intermediate
Variegated dragon tree	<i>Dracaena sanderi</i>	intermediate
Variegated ice plant	<i>Sedum sieboldii medio-variegatum</i>	easy
Variegated ivy-tree	<i>Fatsyhedera lizei variegata</i>	easy
Variegated rubber plant	<i>Ficus elastica doescheri</i>	delicate
Variegated sweetheart plant	<i>Philodendron scandens variegatum</i>	easy
Wandering Jew or	<i>Tradescantia</i>	easy
Wandering sailor	<i>Tradescantia Silver</i>	easy
	<i>Tradescantia tricolor</i>	easy
	<i>Zebrina pendula</i>	easy
	<i>Zebrina purpurea</i>	easy
	<i>Zebrina quadricolor</i>	easy
Waterfall plant	<i>Chlorophytum capense variegatum</i>	easy
Water-melon peperomia	<i>Peperomia sandersii</i>	intermediate
Weeping fig	<i>Ficus benjamina</i>	intermediate
White sails	<i>Spathiphyllum wallisii</i>	easy
Window leaf	<i>Monstera deliciosa borsigiana</i>	easy
Zebra plant	<i>Aphelandra squarrosa lutea</i>	delicate
	<i>Vriestia splendens</i>	easy

MARANTA
MACROCARPA

ANTHURIUM
SCHERZERIANUM

PEPEROMIA
CAPERATA

VRIESIA
SPLENDENS

HEDERA
HELIX GLACIER

CODIAEUM (CROTON)

BEGONIA REX

A plant arrangement suitable for a warm room
(60 to 70° F.; 16 to 21° C.)

Indoor Gardening

MORE and more people are discovering the pleasures and interest of indoor gardening, not only those who live in town flats, often without balconies, but those with gardens too.

Keeping a room supplied with cut flowers is one way of bringing the garden indoors. But perhaps more satisfying is the cultivation of house plants, and the making of miniature gardens in bottles and various other kinds of container.

FORCING BULBS

Bulbs grown indoors give special pleasure, since their development can be watched from start to finish, and their blooms appear at times when flowers in the garden are scarce. They are showy and beautiful, and often delightfully fragrant.

For forcing, choose bulbs that are solid, heavy, and free from blemish or mildew. They need not be top size, but



HYACINTHS AND MUSCARI
 If hyacinth and muscari bulbs are grown steadily,
 they will need no support when fully grown

make sure that the tips are undamaged and that the thin outer skins or tunics are reasonably intact. Be particularly careful about this when choosing tulips. Those that look skinned may have been roughly handled; such bulbs will probably do well enough in a garden, but avoid them for growing indoors.

Choose, too, bulbs that have been specially treated to flower at certain times of the year. A bulb normally requires a long period at low temperatures after it has been planted, followed by warmth as it reaches the flowering period. By artificially simulating these natural conditions, through subjecting the bulbs to heat or cold treatment, growers are able to vary the length of the waiting period. In this way, a grower can dictate the time of year at which a bulb will

bloom. It enables him to ship bulbs to any part of the world, and it enables the indoor gardener to buy, with confidence, bulbs that have been specially prepared to flower early (for example, at Christmas), or at specific times during spring or early summer.

PLANTING BULBS

Bulbs may be forced in many different kinds of container filled with one of a variety of growing media.

The beginner will probably wish to use flower pots filled with soil; to guard against over-watering, put a few crocks covered with leaves over the drainage holes. Bowls made specially for bulb-growing are filled with bulb fibre or medium grade sedge peat. One or two lumps of charcoal at the bottom of each bowl will give sufficient drainage. For crocuses

there are special pots made of terracotta, with holes punched out at intervals round the sides. Fill the pots gradually with fibre and poke the tip of a crocus corm through each hole from the inside as the work proceeds; plant several more on the top. Each crocus pot holds about a dozen corms and makes a delightful picture when all come to flower, with blossoms round the sides of the pot as well as on top.

Most bulbs can be grown in soil, compost, bulb fibre, sedge peat, vermiculite, water or brick rubble, or even in bowls of wet newsprint.

The chief essential is to maintain an even amount of moisture. The planting material must never become waterlogged and never dry out. Food is of less consequence, since a bulb usually stores enough within itself to bring it to flower.

If soil is to be used, John Innes potting compost No. 1 gives excellent results. Alternatively, make up a mixture of

equal parts of sifted loam, coarse sand and peat. The soil must be firm in the pots but not hard packed.

Bulb fibre can be mixed at home from sedge peat, a little crushed charcoal and oyster shell. But most nurserymen sell fibre ready mixed at a reasonable price; in some brands there is also a trace of fertilizer.

Soak the fibre before use, so that when squeezed in the hand only a few drops of moisture can be expelled; never let it swim in water. Half-fill the container and stand the bulbs in place, close to each other but not actually touching. Using the handle of a wooden spoon, pack more fibre round the bulbs until the smaller ones are completely covered and only the necks of hyacinths and narcissi are showing.

Do not twist any of the bulbs round and round to set them lower in the bowl, as this consolidates the fibre beneath them so that the roots cannot

HYACINTH BULBS AND CROCUS CORMS



Hyacinths planted in soil are placed close together but not touching. The soil is packed in so that the necks of the bulbs are showing

Plant crocus corms so that they are just covered by the soil. Level off the soil at least $\frac{1}{2}$ in. below the rim of the bowl



penetrate it and they therefore grow upward and over the rim of the bowl. Fibre, like soil, should be pressed firmly into the container but not packed hard.

Compost made from old newspapers is excellent for hyacinths. Newsprint (the material on which newspapers are printed) contains cellulose and has a natural tendency to hold moisture. To prepare a newsprint compost, first soak the newspapers well, then shred them into pieces the size of a pea. The compost is used in bowls in the same way as fibre.

PLUNGING BULBS

When all the bulbs are planted, put them into a cold, dark place for eight to ten weeks to encourage good root formation, without which there cannot be success. Most bulb failures are caused by bringing the bowls too early into the light and warmth.

Ideally, the bowls should be plunged under a 6-in. layer of wood ashes, sand or soil in the garden. Wrap them first in polythene to save them from getting scratched and to prevent heavy rain from flooding them.

If they cannot be plunged in a garden, the bowls should be stood in a cold, fireless place such as a cellar or cool cupboard. First wrap the bowls in black polythene, which keeps out the light and prevents them from drying out. Bowls wrapped in polythene will not need watering throughout the plunge period. If they are not wrapped, they should be looked at occasionally and supplied with sufficient water to keep the fibre just moist.

Examine the bowls from time to time. When the bulb shoots are about 1 in. high, root growth is sufficiently strong for the bowls to be brought in from the garden or taken from the cupboard. Remove the polythene wrapping, and

then put them in a light, cool room, at a temperature of about 50° F. (10° C.).

For the first day keep the bowls covered with newspaper to allow the white shoots to accustom themselves to the light. They gradually turn green and grow vigorously, but do not take them into real warmth—higher than 60° F. (16° C.)—until the leaves are well out of the bulbs. At this stage, water more frequently; how often depends on the heat of the room. Keep the fibre moist to the touch, but no wetter; if it is overwatered it will harden on top (repelling any further moisture) and dry out underneath.

A good idea is to sprinkle the container with *Agrostis tenuis* grass seed directly it leaves the plunge bed or the cupboard. By the time the bulbs come to flower, the surface of the soil or fibre will be completely hidden by a green turf carpet.

COMMON CAUSES OF BULB FAILURE

1. Insufficient time in the plunge bed or cupboard, causing stunted growth.
2. Leaving the bowls in a draught, which turns the leaves yellow.
3. Insufficient water at the roots, which may result in dead blooms on the flower spike, stunted flower stems shorter than the leaves, or dead foliage.
4. Insufficient light, inducing long, lanky and yellowing leaves.

GROWING BULBS ON WATER

A few bulbs, notably crocus, *Narcissus* Cragford and *N. Paper White*, can be grown entirely on water. The bulbs themselves must be kept just clear of the water (if they touch it they will rot) so that their roots can go down for moisture. It is not necessary to keep water-grown bulbs for a time in darkness, and their development can therefore be watched daily.

There are two methods of water cultivation. The most usual is in bulb glasses,



CROCUS GROWING ON PEBBLES

Fill the washed pebbles in a bowl with water in the bottom. The bulbs are lodged between the stones so that they do not touch the water

which can be bought in various sizes. A bulb glass has a restricted neck in which the bulb perches, sending its roots down to the water below. Always keep a lump of charcoal in the glass.

Rain-water gives much better results than tap-water; even in a flat, rain-water can be trapped in a suitable container placed on a window ledge. Top up, too, with rain-water.

The other method is to pile washed pebbles in bowls or saucers with water in the bottom. The bulbs are lodged between the stones, which keep them from contact with the water.

BULBS FOR FORCING

Hyacinths. Most of the large-flowered hyacinths force well. They can be had in either white, red, yellow, pink or blue shades. Roman hyacinths bloom earlier,

are smaller and daintier, and produce several spikes from a single bulb; the flowers are usually white, but there is a deep rose-pink variety called Rosalie. Most hyacinths should be planted in September or October.

Muscari. All need cool conditions.

Daffodils and narcissi. Recommended are Golden Harvest, Carlton (clear yellow), Verger (white and lemon), and Valiant Spark (orange and yellow). For growing on pebbles the best are Cragford, Grand Soleil d'Or and Paper White.

Tulips. Most double tulips can be forced. Of the single varieties, choose for forcing those listed in bulb catalogues as single early. Potted in September and October, they will flower in January and February.

Crocuses. All crocuses can be forced.

MINIATURE GARDENS

A fascinating form of indoor gardening is to construct and cultivate tiny, complete gardens. They can be made in almost any container—a vegetable dish, a bowl, an old-fashioned meat dish of the kind to be picked up at a street-market stall, or even a baking tin. Miniature gardens give particular pleasure in winter and early spring, when flowers are scarce and more time is spent indoors.

If the chosen container has drainage holes, so much the better. But they are not essential. Indeed, they pose the problem of protecting the polished furniture on which the miniature garden is to stand; a tray has to be put beneath it.

Whether or not the container has drainage holes, cover its base with a 1-in. layer of crocks, small stones or pebbles; they drain moisture from the soil above and keep plant roots from standing in water. Next spread a thin layer of leaves or pieces of coarse peat to prevent the finer soil from sifting through.

Then add the soil—either John Innes potting compost (without fertilizer) or equal parts of coarse sand, peat and loam, with a little crushed charcoal and brick rubble.

The miniature garden can be designed in as many different ways as an ordinary full-scale garden. If it is to be a miniature rock garden, pile the soil unevenly to give an informal effect, and introduce small pieces of natural stone here and there. If it is to be a formal garden, little paths and sunken beds are constructed round small lawns. Thin pieces of stone or slate are used for walls and pathways, and the lawns are sown with grass seed and kept trim with nail scissors. Some of the loveliest miniature gardens are made in Japanese style with small bridges, temples and similar ornaments, and sunken pools made from meat-paste jars.

Whichever style is chosen, the aim is to keep trees, plants and stones all in proportion.

Dwarf evergreen piceas form the trees that are to give height to the garden. A tiny conifer of the cypress family, *Chamaecyparis obtusa ericoides*, makes a dome-shaped tree a few inches high and wide. Dwarf oak and beech seedlings can be planted in the miniature garden and will last for a few years before they grow too big. Another suitable tree for the miniature garden is a dwarf juniper, *Juniperus communis compressa*.

Most small bulbs look well in miniature

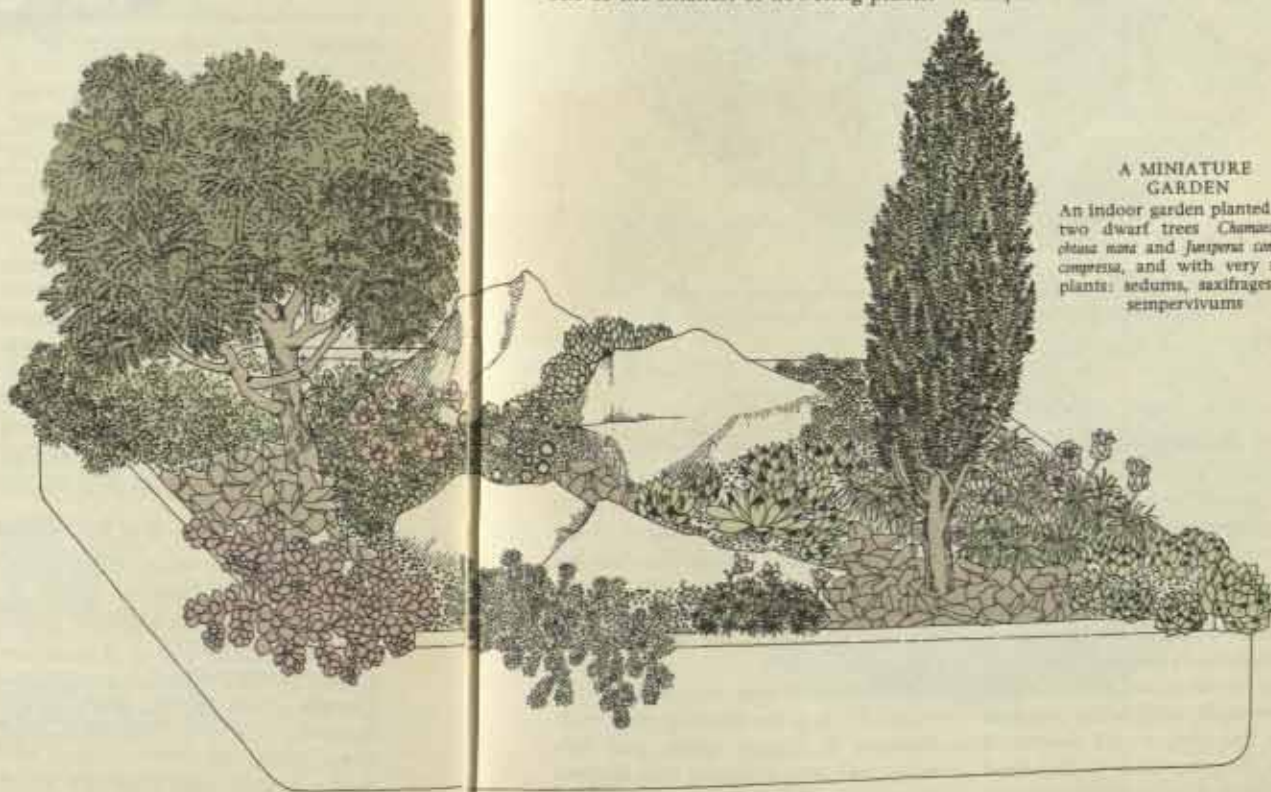
gardens. Try particularly *Narcissus asturiensis* (syn. *N. minimus*), snowdrops, dwarf cyclamen and crocus. A small bulb that produces red flowers throughout most of the summer is *Rhodohypoxis baurii*, which grows only 4 in. high.

Miniature roses can also be included. The dwarf *Rosa royleana* (syn. *R. chinensis minima*) forms are only a few inches tall, with red, pink, white or yellow flowers.

Other plants for the miniature garden are sedums, sempervivums, the *muscoides*, and *kabschia* groups of saxifrages, the dwarf, *Iris cristata*, and *Tolmiea menziesii* which has rough leaves. *Mentha requienii*, with a minty smell and blue flowers, is one of the smallest of flowering plants.

The small thrift, *Armeria caespitosa*, is charming, and there are two delicate varieties of blue-eye grass, *Styrrinchium bermudiana* and *S. californicum*, with small rush-like leaves, the first with blue and the other with yellow flowers.

Once the miniature garden is planted, never let it dry out. It needs daily attention. Occasionally, during a warm shower, stand it outside for rain to wash the foliage. On the other hand, never let it become waterlogged. Miniature gardens in large dishes are probably too unwieldy to drain except through drainage holes, but gardens in smaller bowls can be turned gently on to their sides to let the surplus moisture drain out.



A MINIATURE GARDEN

An indoor garden planted with two dwarf trees *Chamaecyparis obtusa nana* and *Juniperus communis compressa*, and with very small plants: sedums, saxifrages and sempervivums



Saintpaulias (African violets) grow particularly well in a bottle because they are delicate and need a warm, damp atmosphere

BOTTLE GARDENS

A garden in a bottle has the same sort of fascination, and requires much the same kind of ingenuity and dexterity to construct, as a ship in a bottle. But once the bottle garden is established, it can be left for months without attention; it will not even need watering.

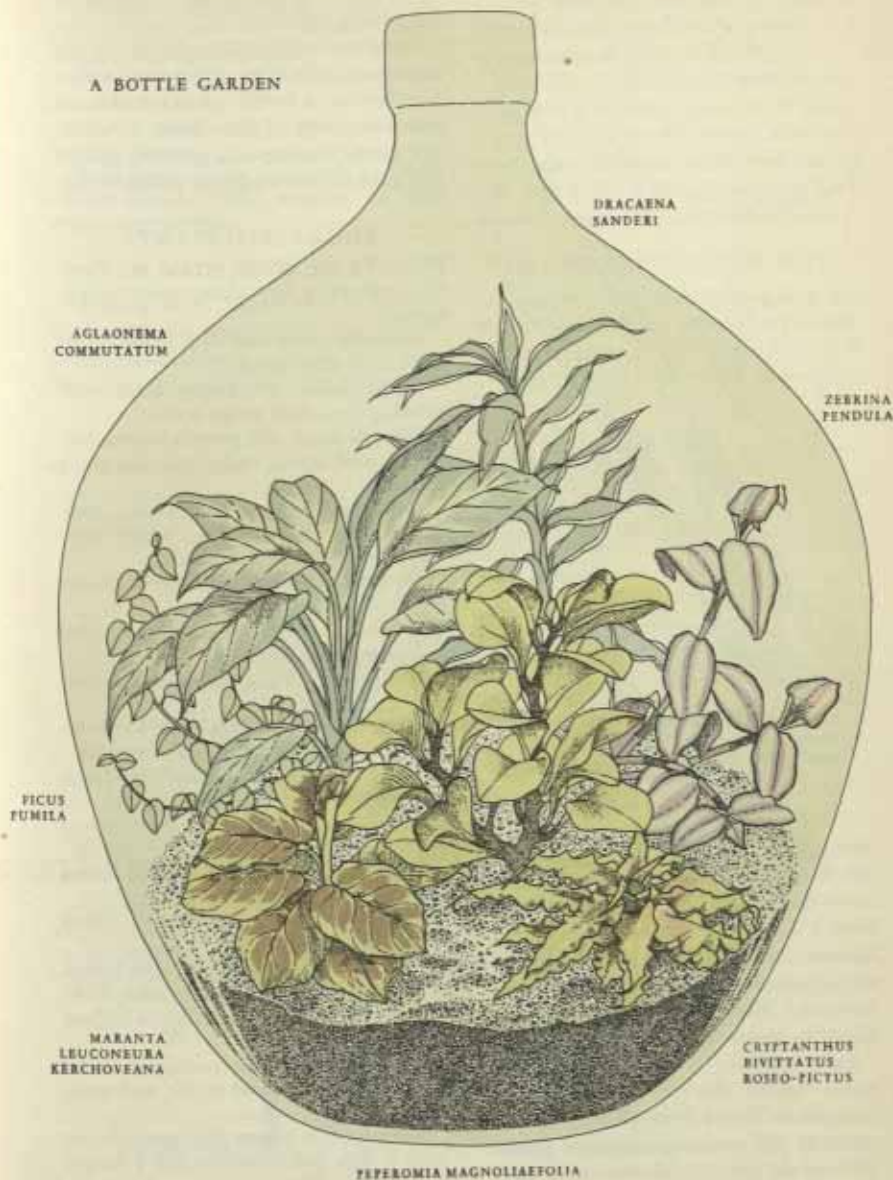
More than a hundred years ago, a London physician named Nathaniel Ward discovered that ferns and mosses, which never grew satisfactorily in the industrial fumes of the city, would flourish if grown in the protection of glass-sided cases. It is from Ward's experiments that

bottle gardens have been developed.

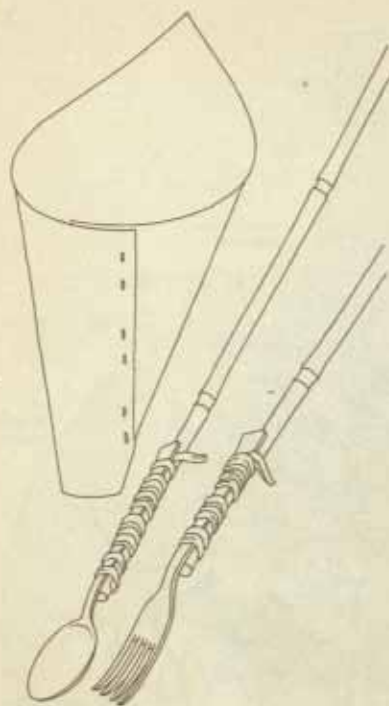
Use any large bottle (a carboy is ideal), wash and dry it and, by means of a paper funnel, introduce several inches of dry John Innes potting compost No. 1, or dry soil mixed with a small quantity of crushed charcoal. Damp soil will not go easily through the neck of the bottle and will cling to its sides.

Only small plants should be introduced, for it is the planting that needs dexterity. A dessert spoon and fork lashed with wire or tape to thin bamboo canes are useful tools; they pass easily

A BOTTLE GARDEN



ZEFEROMIA MAGNOLIAEFOLIA



Useful tools for bottle gardening: a paper funnel so that the soil can be introduced easily, and a dessert spoon and fork lashed to bamboo canes to move the soil

through the neck of the bottle, and can then be carefully manipulated to cover the roots of the plants with soil. Even if this is not done very efficiently, however, the plants will, after watering, soon root afresh in the humidity of the container. After planting, water is introduced by means of a tube or small can.

Once planting is finished, cork the bottle tightly. The idea is to establish a completely closed atmosphere which is virtually self-watering; moisture passed off from the leaves condenses on the glass sides of the bottle and returns to the roots. For this reason a bottle garden

needs watering very rarely—once a year is probably sufficient.

Stand the bottle in a good light but not strong sunlight. If its cork is fitted with a lampholder, a bottle garden makes an excellent table or floor lamp in which the subtle beauties of a growing garden grace the room by night as well as by day.

SUGGESTED PLANTS

Plants for the bottle garden are those that naturally like close, moist conditions.

Aglaonema commutatum, dark green leaves with silver-grey spots.

Begonia foliosa, a shrubby plant with small, glossy, dark green leaves.

Billbergia nutans, stiff, greyish leaves, very showy pink bracts, and purple and green flowers.

Cryptanthus bivittatus roseo-pictus, pink leaves with cream stripes, which turn light and dark green in shade.

Dracaena godseffiana, dark green leaves thickly spotted with cream.

D. sanderi, greyish-green leaves with ivory-cream margins.

Ficus pumila, dark green, heart-shaped leaves.

Fittonia verschaffeltii, a trailing dwarf with dark green leaves netted with carmine.

Maranta leuconeura kerchoviana, mid-green leaves with blotches of maroon-red.

Peperomia magnoliaefolia, mid-green leaves with an irregular cream margin.

P. nummularifolia, round, stalked leaves and creeping, thread-like stems.

P. obtusifolia, dark green, fleshy leaves with a purple edge.

Pilea muscosa, minute, blue-green leaves.

Saintpaulia ionantha, varieties have flowers ranging in colour from white to deep violet.

Tradescantia fluminensis, perennial trailer with shiny leaves and stems, and small white flowers.

Zebrina pendula, silvery grey-green leaves with a dark green margin and a purple stripe down the centre.

The following ferns are also suitable for the bottle garden:

INDOOR GARDENING

Adiantum capillus-veneris (common maidenhair) and *A. cuneatum* have delicate, light green fronds.

Asplenium nidus, a shiny, dark green, strap-shaped fern.

Davallia bullata, dark green, broad, leathery leaves.

Pteris cretica, straw-coloured or pale brown fronds. Small varieties of this species are suitable.

PLANTS FROM PIPS

Charming small plants can be grown from pips discarded from the dessert plate. Seeds of dates, avocado pears and the citrus fruits are the ones to choose.

Plant them in John Innes No. 1 potting compost, and keep them if possible at a temperature of about 55° F. (13° C.).

Avocado will germinate more quickly if the seed is soaked in water for 48 hours, then placed, large side down, in a hyacinth glass. The base of the seed should just touch the water. Once roots have formed, pot the avocado in sandy soil.

GROWING PINEAPPLE TOPS

A pineapple plant is interesting to grow. Cut off the leafy top of a pineapple with a thin segment of the upper rind, and leave it for a day or so to dry. Then pot it

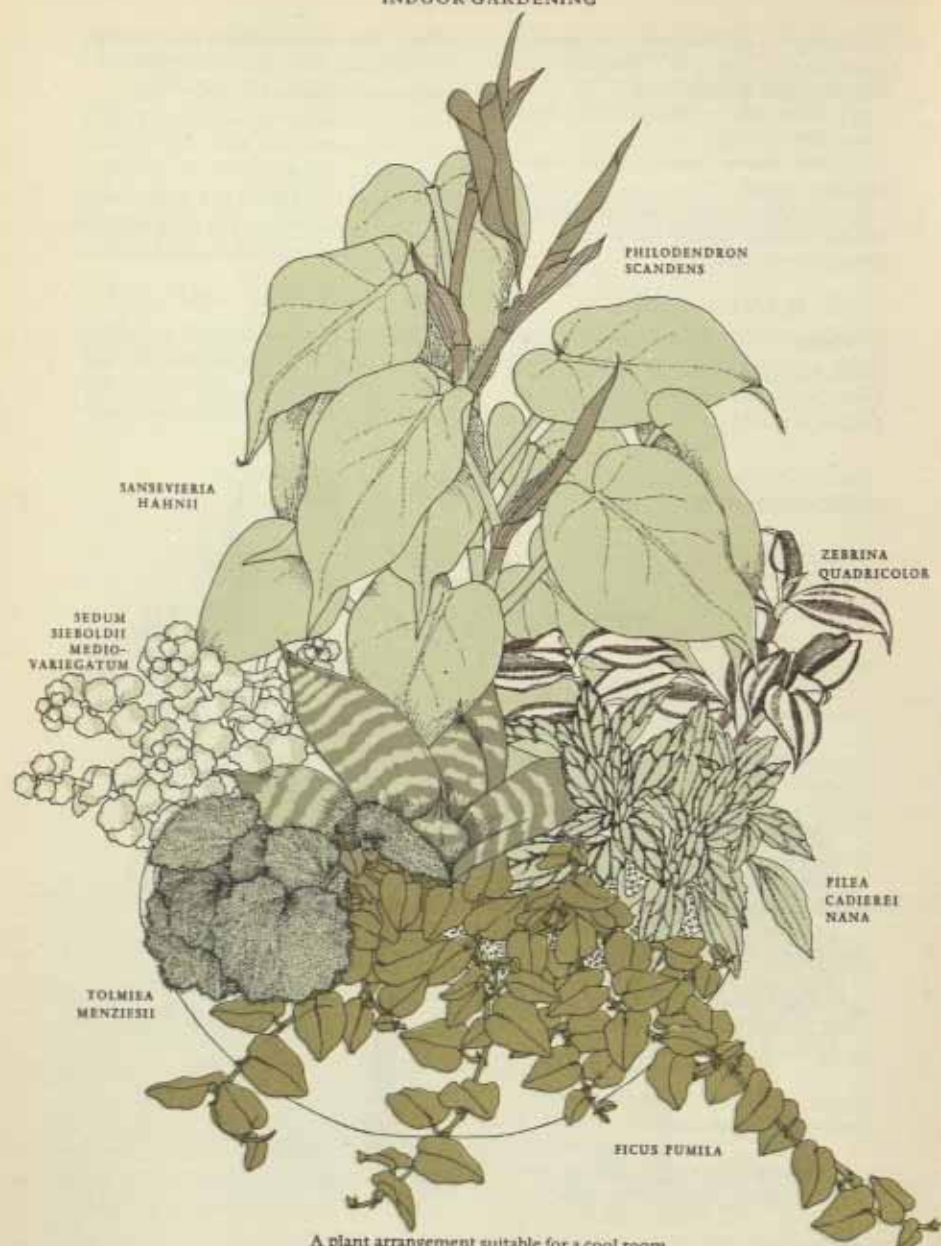
PLANTS FROM PIPS



Plant grown from an orange pip

Plant grown from a lemon pip

INDOOR GARDENING



A plant arrangement suitable for a cool room
(45° F.; 7° C.)

carefully in very sandy soil and put it in a warm place to root—standing on a box of peat, for example, over a radiator. Not every top “takes”, but if one does put it in fairly rich soil and keep it in

a warm, light place. Do not over-water the new plant.

A pineapple plant grown in this way in the house is unlikely to fruit, but in a warm greenhouse it may do so.

SMALL-PLANT GARDENS

House plants that are not in themselves particularly striking gain greatly in effect if they are combined in mixed plant gardens in large bowls or dishes. Many house plants do better in a community.

Fill the bowl either with John Innes potting compost No. 1 or soil to which a little crushed charcoal has been added, and arrange the plants on the surface to get some idea of composition before turning them out of their pots. The plants themselves should be chosen for contrasting shapes and textures as well as colours.

Plant firmly, interspersing a few small pieces of rock if desired, then cover the surface of the soil with coarse sand or granite chippings. Take great care not to

over-water, especially during the winter months; small-plant gardens that are kept in centrally heated rooms will, of course, need more water than those kept in cold rooms.

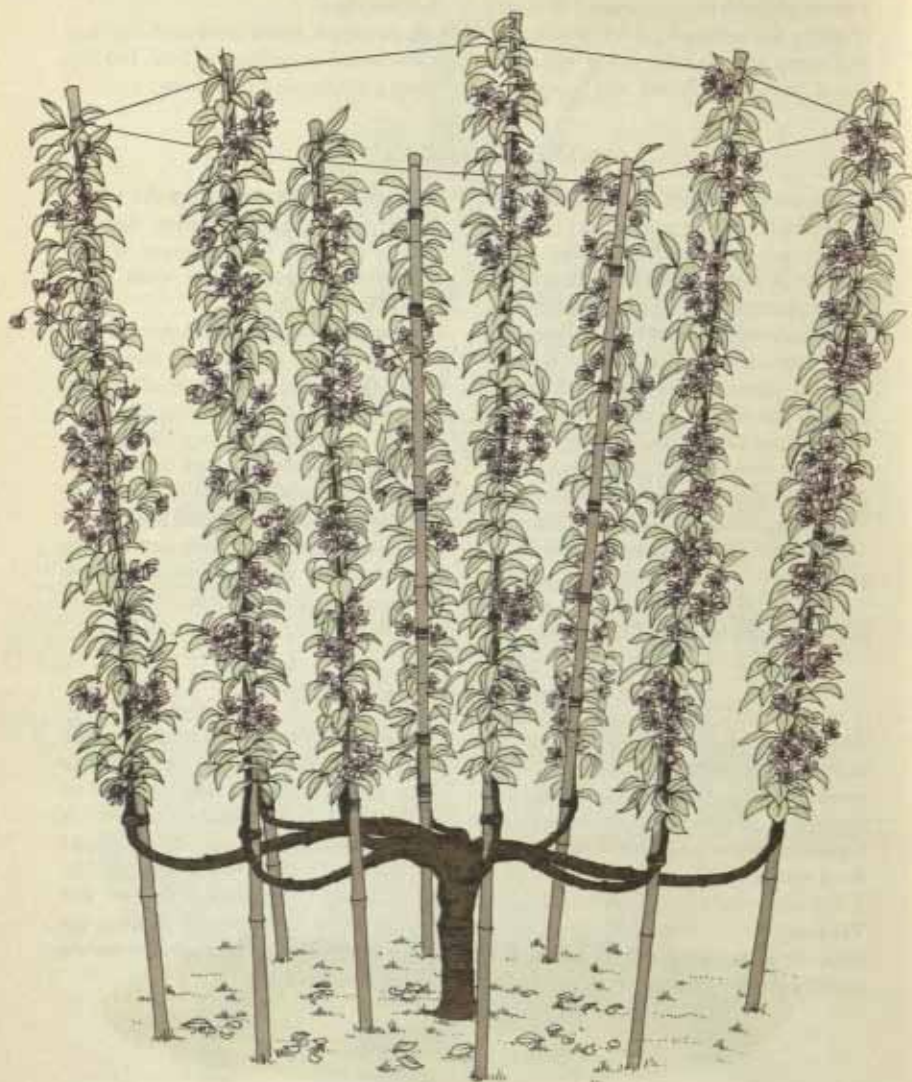
An unusual and lovely decoration for a dinner table or a party is the temporary small-plant garden made specially for the occasion. Dig up the plants from the outside garden and arrange them artistically in a bowl. Into the soil between the plants push metal funnels, which can be bought for this purpose. Fill the funnels with water and stand fresh-cut blooms in them. This combination of growing plants arranged with cut flowers is called *pot-et-fleur*.

MOSS GARDENS

The time of year to make a moss garden is mid-winter, when the mosses growing in the woods are at their best. Dig out clumps of various kinds of mosses—the search for them makes a pleasant outing for a winter's day—and arrange them in a flat dish. An old meat server is ideal. Take care that no moss straggles over the edge of the dish or it will act as a syphon and dry out the garden. The moss should

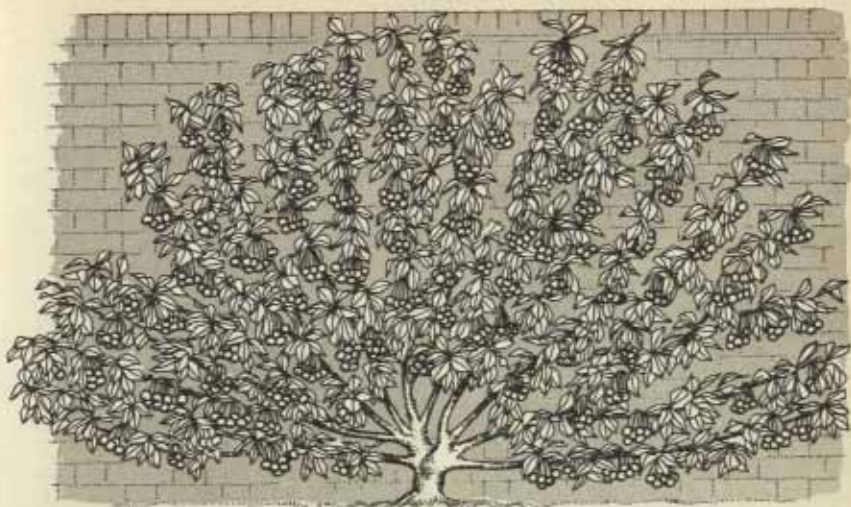
be sprayed with water once each week.

Variety and colour can be added to moss gardens either by tucking primrose or violet roots between the patches of moss, or by sticking in one or two winter blossoms cut fresh from the garden. However, the contrasts of texture and colour of one moss with another are quite interesting enough to warrant the use of mosses alone.



GOBLET-TRAINED APPLE TREE IN FLOWER.

This very decorative system of training allows the maximum of light and air to get in among the branches. It is a classic French method of training apple trees, but requires a good deal of work. It would take about eight years for a new tree to reach the stage shown here.



FAN-SHAPED CHERRY TREE

With its branches covering the wall evenly, this sweet cherry tree is ideally trained to receive plenty of sunlight and air, and its shape adds beauty to the brick wall behind it

FRUIT

ONE kind of fruit or another can be grown in almost any garden; even the smallest can produce strawberries or apples, both of which can be grown in a minimum of space.

Besides being planted for their crops, fruit trees and bushes can be used to make the garden look more pleasing. Hedges can be made with black currant bushes; garden sheds and fence palings can be covered with blackberries or loganberries, and bare walls can be covered by fruit trees instead of by decorative wall plants or creepers.

BUYING TREES AND BUSHES

When buying trees and bushes it is important to deal with a reliable nurseryman who propagates the fruit trees and bushes himself.

Because there are many differing types of serious virus disease that affect soft fruit stock the Ministry of Agriculture licenses growers who produce disease-free bushes and canes, and issues certificates which relate to the purity and health of the stocks at the time of inspection. It is possible to obtain from the Ministry of Agriculture a list of nurserymen who produce virus-free soft fruits.

In the case of apples, pears, plums and cherries, buy young trees and bushes, as they will establish themselves in the garden more happily than older ones. Plants that have been in the nursery for some years are apt to be stunted because of lack of room to develop and may never recover properly.

Advice on buying root stocks is given under the name of the fruit concerned.

SOIL CONDITIONS

The right soil conditions are important, and earthworms, which penetrate to a depth of 6 ft. or more, should be encouraged, as they help to ventilate and drain the soil. Constant application of organic matter will encourage earthworms, and the worms in turn will carry any organic plant foods applied as a surface dressing deep down into the soil. Frequent deep cultivation reduces the earthworm population and does not improve the structure of the soil.

PLANNING AND PLANTING

Plant fruit trees or bushes in soil that has been cleared of perennial weeds. Clear the ground either by working on it the whole summer, carefully forking out the weeds, or allowing the weeds to grow in the spring and then applying a strong hormone weedkiller.

GENERAL PLANTING

The trees and bushes can be planted at any time from October to March, but it is best to plant them in early November, if possible, so that they can settle down and grow roots before the hard winter sets in. Details are given for each fruit.

SUPPORTING THE TREES

Adequate staking is important because if a tree moves even slightly in the wind, its minute root hairs will be torn and killed, and a small depression in the soil may form round the base of the trunk, in which water will collect, causing the death of the tree.

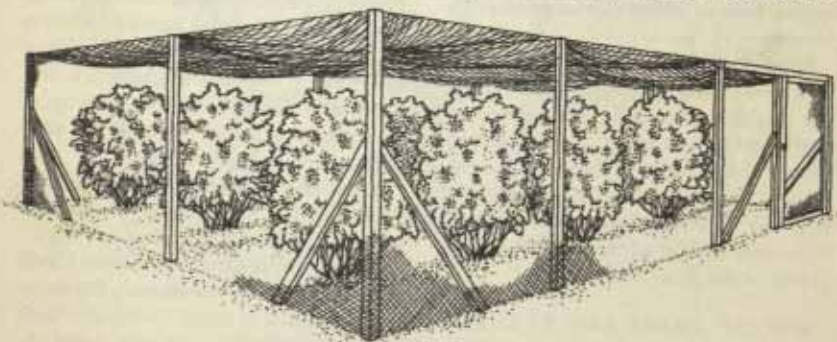
FROST PROTECTION

In a large garden fruits should be planted in the higher parts and not in a low "frost pocket". In gardens situated in frosty areas, part of the base of a hedge or fence on the lowest boundary can be removed to allow frozen air to drain away.

Bush, cane and other soft fruits may be covered with newspaper, dry sacking or polythene on nights when frost is expected. This will reduce losses of heat by soil radiation and will also protect the blossoms.

BIRDS

Where birds are numerous, protect soft fruits, particularly raspberries, red currants and strawberries, with a wire-netting cage. This cage should be 6 ft. high, and as long and wide as is necessary, with a gate at one end. To keep the birds out,



PROTECTION AGAINST BIRDS

To protect soft fruits from birds make a wire-netting cage, as large as necessary, 6 ft. high and with a gate. The top may be of fish netting—to save expense, and also to avoid rust dropping on to the bushes.

the netting should be not more than $\frac{3}{4}$ -in. mesh. Fish netting is cheaper than wire netting and can be used for the top of the cage, and wire netting for the surround. Each winter, remove the fish netting and dry before storing. Nylon netting may be used for the entire cage.

FRUIT TREES AGAINST WALLS

Walls absorb moisture and so the soil at the base of a wall is often dry. To obviate this, bury a 3-in. agricultural drain-pipe upright 1 ft. away from the wall and the site of the tree, and pour in water from time to time during the summer to moisten the soil below. In addition, mulch the surface of the ground with rotted compost, sedge peat or leaf mould.

Prepare the border by deep digging and incorporate some well-rotted manure or compost. Plant the tree so that its base is about 8 in. away from the wall, and spread out the roots fan-wise from the wall. Support the plant with a cane or, if there are horizontal wires on the wall, fasten it to them. Water it in well.

Morello cherries, grown as fan-shaped trees and planted 12 ft. apart, or red currants and gooseberries 2 ft. apart, and grown as cordons are ideal for a north wall.

On a sunny south wall, plant peaches, apricots, nectarines, sweet cherries and figs 12 ft. apart, and grow them as fan-shaped trees; or plant best quality pears 10 ft. apart, and train them as espallers.

An east wall can be covered with pears such as Conference and Marie Louise, fan-trained plums such as Victoria or Oullin's Golden Gage, cherries like Emperor Francis or Early Rivers, or red currants and gooseberries.

A west wall is ideal for dessert plums, dessert cherries and first-class dessert apples and pears. In the south or south-west of England, a wall facing south,

south-west or south-east can be used for peaches and a south wall for apricots.

FEEDING THE TREES AND BUSHES

Manures and fertilizers are dealt with under the various fruits. Some fruits may need extra nitrogen and others extra potash, but there can be no hard and fast rule about this since a very wet season may well produce high nitrogen conditions automatically and a dry, sunny season high potash conditions. Potash is not easily washed away, and if too much is applied symptoms of magnesium deficiency may appear. Nitrogen is not readily held by the soil so it is advisable to apply it annually.

DEFICIENCY SYMPTOMS

Deficiencies manifest themselves in the following ways, during June, July and August.

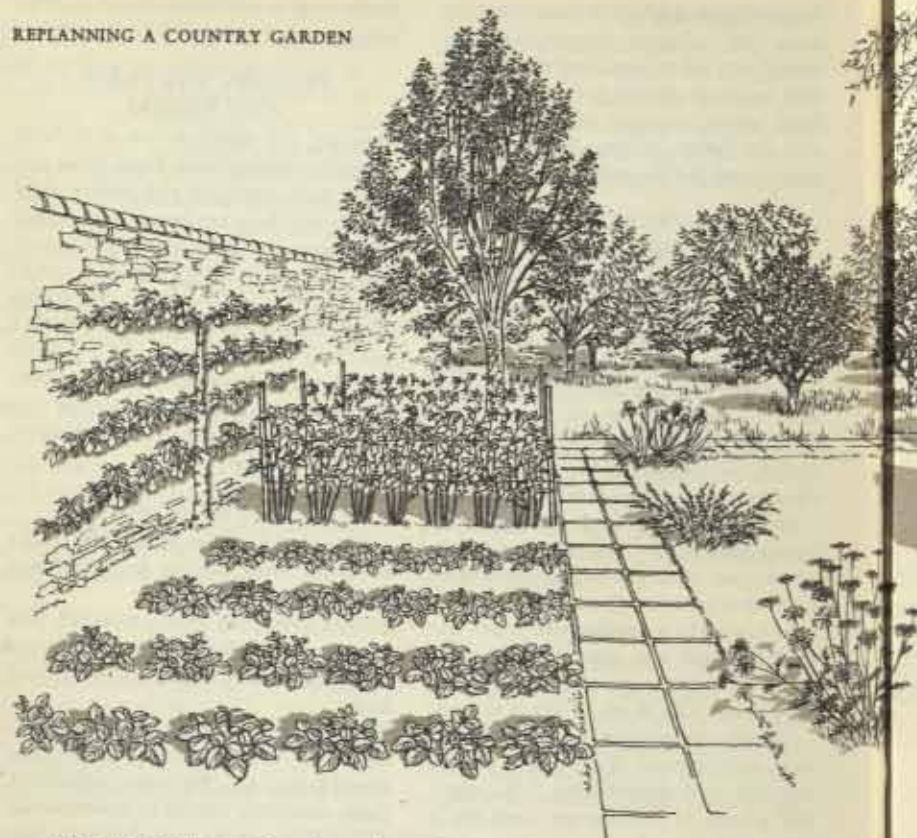
Nitrogen deficiency results in small, pale green to yellow foliage, a few thin, short shoots and small, highly-coloured, hard fruit.

Phosphorus deficiency, which is very seldom seen, results in purple- and bronzy-tinted foliage and thin restricted shoots. *Potash* deficiency results in sparse, small, brittle foliage, with greyish-brown margins, restricted thin shoots and immature, dull, small fruit.

Iron deficiency results in bright yellow foliage, small fruit and a reduced weight of crop. Apples and pears will be pale green with a red flush. The deficiency is mild if the outermost leaves of the tree are yellow and the lower leaves greener.

Magnesium deficiency results in brown interveinal scorching near margins and centres of foliage. Browning is sometimes preceded by purpling. Shoots are spindly or absent in severe cases, or elongated and thin in mild cases. Fruit is small, dull and immature.

REPLANNING A COUNTRY GARDEN



This country garden was planned to make use of an existing small orchard, planted with apples, cherries and a pear tree. The lawn was made round two established silver birches and the fruit border on the left was planted with cane fruits such as raspberries, with strawberries next to them. An espalier pear was planted against the south-facing wall

These deficiencies can be rectified by applying the appropriate organic plant food. (See *Fertilizers and Manures*.)

SPRAYING

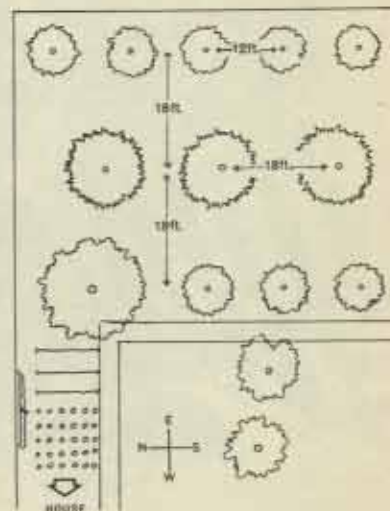
In order to counteract certain pests and diseases it is necessary to spray the trees and bushes from time to time with a machine powerful enough to soak them all over.

When mixing the spray solution follow the maker's directions carefully. Spray on a calm day and when the spray is not likely to be washed off by rain.

After spraying at the end of the season, pour any unused solution down a drain—do not keep it for the next spraying. Wash the buckets and machine thoroughly and oil all removable parts of the spraying equipment. Keep the hose in a dark place



In the orchard there are eight bush apple trees, a pear tree and three Morello cherry trees. In the fruit border the wire-supported raspberries are planted to avoid the shade of the pear tree. For the espalier-trained pear a variety has been chosen that the established pear can pollinate



as strong sun is likely to perish the rubber.

For details of fruit pests and diseases see *Garden Pests and Plant Diseases*.

POLLINATION AND STERILITY

Fruit trees are divided into two classes: self-fertile—those which set from their own pollen, and self-sterile—those which bear little or no fruit unless they receive pollen from some other variety of the same fruit blossoming at the same time.

All sweet cherries are self-sterile; plums

are divided into three groups—self-fertile, self-sterile and partly self-fertile; apples and pears are nearly all self-sterile; the great majority of strawberries and apricots are self-fertile.

PRUNING

For pruning in general, see *Principles of Pruning*. Pruning details are given under the individual fruits.

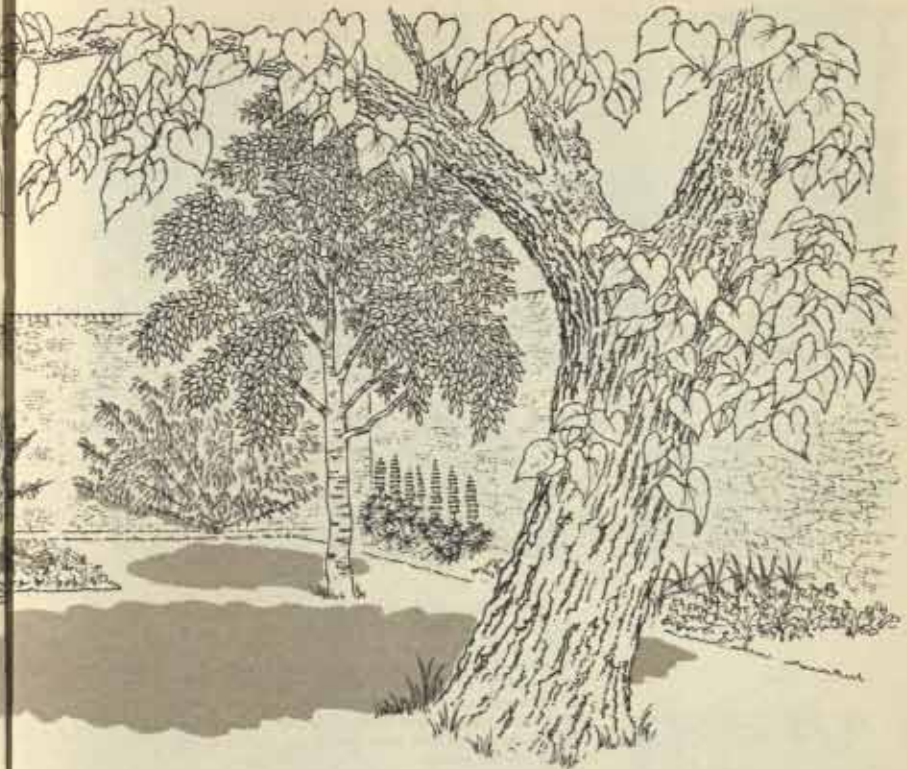
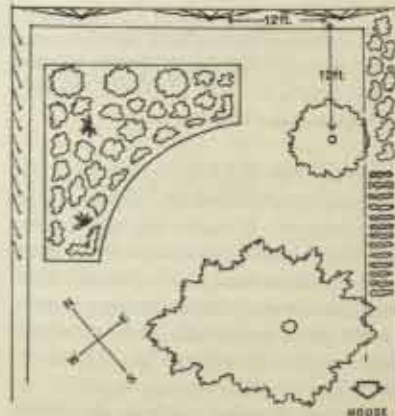
PROPAGATION

Fruit trees and bushes are propagated in various ways. Seedling fruits are invariably quite different from the parent varieties and so they cannot be relied upon. It is therefore necessary to resort to

FRUIT IN A WALLED GARDEN



Apples have been planted against the south-east facing wall and are trained as cordons in a narrow border, thus giving free access to the island perennial border. More herbaceous perennials have been put in the border at the foot of the north-west facing wall. The warmest wall was reserved for three apricot trees which are fan-trained and benefit from the extra protection of the other two walls.



A neglected walled garden was replanned completely, retaining only the gnarled old mulberry tree and a plum tree.

vegetative methods of propagation, that is, grafting, budding and the taking of cuttings. Budding and grafting are not easy and for this reason most gardeners buy their plants from nurserymen who specialize in producing first-class trees and bushes.

Black currants, red currants, gooseberries, blackberries and loganberries all grow quite well from cuttings; but apples, pears, plums, cherries, damsons, etc., are budded or grafted on to certain wild types of the same family, which provide the root system known as root stocks.

Root stocks have been classified by the East Malling Research Station and are usually given numbers and letters as a name.

Thus the apple variety Cox's Orange Pippin may be grafted on to the M.IX stock. The tree thus produced would be called a Cox on M.IX.

Grafting is carried out during the late winter months or in the early spring, but budding is done during the summer months.

For further details of propagation see under individual fruits and *Propagation*.

FRUIT FOR A NARROW GARDEN



In this narrow, high-walled garden, ingenuity and careful planning have made it possible to grow a variety of fruit while retaining the informal atmosphere set by the lawn. Morello cherries are planted 15 ft. apart against the east-facing wall, and the south-facing wall supports a fan-trained peach. In the centre area, three apple trees are grown as dwarf pyramids so that they throw little shade; the farthest tree is planted as far away as possible from the south wall so as not to throw shade on the peach.

The pears on the west-facing wall are vertical cordon trained; they are kept close to the wall so as not to interfere with free movement along the path. Black currant and gooseberry bushes are planted 7 ft. apart, and form the foreground of the view from the house and a small terrace.



HARVESTING

Care in harvesting is very important, as it is not much use nurturing the fruit to the cropping stage if it is to be spoilt by incorrect harvesting. Full details are given under individual fruits, but good general rules are:

- Do not pick too early or too late.
- Do not bruise.
- Do not drop.
- Do not pick in wet weather.
- Do not leave lying about in the sun.
- Do not put diseased fruits in with good fruits.

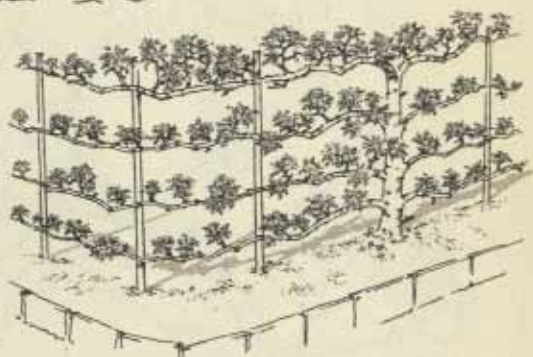
FRUIT

GROWING FRUIT FOR DECORATIVE EFFECTS



In this corner of a walled garden, a fan-trained peach grows on a south-facing wall and a fan-trained fig occupies a south-west facing corner. Fruit on these trees will tend to ripen early because of the warmth reflected from the brick walls

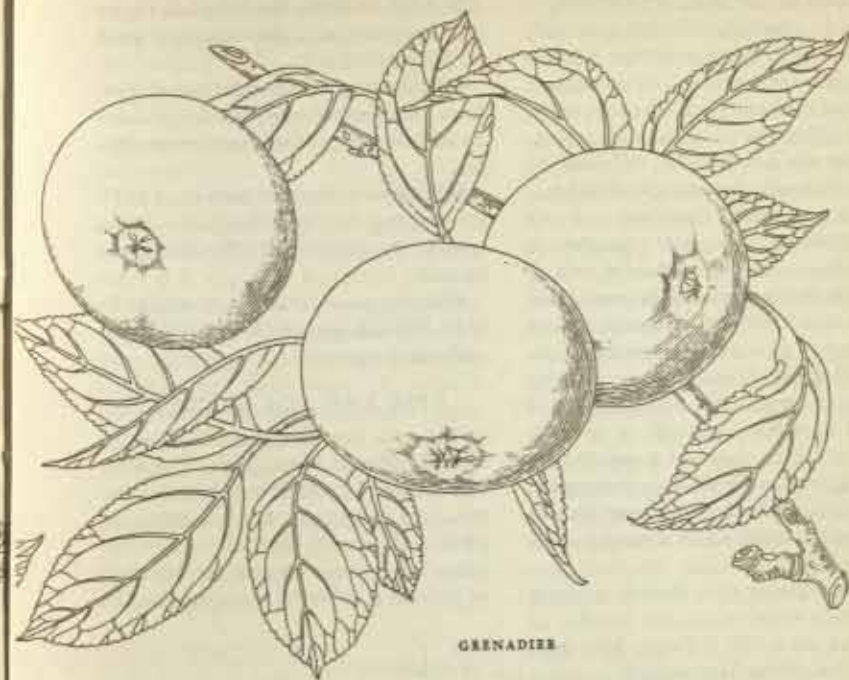
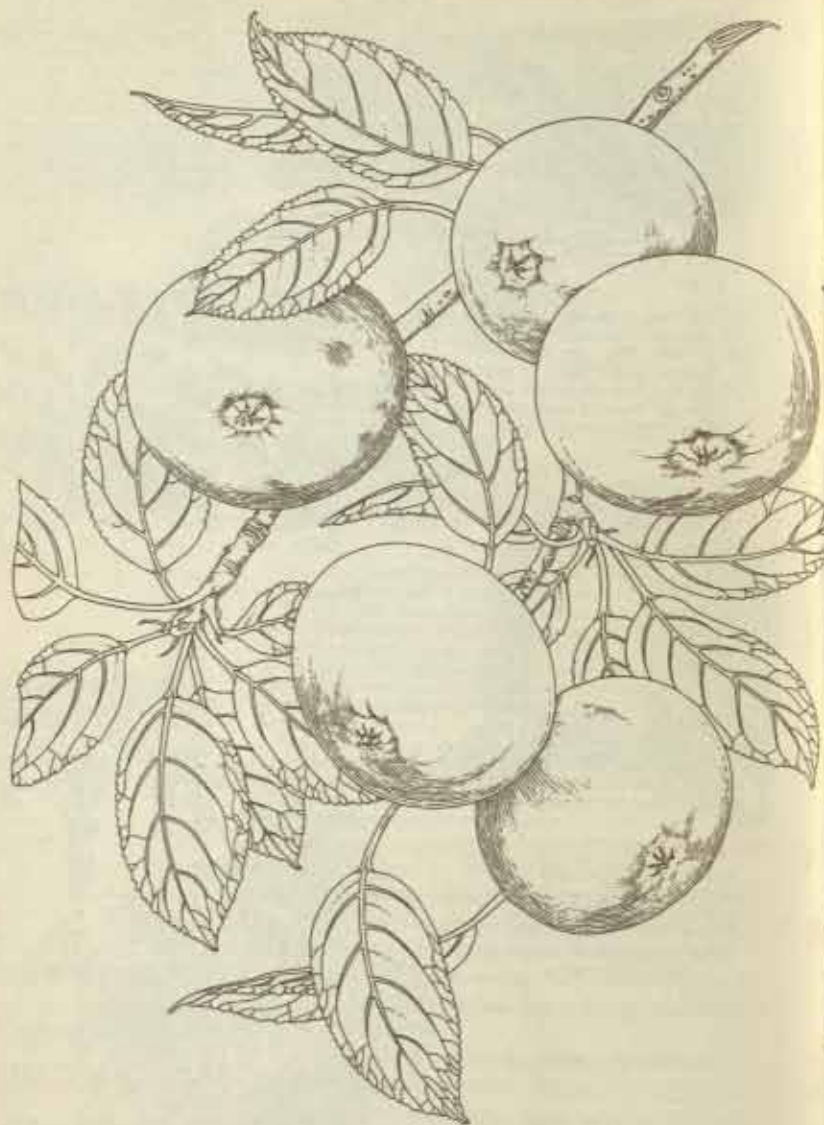
An espalier apple tree provides an attractive edging for a path. The tree requires regular attention; it is important that the stakes and ties are checked every year and renewed if necessary



An archway composed of cordon pears growing up iron arches looks attractive over a path. Small, shade-tolerant plants can be grown beneath the pears



A sunny corner of a town garden is an ideal spot for a seat. Here a small almond tree and Virginia creeper grow round the seat and vines cover the low wall



GRENADEER

Apples

APPLS are the most commonly grown fruit in the British Isles. They will thrive in almost any type of weed-free soil but, because soil that is waterlogged in the winter may kill the trees, the land should be well drained.

PREPARATION OF SOIL

After the soil has been dug or forked over, if it has not been regularly manured in the past, lightly hoe in fish manure with a 10 per cent potash content at the rate of 3 to 4 oz. per sq. yd.

If the soil has been neglected, try to enrich it before planting. Where it is light

and sandy, apply 6 oz. wood ash (or, if wood ash is not available, 2 oz. sulphate of potash) per sq. yd. and in addition, if cooking apples are to be planted, lightly rake in 3 to 4 oz. fish manure per sq. yd.

ROOT STOCKS

As apples do not do well on their own roots, it has been found necessary to bud or graft the trees on to the roots of wild apples, which are known as the root stock.

Fifty years ago, the East Malling Research Station began to classify and number the various types of root stock in use at that time. These stocks are identified by

numerals with the letter M for Malling as a prefix, for example, M.IX. More recently the John Innes Institution has collaborated with East Malling. The root stocks produced by these two bodies are known as the Malling-Merton series, and are identified by the letters MM. followed by Arabic numerals, for example MM.109.

It is now possible, therefore, to buy a tree grafted on to a special type of stock that will give the results desired, and to gauge the eventual size of the tree as well as how soon it will bear. If, for example, it is desired to grow a small tree to crop almost immediately and to go on yielding for many years, the variety selected should have been grafted on to M.IX stock, or if a standard tree is required for planting in an orchard where sheep graze or fowls range freely, the variety should have been grafted on to a strong stock such as M.XVI.

When ordering trees give the name of the variety required and the number of the stock on which it should have been budded or grafted. For example, an order might read, "Please send one Worcester Pearmain on M.IX."

PRINCIPAL STOCKS FOR APPLE TREES

M.II—one of the most popular root stocks. Good for weak varieties grown as cordons, or for dwarf pyramids or espaliers.

M.VII—makes the variety grow vigorously for five years and thereafter to crop heavily on its large frame. Bush trees can be planted from 15 to 18 ft. square, depending on the variety.

M.IX—a very weak stock; makes trees bear early. Produces poor average roots, so needs efficient staking. Bush trees on this stock can be planted 9 to 12 ft. square, depending on the variety.

M.XVI—the stock to use for half-standard and standard trees or large bush trees on very poor soil. Plant the trees 28 to 30 ft. square.

M.XXV—another stock for half standards and standards, and especially good for light, sandy soil.

MM.104—useful in place of staked bush trees, because its roots provide good anchorage. Excellent for Cox's Orange Pippin.

MM.106—can be used instead of M.IX for planting in dry sandy soil. Causes trees to crop very heavily. Plant 15 to 18 ft. square.

MM.109—gives results very similar to M.II. Popular on sandy soil because it withstands drought.

TYPE AND AGE OF TREES

Apple trees can be trained to grow in several different ways. Trees that have been trained for a short time by a nurseryman can be bought, but it is better to plant quite young, untrained trees, because apple trees should be disturbed as little as possible by transplanting. To

TREE SHAPES



Half standard
Usually grown on grass

obtain the best results buy one-year-old trees—maiden—and carry out the necessary training.

Do not buy five- and six-year-old trees from a nurseryman as they are usually stunted and never really re-establish themselves.

Cordons, bush trees, trees that are to be trained as dwarf pyramids, pillars or spindles can be bought when two years old, and half standards and full standards when three years old, because they will have more stems than younger trees. Trained espalier trees can be bought when four years old, as their main branches will already have been trained in the nursery.

Always order the trees during the summer months and ask the nurseryman to guarantee delivery by the middle of November, in order that they can be planted before the soil becomes too cold or too wet.

PLANTING AND STAKING

If the trees have travelled a long way, it is wise to soak their roots in a bath of water for an hour or two before planting. If the soil is frozen, place the trees in a sheltered spot and cover their roots with sedge peat to a depth of 6 or 7 in. When it is impossible to plant all the trees within two or three days of arrival, heel them in by digging a large hole, putting the roots of the trees in it as close together as possible and then covering the roots over with fresh soil.

The planting hole for each tree should be about 3 ft. across and 8 in. deep, so that it is large enough to accommodate all the roots when they are spread out. To encourage the production of surface roots, cut back cleanly with a sharp knife any roots that were damaged when the plants were dug up in the nursery, so that the surface of the clean wounds will face downward at the time of planting.

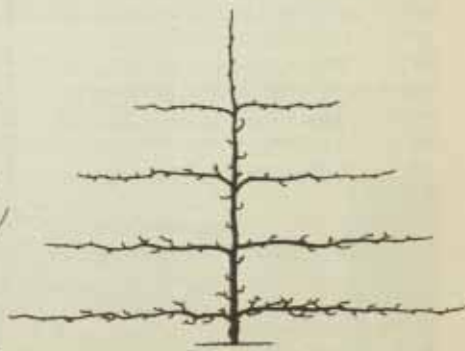
TREE SHAPES



Dwarf pyramid
Easy to pick and prune



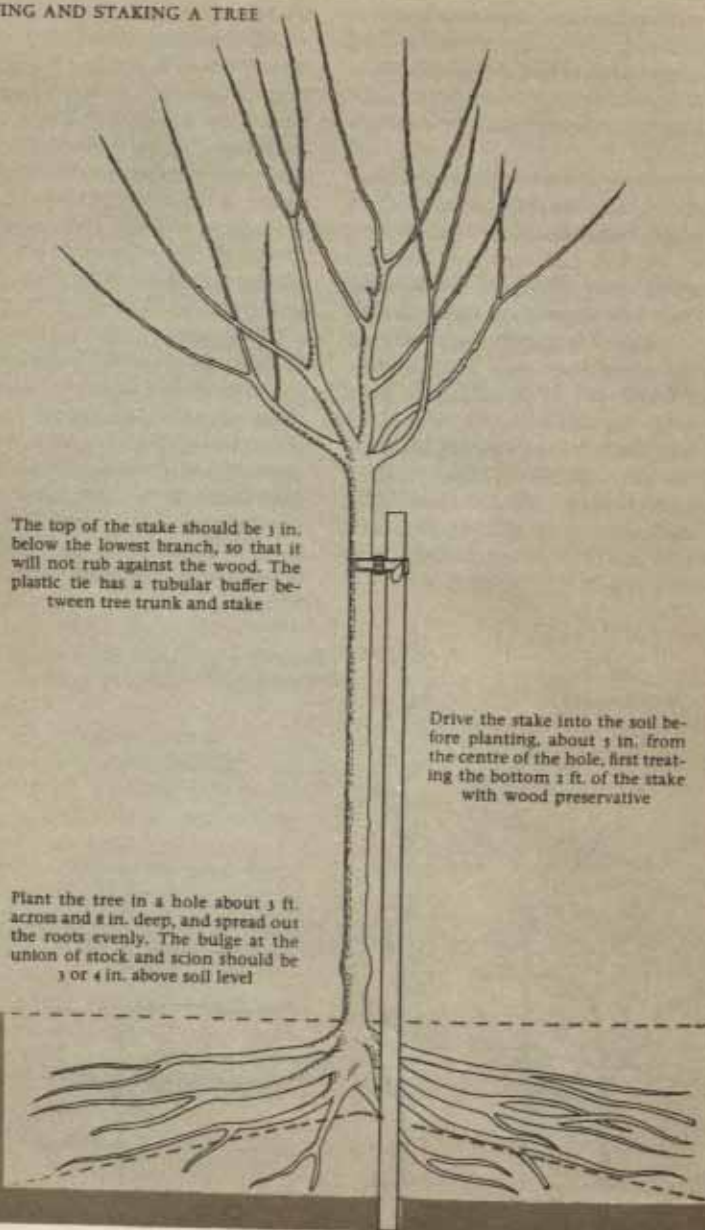
Pillar
Useful where space is restricted

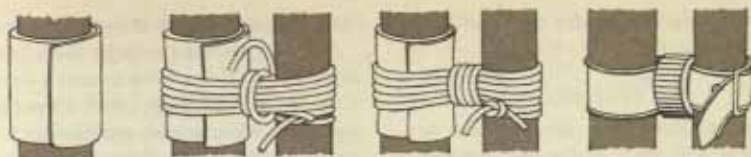


Espalier
For training on walls

FRUIT

PLANTING AND STAKING A TREE





FASTENING A TREE TO A STAKE

When tarred string—which does not rot—is used, first put a sacking band round the tree trunk to avoid chafing. Wind the string round the tree and stake and make a spacer by coiling the end of the string before tying the knot. Modern plastic tree ties (right) have a buckle which allows for adjustment. A tubular cushion acts as a spacer

Stake the trees efficiently, driving the stakes into the soil before planting so that the roots will not be damaged. For normal bush trees, use stout chestnut stakes, 5 ft. long and 3 in. in diameter. First soak the bottom 2 ft. of each stake in a tank of Cuprinol for 24 hours—the preservative will penetrate right into the wood, and the stakes should last for many years. Then drive the stakes into the ground to a depth of 2 ft., and about 4 or 5 in. away from the centre of the hole. Use two 6-ft. stakes for half-standard or two 8-ft. stakes for standard trees and treat them with Cuprinol in the same way. Then drive the stakes 2 ft. into the ground and 9 in. away from and on either side of the centre of the hole. Tie the trees to the stakes with modern plastic ties. This type of tie has a special tubular cushion which acts as a buffer between the trunk of the tree and the stake, and an adjuster which, when moved, enables the tightness of the tie to be quickly gauged.

The actual point where the graft or bud of the variety joins the stock should not be buried, so do not plant trees deeply. If the point of union is not kept about 3 or 4 in. above soil level, the variety itself may send out a few roots, which will mask and perhaps completely ruin the beneficial effect of the root stock. Spread the roots out evenly in the bottom of the hole, like the rays of the sun. If a little mound of soil 4 in. high is put in the centre of the hole, the base of the tree can "sit"

on this while the roots are spread. Make certain that the roots are growing out on all sides as this is the only way to ensure that the tree will be properly anchored. As the roots are put into position, place a spadeful of soil over them and tread it down firmly so that they cannot move. It is better for two people to plant a tree so that one can shovel the soil over the roots while the other does the treading.

The roots of apple trees sometimes grow out in two or three layers or tiers. In such cases first spread out the lower roots and cover them with soil and tread down, then spread out the next tier of roots, cover them with soil and tread down, and so on. In this way the roots will be kept in their normal stratification.

Even after planting and firming, the soil tends to settle down. It is advisable, therefore, to leave the soil slightly raised round the tree, so that after three or four weeks the soil covering the roots will be level with the surrounding soil.

Where rabbits or hares are prevalent protect the trees with tubes or sleeves made from 3-ft.-wide, 1-in. mesh wire netting. Cut the netting into 2½ ft. lengths and fasten it round the trees immediately after planting. These guards will prevent severe marking by rabbits and hares during the first month.

Lastly, nail a cross bar 2 in. by 1 in. by 18 in. to each stake to form a bridge about 1 ft. below the point where the lowest branch of the tree joins the main branch

FRUIT

or stem. Fasten the tree to the cross bar with plastic ties.

FEEDING

After planting top dress the newly-firmed soil with well-rotted vegetable compost or sedge peat to a depth of 1 in.

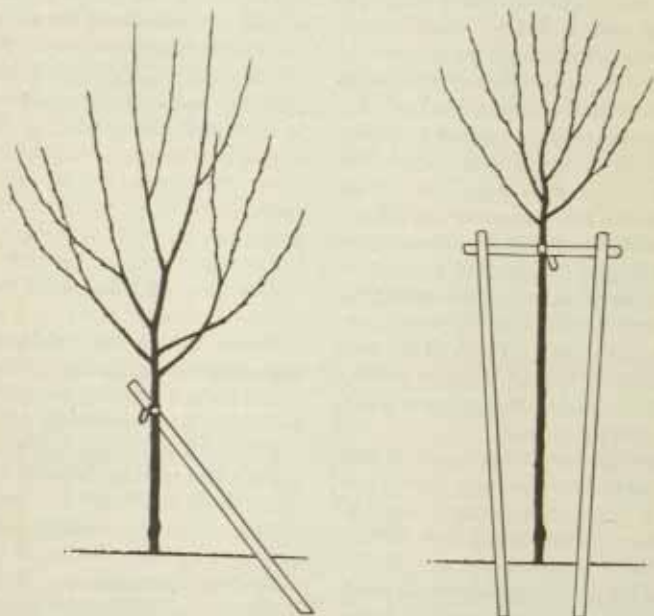
Apples seldom need lime in any form. Dessert varieties prefer a slightly acid soil and usually need more potash than nitrogen, because when they are over-fed with a nitrogenous fertilizer their fruits lose some of their sugar content, crispness and colour, and will not keep well. Therefore, spread about $\frac{1}{2}$ lb. wood ash evenly round each dessert apple tree as far as the branches extend. If the trees are to be given a fish manure in addition, make

sure that it contains 10 per cent potash.

Cooking apples are larger than dessert apples and do not need as much potash. Give them fish manure with a 6 per cent potash content at 3 oz. per sq. yd.

Feed apple trees in February so that the foods are available as they are needed in the spring and summer.

If the trees are to be planted in grass, dig out a circular hole and stack the grass sods on one side. After the roots have been covered, put the sods back upside down so that they can act as a mulch. Cut the grass once a fortnight throughout the summer. For the first three or four years put the cuttings round the trees, but later let them lie where they fall, because they form part of the manuring pro-



STAKING APPLE TREES

A diagonal stake will give greater rigidity to a short-stemmed tree. Drive in the stake with its top towards the prevailing wind so that the tree will lean against it in a stiff breeze. Two sloping stakes connected by a cross-piece at the top give firmer support for a tall tree

gramme. Sprinkle the fish manure on to the grass each February.

POLLINATION

It is important when planting a single apple tree to make sure that it is self-fertile, since self-sterile varieties must have their pollinators or "mates" planted at the same time. But as only a few varieties of apple are self-fertile, better crops are assured when cross pollination takes place. Thus a mixed orchard invariably crops better. Compatible varieties flowering at the same time will pollinate one another. To save disappointment seek expert advice on which varieties to plant.

In small gardens the problem of pollination can be overcome by planting "family trees". These are stocks on to which four different varieties have been grafted, so that the tree provides itself with perfect inter-pollination and gives a succession of varieties to eat or cook.

SYSTEMS OF TRAINING

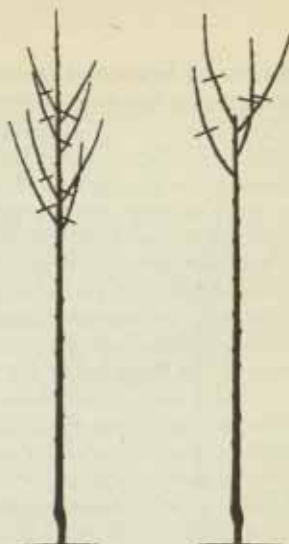
There are various systems by which apples may be grown successfully—even in small gardens. Some systems ensure that the trees take up a minimum of space and require little pruning, so that the highest possible yield is obtained.

1. THE FULL STANDARD

Full standard trees have trunks about 6 ft. high and are usually planted in grass. Such trees should have been grafted on to strong stocks, because they do not come into cropping early, and five or six years may pass before any apples can be picked. Standard trees are expensive to buy and to stake, and should be planted at least 30 ft. apart.

2. THE HALF STANDARD

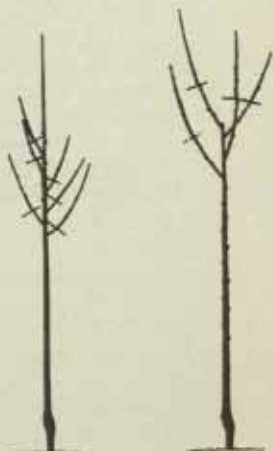
Half standards have trunks $4\frac{1}{2}$ ft. high and, like the full standard trees, should have been grafted on strong stocks suitable for planting in poultry runs, because they do



PRUNING A STANDARD

First year: Cut back side growths hard to form stronger branches, removing completely the side shoots low down on the main stem.

Second year: Remove unwanted lower laterals, leaving four or five laterals at the top to form main branches. Prune these laterals hard to strengthen them.

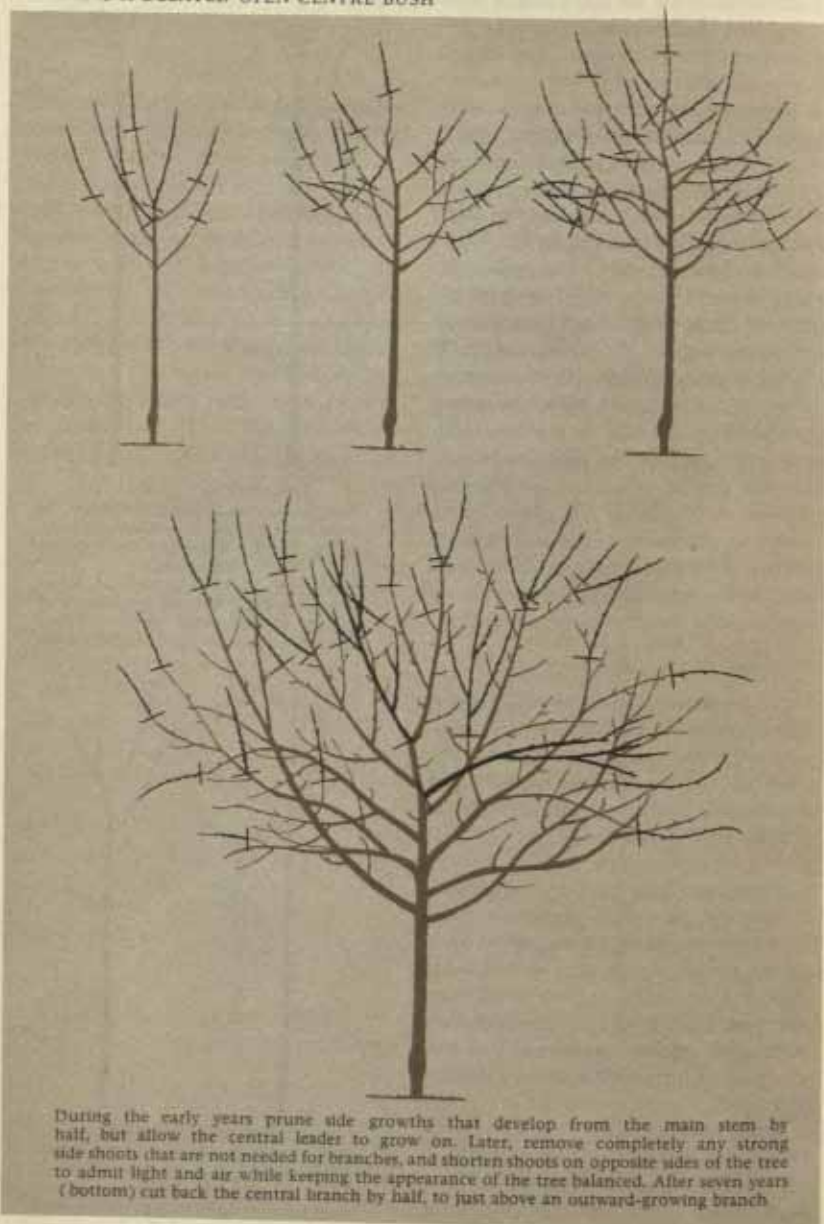


PRUNING A HALF STANDARD

The pruning process is the same as for a full standard tree, except that the lowest of the side growths that are to become main branches are 4 ft. 6 in. from ground level instead of 6 ft.

FRUIT

TRAINING A DELAYED OPEN CENTRE BUSH



not mind the high nitrogen conditions produced by poultry manure; while the birds cannot get into the branches to peck the fruit, the trees provide them with shade. Plant half-standard trees 24 ft. square and stake them well.

3. THE OPEN CENTRE BUSH TREE

Open centre bush trees have trunks 2 or 2½ ft. high. Their branches should grow to form a goblet-shaped tree so that both branches and fruits get all the light and air they need. This is the commonest form of apple tree grown in gardens, and the pruning necessary to produce such a tree is described on page 705. Plant bush trees 12 ft. square. The dessert varieties prefer to grow in grass, so if it is necessary to plant a tree in cultivated land, choose a cooking variety, for it will benefit from the fertile conditions round it. Bush trees are grafted on to semi-dwarfing or dwarfing stocks.

4. THE DELAYED OPEN CENTRE BUSH TREE

Delayed open centre bush trees are very popular, not only because blossom buds are readily formed on the branches, which lie almost flat and are evenly spaced, but the young growth is evenly distributed, and the trees are strong. They differ from the open centre bush trees in that the main branch grows on up the middle of the tree; otherwise the shape is the same. Plant a one-year-old tree or maiden and, if it is not very strong, cut it back to 3 ft. and just above a growth bud. Then as the new shoots appear, train one from a top bud into a vertical position to make the main stem. Cut this shoot back to just above a bud during the following winter and also for the next three or four years until the tree is 5½ ft. high. The main stem is then left unpruned. If, however, the previous season's growth has been very vigorous owing to wet weather, cut the top shoot back about mid-May

so that the tree is the required height.

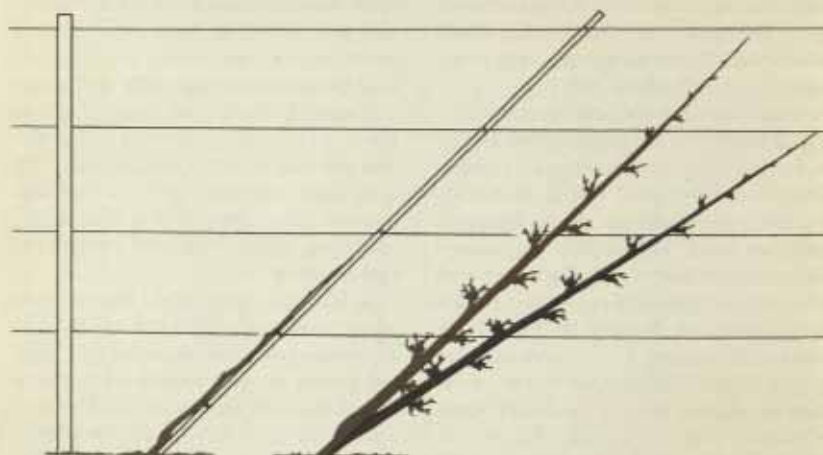
Prune the side growths that develop from the main stem by about half in the first year or two to create evenly spaced branches from the centre. To make sure that branches on either side of the tree correspond, cut a wedge-shaped notch about ¼ in. deep just above a bud in the one-year-old wood of each branch. This will cause the bud to grow out and produce more laterals. A similar notch made just under a bud will prevent the bud growing.

As the tree gets older, shorten one shoot on one side of the tree and the corresponding shoot on the other side; then cut cleanly down to their base any strong side shoots that are not needed for branches. After six or seven years, completely remove one or two of the older branches to encourage the production of young wood. If a branch bends down too much, cut it back to just beyond an upward-growing side shoot; then cut back this side shoot by half to encourage the production of a branch in the right direction.

5. THE CORDON

Cordons are trees on single stems and are usually trained at an angle of 45° by being tied to wires stretched tightly between posts. Buy cordons on M.I.X stock, and plant them 2½ ft. apart in rows 6 ft. apart, and take care to keep the union of the stock and scion 3 in. above the ground. If a number of cordons are to be planted, provide them with a fence comprising posts rising 8 ft. out of the ground and placed 12 ft. apart, with parallel wires stretched between the posts. The bottom wire should be stretched tightly at a height of 2½ ft. above soil level and the others at 2-ft. intervals. If possible, use old telegraph wire, because this damages the bark less than ordinary galvanized wire. To ensure that the cordons grow perfectly straight, tie bamboos to the wires at an angle of 45° to the soil

PLANTING CORDONS



Plant the cordon at an angle of 45° with the scion uppermost, keeping the growth straight with a stake. The angle of the main stem slows the movement of sap and encourages even growth. When the cordon outgrows its supporting wires, change the angle of growth (right)

SUMMER PRUNING OF CORDONS



Cut back laterals almost to their bases, to encourage the production of fruit buds

and, as the leaders of one-year-old end growths develop on the ends of the cordons, tie them carefully to the canes.

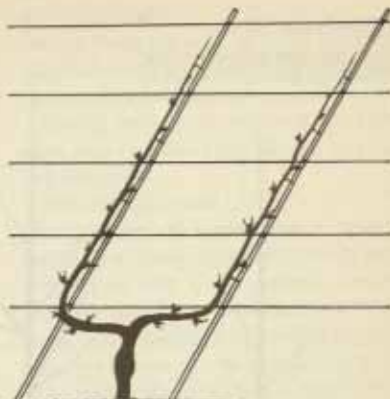
For the first three winters, cut back the leader by half to a point just above a bud, and cut the laterals, or one-year-old side growths, to within 1 in. of their bases. This system can be continued for the next 10 or 12 years, but it is preferable to change to the modified form of the Lorette summer pruning system, which entails the cutting back of laterals in the summer, when they have reached a length of 1½ ft. (See page 706.) Prune the leader each December until the cordon is 5 ft. long; then delay pruning it again until about 16 months later, when it should be cut back by about half; thereafter prune yearly in May in the same way.

Cordon trees can be grown in grass and most of the mowing can be done mechanically. Cut by hand grass that is actually growing in the rows and allow it to lie as a mulch. Any other grass that is cut near the cordon trees can be used as a mulch along the rows. This will discourage the growth of strong grasses and also reduce the amount of hand work in the rows.

6. THE PILLAR

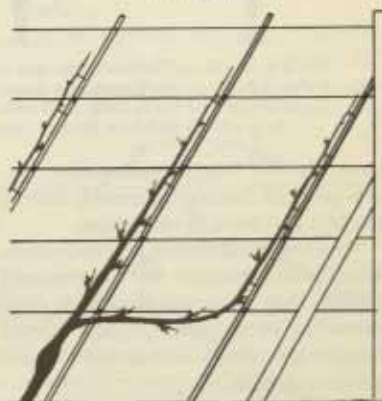
Apple trees grown on the pillar system cause little work and are of a high quality. Buy trees grafted on M.11 or M.104, and plant them 5 ft. apart in rows 12 ft. apart. A pillar tree is allowed to grow to 12 ft. It has a central stem from which radiates a large number of lateral growths, and it is important that this central stem should be stout, upright and rigid so that the tree can carry the fruit without further support.

Train young trees as follows: Prune the one-year-old trees back to 2½ ft. from soil level and to just above a bud, and cut back the laterals to within ½ in. of the main stem. In the second winter, cut back the leader by half to just above a bud, and the top lateral to within ½ in. of the main



DOUBLE CORDON

This type of tree is grown both for decorative purposes and to increase the amount of fruiting wood in the available space. After planting, the tree is cut back to two buds low down on the main stem, and their leading growth becomes the cordons.



END CORDON

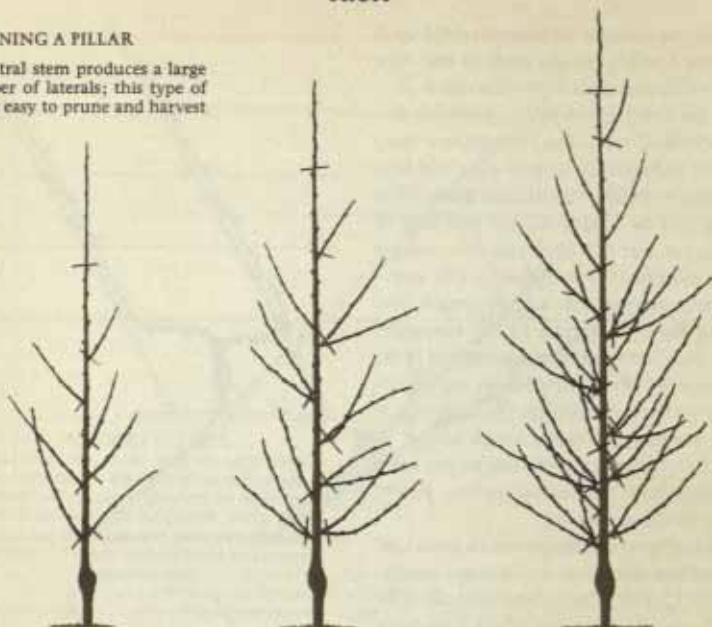
On the last tree in a row of cordons, allow one side shoot to develop to fill the empty space before the end-post

stem, leaving the second lateral unpruned. Cut back the remaining laterals to within ½ in. of the main stem.

In the third winter prune as for the second, but leave two laterals unpruned (the first lateral below the leader should be cut back to within ½ in. of the main

TRAINING A PILLAR

A central stem produces a large number of laterals; this type of tree is easy to prune and harvest



Left to right. *One-year-old tree:* Prune back the stem to 2½ ft. high and cut back all laterals to within ¼ in. of the main stem. *Two-year-old tree:* Cut back the leader by half to just above a bud; prune half the laterals—fruit buds will form on the rest. *Three-year-old tree:* Prune back laterals that have fruited; 2-year-old laterals will fruit the following year

stem). In the fourth winter leave two one-year-old laterals unpruned, and in the fifth year leave six altogether.

Thus the framework of the tree is established and thereafter the one-year-old laterals that grow on the main stem should be left to grow naturally. By the following autumn fruit buds should have grown on them.

In the following winter prune back any fresh growth that has been made from the tip. This will allow the fruit buds on the lower half of the two-year-old laterals to crop. Prune these laterals to within about ¼ in. of their base only after they have borne fruit. Thus the one-year-old lateral is left alone, the two-year-old lateral is tip-pruned, and the three-year-old lateral is pruned back hard. When the trees are eight or nine years old they

will carry three-year-old laterals that have just fruited, an equal number of two-year-old laterals that will carry the crop the following year, and in addition a large number of one-year-old laterals.

7. L'ARCURE

The l'arcure method is a Belgian system that is sometimes used in the British Isles. It is similar to the cordon system except that the trees are trained in semi-circular arches (see illustration on page 703), and can form a useful edging to a walk.

The arching causes the branches to bear plenty of fruit buds, and consequently the trees fruit heavily while they are still young.

Further, the arches ensure the maximum amount of branch in the minimum of space. Plant 4-ft. high maidens,

FRUIT

on M.IX or M.VII stock, 8 ft. apart, and then arch each tree to form a semicircle. Tie the end to a wire that has been stretched tightly between posts $1\frac{1}{2}$ ft. above soil level.

In the following summer prune all the laterals, with the exception of the one in the middle of the arch, to within $\frac{3}{4}$ in. of their base as soon as they are $1\frac{1}{2}$ ft. long. Then carefully train the central lateral in the opposite direction to form a second semicircular arch, and tie it to a wire stretched 2 ft. above the ground.

In the second summer prune the second main curved branch in the same way by cutting back all the laterals with the exception of the central one, which should then be trained in the opposite direction in the winter.

Continue this procedure until the l'arcure-trained tree rises in alternating curves to a height of 8 ft. When all the necessary arches have been formed, follow the modified form of Lorette pruning to keep the trees cropping.

8. FAMILY TREES

Family trees are sold as bush trees and should be trained in the same way as the open centre bush trees.

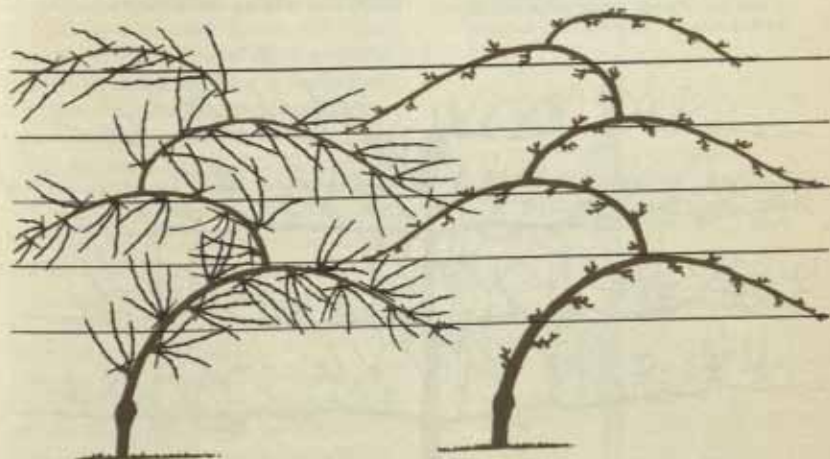
Family trees grow well in grass that is kept well cut, and they should be planted 10 ft. apart.

9. THE SPINDLE BUSH

The growing of apple trees as spindle bushes is a Dutch method that has been adapted to suit Great Britain. Dessert varieties should be bought from M.IX stock. Plant maidens in rows 13 ft. apart leaving 6 ft. between the trees in the rows.

As spindle bushes need support drive 8-ft. stakes into the soil, leaving 2 ft. of each firmly anchored in the ground. Between the stakes stretch wires to which the lower laterals can eventually be hooked. It will then be unnecessary to put up special fences and wires as for cordons.

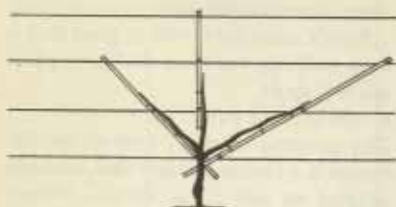
In late February of the year after planting, cut back the trees to within 2 ft. of soil level and just above a bud. Then, at



L'ARCURE TRAINING

This highly decorative Belgian system of training encourages trees to fruit heavily while they are still young. After planting the maiden, arch it into a semicircle, tying the end to a wire. Each year allow only one lateral to grow and train it in the opposite direction to the previous year's lateral.

TRAINING AN ESPALIER



When planting the maiden, remove all the laterals except two and tie them to bamboo canes attached at an angle to tautly-stretched horizontal wires



Gradually increase the angle of the first laterals—by a few degrees each month—so that they are horizontal at the end of the first season. The wires are 2 ft. apart

the end of the following winter, cut back by half the one-year-old growth or leader produced from this bud. Each winter thereafter, prune back the leader by half until the tree reaches 7 ft. Any leaders that develop from the top of the tree after that time should be pruned back in May to within 1 in. of their base.

In the winter thin out the laterals or side growths so that they are 7 in. apart. When they are 9 in. long, pull them down to the wires already provided so that they are horizontal.

10. THE ESPALIER

Espalier trees are usually obtainable with their branches already trained to run parallel to the soil, so that all that needs to be done is to treat the branches as if they were individual cordons. The trees should be planted at least 14 ft. apart and tied to wires stretched tightly 2 ft. apart. They look most attractive trained against house walls. Unfortunately espalier trees are scarce because they are expensive to produce, harder to look after than cordons, and take up more room.



A TRAINED ESPALIER

This tree has been stopped at the fourth tier by completely removing the main stem. All laterals require pruning, to encourage the production of fruit buds

PRUNING

Pruning is necessary for training and maintaining the shape of apple trees.

Careful pruning can ensure that the branches are well spaced and that the centre of the tree is open so that air and sunlight can penetrate to every part. Pruning can also facilitate the spraying of trees, the picking of the fruit, and can help to ensure that the crop is one of quality rather than of quantity.

A sharp knife makes the cleanest cut, although some secateurs also cut cleanly. A saw will be needed to remove the big branches of old, neglected trees. The teeth of the saw should be set wide apart so that it can cut through the green wood easily. Long-handed pruners are recommended for pruning old standard trees.

BUSH APPLES

Prune back the single stem of a one-year-old tree or maiden at a point $2\frac{1}{2}$ ft. above soil level, making the cut just above an outward-pointing bud at an angle of 45° . Three almost equally strong growths should then develop from the three uppermost buds. Prune these growths back to one-third their size in the following November or December, making the cuts in the same way as before.

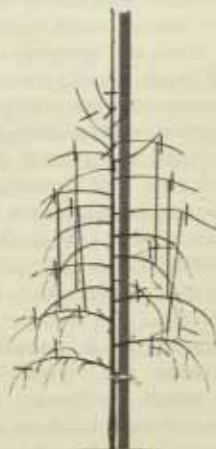
The second pruning should produce six or seven shoots. Cut these shoots back by about half in the following winter. Thus six or seven main primary branches will be produced. Once this "main head" of the tree has been formed the tree can be pruned on either the spur system or the regulating system.

By the spur system, the one-year-old side growths (laterals) from the primary branches are pruned back to within 1 in. of their bases, while the end one-year-old growths on every branch, known as leaders, are pruned back to about half. This system of pruning can be continued year after year.

TRAINING A SPINDLE BUSH

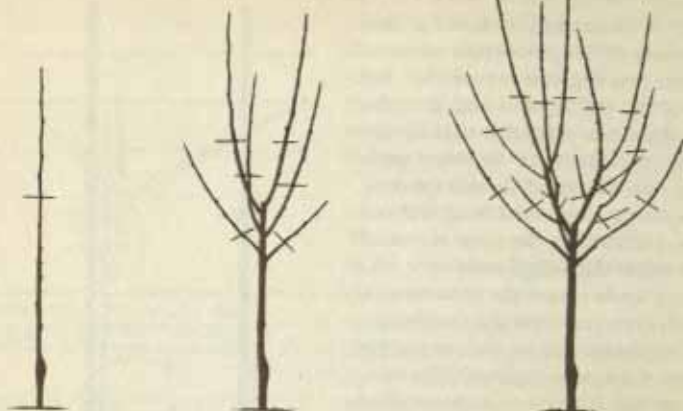


Plant the maiden alongside a stake which is wired to the stakes for other trees just above ground level. Cut back all early growth of laterals and prune each season's growth of the leader by half until the tree reaches 7 ft. Then thin out the laterals until they are about 7 in. apart, and when they are 9 in. long tie them down horizontally, to the wires stretched between stakes



When the lower branches are strong enough, laterals higher up the tree may be wired to them

PRUNING BUSH APPLES



First year: Prune the single stem to just above a bud about $1\frac{1}{2}$ ft. from the ground.

Second and third years: After the first pruning, three growths should develop; prune these to half their size the following winter. In the next season six or seven shoots will develop. Winter prune them to half their length.

Later years: When the main head of the tree has been formed, the object of pruning is to shape the tree and keep the centre open.

By the regulating system the majority of the one-year-old side growths or laterals are not cut back at all, while the leaders are pruned back only by about a quarter. The unpruned laterals usually produce fruit buds so that in the following winter these side growths can be pruned back to $\frac{1}{2}$ in. above a plump fruit bud. This means that there will be no secondary growth as there is when one-year-old laterals are pruned. If this method is adopted, all the branches that tend to grow into one another as well as those that are rubbing one another are cut away, and the bush is merely thinned out to let in light and air.

SUMMER PRUNING

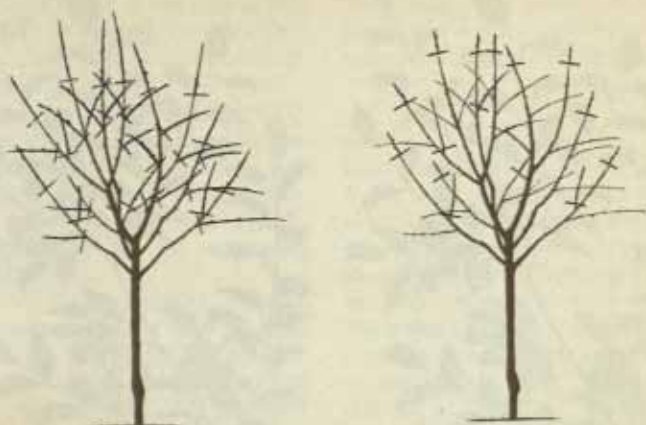
Summer pruning can be done by one of two methods: the normal English method in which the laterals or side growths are cut back by about half in August (especially in a dry year) or September to let light and air into the tree; or a modified form of the Lorette

method, which gives better results and enables the work of summer pruning to be spread over three months.

By the second method those laterals that have grown to a length of $1\frac{1}{2}$ ft. are cut back hard to within $\frac{1}{2}$ in. of their bases in June. Since the current year's growth must not be cut back until it is about $1\frac{1}{2}$ ft. long, the tree should be inspected each week during the three-month period and the side growths or laterals that have reached the right length cut back on each occasion. The leaders or end growths on each branch are not pruned back each summer but are left until mid-May of the following year, when they are pruned back to about half.

This hard cutting-back when the laterals have reached the right age and condition causes the production of fruit buds on the tiny portion of the lateral that remains on the tree, and occasionally of fresh laterals. If two side growths appear from almost the same place, cut back one

PRUNING BUSH APPLES



Spur system: Each year, the one-year-old side growths are pruned back to within an inch or so of their bases, and the new growth at the end of each branch is cut back by about half.
Regulated system: Most of the one-year-old side growths are left intact; primary branch growth is pruned by a quarter, to keep the tree thinned out.

when it is 9 in. long and cut back the other a fortnight later.

The soft succulent growths that are cut off in the summer can be put on the compost heap to produce more organic matter, but winter prunings should be burnt.

WINTER PRUNING

If the trees are to be winter pruned, bear in mind the habit of the variety concerned. A very spreading type such as Lane's Prince Albert should be pruned to keep the tree upright; if varieties such as Worcester Pearmain and Lord Lambourne are spur pruned, they should not be pruned of all their laterals, because the tips of the laterals tend to bear fruit buds; and weaker varieties such as James Grieve should be pruned harder than stronger-growing kinds such as Bramley's Seedling.

All varieties are, however, pruned in much the same way for the first four or five years. It will then be apparent whether a variety is a strong or a weak

grower and the pruning method can be altered in consequence. While an older tree can be pruned hard, a younger vigorous tree will have the necessary vigour in itself and will require lighter pruning.

ROOT PRUNING

When trees are making nothing but strong wood growth, and are not producing fruit buds, they should be root-pruned, the object of the pruning being to encourage the production of fruit buds. The thick anchorage roots—apples do not have a tap root—must be cut back so that the amount of sap sent up to the branches is reduced and excessive growth is checked.

Root-prune as soon as the leaves have fallen.

If a tree is seven or eight years old and is one that has been grafted on a strong stock and has been pruned hard in the early stages, it is possible to dig it up with all its roots, shorten the roots to half

SUMMER PRUNING



Modified Lorette method: As laterals become about 1½ ft. long they are cut back to within ¼ in. of their bases



English method: Laterals are cut back by half in August or September, to admit more light and air

their length, and replant the tree immediately in the same place.

Root-prune older trees in two stages. In the first year dig a trench 2 ft. wide, 2 ft. deep and 3 to 6 ft. or so away from the trunk of the tree (the distance away from the trunk depends on the size of the tree), so the trench extends exactly half-way round the tree on the south side. Cut off with sharp secateurs, or saw off neatly with a U-toothed saw, all the roots that are thus exposed and fill in the trench.

In the second year complete the circle by continuing the trench half-way round the north side of the tree and prune similarly.

The half-circle method prevents the tree suffering too much shock, and ensures that it is not so severely pruned in any one year that it will be in danger of being blown down during winter gales.

RINGING

Bark ringing is a more simple operation than root pruning, and also has the effect of encouraging the production of fruit buds. The normal food supply from the roots is partially or completely cut off, the sap being concentrated in the branches of the tree.

With a sharp knife cut a slit, ¼ in. wide, half-way round the trunk of the tree, 2 or 3 in. beneath the lowest branch.

Cut a similar slit 1 in. lower on the opposite side of the tree. Cut down through the bark and no deeper.

As soon as the bark has been cut off, paint over the wounds with a thick white lead paint or protect them with adhesive tape.

Ringing should be done in March or April, though it is possible to carry out the operation in winter, when the tree is dormant.

BARK SLITTING

A tree is bark-bound if the cells at the centre swell and the bark does not. The bark then acts as a tight corset and tends to split here and there.

A tree may also be bark-bound if (1) the top of the tree seems too large for the stem, (2) it blossoms well but does not yield a good crop and (3) an obvious cracking noise is heard when a knife blade is inserted into the bark and moved downward.

To relieve the constriction, make a perpendicular cut with a sharp knife in the bark on the north side of the tree and from the top of the main stem to soil level. The passage of the sap will thus be unimpeded, and the tree will grow naturally.

A cut made in this way heals rapidly and does no harm to the tree.

PRUNING NEGLECTED TREES

Neglected trees are usually pruned in the winter, for only when the leaves are off the trees can the branches be clearly seen.

1. Cut out all dead wood to its base.
2. Cut back to a young growth lower down any piece of branch that is crossing and rubbing another.
3. If there is a branch growing in the centre of the tree forming either a kind of umbrella or a mass of growth, cut the branch to its base so that the tree becomes goblet-shaped.
4. If it is difficult to spray the trees and pick the fruit because the branches are too tall, cut back the branches with a saw to a point where another branch grows out lower down, but do not shorten them all in one season. Smooth down each saw cut with a sharp knife; then paint the cut with a thick white lead paint.
5. Some branches may droop almost to the soil because of overcropping in the past. These branches should be sawn back to an upward-growing branch. When pruning a large branch, first saw

through about 1 in. of the lower surface. Then, when the upper part is sawn through at a point over the first cut, it will not break away and tear the bark.

METHODS OF PROTECTION

BIRDS

Birds sometimes peck out the centres of flower buds to get at the protein they need. To prevent this, buy tree-banding grease and warm it to a temperature of about 80° F. (27° C.). Then, just before the trees blossom, apply the sticky compound with a short stick to the fruit spurs of the tree and to any part where a bird can conveniently perch.

INSECTS

Grease bands about 3 in. wide can also be put on the trees at the end of September to prevent the females of the wingless winter moths from climbing into the branches and laying their eggs.

Some vegetable types of banding-grease can be put directly on the trees while others can be applied only if strips of grease-proof paper are put on first. Take advice from a horticultural chemist when buying the grease.

Methods of combating pests and diseases are given in *Garden Pests and Plant Diseases*. The fruit grower should, however, adopt the following simple spraying programme. Spray the trees with a tar-oil wash each December, using a 10 per cent solution the first season and a 5 per cent solution thereafter. In the spring just before the blossoms open, apply a captan wash to prevent the scab disease which is very common on apples, and spray again as soon as the blossoms have formed. During the spring and summer watch for pests. The appearance of a cotton-wool-like substance on the branches in summer indicates that the trees have been attacked by the woolly aphid (American blight). Take precautions as set out in *Garden Pests*.

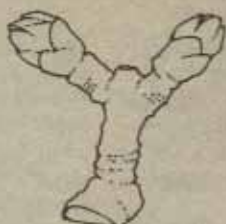
FRUIT

STAGES OF BUD DEVELOPMENT

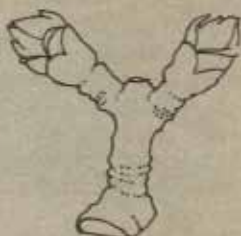
The various sprayings are timed according to these changes



Dormant



Breaking



Burst



Green cluster



Pink bud



Petal fall



Fruitlet

FRUIT

OVERCROPPING

Some varieties are liable to overcrop. To prevent the branches from breaking or cracking under the weight of fruit, thin out the apples with the thumb and forefinger or a pair of scissors in June when they are about the size of walnuts.

Keep dessert apples 4 in. apart on each branch and cooking varieties 8 in. apart. Remove the centre apple of each cluster (the king apple), which is never as well-shaped nor keeps as well as the other apples in the cluster.

It is sometimes inconvenient to pick all the apples in a large orchard at the right time, and it is then advisable to spray the trees with a hormone wash such as Anapal or Shellestone. If the stalks are thoroughly soaked, the apples will cling to the branches for about three weeks longer and no gale will blow them off.

STORING

Store apples in any room or shed where the temperature can be kept at about 40° F. (4° C.) and where the air can circulate between the fruits. Apples breathe

even after they have been picked, and if they lose moisture during storage they will shrivel.

A damp, clean shed is therefore preferable to a dry loft, and a cellar is recommended because it is below ground, where little external heat can penetrate. A good store should have double doors, a double roof interlined with asbestos wool, double walls, and a window with a wooden shutter fitted on the inside. This shutter can be closed to prevent a rise in or a loss of heat.

Wash down and clean the inside of the store in September.

To bring the inside temperature down to 40° F. (4° C.), open the double doors and window at night to admit the cold air, and close them early in the morning.

The store need not be fitted with slatted shelves. It is best to put the apples in half-bushel orchard trays. These trays have open sides so that air can circulate between the fruits, and the strips of wood forming the boxes have rounded edges so that there are no sharp corners to cut into the fruit skins.

Before bringing the apples into the



THINNING THE FRUIT

At the centre of each cluster of fruit is the king apple; it is often misshapen and does not keep well, and so should be the first to be removed. Any other deformed fruits should be removed when they are the size of walnuts.

FRUIT

store, leave them in their boxes outside overnight so that they are chilled; then put them in the store very early in the morning. Sometimes, with really late varieties like Bramley's Seedling, Newton Wonder and Lane's Prince Albert, it is advisable to leave the boxes of fruit outside for a week to allow the apples to "sweat" so that they will be drier when taken into the store. If possible, wrap each

fruit in a sheet of 10 in. square oiled wrapping-paper so that the carbon dioxide given off by the apple will not escape but will help it to keep well, and will delay the process of over-ripening. Stand the boxes containing the fruit on top of one another so that they take up as little space as possible.

Apples keep better if stored separately from pears.

RECOMMENDED VARIETIES

D = Dessert

C = Cooker

Arthur Turner (c), August to October. Dark green with slight orange flush. Flesh white, slightly acid. Resistant to scab. Mid-season flowering.

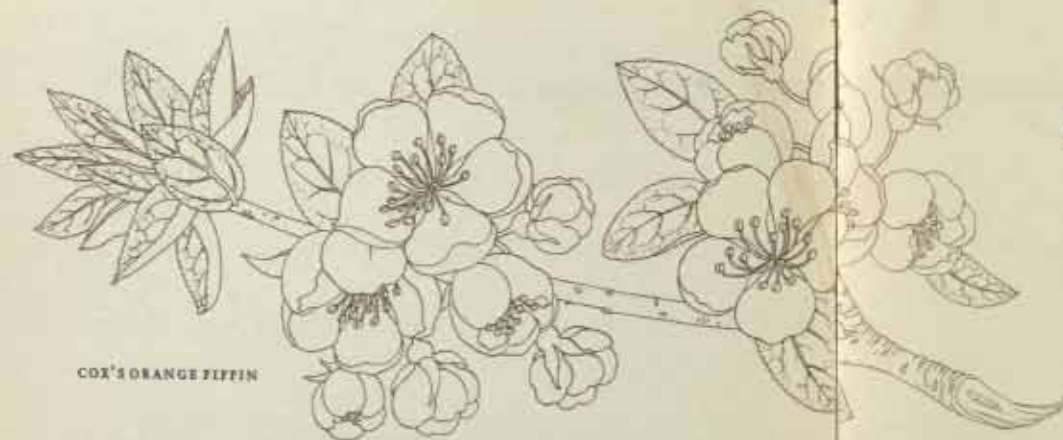
Blenheim Orange (D or C), November to December. Dull yellow with a slight flush. Nutty flavour. Susceptible to scab but resists mildew. Mid-season flowering.

Bramley's Seedling (c), November to April. Large, bright green, greasy skinned. Susceptible to scab. Mid-season flowering.

Charles Ross (D), October to November. Crisp, large yellowy-green with a red flush. Good cropper. Resistant to scab. Mid-season flowering.

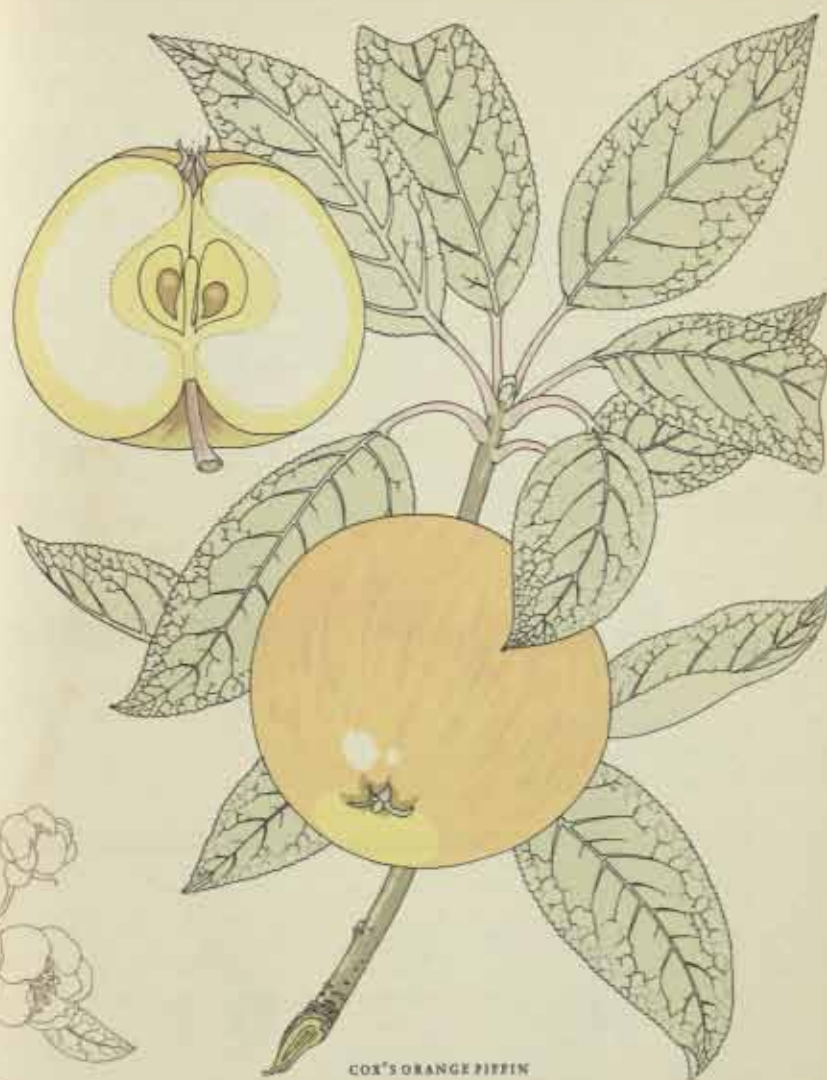
Cheddar Cross (D), August to early September. Slightly conical, yellow and red. Moderate grower. Early flowering.

Cox's Orange Pippin (D), November to January. Dull brown-red russet. Susceptible to scab and mildew. Difficult to grow, but is generally considered to be the finest apple. Mid-season flowering.



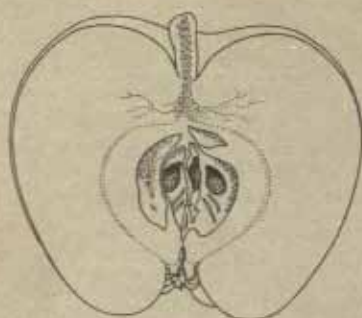
COX'S ORANGE PIPPIN

FRUIT

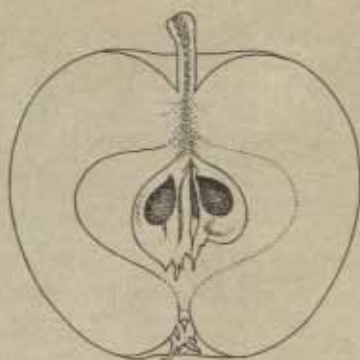


COX'S ORANGE PIPPIN

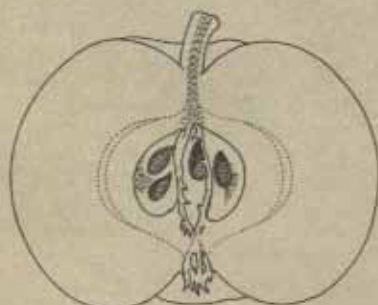
FRUIT



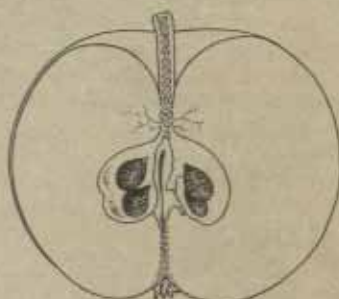
LORD DERBY



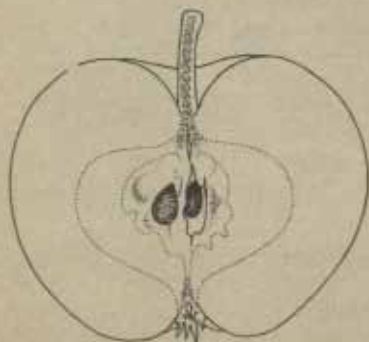
CRAWLEY BEAUTY



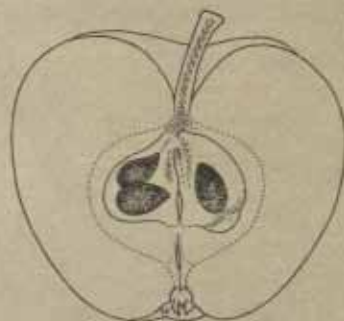
BRAMLEY'S SEEDLING



LAXTON'S FORTUNE



LAXTON'S SUPERB



RED MEIRA

Crawley Beauty (c), December to March. Green with red flush and stripes. Resistant to scab. Very late flowering.

Early Victoria (c), July to August. Greenish-yellow. Heavy cropper. Needs severe thinning. Mid-season flowering.

Edward VII (c), January to April. Round, dark green. Resistant to scab. Compact grower. Very late flowering.

Ellison's Orange (D), September to October. Dull green, streaked with red. Flavour somewhat like aniseed. Blossoms resistant to frost. Mid-season flowering.

Epicure (D), early September. Excellent flavour. Heavy cropper. Resistant to scab. Mid-season flowering.

Exeter Cross (D), mid-August. Crimson with yellow stripes. Flesh cream, often tinted pink. Mid-season flowering.

George Cave (D), mid-July and early August. Brilliant red and yellow. Firm white flesh. Early flowering.

Grenadier (c), August to September. Light green, large and flat. Crops heavily. Mid-season flowering.

Herring's Pippin (c), November to December. Large, dark red. Sometimes used as dessert. Late flowering.

James Grieve (D), September to October. Pale yellow with crimson flush and stripes. Flowers fairly resistant to frost. Mid-season flowering.

John Standish (D), December to April. Hardy, conical and red. Resistant to scab. Very good cropper. Vigorous grower. Mid-season flowering.

Lane's Prince Albert (c), October to April. Large, green with red flush and stripes. Spreading grower. Late flowering.

Laxton's Exquisite (D), September to October. Golden-yellow fruits streaked with red. Delicious flavour. Resistant to scab but liable to mildew. Mid-season flowering.

Laxton's Fortune (D), October to November. Conical, rosy-red, crisp and juicy. Spreading grower. Mid-season flowering.

Laxton's Superb (D), December to March. Greenish-yellow flushed red. Resistant to scab. Often becomes biennial bearer. Mid-season flowering.

Lord Derby (c), November to December. Dark green and conical. Susceptible to scab. Mid-season flowering.

Lord Lambourne (D), October to November. Orange-yellow with crimson flush and stripes. Crisp, white flesh. Crops well. Early flowering.

Merton Prolific (D), November to February. Red with dark crimson stripes. Resistant to scab. Moderate grower. Mid-season flowering.

Merton Worcester (D), September to October. Scarlet with russet and red stripes. Resistant to scab. Mid-season flowering.

Monarch (c), December to April. Round, rosy-flushed. Stores well. Mid-season flowering.

Newton Wonder (c), October to March. Yellow and scarlet. Resistant to scab. Stores well. Late flowering.

Red Melba (D), August. Red, soft and juicy. Resistant to scab. Moderate grower. Early flowering.

Rev. W. Wilks (c), October to November. Large, creamy-yellow, with slight flush. Resistant to scab but susceptible to canker. Early flowering.

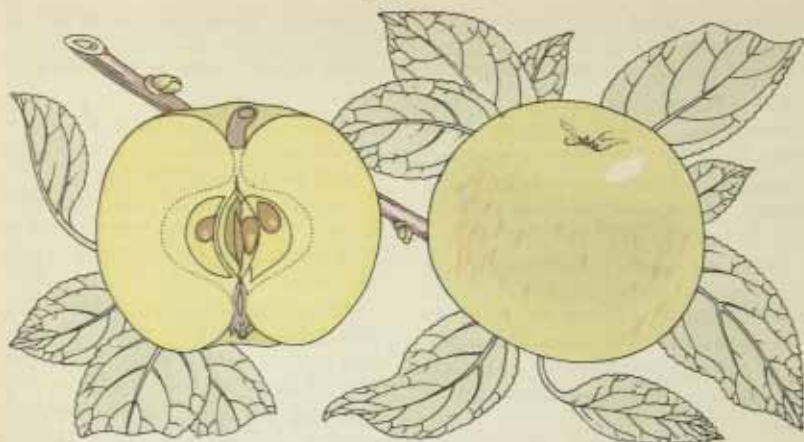
Ribston Pippin (D), November to January. Dull, greenish-yellow with russet. Liable to scab and canker. Needs hard pruning when young. Early flowering.

Scarlet Pimpernel (D), August to September. Crimson, crisp and juicy. Resistant to scab and canker. Early flowering.

Sunset (D), October to December. Golden-yellow with crimson flush. Delicious Cox-like flavour. Resistant to scab. Easy to grow. Early flowering.

Tydemans Early Worcester (D), August to September. Crimson, conical, delicious. Ripens 10 days earlier than Worcester Pearmain and has better flavour. Mid-season flowering.

FRUIT



LANE'S PRINCE ALBERT

Tydeman's Late Orange (D), January to April. Rich orange-red, juicy. Resistant to scab. Shrivels in store so pick very late. Mid-season flowering.

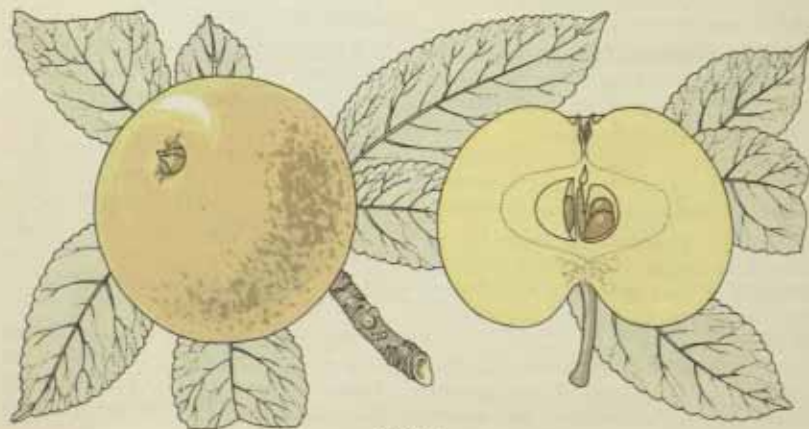
Upton Pyne (C), January to March. Conical, yellow, slightly striped with pink. Most beautiful apple blossom known. Early flowering.

Wagener (C), December to April. Yellowish-green with one red cheek. Easy to grow. Will keep until July. Resistant to

attack from pests and fungi. Mid-season flowering.

Winston (D), March to May. Highly coloured scarlet. Resistant to scab. Crops heavily and should be thinned early. Late flowering.

Worcester Pearmain (D), September to October. Conical, brilliant red. Liable to sawfly maggots but resistant to mildew. A tip bearer so not often used for cordons. Mid-season flowering.

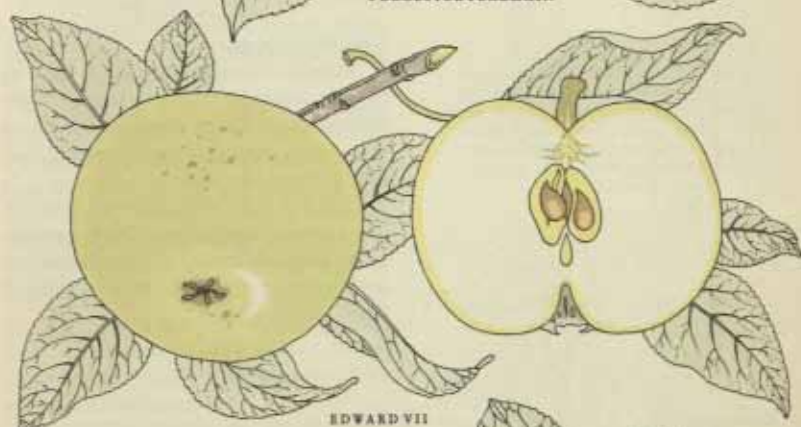


SUNSET

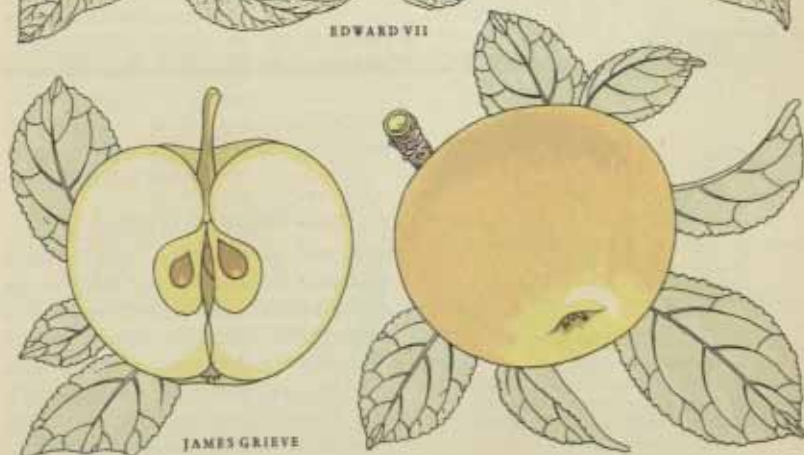
FRUIT



WORCESTER PEARMAIN



EDWARD VII



JAMES GRIEVE

Apricots

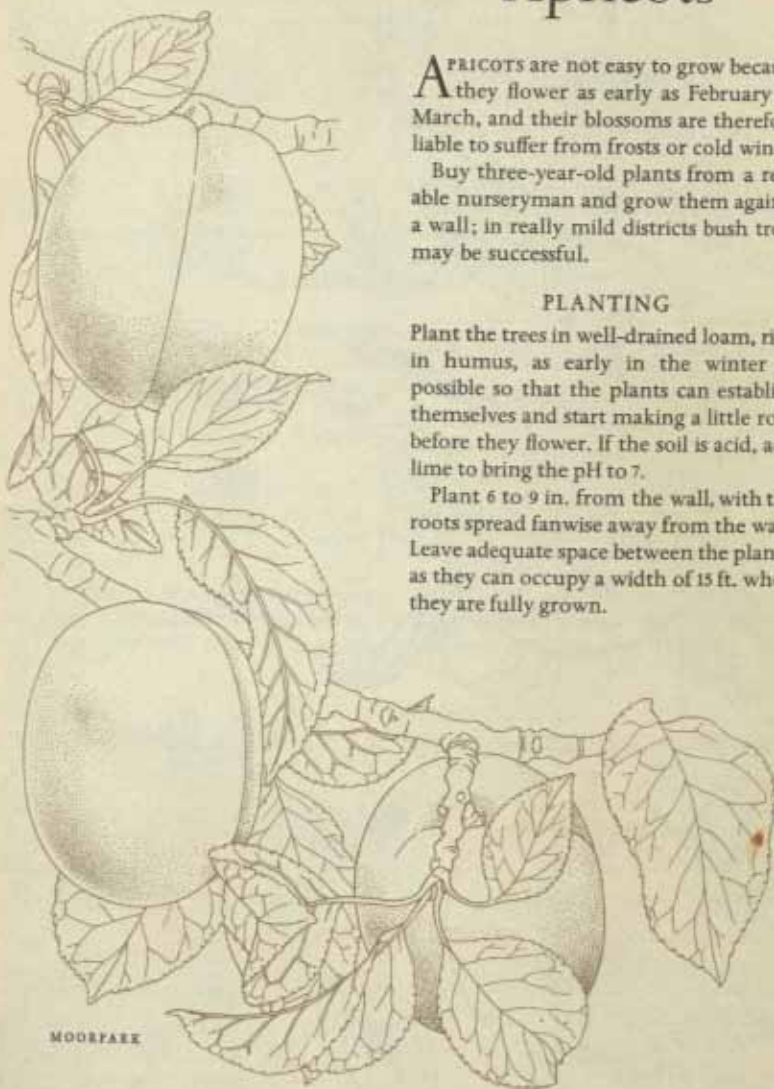
APRICOTS are not easy to grow because they flower as early as February or March, and their blossoms are therefore liable to suffer from frosts or cold winds.

Buy three-year-old plants from a reliable nurseryman and grow them against a wall; in really mild districts bush trees may be successful.

PLANTING

Plant the trees in well-drained loam, rich in humus, as early in the winter as possible so that the plants can establish themselves and start making a little root before they flower. If the soil is acid, add lime to bring the pH to 7.

Plant 6 to 9 in. from the wall, with the roots spread fanwise away from the wall. Leave adequate space between the plants, as they can occupy a width of 15 ft. when they are fully grown.



MOORFAK

Plant bush trees in the open 15 ft. apart, and keep them staked firmly until they are several years old and well established.

CULTIVATION

Borders at the foot of a wall where apricots are planted will need a good soaking when the fruits have developed to about the size of a hazel nut. Mulch the borders immediately afterwards so as to retain the moisture.

Trees grown as bushes may not require as much watering, except in dry seasons or if a dry spell coincides with the fruit swelling stage.

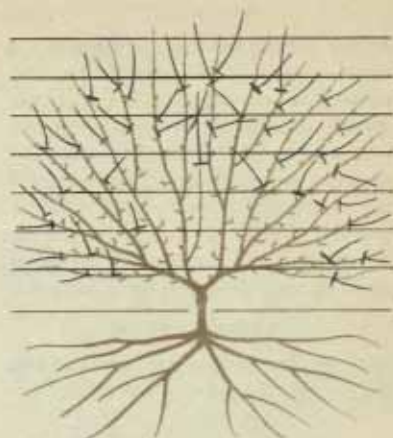
At flowering time protect the trees, even those grown against a wall, from hard frosts by covering them with layers of muslin or polythene.

When the amount of fruit set is heavy, some thinning may be necessary, but do not do this until some of the fruitlets have dropped. In the early summer all trees drop a certain number of their fruitlets, but if thinning is necessary, start by removing one fruit from each of any pairs that are growing and also remove any that are pushing against the wall. Then remove any others necessary in order to leave fruits spaced 4 in. apart all over the tree.

During the winter, tie the branches in to the wall and renew old ties. Use square-headed wall nails and firm string for this, and do not tie too tightly or the wood will be prevented from swelling in the spring.

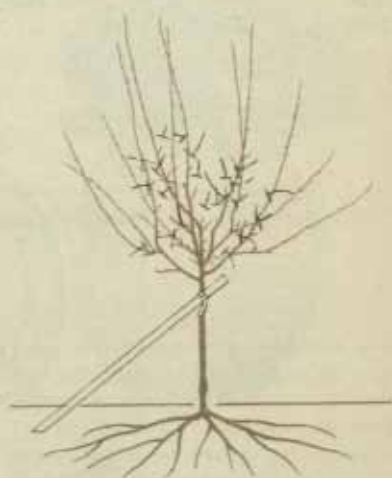
POLLINATION

Most varieties are self-fertile, but there are very few bees about at the time apricots flower. Therefore dust the fully open blossoms with a camel-hair brush to pollinate the flowers and so set the fruit. This method of fertilizing is doubly important if the trees are protected with muslin or polythene at flowering time.



FAN-TRAINED APRICOT

Plant the tree 6 to 9 in. from the wall, spreading the roots away from it. During the winter, tie branches into the wall, using string and square-headed nails. Light summer pruning may be necessary; cut back any laterals growing away from the wall.



BUSH TREES

Apricot bushes require diagonal staking until, after several years, they become firmly established. Only light summer pruning is necessary.

FRUIT

PRUNING

As the apricot flowers on two-year-old wood as well as on older shoots, and sometimes even on old spurs, there are several schools of thought about the best pruning method, but it is generally agreed that quite a good proportion of old wood can be left. Light summer pruning should be done, the laterals being tipped, and any branches or laterals growing away from the wall removed.

PROPAGATION

Apricots are propagated by budding named varieties on to plum stocks. For

large trees, use the vigorous plum stock, Brompton. For small trees, the plum stock St. Julien A (East Malling) is recommended, although this root stock may be difficult to obtain. An alternative is Common Mussel.

HARVESTING

Apricots need careful picking as the stalks tear out easily. Leave the fruits on the trees until they are really ripe—usually at the end of July.

If wasps are prevalent and likely to spoil the fruit, pick a day or two earlier and ripen off in a warm window.

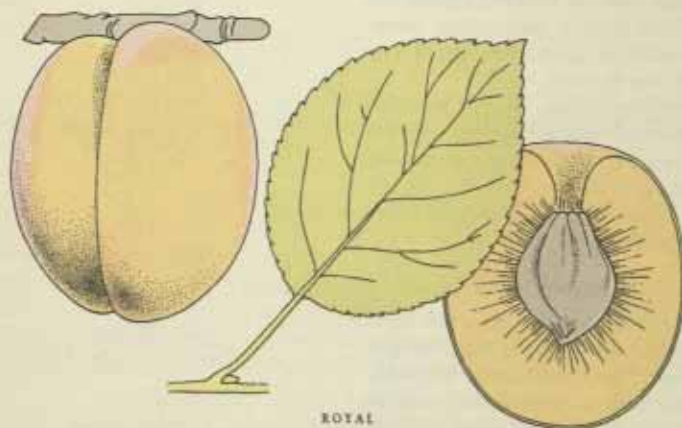
RECOMMENDED VARIETIES

Hemskerk, end of July to early August. Orange-yellow, blotched red. Good flavour for eating.

Moorpark, late August to early September. Brown, orange-yellow, largish. Most widely grown variety. Growth may be strong on clay soils.

New Large Early, end of July to early August. Orange, yellow and red. Fine flavour. An especially good variety for bottling.

Royal, early August. Orange-red, spotted with purple. Oval. Good variety for dessert.





BEDFORD GIANT

Blackberries

CULTIVATED blackberries are very much larger and far more luscious than the wild varieties.

They need little spraying and can be planted in rough corners of the garden or be allowed to scramble over a fence or garden shed.

They will grow in any soil, although if grown in a sunbaked spot the fruits will be rather dry and hard.

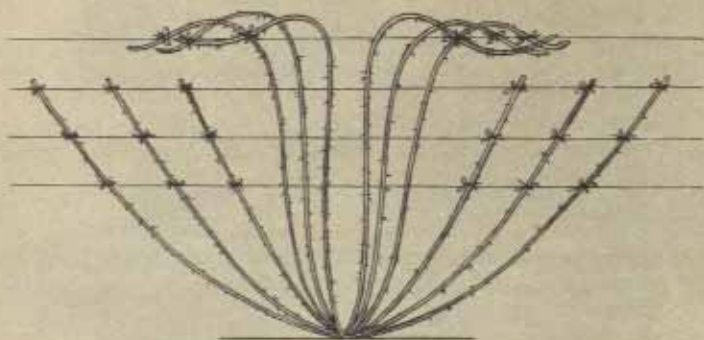
Buy one-year-old rooted layers.

PLANTING

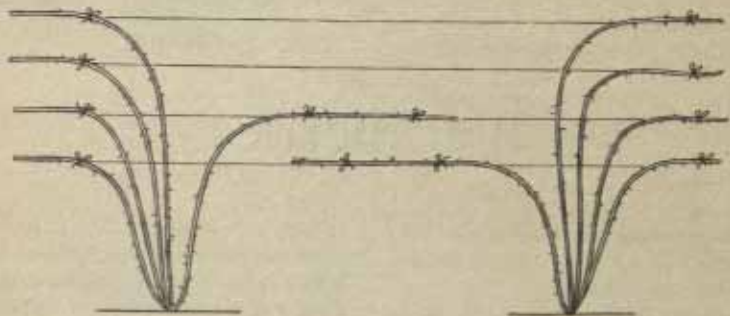
Plant any time between October and March. If planting is to be done in rows, allow 6 ft. between the rows to permit easy access. Erect strong posts at the ends of each row and stretch galvanized wires along the rows from one post to the other at intervals of 1 ft.—the lowest 3 ft. and the highest 6 ft. from the ground.

Put the plants in the rows from 8 to 12 ft. apart according to the method of

FAN TRAINING BLACKBERRIES



As cane fruits are liable to disease, fan training is valuable because it allows young wood to grow above old, fruiting wood where it will not be attacked by falling disease spores. After harvesting, cut down the old canes and retie the young wood in its place, where it will fruit the following season; the new growth will then be tied in above it.



An alternative method of training—which avoids the need for retying canes at the end of the season—is to train young wood to one side of the plant and fruiting wood to the other. Here, the new wood is trained between two plants; the next year's growth will be trained outward.

training to be followed and the strength of the variety. Particularly rampant varieties, such as Himalaya Giant, should be planted up to 15 ft. apart.

TRAINING

Fan training is the most usual method adopted for blackberries that are grown in rows, or on a fence or shed.

Arrange the fruiting canes in the form of a fan. This is a job for two people, because the thorny canes sway about and need to be firmly held by one person while the other makes the ties, first round the wires and then round the canes.

Tie in six or seven canes and remove the remainder, and as new canes grow during the summer loop them together or tie them roughly straight up the centre of the fan, and then twist them round the top wires.

Immediately after harvesting, cut down the old canes and tie new ones in position to replace them. This will allow the new canes to ripen better and to withstand the winter.

A more simplified form of training is to loop three or four canes together and tie them to the supports. This saves labour, provided the new canes are kept together, otherwise they will need to be disentangled late in the summer, which is almost impossible.

Always fasten the new wood higher than the old to avoid any disease spores falling from the old wood on to the new. This, except in wet seasons, is usually sufficient control for cane spot, a disease which sometimes causes trouble. If there are small purple-rimmed sunken patches on the canes in May, spray them with a colloidal copper spray.

Another method, quite commonly used, is to fan-train the canes, fastening the old ones to the right, and the new ones to the left. When the old ones are cut out, the next year's growth replaces

them so that in the second year the new canes are to the right and the old ones to the left. This method saves handling the canes twice in one season.

CULTIVATION

As the roots grow very near the surface, little cultivation of the ground can be done apart from hoeing to keep down perennial weeds during the summer. Put a mulch of rotted compost or sedge peat along the rows in June, and if any of it still remains in the autumn, lightly fork it in after tidying and fastening in the new canes.

FEEDING

In the spring after planting, top dress with superphosphate at the rate of 2 oz. per sq. yd. to strengthen the root growth. To help cane growth, use a nitrogen fertilizer in addition at the rate of $\frac{1}{2}$ oz. per sq. yd. Potash is good for the berries, particularly if the soil is light.

PROPAGATION

Blackberries are propagated by tip-layering or tip-rooting in July and August.

PROPAGATION BY TIP-LAYERING



Plant the end of a growing shoot in a pot buried beside the plant. It will make new roots and can be severed and planted out in the autumn or spring

FRUIT

Sever the rooted layers and plant them out the following autumn or spring.

PRUNING

As blackberries fruit on laterals from buds on one-year-old canes, prune out the old canes immediately after fruiting to allow the young canes to ripen.

Sometimes new canes grow from two-year-old wood, so the base of the older

canes can be retained if the young canes are to be used in training.

HARVESTING

Blackberries are jet-black in colour when ready for harvesting. They have a long cropping season, thus avoiding gluts and consequent waste. Pick all fruit when it is ripe even if it is not required, as this helps the later fruit to ripen.

RECOMMENDED VARIETIES

Bedford Giant, late July to August. Large, sweet and juicy. Strong grower.

Himalaya Giant, August to September. Large, dull. Plant 15 ft. apart.

Marion (a new American introduction), August. Bright black, superior flavour.

Extremely heavy cropper.

Merton Early, August. Shiny, very delicious. Plant 6 ft. apart.

Merton Thornless, mid-August to end of September. Large fruit. No prickles on the canes.



HIMALAYA GIANT



WELLINGTON XXX

Black Currants

BLACK CURRANTS are important because they contain more Vitamin C than any other British fruit. They prefer a heavy soil and will put up with bad drainage conditions better than any other fruit.

TYPE AND AGE OF BUSHES

It is important to buy clean bushes that have been given the Ministry of Agriculture's certificate of health. Buy strong-growing two-year-olds carrying from two to four young branches.

The bushes may last for 20 years provided the big bud mite is controlled and the virus known as reversion kept away.

PLANTING

Plant on an open site in November or early December if possible. Planting can

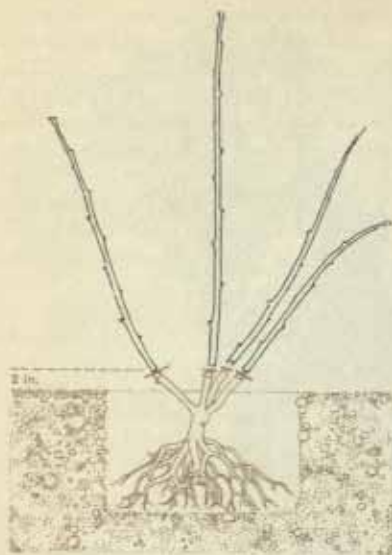
be done later than this—in fact, right through to late February, but by this time the soil is cold and the roots are not able to make an early start. Plant in rows 6 ft. apart, allowing 5 ft. between the bushes. This method of planting gives the heaviest yields per acre of ground.

If the soil is heavy clay, after planting apply a top dressing of well-rotted compost or dung at the rate of one barrow-load to a 6-yd. row. With light or sandy soils dig the manure in during October or November when the ground is being prepared and give a mulch in spring.

FEEDING

In the May following planting, cover the whole of the ground where the black currants are growing with old straw up to 1 ft. deep, or sedge peat 2 in. deep. This

FRUIT



PLANTING AND FIRST PRUNING
In November plant black currants firmly and deeply. The following February, cut all shoots to within 2 in. of the ground



PRUNING
During the second and third years little pruning will be necessary. For the next three years remove about a third of the bush each winter; as black currant bushes produce most of their fruit on young wood, prune the oldest wood

will obviate cultivation which might damage the shallow-rooting bushes and will, at the same time, conserve moisture. Do not remove the straw in the winter, but if much of it has been pulled into the ground by worms, add more straw in the spring to maintain the depth of 1 ft.

Each year, about the middle of February, apply hoof and horn meal all over the straw or sedge peat at the rate of 3 oz. per sq. yd. Distribute this evenly and let it be washed in by the rain. If the soil is light and sandy, apply wood ash as well at the rate of 8 oz. per sq. yd. or sulphate of potash at 2 oz. per sq. yd. every three or four years.

PRUNING

If the bushes are planted in November, cut down to within 2 in. of the ground in February. When planted later than November, prune in March. The one-year-old healthy shoots that are cut off can be used as cuttings for raising new bushes.

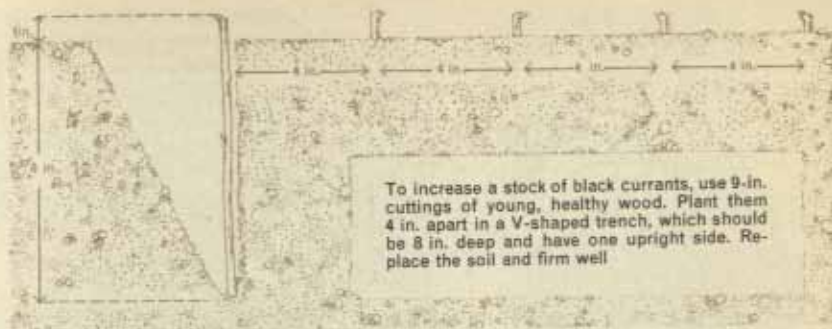
As the bulk of the fruit is borne on wood produced the previous year, the general rule is to cut out the old wood and retain the new. Very little pruning, if any, is necessary in the second and third years, but thereafter remove one-third of each bush each winter, immediately the leaves have fallen. Cut out the oldest wood, starting with branches that are drooping down to the soil. Then remove one in the centre of the bush. After the sixth year, the pruning may be reduced once more by cutting out only, say, one-sixth of each bush, keeping the bushes upright and easy to pick.

Black currants can be cut at any point, for there seem to be numerous tiny buds which break out into growth quite happily when encouraged to do so.

PROPAGATION

It is quite easy to increase a stock of black currants by using 9-in. long cuttings

FRUIT



PROPAGATION BY CUTTINGS

of young, healthy wood. Prepare these cuttings by making a cut with a sharp knife just below a bud at the base of each cutting.

Dig a V-shaped trench 8 in. deep with one upright side. Lay the cuttings upright 4 in. apart against this straight side, leaving 1 in. of each cutting peeping above soil level.

Put the soil back into the trench and tread down well.

Cuttings that are inserted in November or December should be left in position until the following autumn when the plants may be lifted and planted out where they are to grow.

POLLINATION

Wild bees, small flies and other insects are useful for pollinating black currants in cool weather, and hive bees are useful in warm weather.

The flowers can be protected from wind if the bushes are tied into the shape of a cone during the spring.

HARVESTING

Black currants start to turn black a week or so before they are ripe. Be sure to wait until they are fully ripe before harvesting, but always pick the berries on their stalks and, if possible, on a dry day, before they begin to split.

RECOMMENDED VARIETIES

Amos Black, very late. Large, delicious. Compact-growing bush.

Baldwin (Hill Top Strain), late. Thick-skinned, moderate size. High Vitamin C content. Moderately vigorous.

Blacksmith, mid-season. Heavy cropper, especially on light soil, good quality.

Boskoop Giant, very early. Sweet, tender skin.

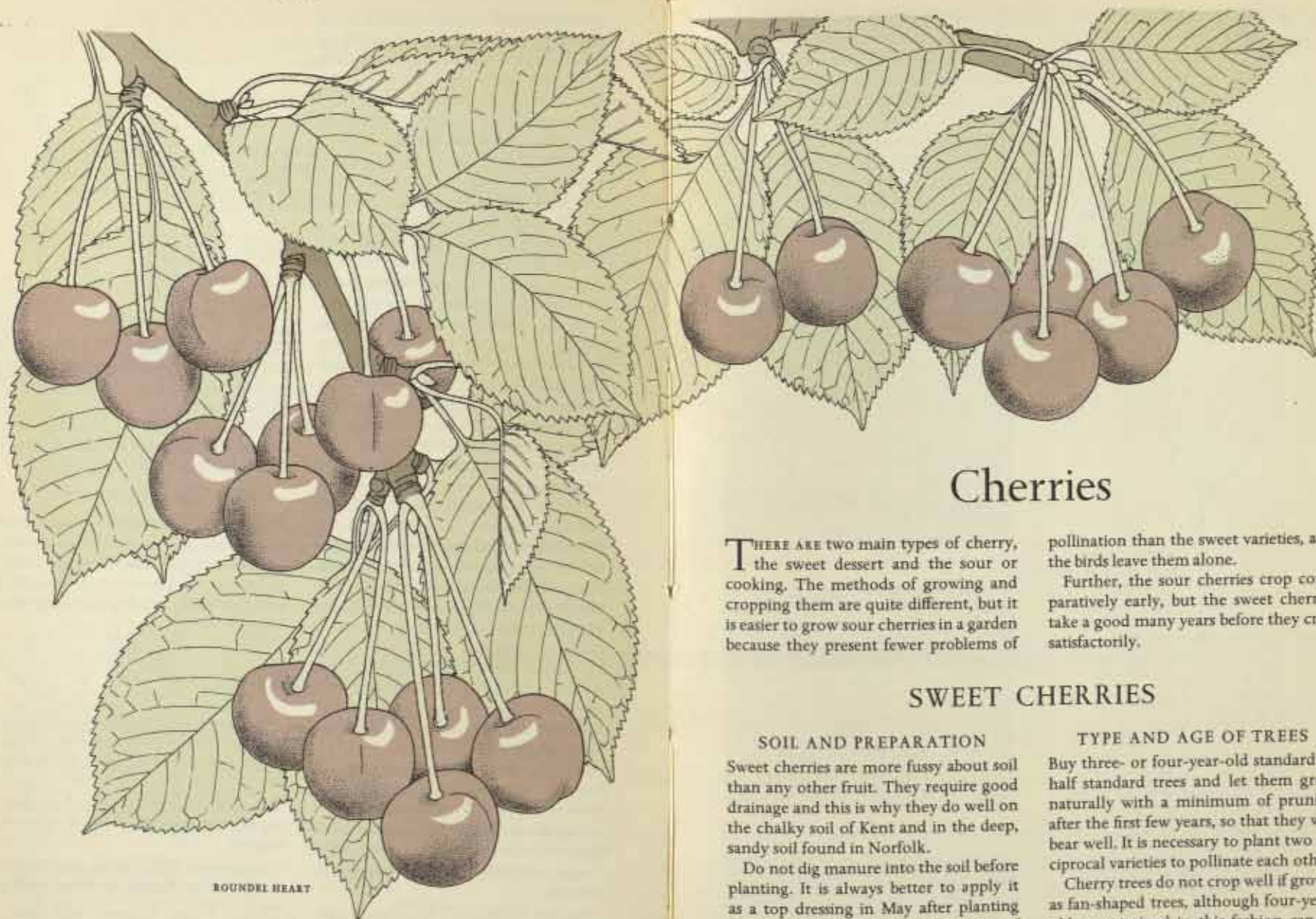
Daniel's September, very late. Large, heavy cropper. Suffers from yellowing of leaves.

Malvern Cross, late. Moderately large. Compact trusses. This variety is a vigorous, upright grower, and a good cropper.

Mendip Cross, early. Large. Long trusses. Slightly spreading bush. Very heavy cropper.

Wellington XXX, mid-season. Heavy, good quality. Strong grower, sulphur shy.

Westwick Choice, late. Sweet. Medium trusses. Vigorous.



ROUNDLE HEART

Cherries

THERE ARE two main types of cherry, the sweet dessert and the sour or cooking. The methods of growing and cropping them are quite different, but it is easier to grow sour cherries in a garden because they present fewer problems of

pollination than the sweet varieties, and the birds leave them alone.

Further, the sour cherries crop comparatively early, but the sweet cherries take a good many years before they crop satisfactorily.

SWEET CHERRIES

SOIL AND PREPARATION

Sweet cherries are more fussy about soil than any other fruit. They require good drainage and this is why they do well on the chalky soil of Kent and in the deep, sandy soil found in Norfolk.

Do not dig manure into the soil before planting. It is always better to apply it as a top dressing in May after planting or, alternatively, to use a mulch of sedge peat 1 in. deep.

TYPE AND AGE OF TREES

Buy three- or four-year-old standard or half standard trees and let them grow naturally with a minimum of pruning after the first few years, so that they will bear well. It is necessary to plant two reciprocal varieties to pollinate each other.

Cherry trees do not crop well if grown as fan-shaped trees, although four-year-old trees trained in this fashion can be bought from nurserymen.

PLANTING AND STAKING

Cherry trees can be planted as late as February, but it is better to plant in November if possible, so that the roots have a chance of settling down before the winter.

Standard trees need to be planted 40 ft. square, for they will take up this space when they mature, and are therefore not suitable for a small garden.

Plant fan-shaped trees 8 in. from a wall



**STANDARD
TREE**

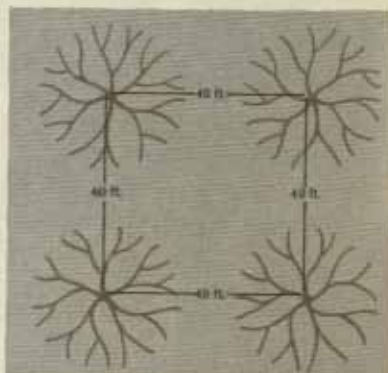
Not suitable for a small garden, as trees should be planted 40 ft. apart



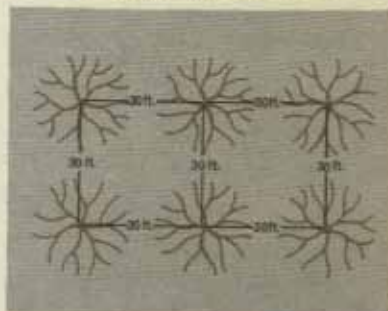
**HALF
STANDARD**
Plant on grass to avoid disturbance



FAN SHAPED
Suitable for a small garden



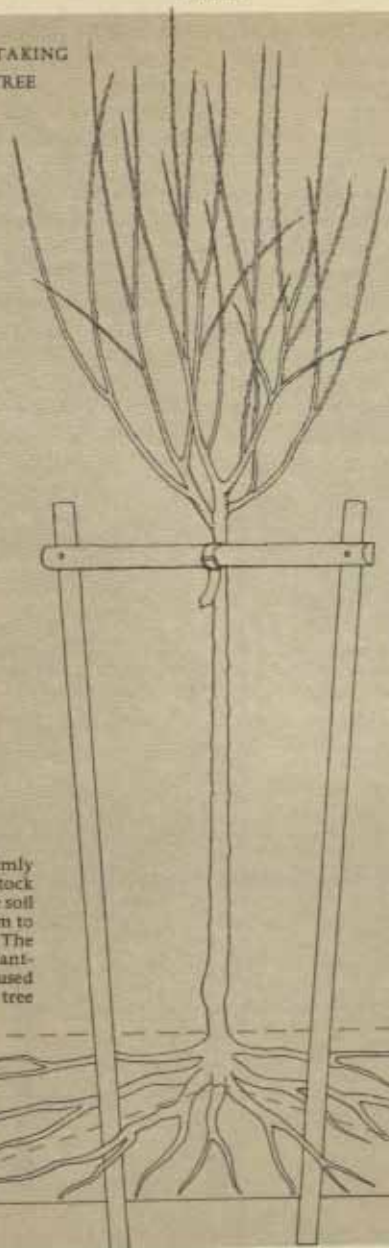
Planting distances for standards



Planting distances for half standards



Planting distances for fan-shaped trees

PLANTING AND STAKING
A STANDARD TREE

Drive in the supporting stakes 1½ ft. apart so that their tops slope outward slightly, and join them with a cross-piece near the top

Plant the tree firmly with the union of stock and scion just above soil level, and tie the stem to the cross-piece. The same method of planting and staking is used for a half-standard tree

or fence and 20 ft. apart. Fix tightly-stretched wires horizontally along the wall at 2-ft. intervals, and as the branches grow, tie them to these wires.

FEEDING

As it is important not to disturb the roots of cherries, plant the standards in a grass sward and cut the grass regularly as if it were a lawn. Do not collect the grass cuttings but let them fall back on to the soil. For the first three years keep a circle 3 ft. across round each tree free from grass by regular hoeing. This will prevent the young roots being robbed of moisture. Every year in February apply bone meal at 4 to 5 oz. per sq. yd. all over the grass where the cherries are growing.

It is important to keep fan-shaped trees growing slowly. Therefore it is not advisable to mulch them with well-rotted dung, as this may postpone cropping. A mulch of sedge peat will do good if it is put round each tree in a semicircle 4 ft.

across and 1 in. deep. Such a mulch will protect the roots of the trees in a dry summer.

If the soil is acid, apply carbonate of lime in the autumn round the trees at the rate of 8 oz. per sq. yd. every four years. Put this over the surface of the soil or mulch and let it be washed in gradually.

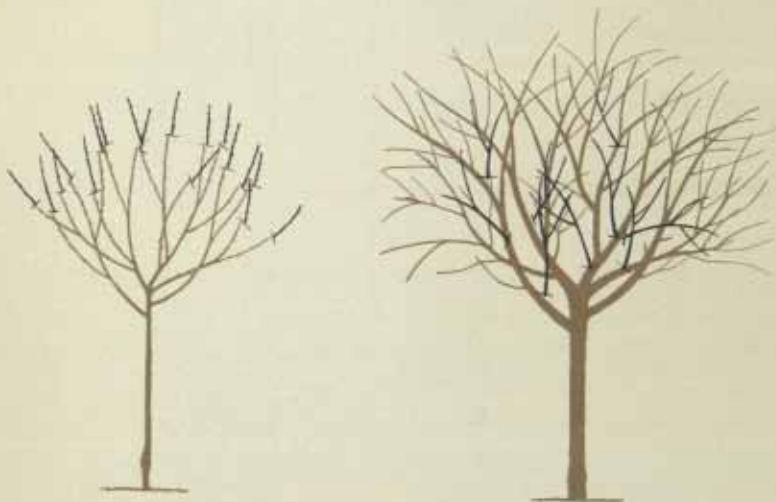
POLLINATION

As all varieties of sweet cherry are self-sterile, care should be taken to ensure that the right pollinators are planted.

PRUNING STANDARD TREES

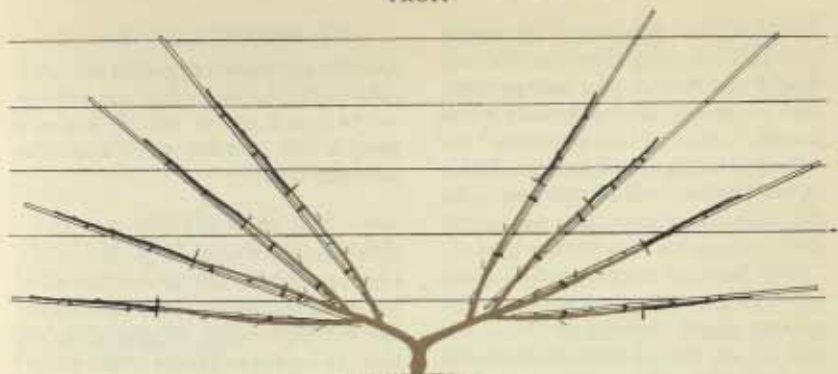
During the winter after planting standard trees, cut back the leaders at the end of every branch by half, to a point just above a bud. Continue this hard pruning for two years more, by which time a good strong framework should have been formed.

After this the cherry tree may be allowed to grow freely with just a small



WINTER PRUNING STANDARDS

For the first four years, prune the leaders by half. Subsequent pruning (right) is only to prevent branches crossing and rubbing and to give better access for sunlight and air



TRAINING A FAN-SHAPED TREE

During the first two years, prune back new growth by half in order to produce side growths. Train them along bamboo canes to make the shape of the tree

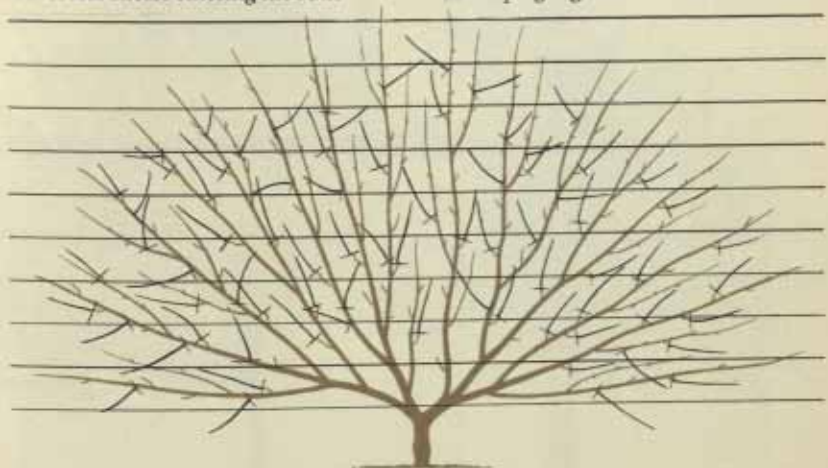
branch here and there being cut out each winter to prevent crossing and rubbing, and to let light and air into the centre of the tree.

If any large saw-cuts have to be made later on in the tree's life, clean them up afterwards with a sharp knife and then paint them over with thick white lead paint. This will prevent the spores of silver leaf disease entering the cuts.

PRUNING FAN-SHAPED TREES

For the first two years after planting fan-shaped trees, cut back by half the one-year-old growths, then allow the growths to develop as naturally as possible, making sure that the branches are spaced out evenly.

Summer pruning is necessary in July and August, when the side growths developing against the wall or fence



SUMMER PRUNING

In July and August, cut out all side growths behind the tree. Prune also any growths whose strength and position would make it impossible to train them along the wall

should be cut right out. Very strong growths developing away from the wall should also be cut out, because their strength and position will make it impossible to tie them back in winter.

Weak growths should be pruned back to within three buds of their base, with the exception of those that are needed for tying into the wires in the winter.

If the branches tend to produce numerous strong side growths, bend the growths round carefully in the winter and tie the tips of the shoots to the branches. This will check the flow of sap up the circle of growth the following spring and fruit buds will form.

The strong lateral shoots should also be pruned back to a point just above the fruit buds to check excessive growth.

Trees that have been shoot-circled in this way may look peculiar for one season, but the method is effective.

PROPAGATION

Cherries are budded or grafted on cherry root stocks. Suckers from wild cherries can be used as stocks, but the best root stock is the Mazzard stock known as Malling F.12/1.

SPRAYING

Spray the trees each December with a 5 per cent solution of tar distillate wash. In March cut off any dead or withered tips and burn them, because these are likely to have been caused by the withered tip disease coupled with the brown-rot fungus.

HARVESTING

Birds present a big problem in the growing of sweet cherries, and it may be necessary to cover the branches with fish netting during ripening time.

Pick the cherries the moment they are ripe and not before.

RECOMMENDED VARIETIES

There is a very large number of varieties of sweet cherries but the following are the most important.

Amber Heart, mid-July. Pale yellow with red cheek. Pollinated by Napoleon or Florence.

Bigarreau de Mezel, early July. Large deep reddish-black, excellent flavour. Pollinated by Florence.

Bigarreau Napoleon, late July. Large, dark red, firm and sweet. Pollinated by Roundel and Florence.

Bigarreau de Schrecken, late June. Shiny black, excellent flavour. Pollinated by Early Rivers or Black Martell.

Black Eagle, mid-July. Purplish-black, sweet, juicy. Pollinated by Bigarreau de Schrecken.

Bradbourne Black, mid-July to August. Large, very dark red, firm. Pollinated by Napoleon or Merton Favourite.

Early Rivers, late June. Crimson-black,

deliciously flavoured. Pollinated by Merton Heart or Bigarreau de Schrecken.

Elton Heart, early July. Pale red, good fruit. Upright grower. Pollinated by Merton Glory.

Emperor Francis, August. Mahogany coloured. Pollinated by Merton Premier.

Florence, early August. Yellow and crimson, juicy. Vigorous grower. Pollinated by Napoleon or Governor Wood.

Frogmore Early, end of June. Pale yellow, red-flushed, juicy. Upright grower. Pollinated by Merton Glory.

Governor Wood, early July. Large yellow and red, juicy. Beautiful blossoms, flowers late. Pollinated by Napoleon or Florence.

Knight's Early Black, early June. Deep red to black. Moderate grower. Pollinated by Merton Glory.

Merton Bigarreau, late July. Black, rich flavoured. Heavy cropper. Pollinated by Early Rivers or Merton Heart.

SHAPES OF CHERRY TREES



ROUND EL HEART



MERTON HEART



KNIGHT'S EARLY BLACK



EARLY RIVERS

FRUIT

Merton Bounty, early July. Crimson to black. Pollinated by Merton Premier or Florence.

Merton Favourite, mid-July. Heart-shaped, crimson to black. Heavy cropper. Pollinated by Early Rivers or Bradbourne Black.

Merton Glory, mid-June. Yellow spread with crimson. Largest fruit. Pollinated by Early Rivers or Merton Bounty.

Merton Heart, late June. Crimson to black, heart-shaped. Upright grower. Pollinated by Early Rivers or Bradbourne Black.

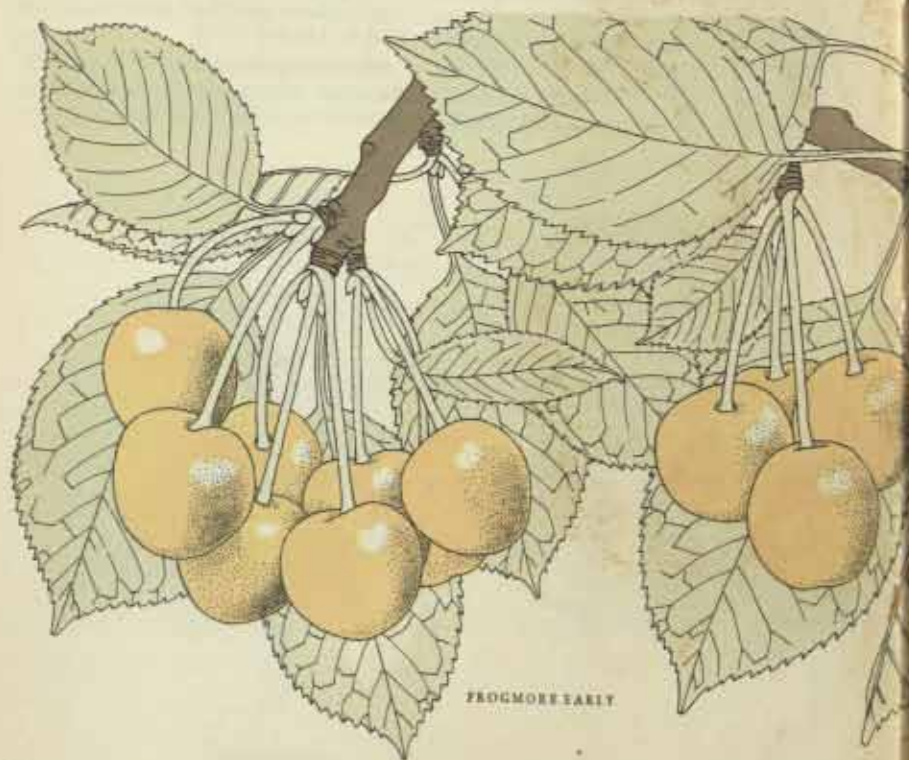
Merton Premier, early July. Firm and sweet. Mahogany, heart-shaped. Pollinated by Early Rivers or Merton Bounty.

Noir de Guben, July. Large black, firm flesh. Pollinated by Merton Premier.

Peggy Rivers, early July. Large, pale red, luscious. Pollinated by Merton Glory.

Roundel Heart, early July. Large, dark red, juicy. Flowers late. Pollinated by Napoleon or Bradbourne Black.

Waterloo, late June to early July. Sweet, deep crimson. Pollinated by Florence or Early Rivers.



FROGMORE EARLY

FRUIT



WATERLOO

SOUR OR COOKING CHERRIES

Sour or cooking cherries are usually grown for making jam or cherry brandy. They will grow well when cultivated as fan-shaped trees on a north wall, especially the variety Morello.

ROOT STOCKS

The sour cherry is usually budded on the Mazzard stock known as Malling F.12/1. The yellow Morello does well grown on its own roots.

PLANTING

Buy two-year-old bush trees or three- to four-year-old fan-trained trees. Sour cherries will grow on the same type of

soil as sweet cherries but on the whole are less particular, although they are best planted on cultivated soil rather than in grass.

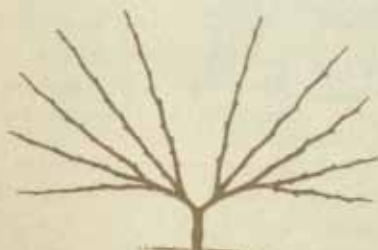
Plant in November while the soil is still warm. Bush trees should be put in 18 ft. square and fan-trained trees 15 ft. apart against a north wall or fence.

FEEDING

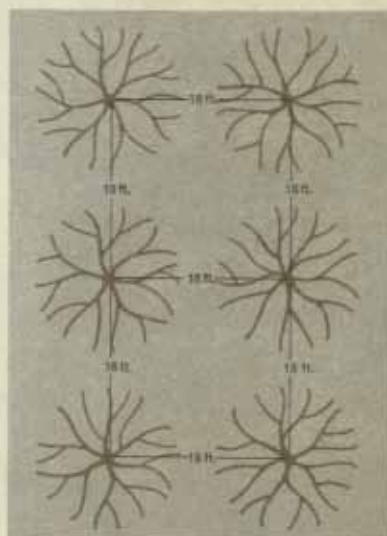
It is necessary to feed cooking cherries more than sweet cherries because the fruit is borne on the newest wood. Put a nest of straw 4 ft. wide all round each tree. Sprinkle fish fertilizer over the straw at the rate of 3 oz. per sq. yd. in February.



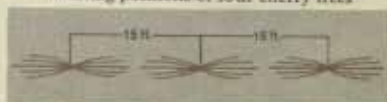
Bush tree



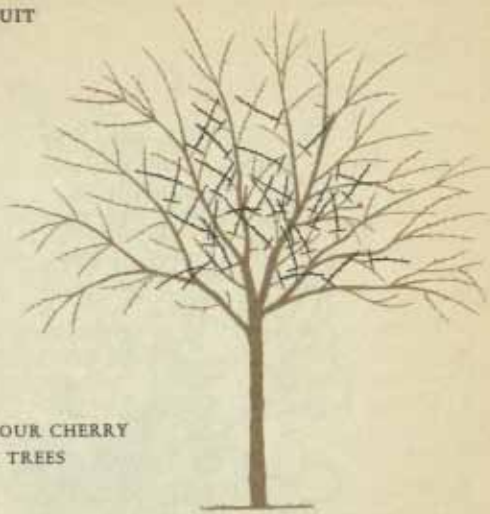
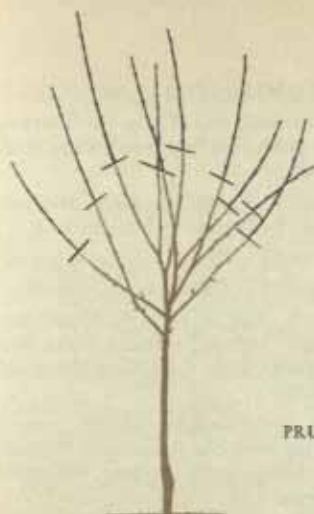
Fan-trained tree



Planting positions of sour cherry trees



FRUIT



PRUNING SOUR CHERRY
BUSH TREES

To encourage strong branches on young trees, cut back the leaders by half each year for the first three or four years. The young growths that fill up the centres of older bushes (right) should be pruned in February

If it is not possible to mulch the soil in this way, water the trees thoroughly in dry summers, starting about the second week in June and continuing until picking time. It may be necessary to give as much as ten gallons of water to each tree at each watering.

PRUNING

Because the fruit is borne on long lengths of thin wood produced the previous season, it is important to cut out the old wood and retain the new.

For the first three or four years, cut back the leaders on bush trees by about half to form good strong branches. Each year after this period, cut back a quarter of the older wood as the buds swell in spring.

In addition, each February, prune back young growths that are tending to fill up the centre of the bushes to a point just above what is called a single bud, because double buds are fruit buds and single are wood buds.

In the case of Morello cherry bushes that have been neglected for a number of years, saw back the branches by about half, then clean up the saw cuts and paint them with a thick white lead paint. This will cause the production of much young wood, which can be cut the following year.

Very vigorous Morello cherries should be pruned exactly as peach trees. (See page 754.)

In the case of fan-trained trees, after the first four years it is necessary to cut away a good deal of the older wood and to tie in the new.

HARVESTING

Provided their skins do not split, sour or cooking cherries can be left on the trees until they are fully ripe.

As the stalks are firmly attached to the branches, cut the cherries off with a pair of scissors, as picking in the normal way may tear the bark and increase the risk of brown rot infection.

RECOMMENDED VARIETIES

Flemish Red, end of July. Fairly strong grower producing bright red, sharp fruit. Self-fertile.

Kentish Red, mid-July. Juicy, deep red, acid fruit. Pollinated by Flemish Red.

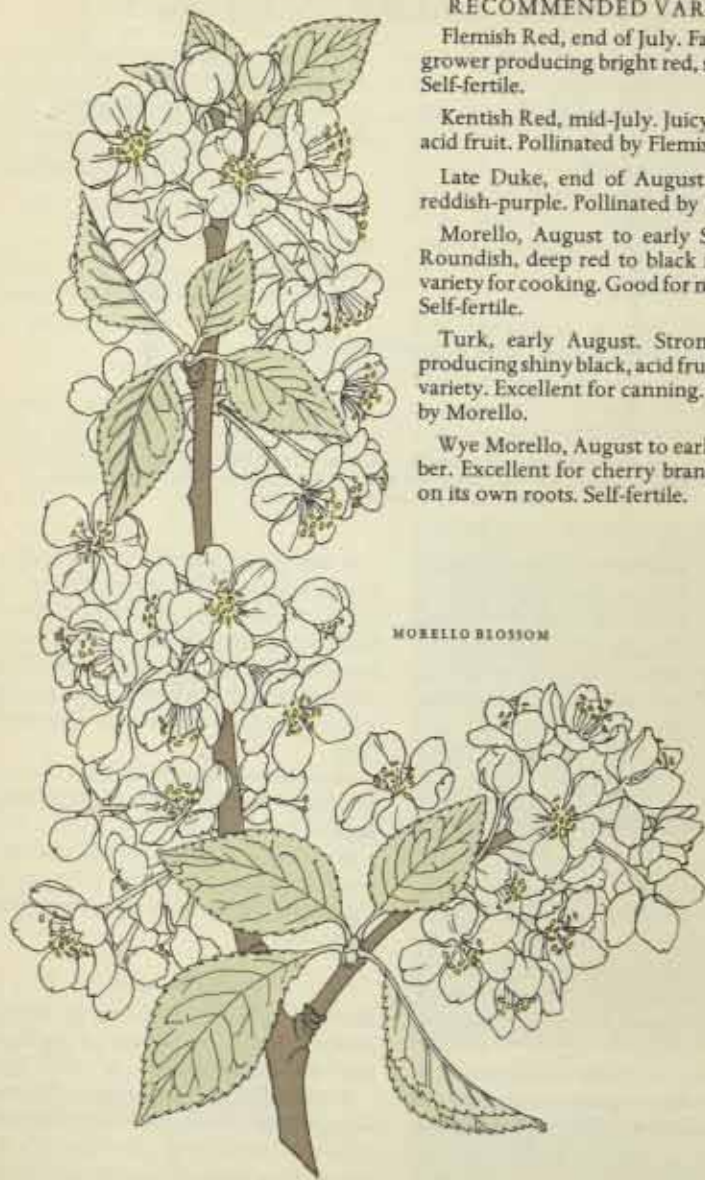
Late Duke, end of August. Sub-acid, reddish-purple. Pollinated by Morello.

Morello, August to early September. Roundish, deep red to black fruits. Best variety for cooking. Good for north walls. Self-fertile.

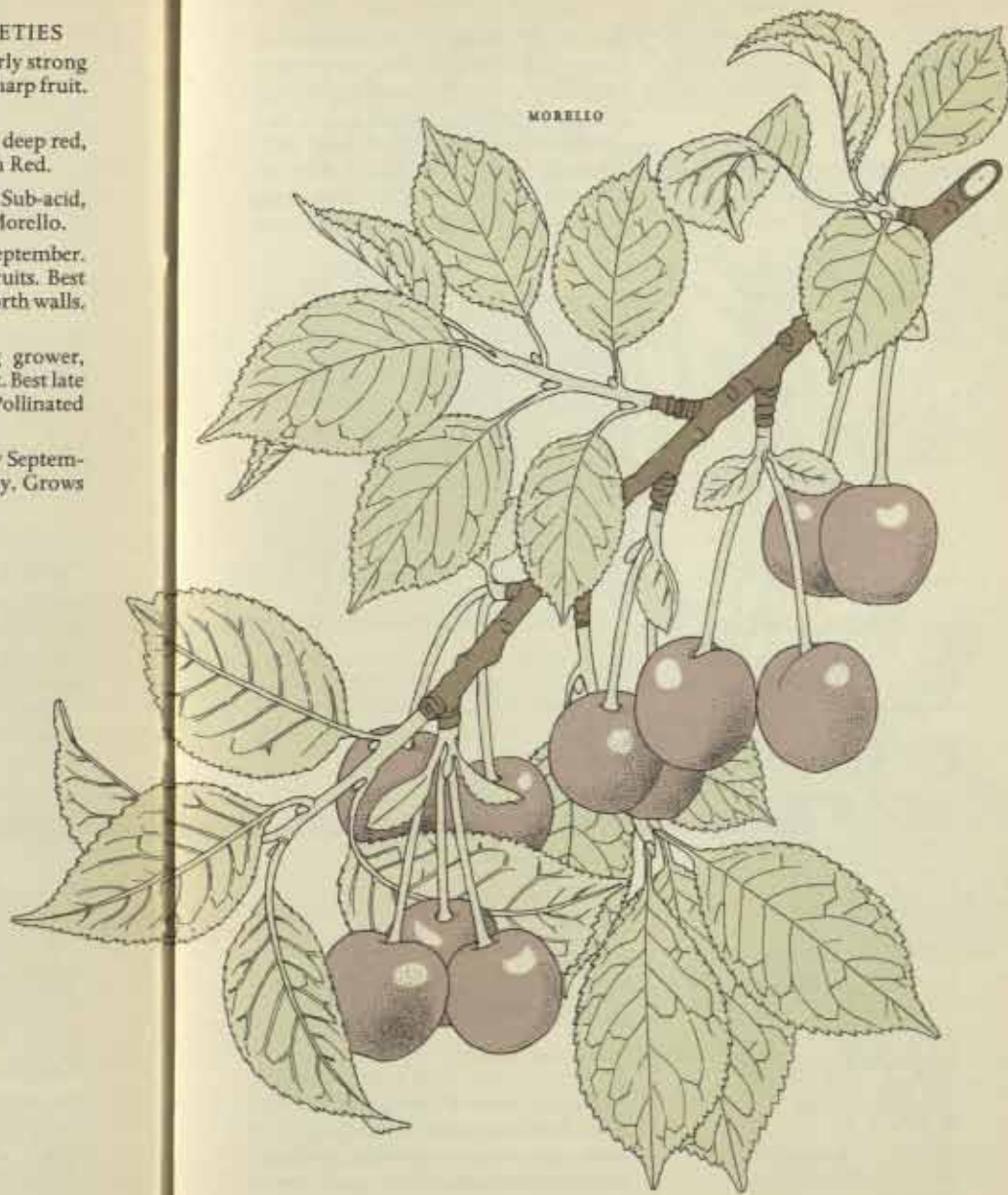
Turk, early August. Strong grower, producing shiny black, acid fruit. Best late variety. Excellent for canning. Pollinated by Morello.

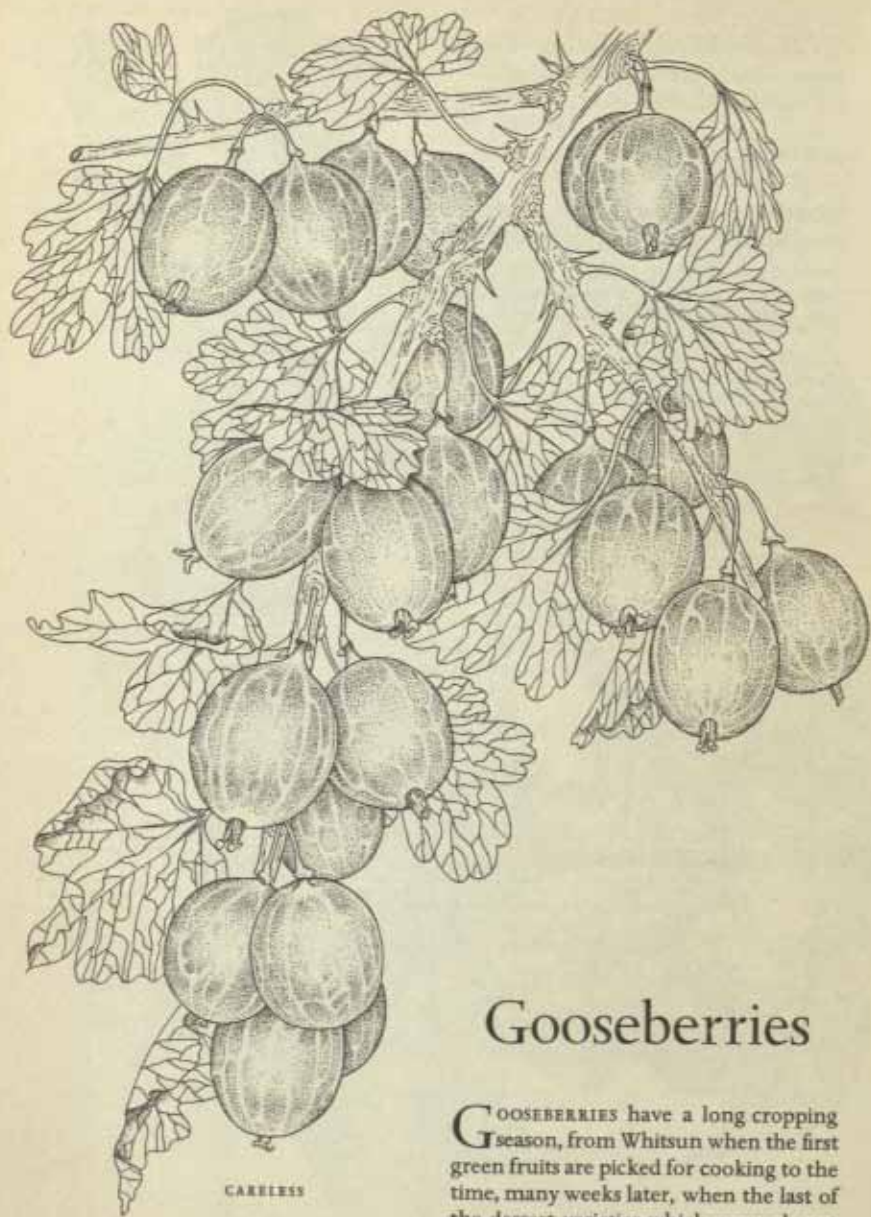
Wye Morello, August to early September. Excellent for cherry brandy. Grows on its own roots. Self-fertile.

MORELLO BLOSSOM



MORELLO





Gooseberries

GOOSEBERRIES have a long cropping season, from Whitsun when the first green fruits are picked for cooking to the time, many weeks later, when the last of the dessert varieties which grow almost as large as plums are ready for picking.

FRUIT

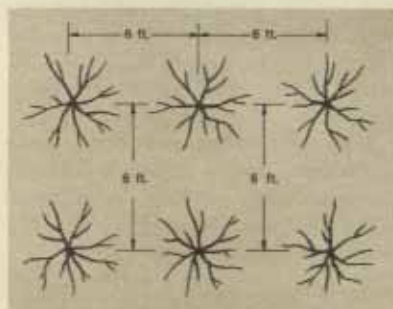
SOIL AND PREPARATION

Gooseberries will grow on almost any type of soil that is well drained. If the soil is sandy and gravelly, fork in one barrow-load of fine organic matter to 8 sq. yds. a few weeks before planting. Where the soil is heavy, fork it shallowly, plant the gooseberries and then put a mulch of fine compost or peat over the ground.

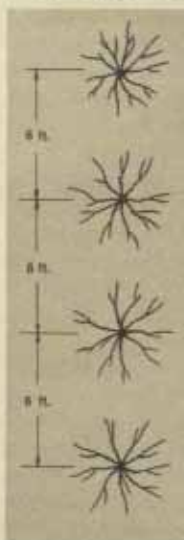
After planting give a dressing of $\frac{1}{2}$ lb. wood ash (or if not available 1 oz. sulphate of potash) per sq. yd., particularly if the soil is sandy.

TYPES AND AGE OF BUSHES

As mildew disease is easier to control if the gooseberry branches are borne well above the soil, buy two-year-old bushes with



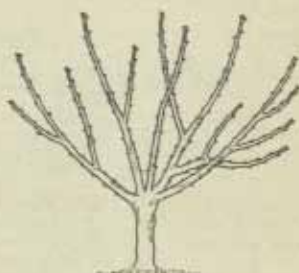
Planting distances for gooseberry bushes



Planting distances for standards



Planting distances for cordons



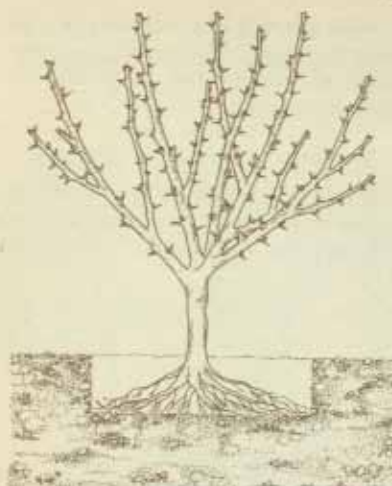
Gooseberry bush



Gooseberry cordons



Gooseberry standard



PLANTING A GOOSEBERRY BUSH

Plant in November, in a hole about 6 in. deep and 2 ft. across. Spread out the roots and replace the soil firmly

stems or legs about 1 ft. high, or four-year-old miniature standard bushes on 3-ft. stems. Buy three-year-old bushes for growing as cordons against walls or fences.

PLANTING

It is best to plant the bushes in November when the soil is warm, although they can be planted at any time after that until the end of February.

Plant shallowly so that the stem stands well above the ground. This will discourage sucker-like growths from coming up from the roots. Dig a hole about 6 in. deep and about 2 ft. across, spread out the roots evenly in the hole and then replace the soil, treading it down firmly. Plant bushes with 1-ft. stems 5 ft. square or, if the soil is very heavy, 6 ft. square, and bushes on 3- or 4-ft. stems 6 ft. apart. Plant cordons 2 ft. apart. After planting, wind black cotton among the branches to keep the birds away from the buds.

FEEDING

In the winter two years after planting dress the soil with $\frac{1}{2}$ lb. wood ash or 1 oz. sulphate of potash per sq. yd. Repeat this dressing every third year from then on. In addition apply 4 oz. bone meal per sq. yd. in February every year.

As with other soft fruits, it is wise to cover the soil with straw 1 ft. deep in the May or June after planting. This acts as a mulch, retains the moisture and helps to prevent the gooseberry mildew spores from drawing up from the soil on to the leaves. Organic matter will be pulled into the soil by worms so add only about 3 in. straw in the following year.

If gooseberries have not been mulched with straw, do not fork or dig among them as they are shallow-rooted plants. Cultivation should be done with a hoe and be no deeper than $\frac{1}{2}$ in.

PRUNING

Gooseberries can be pruned in March by either the regulating or the spur-pruning method. For the first four years, cut back the leaders or one-year-old growths on each branch by half to just above a bud, so that strong branches will be formed. A few laterals may also require cutting back to an upward-pointing bud.

After the fourth year it will be necessary to decide whether to spur-prune bushes to produce large berries for dessert or whether to adopt the regular pruning system to produce smaller berries in quantity. If the latter method is adopted, merely thin out the branches here and there every year to let in light and air. If the gooseberries are to be spur-pruned every year, cut back the one-year-old side growths or laterals to within 2 in. of their bases, and cut back the leaders by about half. When the bushes are ten years old, it may be necessary to thin out every other spur to reduce the number of fruit buds. Prune cordons on the spur system.

PRUNING GOOSEBERRY BUSHES



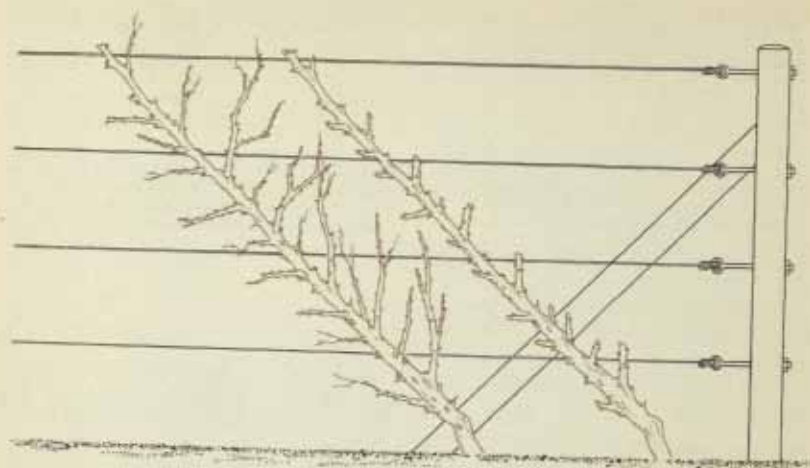
For the first four years, cut back each season's growth by a half, to just above a bud on each leader; this will encourage stronger branches

Subsequently, the bush may be spur pruned; cut back one-year-old side growths to within 1 in. of their bases, and cut the leaders by half. This method produces larger fruit but a smaller crop



Regulated pruning entails less work than the spur method. The branches are merely thinned out every year. The result is a larger quantity of smaller berries

FRUIT



PRUNING CORDONS

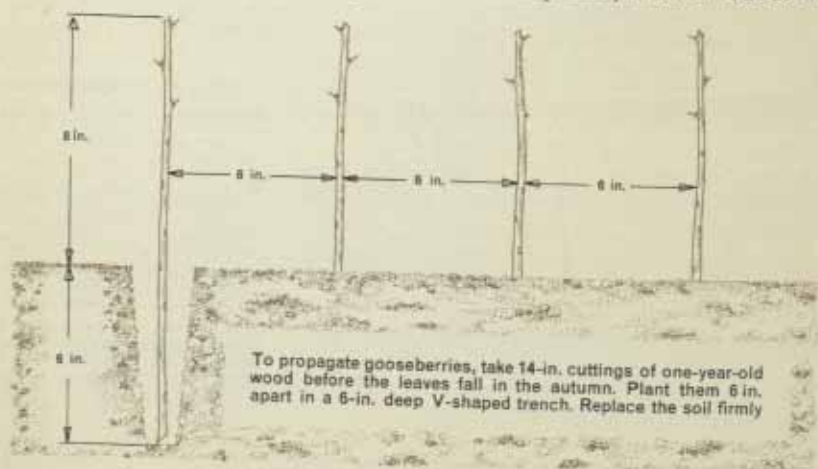
Cut back side growths to within 2 in. of the main stem, to make spurs

THINNING

Start thinning the berries at about Whitsuntide and take the largest berries each time so that the remaining berries will get more sap and will swell up better. Always thin out the berries of the large dessert varieties until they are about 1 in. apart.

PROPAGATION

Gooseberries can be propagated by cuttings, which should be taken just before the leaves fall in the autumn. Choose healthy 14-in. lengths of one-year-old wood to ensure good stems. Make a cut with a sharp knife just below a bud at the



PROPAGATION BY CUTTINGS

bottom end, and a second cut just above a bud at the top end. Afterwards remove all except the top three buds from the cutting.

Then dig a trench 6 in. deep in a sunny place and set the cuttings upright 6 in. apart in the trench, put back the soil

and tread it down well. (See *Propagation*.)

HARVESTING

Pick the cooking varieties as required when they are large enough, but leave the dessert gooseberries on the branches until they are fully ripe.

RECOMMENDED VARIETIES

Bedford Red, mid-season. Medium sized, red. Makes strong bush. Good for picking green as well as for dessert.

Broom Girl, early. Oval, yellowy-olive.

Careless, early. Large greeny-white. Easy to grow. Heavy cropper.

Cousen's Seedling, very late. Bright yellow, good flavour. Prune to keep upright.

Freedom, mid-season. Smooth white. Susceptible to gooseberry mildew.

Golden Drop, mid-season. Greeny-yellow. Good flavour. Upright grower.

Green Gem, early. Good-sized, green. Grows easily. Heavy cropper.

Keepsake, late. Large, pendulous pale green. A strong grower. May be damaged by frost at blossom time.

Lancashire Lad, mid-season. Large, dark red. Strong upright grower. Resistant to mildew.

Lancer, mid-to-late-season. Large. Good for cooking or dessert. Strong

spreading grower. Green.

Langley Gage, mid-season. White to pale green, delicious. Upright grower.

Leveller, mid-season. Extra large yellow dessert. Spreads moderately. Needs well-drained soil.

London, very late. Large, dark red. Excellent for shows. Strong grower but has drooping branches.

Profit, mid-season. Large green oval, excellent flavour. Moderate grower.

Ringer, mid-season. Bright yellow, a show prize-winner. Medium to strong grower.

Warrington, late. Slightly hairy, medium sized, red, excellent for jam. Spreading grower.

Whinham's Industry, mid-season. Red, good dessert. Strong but arching grower. Liable to mildew.

White Lion, late. Large white dessert with excellent flavour. Strong spreading variety.



THE TRUE LOGANBERRY

Loganberries

THE LOGANBERRY originated in the United States. It is maroon in colour and is said to be a cross between a blackberry and a raspberry. When the raspberry is picked its central white plug remains on the cane, but when the loganberry is picked it retains its plug. Consequently, fruit that has been attacked by the maggots of the raspberry beetle cannot be used for bottling or jam-making.

The canes are heavy croppers and, if carefully pruned, manured and sprayed, should bear fruit for about 15 years.

SOIL AND PREPARATION

Loganberries grow on almost any well-drained soil but probably do better on heavy clay soil than on light sand. They like a sunny, open situation and appreciate shelter from the north-east wind.

Before planting in sandy and loamy soils, dig in a barrowload of well-rotted compost to each 8 sq. yds. In heavy clay, plant shallowly and then use well-rotted compost as a mulch in the May following planting.

TYPE AND AGE OF CANES

Buy one-year-old virus-free canes with a good root system.

PLANTING

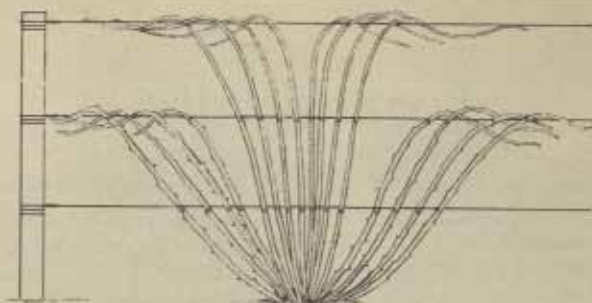
Plant loganberries about 6 in. deep and 8 to 12 ft. apart in November, early December or in March. Spread the roots out carefully, replace the soil and tread down firmly. Train the canes in a fan by tying them to wires, preferably old telephone wires, stretched at 2-ft. intervals between 8-ft. tall poles set 8 ft. apart—the base of the poles should have been treated with Cuprinol before being driven 2 ft. into the ground.

If the loganberries are planted in November, cut the canes in early spring to just above a bud and to within 6 in. of soil level. If they are planted in May prune them in a similar manner immediately after planting.

FEEDING

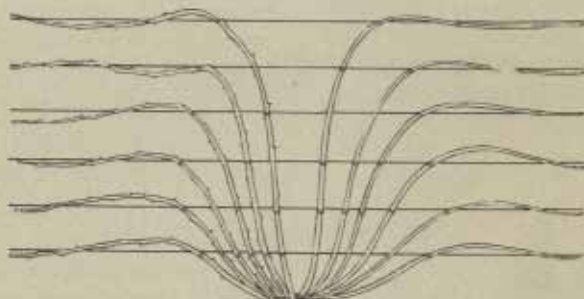
As loganberries produce long fruit-bearing canes every year and are gross feeders, it is necessary to be liberal with compost. Place straw between the rows to a depth

FRUIT

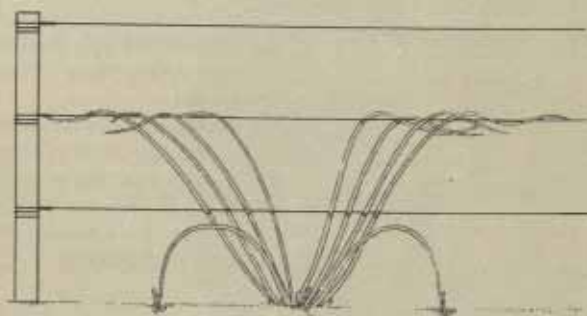


TRAINING LOGANBERRIES

So that disease spores from old wood will not fall on to new wood, young growth is trained up to the top wire. It is retied in the lower position after the fruiting wood has been harvested



To avoid the need for retying at the end of each season, new wood can be trained to one side of the plant while the fruiting wood is on the other. The following season, new wood will be tied in to the side from which the old fruiting wood has been cut down



PROPAGATION BY LAYERING

Choose two strong canes and, without separating them from the plant, bury their tips in sunken pots. New roots will be produced, ready for severing from the parent plant and transplanting the following spring

of 1 ft. and to a depth of 1 in. among the plants. Every year, in late February, apply 3 oz. fish manure per sq. yd. over the straw.

If the canes do not seem to be growing strongly enough, give them a second dressing of fish fertilizer all over the ground in October.

PRUNING

Prune as soon after picking as possible. When the canes have first fruited, cut them away to soil level. If the canes are pruned down only to within, say, 6 in. of the soil, the "snags" that are left are apt to become a source of disease.

TRAINING

As a result of the disease known as cane spot, two special systems of training have been devised to prevent the disease spores from dropping from the old wood on to the new.

The new canes can either be taken up the wires as the central parts of the fan and tied to the top wire, or the old wood can be trained on one side of the fan and the new wood on the other (see diagram opposite).

The advantage of the latter system is that the new canes stay in the position in which they were originally tied until they have finished fruiting; as canes grown by this system should be planted 12 ft. apart, they need a great deal of room.

PROPAGATION

In the middle of July choose two strong young canes from each plant and, without separating them from the plant,



bend them down and bury the top 2 in. of each cane in the soil within 2 or 3 ft. of the parent plant. The tips of these canes will continue to grow and will push their way up through the soil, while the portions that are buried will send out roots. In the middle of November cut out the old canes at a point 2 in. above soil level. Then tie canes used for propagation to the wires and leave the tips that have rooted until early April, when they can be lifted and moved to the place where they are to grow.

Transplanting is made easier if a 6-in. peat pot filled with Eclipse No-soil Compost or John Innes potting compost No. 1 is buried in the soil and the tip of the cane is inserted into the pot. The new roots will then be produced in the pot, which can easily be dug up again the following April.

HARVESTING

Pick the loganberries each day as the individual berries become firm and ripe. It is unwise to leave berries on the canes to get soft. The reason for this is that if left longer moulds may be troublesome.

RECOMMENDED VARIETIES

The true loganberry. Large, conical drooping fruits. Easy to pick. Very juicy. Ripens in July and produces fruit for many weeks. Hardy. Heavy cropper.

Thornless loganberry. Deliciously flavoured and excellent for jam. Not so vigorous as the true loganberry, but easier to train because it is thornless.



HALE'S EARLY

Peaches and Nectarines

THE NECTARINE, which is a smooth-skinned form of the peach, is grown in the same way as the peach, but needs more water at fruit-swelling time.

SOIL AND PREPARATION

The trees do well in a good medium loam and prefer a light soil to a heavy one, although peaches can do well in a gravelly soil if they are given a good mulch of straw.

Before planting bushes in open ground it is sufficient to fork into the soil 5 oz.

bone meal and $\frac{1}{2}$ lb. wood ash per sq. yd. Carbonate of lime can also be given as a top dressing at 7 oz. per sq. yd.

If the trees are planted against a wall, make a special bed for them, with good drainage, in the following manner:

Dig a trench 6 ft. long, 3 ft. deep and 3 ft. wide. Place a good layer of broken bricks or clinkers at the bottom, and cover the bricks with some good turf, upside down, or 6 in. of damp horticultural sedge peat. Then fill up the trench with a compost consisting of four parts good

soil and one part mortar rubble. If mortar rubble is unobtainable, use one part hydrated lime to 16 parts good soil. If possible, add to each barrowload of this mixture a 3-in. potful of sulphate of potash, a 6-in. potful of bone meal and a 12-in. potful of wood ash.

ROOT STOCKS

Peach and nectarine trees grafted on Brompton stock are the most popular, but those grafted on Common Mussel stock are recommended for smaller trees. It is possible to raise trees from cuttings or from fruit stones.

TYPE AND AGE OF TREES

Both peaches and nectarines do well as fan-shaped trees against walls or fences and should be bought when they are three years old. A few peaches, but not nectarines, can be grown as bush trees. Buy these as two-year-old plants.

PLANTING

If possible plant in November while the soil is still warm. When planting a fan-trained tree against a wall or fence, make sure that the base of the trunk is 6 in. away. If several wall trees are planted, allow 15 ft. between them. Do not plant deeper than 7 or 8 in. and spread the roots out fanwise. If the roots are broken or damaged, cut them back with a sharp knife so the cut faces downward. Fill in with soil and tread down. After planting, cover the soil for about 3 ft. round the hole with fine, rotted compost or sedge peat to a depth of 1 in.

Plant a bush tree 1 in. shallower than it was in the nursery; the soil mark on the base of the stem will serve as a gauge. Tread the soil down well over the roots, and tie the bush to the stake so that it cannot move in the wind. Place a mulch of straw or sedge peat round the tree to a depth of 3 ft., and at the end of two years

remove the mulch and sow the area with Chewings fescue grass, allowing $\frac{1}{2}$ oz. per sq. yd.

It is advisable to soak the trees thoroughly with a 5 per cent solution of a tar distillate wash each December, to clean the trees and kill aphids' eggs.

FEEDING

Each February apply 3 oz. dried blood or fish manure per sq. yd. If the bush trees are grown in grass, cut the grass round them regularly in the summer and leave the cuttings to pass back into the ground.

If the trees are not in grass, place a mulch of straw round them to a depth of 1 ft. and maintain it. Then apply fish manure or dried blood over the straw at 3 oz. per sq. yd. The straw mulch will help to prevent stone-splitting and, as it is not advisable to water once the fruit has set, will also keep the moisture in the ground. Just before the buds swell in the spring, apply a dressing of sulphate of ammonia over the straw at 2 oz. per sq. yd.

POLLINATION

All varieties of peaches and nectarines are self-fertile, but because the blossoms are tender and pollinating insects tend not to work in bad weather, it is wise to do a certain amount of hand-pollination by brushing the centre of the fully open flowers with a camel-hair brush.

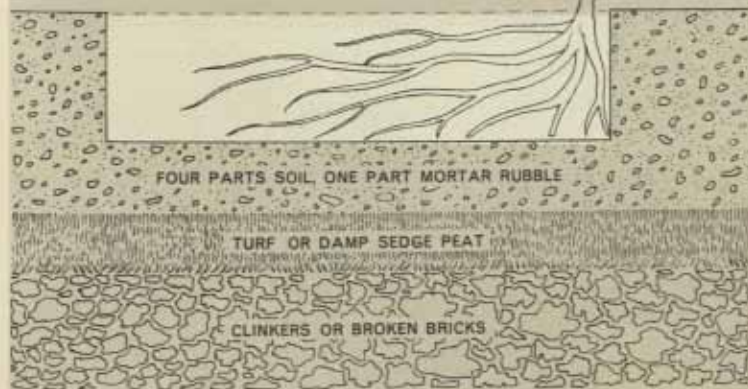
PRUNING

After planting bush trees, do not prune for 17 months and then cut all the branches back by about half, even if it means cutting back two-year-old wood. The trees should then send out numerous young laterals. In April the following year prune back some of the older, harder wood leaving the younger wood in its place. Make sure that the branches are kept off the ground and that the centres of the bushes are kept open.

A WALL-TRAINED PEACH: PLANTING AND FIRST PRUNING

Tie the shorter laterals to wires stretched across the wall $1\frac{1}{2}$ ft. apart. Cut off any laterals that grow out behind the branches in such a way that they cannot be trained on the wires.

In a hole 7 or 8 in. deep and 6 in. away from the wall, spread the roots evenly in a semicircle. Position the tree so that the top of the main stem slopes in towards the wall.



FRUIT

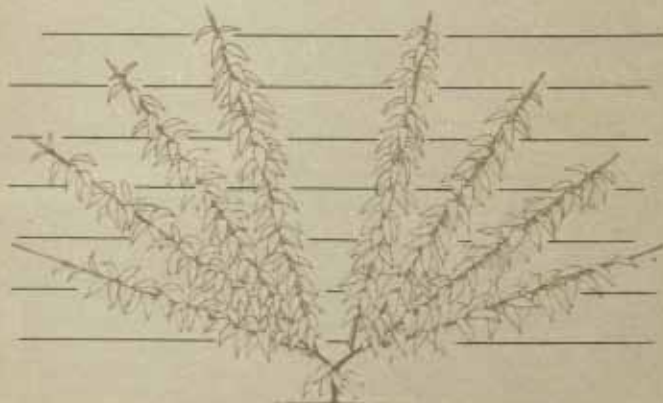
FAN TRAINING A PEACH TREE



Cut the maiden to within about 1 ft. of the union of scion and stock, and in the spring remove all shoots except two that are suitably placed to become the first branches of the fan on opposite sides of the stem. Tie them into position on the wall and support them with bamboo canes



Cut away the main stem when the selected side shoots are about 1½ ft. long, and in February cut both these branches to an upward-facing bud not more than 1½ ft. from the main stem. The following year, laterals will be produced along the two branches and, by tying in, the shape of the tree will be established (below)



The branches of fan-trained trees should radiate evenly from the main stem and be tied to telephone wires stretched tightly across the wall, the first 2 ft. above the ground and 3 in. away from the wall, and the rest $1\frac{1}{2}$ to 2 ft. apart.

Cut back to their base any laterals that grow out perpendicularly from the branches and tie the shorter laterals to the wires.

Each April cut out some of the old wood and leave the young wood evenly spaced, because it is this young wood that will produce the fruit.

It may be necessary to root-prune fan-trained trees eight years after planting, if they are making too much strong growth or if they have grown to the top of the wall and are becoming difficult to control.

In winter dig a 2-ft. semicircular trench 3 or 4 ft. away from the main stem of each tree; cut off all the strong-growing roots, then replace the soil carefully and tread it down firmly.

THINNING

When the fruits on wall trees are about the size of chestnuts, thin them out so that they are 9 in. apart.

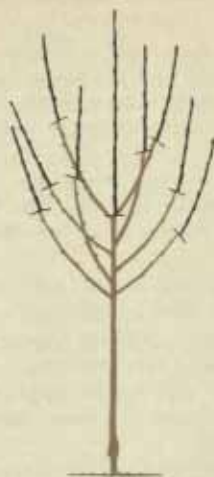
If there are any twin fruits on bush trees, thin them out by removing one fruit from each pair.

HARVESTING

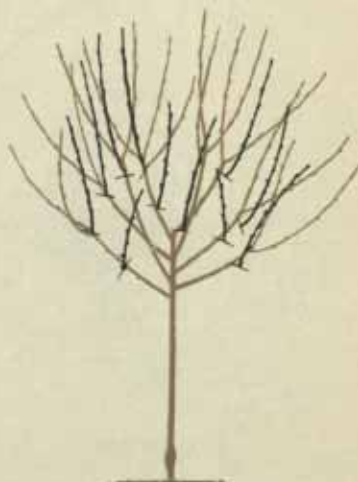
Peaches and nectarines will ripen more quickly if a small muslin or paper bag or part of an old nylon stocking is slipped over each fruit.

The bags will not only prevent the birds and wasps from attacking the fruit but will also prevent the ripe fruit from falling to the ground.

Pick the fruits very carefully by gripping them in the palm of the hand. Do not pinch them with the thumb and forefinger, as they bruise easily.



TRAINING AN OPEN CENTRE BUSH
Do not prune a bush tree for the first 17 months after planting; then cut back all the branches by about half



In April the following year, prune back some of the older wood, and make sure that the centre of the bush is kept open

RECOMMENDED VARIETIES
OF PEACH

Amsden June, mid-July. Crimson to purple flush. This has better flavour if allowed to fall into small muslin or paper bag when ripe. Better for walls than bushes.

Bellegarde, late September. Large, golden-crimson with delicious flavour. Hardy, but because of lateness difficult to ripen.

Duke of York, August. Rich crimson, refreshing. Makes a large tree.

Hale's Early, late July to August. Rather small crimson. Very attractive.

Peregrine, mid-August. Large crimson. Excellent variety as a bush. Fairly free from disease.

Rochester, mid-August. Yellow flesh with one crimson side. Good variety when grown as a bush.

RECOMMENDED VARIETIES
OF NECTARINE

Early Rivers, mid-July. Greenish-yellow, brilliant scarlet. Best early nectarine.

Elruge, late August. Greenish-white, with a purplish-red flush. Hardest nectarine.

Humboldt, mid-August. Orange with deep crimson flush. Flowers late, so useful in frosty areas.

John Rivers, early August. Large golden-yellow with deep brownish-crimson flush. Regular cropper.

Pineapple, early September. Large, greenish-yellow with crimson flush. Grows well in the south and south-west of British Isles.

Violette Hâtive, mid-August. Small, pale yellow, with dark red flush, good flavour. Does well in south and south-west of British Isles.

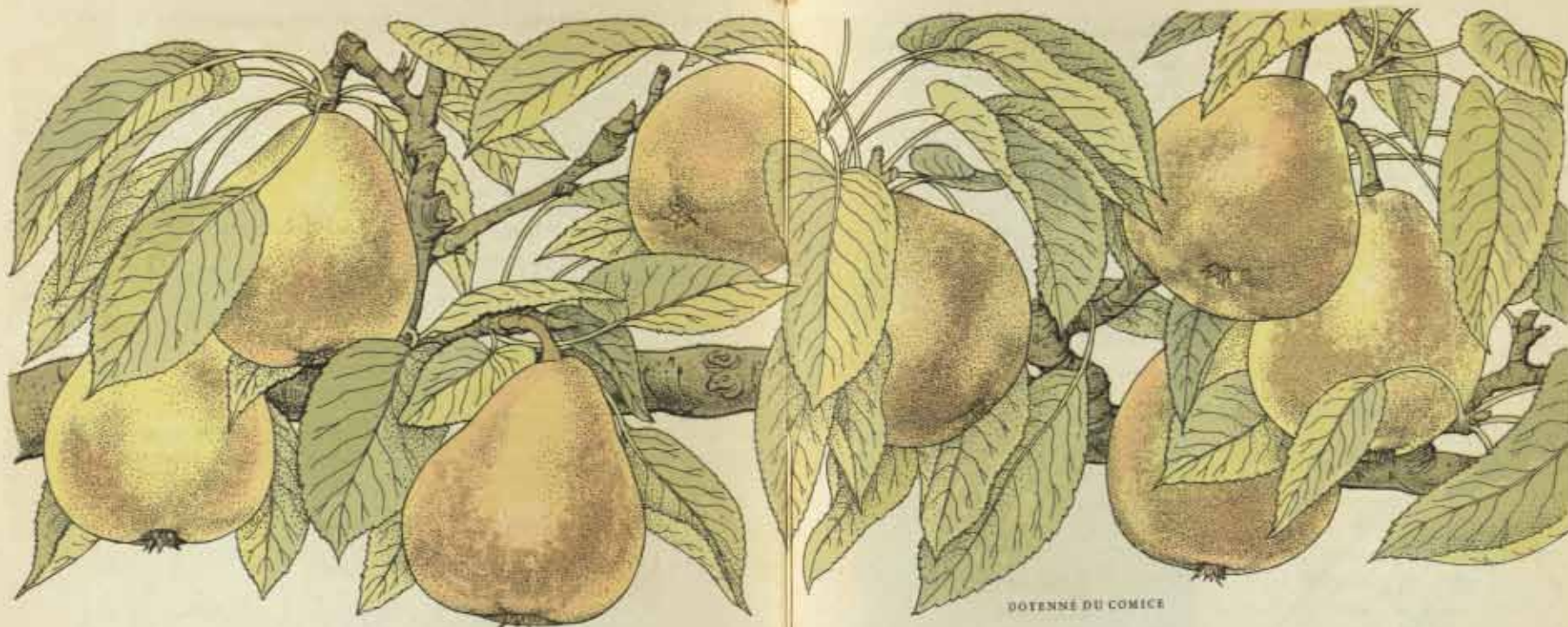


BELLEGARDE

FRUIT



BELLEGARDE LEAVES AND BLOSSOM



BOITENÉ DU COMICE

Pears

PEARS are as easy to grow as apples, but the trees tend to deteriorate quickly if they are not looked after. Many varieties of pear, like apple, are self-sterile so that failure to plant a suitable pollinator is often the cause of disappointment.

SOIL PREPARATION

Pears prefer a deep, moist soil that will retain its moisture in summer. They like a sheltered, sunny position, and do well against walls and fences where they are protected from cold winds.

If the soil is sandy, add a good mulch after planting and in early spring in

subsequent years, so that the moisture will be retained in the summer.

ROOT STOCKS

Normal tree varieties should be budded or grafted on to Quince A stock, and cordons on to Quince C stock. As some varieties do not knit well on these stocks, what is called a compatible variety is grafted on to the stock, and then the incompatible kind is budded on to the compatible variety. These trees are expensive and are called "double-worked" trees. Williams' Bon Chrétien, for example, is incompatible on Quince A, so Beurré

Hardy is grafted on to the Quince and then the Williams on to the Beurré Hardy. Having bought the tree on the correct stock, make sure that the union of the stock and the variety is planted well above soil level, to prevent the wood of the variety from rooting and completely ruining the beneficial dwarfing effect of the quince stock.

TYPE AND AGE OF TREES

Bush trees are normally planted when they are two years old, and espaliers when they are three or four years old.

PLANTING

Plant pear trees at any time during the winter—in November if possible. Dig the

holes 3 ft. square, making them 8 in. deep in ordinary soil and only 6 in. deep in heavy clay. Before planting, drive stakes at least 2 ft. into the soil so that the trees can be tied to them by proprietary plastic strap ties. Spread the roots out evenly, and as the soil is put back tread it down firmly.

Pear trees, like apple trees, can be trained as bushes with open centres, as bushes with delayed open centres, or as pyramids; trees trained in any of these ways should be planted 12 ft. square. Plant pillar trees 8 ft. square, and spindle trees 4 ft. apart with 6 ft. between each row. Oblique single cordons should be planted 2 ft. apart, and espalier-trained trees against walls or fences 15 ft. apart.

FRUIT



Open centre bush



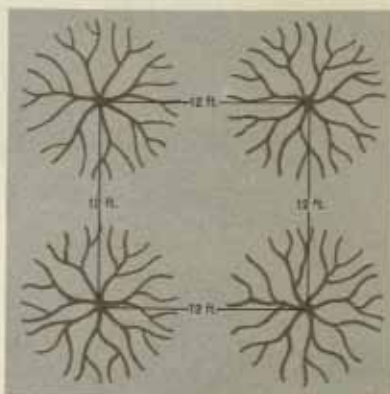
Delayed open centre



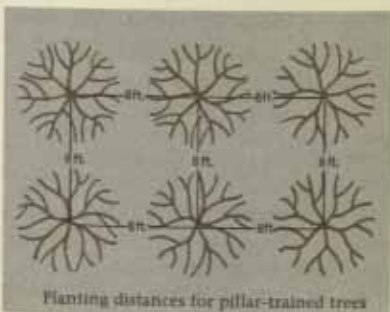
Dwarf pyramid



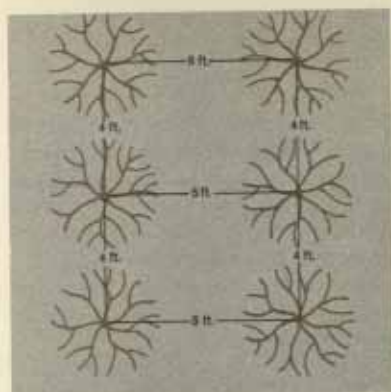
Pillar



Planting distances for delayed open centre bushes



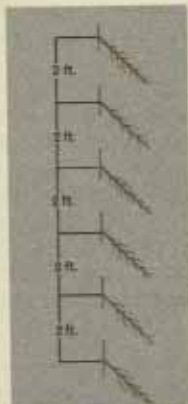
Planting distances for pillar-trained trees



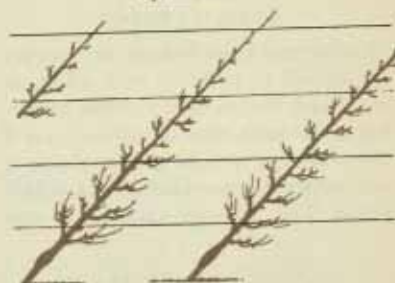
Planting distances for spindle bushes



Spindle bush

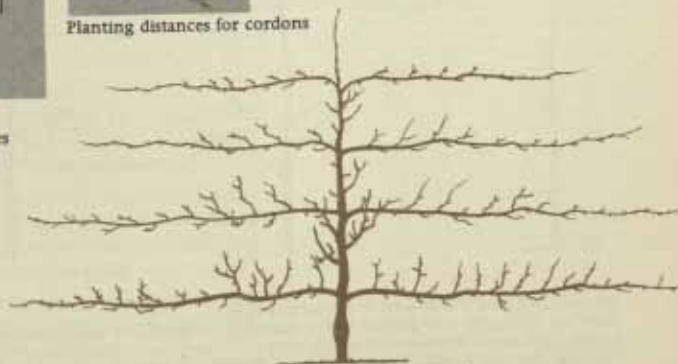


Planting distances for cordons



Cordons

Planting distances
for espalier trees



Espalier

FEEDING

Pears can be treated in much the same way as apples, and can therefore be grown in the same orchard. But pears, unlike apples, do not suffer from potash starvation. They can suffer from nitrogen starvation and should therefore be given 3 oz. meat and bone meal per sq. yd. each February. In addition, mulch 3 or 4 ft. round each tree, especially those grown against walls, with sedge peat to a depth of 1 in. When the trees are grown in grass, keep the grass short throughout the season and leave it to lie and rot where it falls, then apply meat and bone meal at the rate of 3 oz. per sq. yd. over the grass so that it can be washed in naturally.

POLLINATION

As most pears are self-sterile two varieties are needed to pollinate each other, so make sure that suitable varieties flowering at the same time are planted. But if only one tree is to be grown, choose a self-fertile variety, or a family tree, which grows three different varieties on one

stem. A good nurseryman will give advice on which varieties to plant.

PRUNING

Pears usually need harder pruning than apples, although the method is the same. Pears produce fruit buds very easily, so that after ten years they usually need thinning out by cutting back the spurs bearing the fruit buds to half their size.

Detailed instructions for pruning the different types of tree are given on pages 705 to 708.

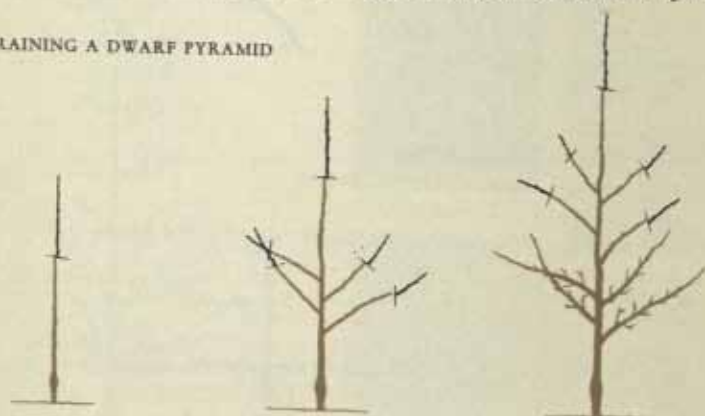
THINNING

When the young pears are about as big as acorns, thin them out until they are about 4 in. apart. Do not thin out the variety Doyenné du Comice.

HARVESTING

Pears are difficult to store. They should be picked at exactly the right time. Always pick the early and mid-season varieties before they are ripe. When the pear appears to be full sized, lift it up in the

TRAINING A DWARF PYRAMID



First year: Cut back the maiden to a height of 1½ ft.

Second year: Prune the new growth on the main stem to about 1½ ft. and prune side growths to 9 in., just above downward-pointing buds.

Third year: By now fruiting spurs will have formed on the first branches. The leader and upper branches should again be cut back.

FRUIT

STAGES OF DEVELOPMENT OF PEAR BUDS



White bud



Petal fall

palm of the hand, and if the stalk comes away easily from the spur it is ready. The late varieties, which do not ripen on the tree but in store, should not be picked until they part easily. The best time to pick is suggested in the list below.

The best temperature for storing pears is between 35 and 40° F. (2 and 4° C.).

RECOMMENDED VARIETIES

D = Dessert C = Cooker

Most dessert pears, if they are picked while still firm, can be peeled and will cook quite well.

Bergamotte d'Espéren (D), yellow and delicious. Pick October, store until March. Vigorous grower. Early flowering.

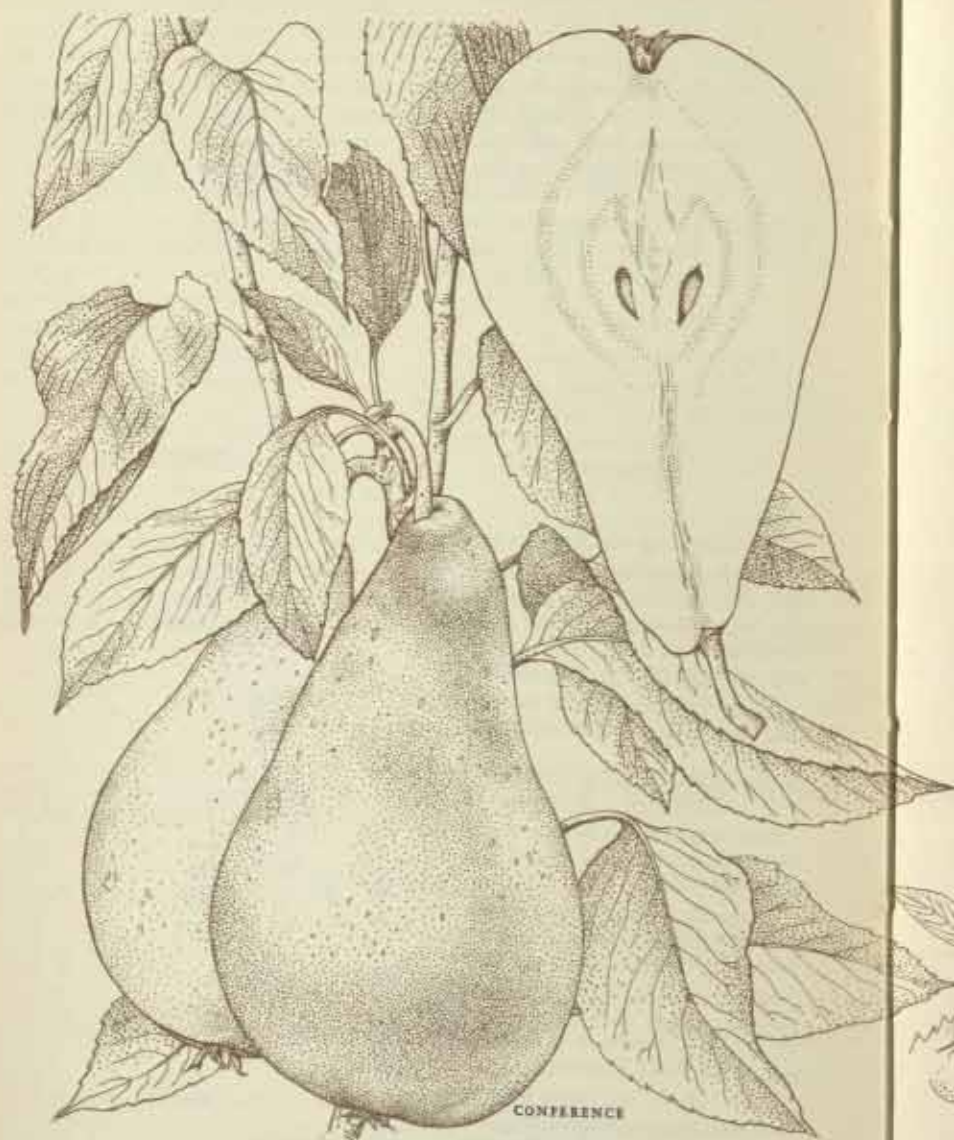
Beurré d'Amanlis (D), medium to large, very juicy. Pick end August, use early September. Grows well in the Midlands and North. Early flowering.

Beurré Hardy (D), russet flushed with rose-pink. Pick mid-September, use October. Hates chalky soil. Late flowering.

Beurré Superfin (D), yellow with some



Fruitlet



CONFERENCE

russet, very delicious flavour, never gritty. Pick mid-September. Mid-season flowering.

Catillac (c), large, dark green. When cooked becomes deep red. Pick early October, use October to April. Late flowering.

Charles Ernest (n), large, yellow and scarlet. Pick mid-October, use late October to November. Excellent cropper. Early flowering.

Conference (n), tapered, dark green covered with russet. Pick late September, use October to November. Resistant to scab. Mid-season flowering.

Doyenné d'Été (n), small, yellow with red-brown blush. Pick third week in July, use late July to August. Good early pear. Early flowering.

LOUISE BONNE OF JERSEY



WILLIAMS' BON CHRÉTIEN

FRUIT

Doyenné du Comice (D), yellow with red flush, some russet. Pick first week in October, use November to December. Subject to scab. Finest pear in cultivation. Late flowering.

Dr. Jules Guyot (D), yellow with slight flush. Pick third week in August, use early September. Late flowering.

Durondeau (D), golden-yellow, russet. Pick late September, use October to November. Good for south wall but subject to scab. Mid-season flowering.

Emile d'Heyst (D), light yellow-brown russet. Pick end September, use October to November. Very fertile, compact. Susceptible to scab. Mid-season flowering.

Fertility Improved (D), greenish-brown. Pick early September, use September to October. Crops heavily so needs thinning. Susceptible to scab. Mid-season flowering.

Glou Morceau (D), green, ripens yellow. Pick mid-October, use December to February. Late flowering.



WILLIAMS' BON CHRÉTIEN

WINTER NELLIS

Gorham (D), pale yellow, russet coloured. Pick mid-September. Heavy cropper. Resistant to scab. Late flowering.

Joséphine de Malines (D), small, light greenish-yellow. Delicious flavour. Pick beginning October, use December to January. Mid-season flowering.

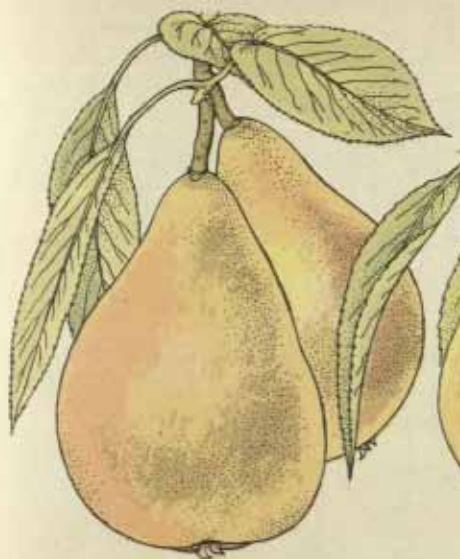
Louise Bonne of Jersey (D), greenish-yellow with red flush. Pick towards end of September, use October. Spreading grower. Early flowering.

Nouveau Poiteau (D), tapering greenish-yellow. Pick third week in October, use November. Good pollinator for Doyenné du Comice. Late flowering.

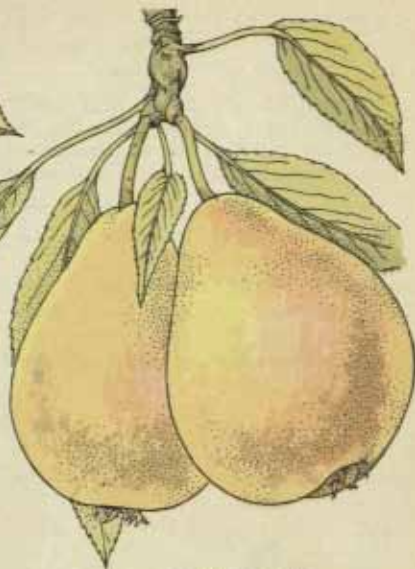
Packham's Triumph (D), yellow, juicy. Pick mid-October, use November. Small tree. Crops early. Mid-season flowering.

Pitmaston Duchess (D or C), huge, pale yellow with slight russet at stem end. Pick end September, use October to November. Late flowering.

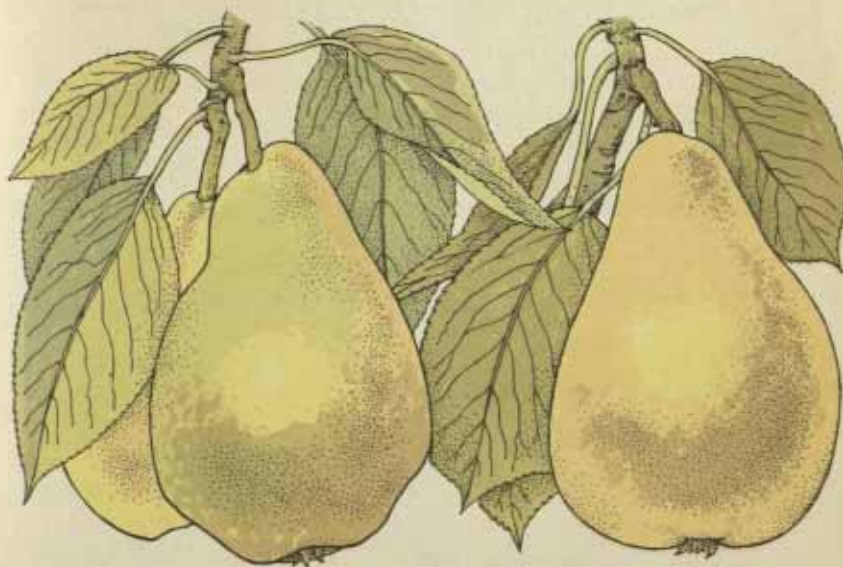
FRUIT



DURONDEAU



LOUISE BONNE OF JERSEY



NOUVEAU POITEAU

FITZMASTON DUCHESS

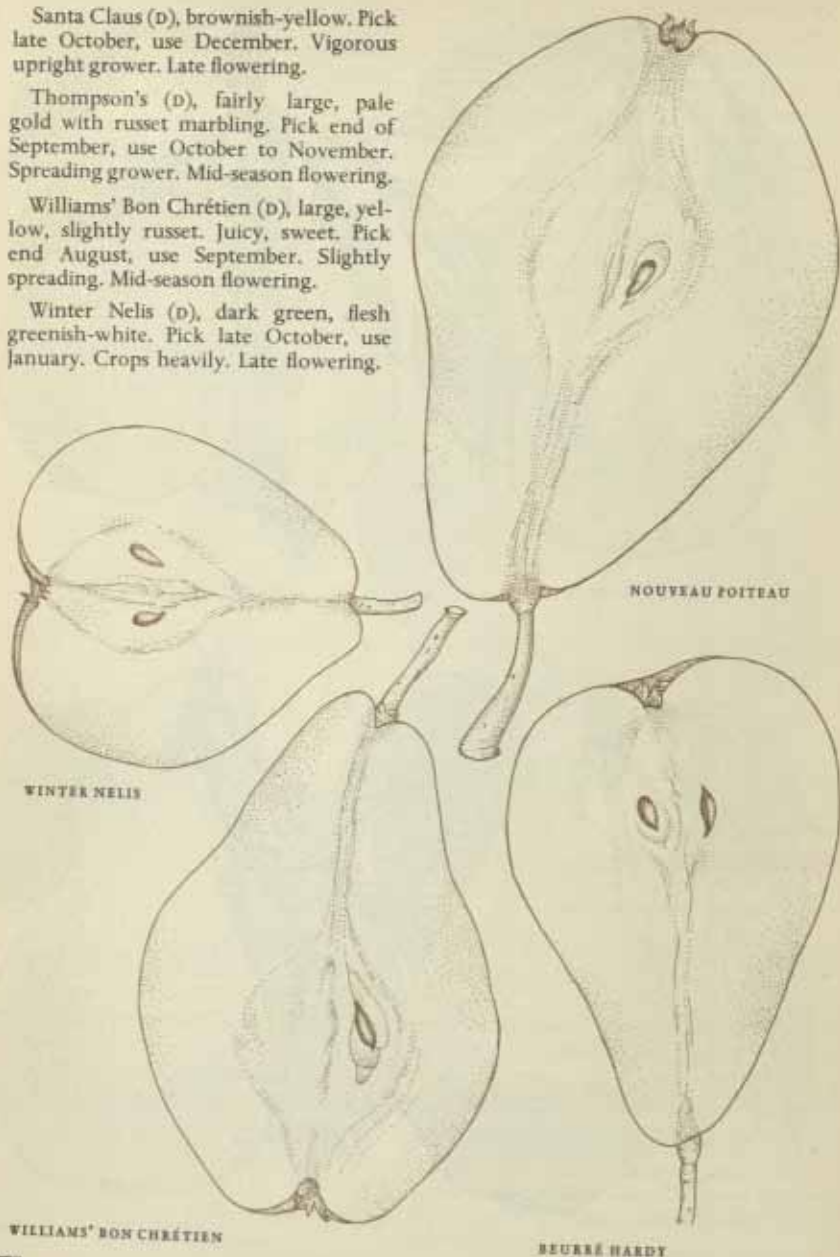
FRUIT

Santa Claus (D), brownish-yellow. Pick late October, use December. Vigorous upright grower. Late flowering.

Thompson's (D), fairly large, pale gold with russet marbling. Pick end of September, use October to November. Spreading grower. Mid-season flowering.

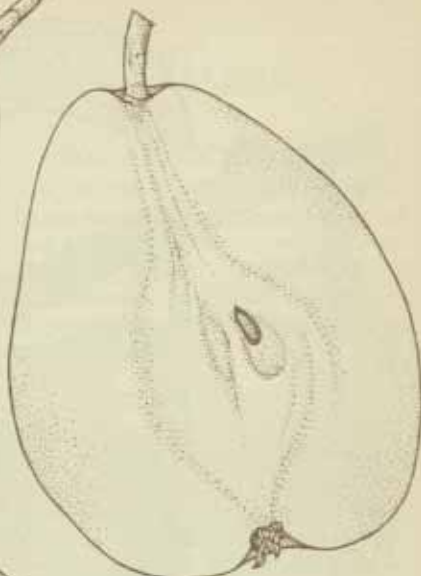
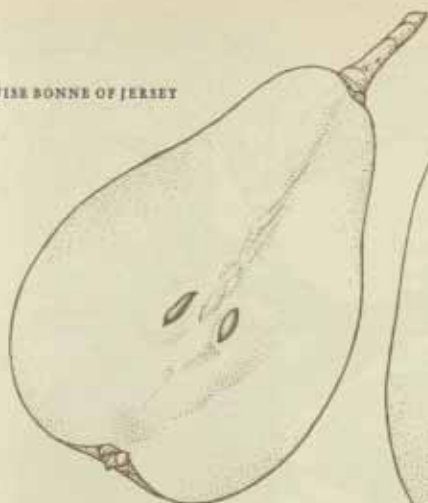
Williams' Bon Chrétien (D), large, yellow, slightly russet. Juicy, sweet. Pick end August, use September. Slightly spreading. Mid-season flowering.

Winter Nelis (D), dark green, flesh greenish-white. Pick late October, use January. Crops heavily. Late flowering.

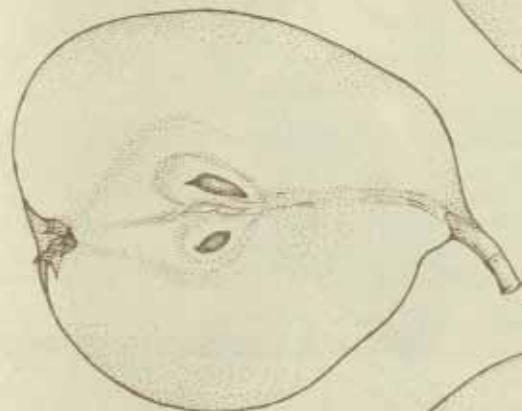


FRUIT

LOUISE BONNE OF JERSEY



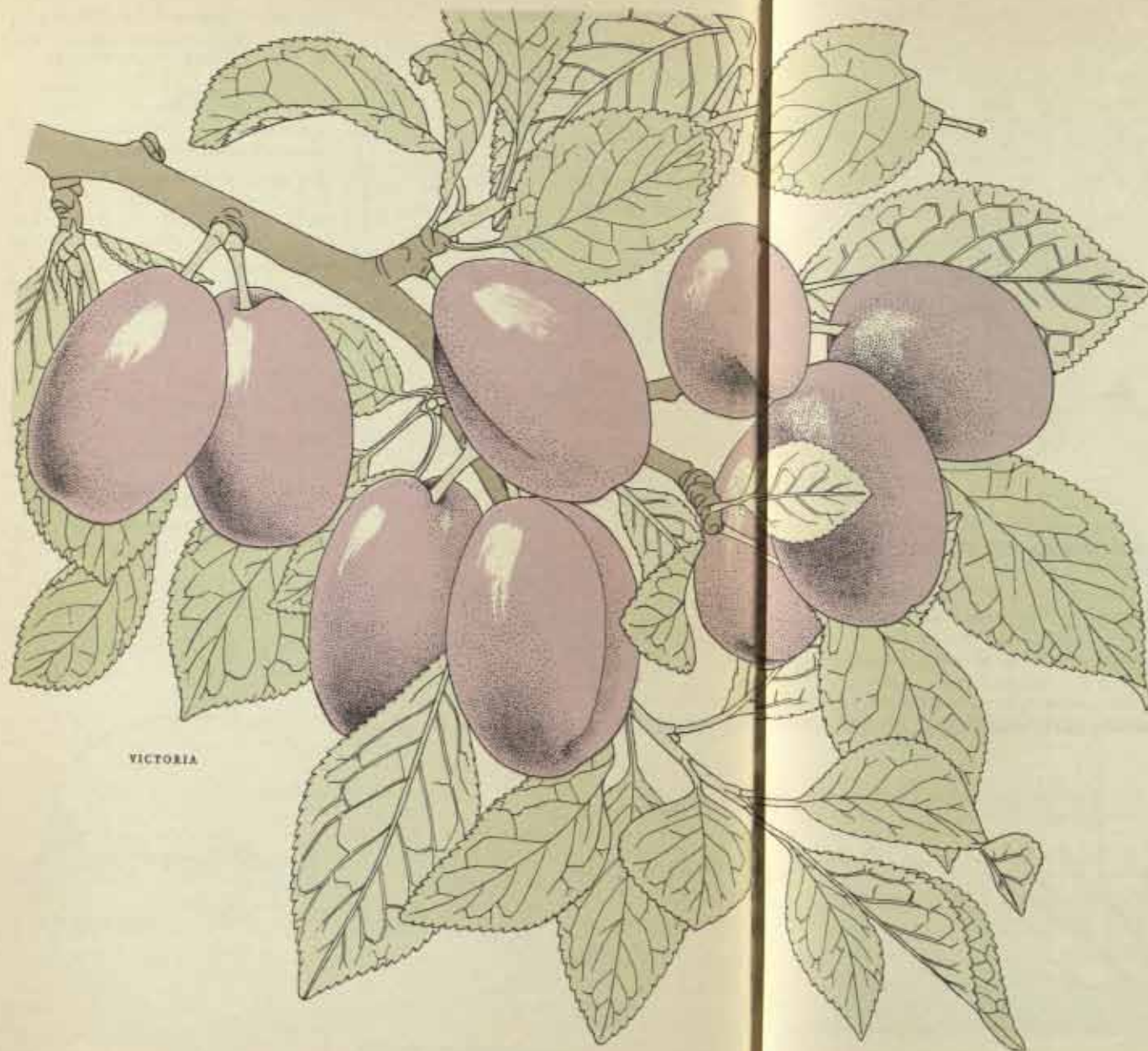
ÉMILE D'HEYST



DOYENNÉ DU COMICE



TITMASTON DUCHESS



VICTORIA

Plums

SOIL AND PREPARATION

On the whole plums, which include gages, damsons and bullaces, like richer soil than apples and do quite well on heavy clay. They do not like an acid soil so if necessary give a dressing of carbonate of lime before planting, at the rate of 1 lb. per sq. yd.

ROOT STOCKS

The most common root stock is Myrobalan B, which is used for most varieties of plums, damsons and greengages. The more dwarfing Common Mussel is used for plums that are to be grown as bushes or fan-trained trees. The disadvantage of this stock is that it tends to send up suckers. The Common Plum stock is used for greengages but is incompatible with plum varieties such as President or Czar and with damsons. It is a first-class stock for Victoria, and helps it to resist the silver leaf disease.

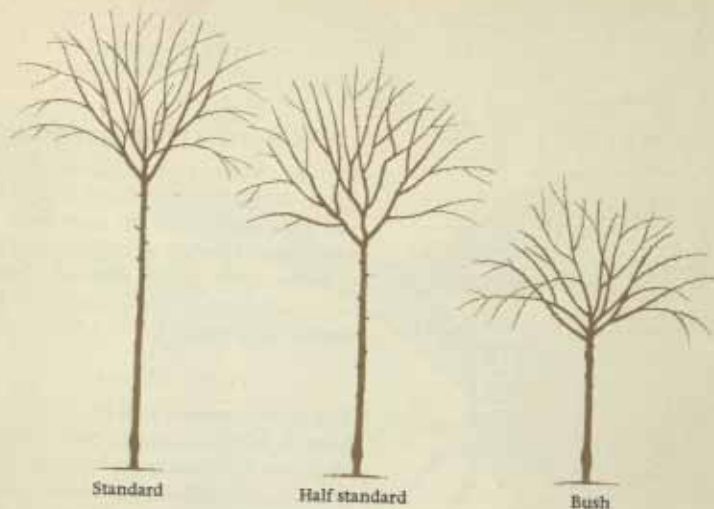
Two stocks that are coming into popularity are Pershore, which brings many trees into bearing early, and St. Julien A, which is compatible with all kinds of plums and also brings them into bearing early. St. Julien A is probably better than Common Mussel.

TYPE AND AGE OF TREES

Bush trees should be bought as two-year-olds; half standards and standards as three-year-olds and fan-trained trees as four-year-olds.

Fan-shaped trees are trained against walls or fences. Standards and half standards are usually planted in cultivated ground but can be grown in grass. Plums are seldom grown as bush trees because

THE SHAPES OF PLUM TREES



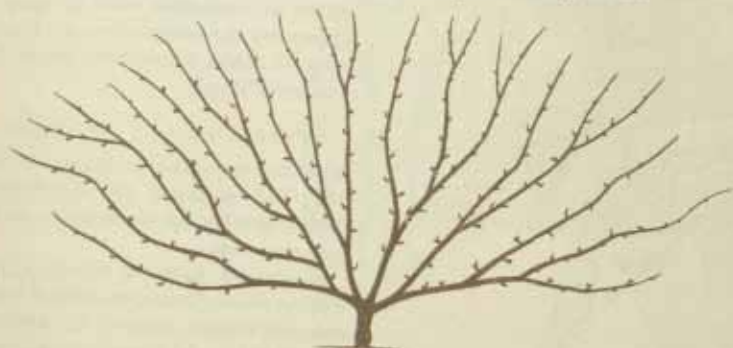
of the drooping habit of the branches, but if buying them for this purpose, see that they have stems at least 3 ft. high.

PLANTING

Plant very firmly. Dig a hole 3 ft. square and about 6 in. deep and spread the roots out evenly in the hole, cutting back cleanly any damaged ones. Put back the soil and ram it down well.

Plant bush plums 15 ft. square, half-standard plums 18 ft. square and standard plums 24 ft. square.

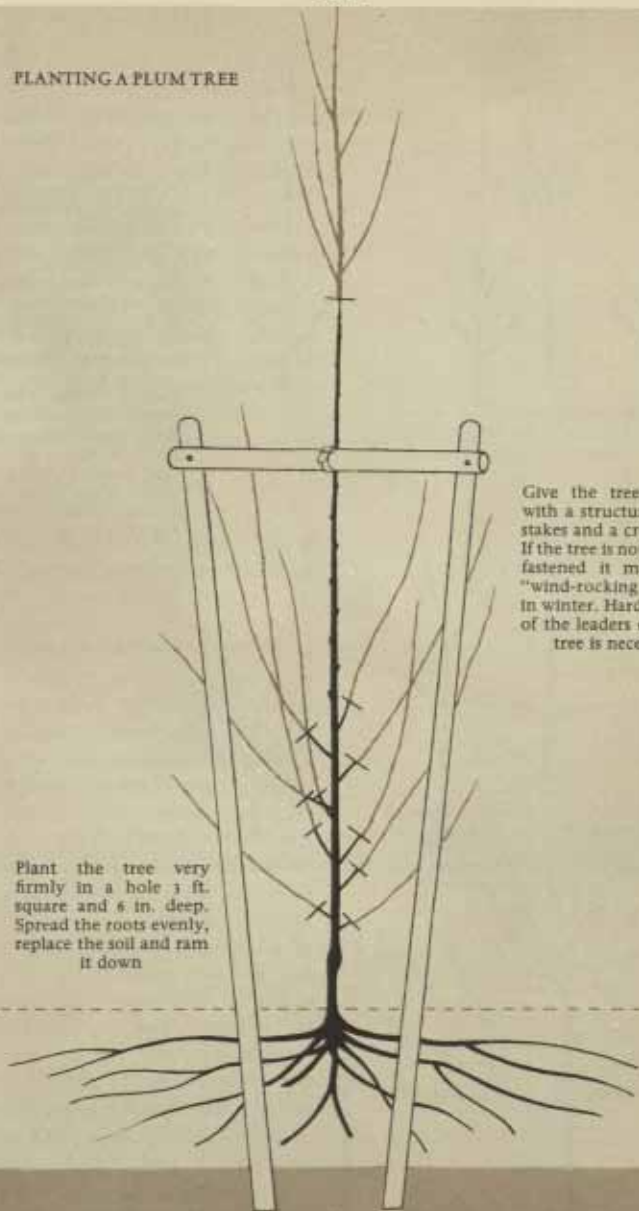
Planting should be done in November if possible while the soil is still warm, but may continue, if necessary, to the end of February. Stake the trees while planting so that they cannot move in the winter winds, otherwise what is known as "wind-rocking death" may occur.



PLANTING A PLUM TREE

Plant the tree very firmly in a hole 3 ft. square and 6 in. deep. Spread the roots evenly, replace the soil and ram it down

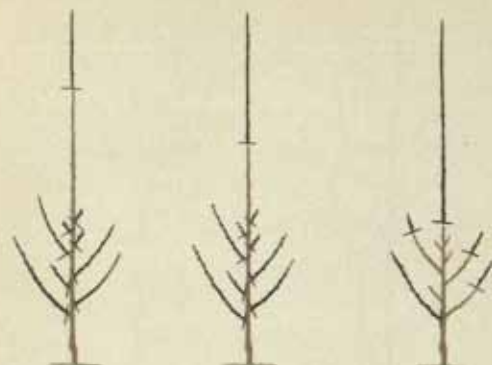
Give the tree support with a structure of two stakes and a cross-piece. If the tree is not securely fastened it may suffer "wind-rocking death" in winter. Hard pruning of the leaders on a new tree is necessary



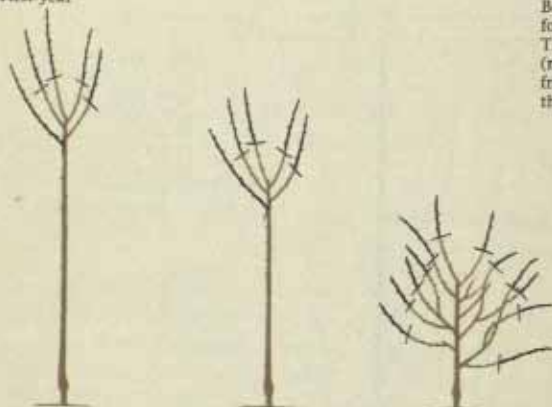
TRAINING PLUM TREES;

PRUNING FOR
THE FIRST THREE YEARS

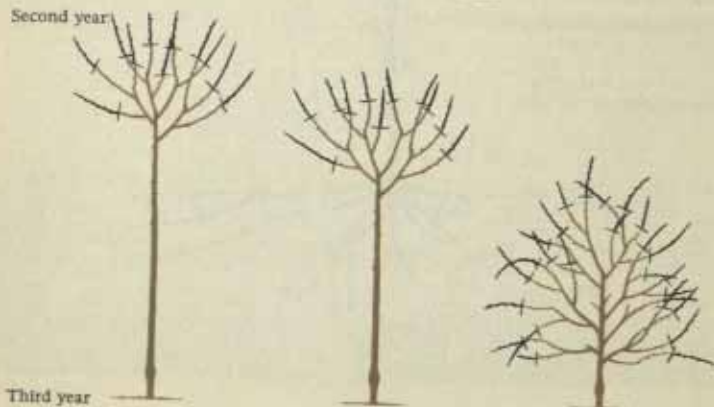
A maiden is developed into a standard, half standard or dwarf pyramid tree depending on how it is pruned. On standards (far left) all side-growths low down on the main stem are removed so that the lowest branches on the mature tree will be 6 ft. from the ground; on a mature half standard (centre) the lowest branches will be $4\frac{1}{2}$ ft. from the ground. Both these forms are suitable for growing in grass. The dwarf pyramid shape (right) is pruned so that its fruiting branches are near the ground, making it easier to harvest.



First year



Second year



Third year

FRUIT

FEEDING

Plums need well-manured soil and benefit from a 1-ft. deep mulch of straw. If this is not possible in a small garden, use peat or leaf mould 2 in. deep. In addition, give a yearly dressing of hoof and horn meal or fish manure at 4 to 5 oz. per sq. yd. each February. Old cow or pig manure if available is a good alternative mulch, and no additional fertilizer will be needed.

Plums on the whole prefer to grow on cultivated land, but will grow on grass if it is fed with hoof and horn meal in February and again after the plums have been picked. If the leaves turn yellow, apply seaweed meal at the rate of 3 or 4 oz. per sq. yd.

POLLINATORS

There are only a few self-fertile kinds of plum, so suitable pollinators should be planted (see list of varieties).

PRUNING

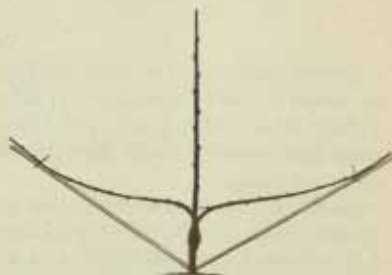
Prune back the one-year-old growths, known as leaders, by about half their length in the February after planting. Such hard pruning of the leaders is necessary for three years with the strong-growing varieties on vigorous stocks, but must be continued for four years in the case of heavy-cropping varieties on weak stocks.

Once good, strong branches have been formed, a tree grown in the open may be left to grow more or less as it will. A certain amount of thinning out to let in light and air will be necessary and this is best done in the summer months when "gumming" quickly seals the wounds against the entry of silver leaf spores. With spreading varieties such as Victoria and Early Laxton, prune the leaders to an upward-pointing bud, but upright-growing varieties such as President and Czar should be cut back to just above an outward-pointing growth to encourage horizontal growth.

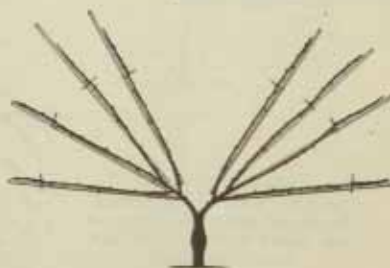
FAN TRAINING A PLUM TREE



First year: In the spring after planting cut the tree back to within 2 ft. of the ground, removing all laterals

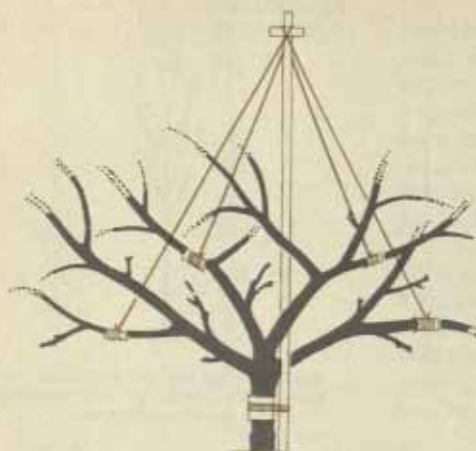


Second year: Allow two suitably-placed side shoots to grow, to form the first branches of the fan. When they are about 1½ ft. long support them with canes and cut away the main stem



Third year: Two shoots on the upper side of each branch and one on the underside should be allowed to grow. Winter prune them to about 1½ ft.

FRUIT



MAYPOLE STAKE

When there is a heavy plum crop it is often necessary to support the branches from late June onward. Ropes from the top of this "maypole" stake can be tied to the heavier branches or attached to them with wire hooks

Any big cuts that have to be made in the winter should be smoothed over with a sharp knife and painted with thick white lead paint to prevent the entry of silver leaf disease.

Plum trees that are to be grown in pyramid shape are planted 10 ft. square. Cut back the laterals late in July to 8 in. and allow the central leader to grow upward. Do no winter pruning, with the exception of cutting back one-year-old growth in the last week of March, a few months after planting.

BARK SLITTING

As plums often get bark-bound in April, when the sap is rising, make a vertical slit with a sharp knife from the top of the trunk to the bottom on the north side of the tree. This slitting of the bark eases the tension, helps the tree to grow better, and makes it, some claim, less susceptible to silver leaf disease.

If for any reason the soil beneath the plum trees has to be sown with grass, it is best to use a mixture of Timothy S/50 grass, wild white clover S/184 and extra

FORKED STAKES

Another way of supporting heavily-cropping branches is to use forked stakes, rather like clothes-line props



late red clover S/123, in a ratio of 1:3:2. Sow at the rate of 1 oz. per sq. yd. and lightly rake in. The clovers will give nitrogen to the plums and the sward will look attractive if mown regularly.

THINNING

When the plums are the size of acorns, thin them out to 3 in. apart. This helps to prevent branch breakages by reducing the weight of fruit, as well as ensuring regular cropping. If there is a heavy crop, even after thinning, support the branches with poles or posts in late June.

THINNING THE FRUIT

The size and quality of plums are improved by thinning, and the process should be spread over several days. First remove all diseased, bruised and misshapen fruit and then remove healthy plums until the remainder are 3 in. apart. When thinning, leave the fruit stalks on the shoots.



Ready for thinning

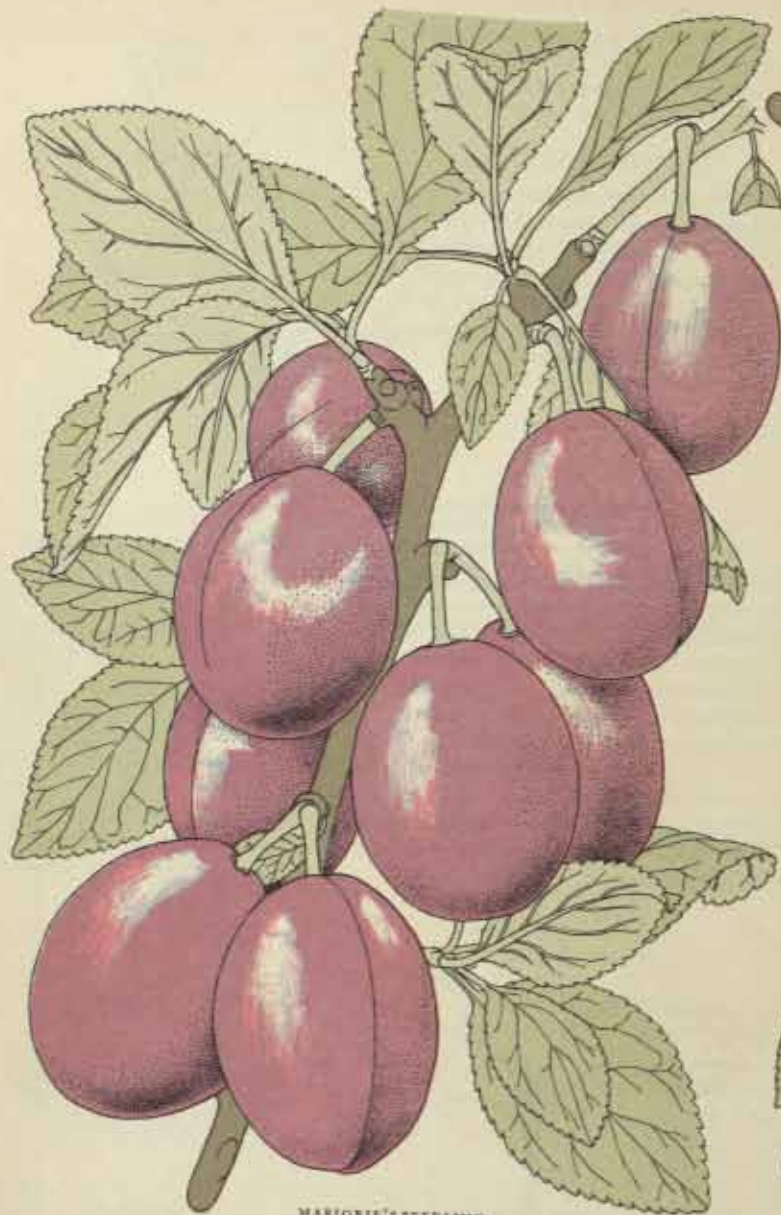


After first thinning



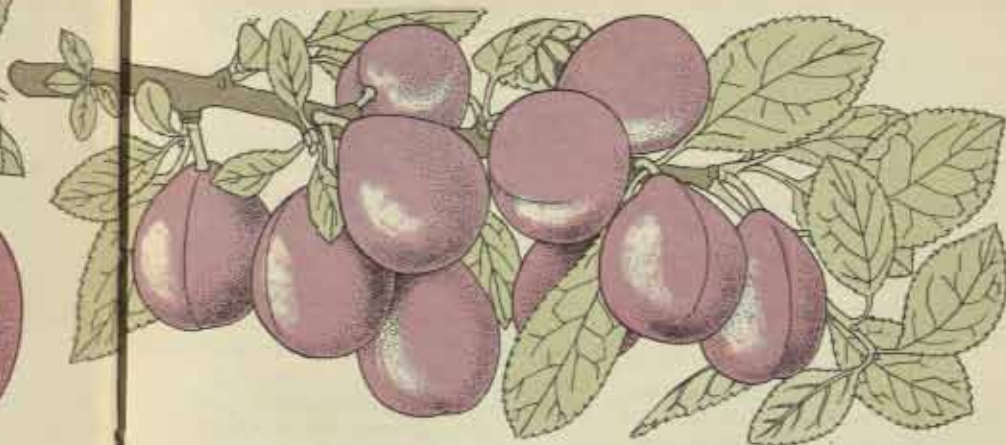
Final crop

FRUIT



MARJORIE'S SEEDLING

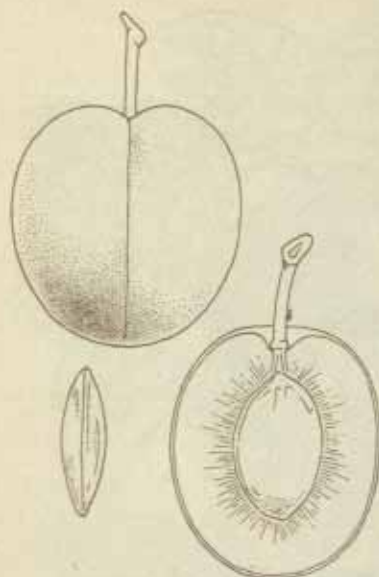
FRUIT



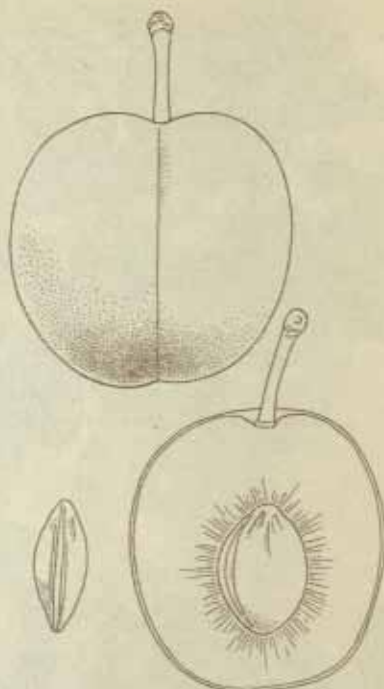
DAMSON
FAIRBIRN



JEFFERSON



RIVERS' EARLY PROLIFIC



RECOMMENDED VARIETIES

D—Dessert

C—Cooking

PLUMS AND GAGES

Bryanston Gage (D), mid-September. Greengage-like, spotted red. Pollinator Greengage.

Cambridge Gage (D), end August. Round greenish-yellow, very delicious. Crops regularly. Pollinator Victoria.

Coe's Golden Drop (D), mid-September. Yellow with red spots on sunny side. Apricot flavour. Grows on wall. Pollinator Early Laxton.

Czar (C), early August. Large dark purple-reddish. Heavy cropper. Self-fertile.

Denniston's Superb, (D), mid-August. Sweet greengage flavour. Vigorous grower. Self-fertile.

Early Laxton (D), end July. Oval-shaped yellow, with pinkish flush. Useful for small garden. Pollinator Victoria.

Early Transparent Gage (D), mid-August. Pale yellow with red dots. Heavy cropper. Very delicious. Self-fertile.

Giant Prune (C), mid-September. Large oval, vermillion-red. Rust-resistant. Good for small gardens. Self-fertile.

Green Gage (D), end August. Yellowish-green with russet dots. Uncertain cropper, but delicious. Pollinator Marjorie's Seedling.

Jefferson (D), end September. Yellowish-green fruit with bronze marks and pink flush. A gage type. Upright grower. Pollinator Denniston's Superb.

FRUIT

Kirke's Blue (D), mid-September. Dark purple with violet bloom. Best grown on wall as fan. Pollinator Victoria.

Laxton's Gage (D), end August. Yellow, round. Vigorous grower. Self-fertile.

Laxton's Goldfinch (D), end August. Yellow, round, sweet. Good for south wall. Probably self-fertile.

Marjorie's Seedling (C), end September. Purple, oval, with bluish bloom. Fruit can be left on tree till mid-October. Self-fertile.

Oullin's Golden Gage (C), mid-August. Large golden-yellow with greyish bloom. Upright grower. Slow to crop. Self-fertile.

President (D), late September. Oval, deep purple with slight blue bloom. Pollinator Denniston's Superb.

Purple Pershore (C), mid-August. Egg-shaped purple. Flowers well after frosts. Self-fertile.

Rivers' Early Prolific (C), end July. Smallish purple, with lavender bloom. Weak growing, compact tree. Pollinator Early Laxton. Good for jam-making.

Victoria (D), end August. Carmine with pale blue bloom. Very popular. Branches break easily. Susceptible to silver leaf. Self-fertile.

Yellow Egg (C), end August. Smallish, bright yellow. Very heavy cropper. Self-fertile. Delicious for jam-making.

DAMSONS

Damsons are small fruits and seem full of stones, and so are less popular than other types of plum. All the varieties listed can be cooked.

Bradley's King, mid-September. Reddish-purple, oval shaped.

Common Damson, end September. Round, black, in clusters.

Farleigh, mid-September. Round, almost black, slightly tapering.

Merryweather, September. Round, deep blue with heavy bloom. The best garden variety.

Shropshire Prune, late September. Deep purple with dense bloom. Excellent for bottling or canning.

LESS COMMON TYPES OF PLUM

Black Bullaces: Ripe in October.

Bullaces: Tiny plums, smaller than damsons. Often called wild plums. All fruits are bluish-black with purplish bloom, and ripen in autumn.

Cape Plums: Should be grown on a south wall, because they are tender and flowers are often damaged by frost.

Cherry Plums: These are somewhat like cherries but slightly larger, and usually raised from stones. They are picked in July.

There are no particular named varieties in Great Britain.

Shiros: Golden-yellow, oval-shaped plums with white flesh.

JAPANESE PLUMS

Japanese plum trees are hardy in the open only in the south-west of England, but in the Midlands and the south can be successfully grown against a south wall as fan-shaped trees.

They crop heavily and look beautiful when growing.

The fruits, though not large, are decorative and juicy.

Grow, train and prune as for ordinary plums, and spray with a tar oil wash each December to keep away aphids in the summer.

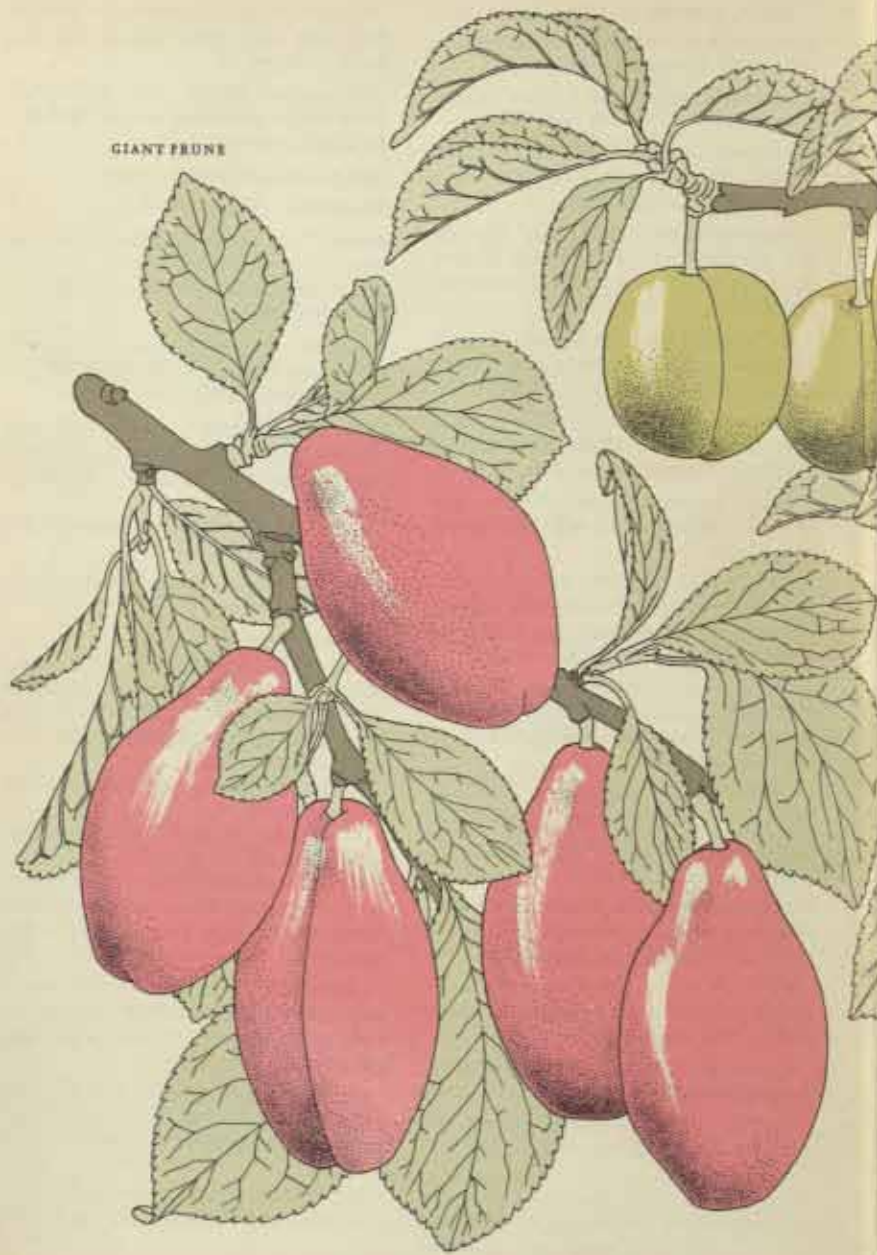
Abundance, August. Round, transparent orange fruit, mottled crimson.

Botan, July. Round, red fruit, very sweet. Moderate grower.

Shiro, August. Golden-yellow, oval fruit. Flesh almost white. Bears the largest fruits of the three.

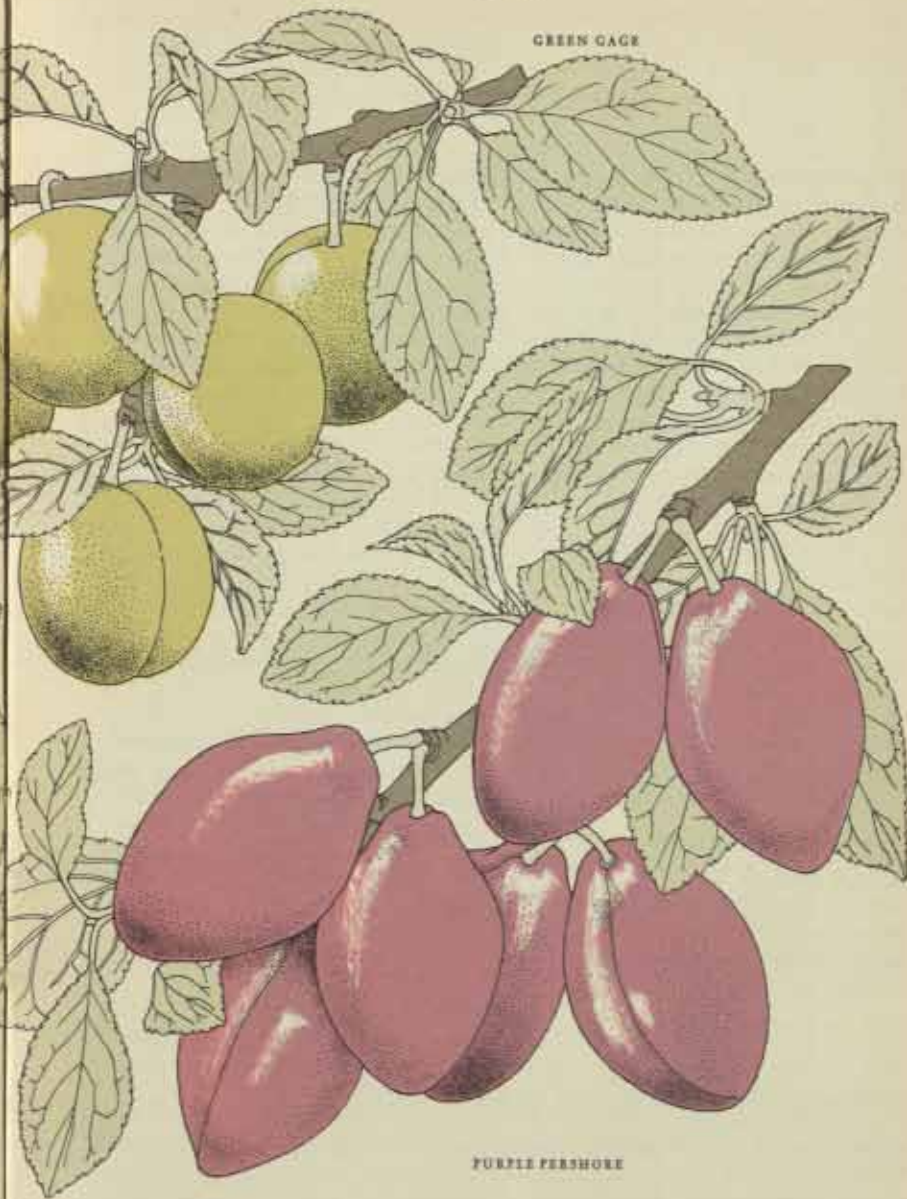
FRUIT

GIANT PRUNE



FRUIT

GREEN GAGE



PURPLE PERSHORE

Raspberries

DURING recent years, raspberries have been attacked by various types of virus. Many erstwhile good varieties have completely disappeared because of serious infection.

The East Malling Research Station is doing a great deal to solve the problem using modern heat therapy as well as breeding new varieties of the Newburgh strain, which is disliked by aphids. Since it is the aphids that carry viruses from cane to cane, such plant selection should eventually eliminate the trouble.

SOIL AND PREPARATION

Raspberries prefer heavy soils to light sands, but also need good drainage. They react well to straw mulching systems on almost all soils because the surface roots are fibrous and do not penetrate more than 6 in. deep.

Dig the soil early in the autumn, putting plenty of cow manure or rotted compost at the bottom of the trench.

TYPE AND AGE OF CANES

Buy one-year-old canes. It is important that they should be virus free, and a Ministry of Agriculture inspection certificate number should be obtainable from the nurseryman.

PLANTING

Plant the canes in late autumn or early winter. Planting can be done as late as February, but can lead to difficulties if followed by a dry spring or early summer. Raspberries should be planted only on ground that is free from perennial weeds, for once the canes are in position, it is almost impossible to control such weeds

as couch grass and creeping buttercup.

Plant the canes 1 ft. apart in rows 6 ft. apart. Remove the soil at the base of each cane carefully, and bury the roots so that the old planting mark is level with the soil surface.

Do not cut the canes down at planting time. Wait until February and then cut them back to a bud 1 ft. above soil level.

FEEDING

Apply straw all over the ground to a depth of 1 ft. in the middle of the month after planting. Because worms will pull loose straw into the ground, it will probably be necessary to add more straw each year, say a 3-in. layer, in mid-September to maintain the depth of the mulch. Each year, in early February, apply bone meal or a fish manure all over the straw at 4 oz. per sq. yd.

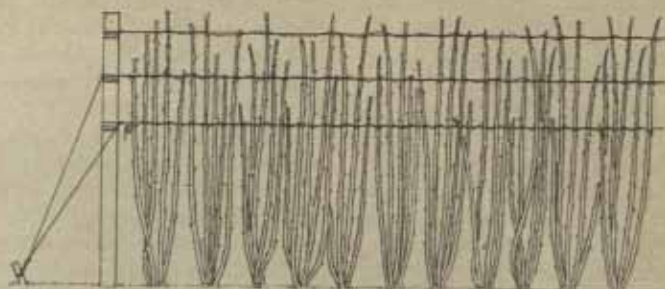
Alternatively, apply well-rotted farmyard manure, compost or sedge peat along the rows in May, to a depth of 1 or 2 in. In the summer, lawn mowings may be applied along the rows also, but these should not be any deeper than 1 in. since they generate heat and may damage the base of the canes.

PRUNING

Every year, immediately after fruiting, cut down canes that have borne fruit to soil level to enable the young canes to grow properly.

In some gardens and with good varieties, canes may grow as tall as 8 ft. Cut these back in late February by about 1 ft. to make picking easier and to encourage the production of fruiting spurs lower down the canes.

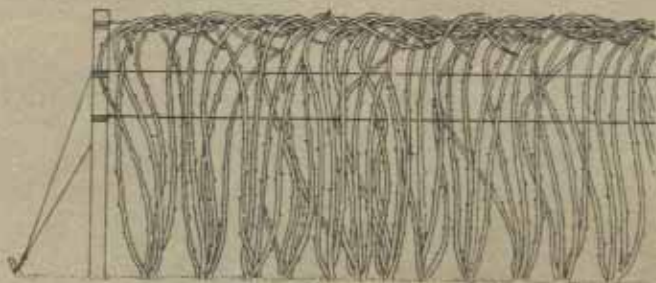
PLANTING AND TRAINING RASPBERRIES



Plant raspberry canes 1 ft. apart in a row and stretch wires between posts at each end of the row. After each season's pruning, tie the canes to the wires at the appropriate heights and 3 to 4 in. apart



Raspberry canes can also be grown between parallel wires running down either side of the row. Keep the wires parallel with strong S-shaped hooks placed at regular intervals



Under the roping system, three wires are stretched along the row one above the other and when the canes reach the top wire they are entwined round it to form a kind of twisted rope

There are, of course, autumn-fruiting raspberries. These must be pruned quite differently. Cut the canes down to within 5 in. of soil level in mid-February each year; the young canes that grow up will carry the crop in the autumn.

TRAINING

Provide posts with wires stretched between them to which the canes can be tied. Use 7-ft. posts and treat the bottom 2 ft. with Cuprinol. Drive these posts into the ground about 15 ft. apart and stretch wires tightly between them, the bottom one at $3\frac{1}{2}$ ft. above soil level, the next 1 ft. higher up and a third 1 ft. higher still.

A less bothersome method is to provide parallel wires between which the canes can grow. Drive in a post at each end of the row and nail a piece of wood to each

one to form a T. Stretch the wires tightly along the rows, attaching them to the ends of the T-pieces. Attach strong S-shaped wires at intervals along the wires to keep them together. This system is not suitable for very vigorous canes or in gardens subject to winds.

A third method is the roping system and is an extension of the first system. The tops of the canes are entwined round the top wire to form a kind of twisted rope. The effect is to make picking easier, and heavier crops may result.

HARVESTING

Raspberries do not keep well, so always pick them on the day they are to be eaten. They should be ripe but still firm for dessert, but if they are to be used for making jam they must be fully ripe.

RECOMMENDED VARIETIES

Lloyd George (New Zealand Strain). A summer- and autumn-fruiting raspberry. Fruit rather hidden. Excellent for jam and quick freezing.

Malling Enterprise, late. Dark coloured, large and good flavour. Excellent for freezing. This is apt to make too few canes.

Malling Exploit, early. Bright red. Fruit partly hidden by leaves. Excellent in south-west.

Malling Jewel, early to mid-season. Delicious, firm and easy to pick. Excellent for jam or freezing.

Malling Landmark, late. Soft, bright coloured. Thorny canes. Outstanding cropper. Useless for bottling.

Malling Notable, early to mid-season. Large, sweet, red. Easy to pick. Specially good in north.

Malling Promise, early. Large, good flavour. Produces plenty of cane. Heavy cropper. Not much good for bottling or freezing.

Norfolk Giant, very late. Dark red, delicious. Resistant to frost. Excellent for jam. Not a very heavy cropper, but useful because late.

FRUIT



MALLING JEWEL

Red Currants

UNDER this heading are included yellow currants and white currants, since they are grown in a similar way.

Red currants are quite different from black currants in that the fruit is produced on old wood. The red currant can be grown, if desired, as a half standard on a 4-ft. stem with the berries borne all the way up the stem as well as on the branches.

Such little trees are most attractive and even look quite well when grown as specimens in a mixed border.

SOIL AND PREPARATION

Like other soft fruits, red currants require good drainage and if this is ensured the bushes will do well on almost any soil. They do, however, need plenty of organic matter and ample supplies of potash. Give them a good open sunny situation sheltered from gales.

TYPE AND AGE OF BUSH

If red currants are to be grown as bushes, buy two-year-old plants; if they are to be grown as cordons trained against a north wall or fence, buy three-year-olds, and for specimens on 3- or 4-ft. stems, buy four-year-old plants.

Even in the case of bushes it is worth while asking that there should be a stem of about 9 to 12 in., so that the branches can grow well above soil level.

PLANTING

Plant in November, if possible, immediately the leaves have fallen, for then the roots will establish themselves before the winter sets in. Planting may continue until the end of February if necessary.

Plant bushes 6 ft. square and cordons

2 ft. apart. Dig a hole 2 ft. square and 8 in. deep, and spread the roots out carefully in it. Prune back with a sharp knife any that were damaged at lifting time so that they point downward. Put back the soil and tread down firmly.

FEEDING

The best way to feed red currants is to cover the soil after planting with straw 1 ft. deep. This makes it unnecessary to hoe in between the bushes or even to fork in between them in the winter. Each February a little more straw may be added if necessary. This is usually only necessary for the first three or four years. In addition, each February apply fish manure with a 10 per cent potash content, at 3 oz. per sq. yd.

If the soil is sandy and likely to be low in potash, give wood ash also at $\frac{1}{2}$ lb. per sq. yd. once every four years in February. Sulphate of potash may be used as an alternative, at 1 oz. per sq. yd. annually.

PRUNING

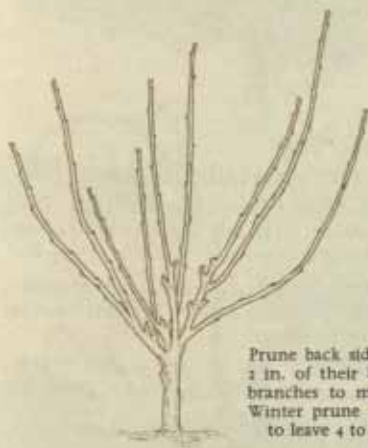
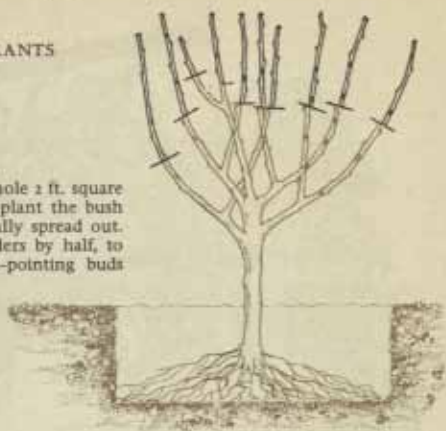
During the first four winters, cut back the one-year-old leaders on bushes by about half to just above an outward-pointing bud, to produce a goblet shape. Prune back the laterals or side growths to within about 2 in. of their bases, thus gradually forming six or seven good branches to keep the goblet shape. Aim to make these branches about 7 in. apart at their tips.

In addition to winter pruning, in mid-June of each year break off with the back of the knife all laterals to within 6 in. of their bases. This treatment will enable the fruit to ripen well.

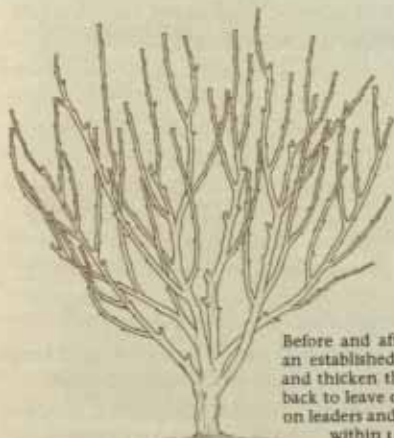
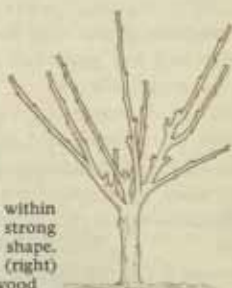
FRUIT

PLANTING AND PRUNING RED CURRANTS

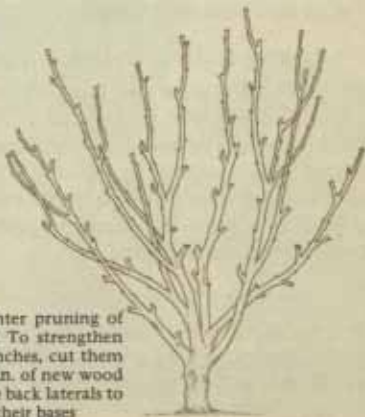
In November dig a hole 2 ft. square and 8 in. deep and plant the bush with its roots carefully spread out. Prune back the leaders by half, to just above outward-pointing buds



Prune back side growths to within 1 in. of their bases, leaving strong branches to make a goblet shape. Winter prune a young tree (right) to leave 4 to 6 in. of new wood



Before and after winter pruning of an established bush. To strengthen and thicken the branches, cut them back to leave only 9 in. of new wood on leaders and prune back laterals to within 1 in. of their bases





FAY'S PROLIFIC

Do not summer-prune the leaders, but after the first five years cut them back by a quarter each winter.

In the case of red currants grown as half standards prune back in June the side growths on the main stem to within 2 in. of their bases, but prune the leaders in exactly the same way as recommended for bush trees.

Keep cordons as a single stem, cutting the leader back by about half each year and the side growths or laterals to within 1 in. of their bases each winter.

PROTECTION FROM BIRDS

Birds can give a great deal of trouble by pecking out the fruit buds in the spring. Keep them away by stringing black cotton between the branches every January. Red currants are better grown in a wire cage if possible because birds seem to prefer them to any other fruit.

HARVESTING

Pick the currants the moment they are a good clear colour. Pick whole bunches at one time and do not attempt to pick off single berries.

RECOMMENDED VARIETIES

Earliest of Fourlands, very early. Long bunches, clear red. Upright grower and regular cropper.

Fay's Prolific, early. Long bunches, large. Useless in a windy situation because branches break.

Laxton's No. 1, mid-season. Large, crimson. Good flavour. Heavy cropper.

Minnesota, mid-season. Brightly coloured, large. Strong grower.

Perfection, mid-season. Large, heavy, long bunches. Spreading bush.

Raby Castle, mid-late. Medium-sized bunches and fruits. Excellent for cordons.

Red Lake, mid-season. Brightly coloured, delicious. Upright and vigorous.

Rivers' Late Red, long bunches, bright red. Spreading bush, best late variety.

Wilson's Long Bunch, late. Long bunches, medium. Strong upright grower.

White Dutch, late. Whitish-yellow. Spreading bush, heavy cropper.

White's Transparent, mid-season. Large white. Sometimes called White Pearl.

White Versailles, early. Long bunches, sweet. Growth medium and upright.

Strawberries

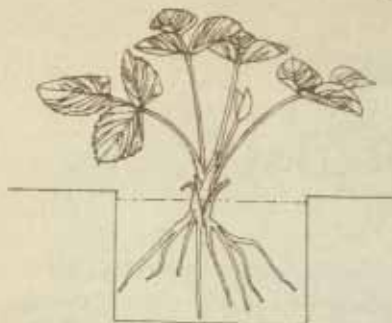
SOIL AND PREPARATION

Strawberries grow naturally at the edge of woodlands and therefore prefer leaf mould and similar organic matter. They also like light soil and good drainage. Since they are surface rooting, cultivation should be extremely shallow. In July, before planting, fork in very well-rotted compost, spent hops, leaf mould or dung at 2 good bucketfuls per sq. yd.

ROYAL SOVEREIGN



FRUIT



PLANTING STRAWBERRIES
Position the plant with its crown just above soil level. Replace the soil, tread firm and hoe lightly

TYPE AND AGE OF PLANTS

Always buy healthy young plants in August or early September. They should be plants that have been obtained from a virus-free mother stock that has been grown in soil rich in organic matter.

PLANTING

With a trowel make a good hole for each plant, spread the roots carefully, put back the soil and tread down hard. Hoe lightly afterwards to remove footmarks. The rows should be $2\frac{1}{2}$ ft. apart and the plants $1\frac{1}{2}$ ft. apart in the rows. If planted in August strawberries will give a

heavier yield, not only the first year, but for three years afterwards. If the weather is mild, planting can be done as late as early November, but this does not give time for the plants to establish themselves and winter losses can be expected. Spring planting is possible though no crop must be taken the first summer.

MULCHING

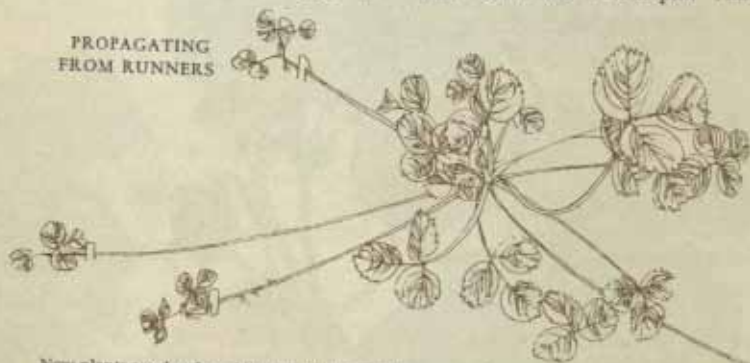
After flowering, mulch the plants. Use clean straw or peat or peat moss litter, or even polythene strips, and apply round the plants to keep the fruit trusses clean and off the soil. Do not apply the mulch too early, otherwise the risk of damage by frost will be increased.

If straw is used, rake it into ridges and burn it at the end of the season where it lies; this will not harm the plants and will help to get rid of pests. Alternatively scrape up the straw and put it on the compost heap, where it should be sprinkled with fish manure at 3 oz. per sq. yd.

PROPAGATION

It is possible to obtain good runners in July and August. As the little plants appear, peg them down into the soil or into 3-in. pots sunk into the soil using strong wires bent like a hair-pin. This will

PROPAGATING FROM RUNNERS



New plants are developed by pegging down the runners that trail from the old plant into 3-in. pots sunk into the soil. After new roots have been made the daughter plants can be severed and planted out elsewhere

enable the roots to form more quickly.

Plant out the newly rooted plants in freshly prepared beds. If they have been rooted directly into 3-in. pots they can be potted on in August and used for forcing under glass for earlier fruit.

FEEDING

In April every year apply a fish fertilizer containing 10 per cent potash at 3 oz. per sq. yd. Immediately after fruiting give hoof and horn meal at 3 oz. per sq. yd.

PROTECTION

When frost is expected, cover the strawberry bed with sheets of newspaper or polythene to protect the plants.

Since there is seldom any wind on a frosty night, the newspapers will not be blown away.

As birds are very partial to strawberries, put fish netting all over the plants early in the season to give protection.

RECOMMENDED VARIETIES

Cambridge Favourite (Hartley Mauditt strain), mid-season. Large, salmon-scarlet. Heavy cropper, compact grower.

Cambridge late Pine, late. Conical, crimson, sweet flavoured. Resistant to frost and mildew.

Cambridge Prizewinner, early. Light scarlet, firm. Plants spreading, love wood ash at 5 oz. per sq. yd.

Cambridge Rival, early. Large, conical, crimson. Good variety for sandy soils.

Cambridge Rearguard, very late. Rounded, dark crimson. Very subject to red core disease and mildew. Loves sandy land.

Cambridge Sentry, mid-season. Glossy crimson. Resistant to diseases. Good for bottling and jam-making.

Cambridge Vigour, early. Glossy crimson. Resistant to disease and frost.

Merton Princess, mid-early. Large, crimson. Susceptible to red core.

Red Gauntlet, mid-season. Large, scarlet. Vigorous compact grower. Large trusses.

Royal Sovereign, mid-season. Scarlet, large, delicious. Likes heavier soils.

Talisman, mid-late. Large crimson. Excellent for jam. Resistant to mildew. Soft in rainy seasons.

ALPINE STRAWBERRIES

These tiny strawberries are much loved on the Continent. They can be raised in the greenhouse at a temperature of 55° F. (13° C.) from seeds sown in March in boxes of No-Soil compost or John Innes seed compost.

When seedlings are $\frac{1}{2}$ in. high, prick them off, 1 in. square, into boxes containing John Innes potting compost No. 1.

Grow the plants on in the greenhouse on the shelving for another fortnight, and then harden them off in a frame until mid-May, when they can be planted out in rows $1\frac{1}{2}$ ft. apart, with 1 ft. between the plants. These plants will crop the same year.

Alternatively, plants can be obtained from a reliable nurseryman in September. Remove the first few flowers that appear, to encourage heavy cropping from August till October.

Baron Solemacher is the best variety to grow. It is a heavy cropper for very many weeks in the summer and is delicious as dessert and very good for jam. This variety never produces runners.

STRAWBERRIES IN BARRELS

If the only space available is a concrete yard or a veranda, it is still possible to grow strawberries—in a barrel. The barrel should be about $4\frac{1}{2}$ ft. high with a diameter of 3 ft. at the top.

Make four or five drainage holes about $1\frac{1}{2}$ in. wide in the base of the barrel, and cover each hole with broken crocks. Then make 20 to 24 holes about 3 in.



STRAWBERRY BARREL

This is an ideal way of growing strawberries in a town garden. About two dozen plants can be planted through holes in the side of the barrel, and a further half dozen grown on top

wide here and there in the sides of the barrel, through which the plants can grow. Gradually fill the barrel with John Innes potting compost No. 2.

As work proceeds, push the plants through the holes in the barrel from the outside, firming the soil over the roots. Insert six more plants in the top surface. Stand the barrel on bricks to ensure good drainage, and put it in a light position.

Water immediately after planting to help the soil to settle, and water regularly during the summer.

The best variety for this method of culture is Cambridge Favourite.

REMONTANT STRAWBERRIES

These are often known as perpetual strawberries, and crop principally in September and October.

Prepare the ground as for ordinary strawberries but plant in October instead of August. Remove the first flowers completely; the second batch of bloom will fruit in the autumn.

Mulch the rows in mid-July with sedge peat, not only to keep the moisture in but to ensure that the berries are clean. The flower trusses are often long.

Plant firmly, $1\frac{1}{2}$ ft. apart, in rows 2 ft. apart, and keep the crowns of the plants just above soil level.

RECOMMENDED VARIETIES

Hampshire Maid, August to November. Round, firm, dark red. Good for jam, heavy cropper.

Red Rich, September to November. Dark red, juicy. Easy to grow.

Sans Rivale, September to December if covered with cloches. Large trusses, large, red. Very heavy cropper.

St. Claude, October to November. Solid, juicy, sweet. Dark green leaves. Resistant to disease.

St. Fiacre, September. Fair sized, red. Shortest cropping kind.

Unusual Fruits

FIGS

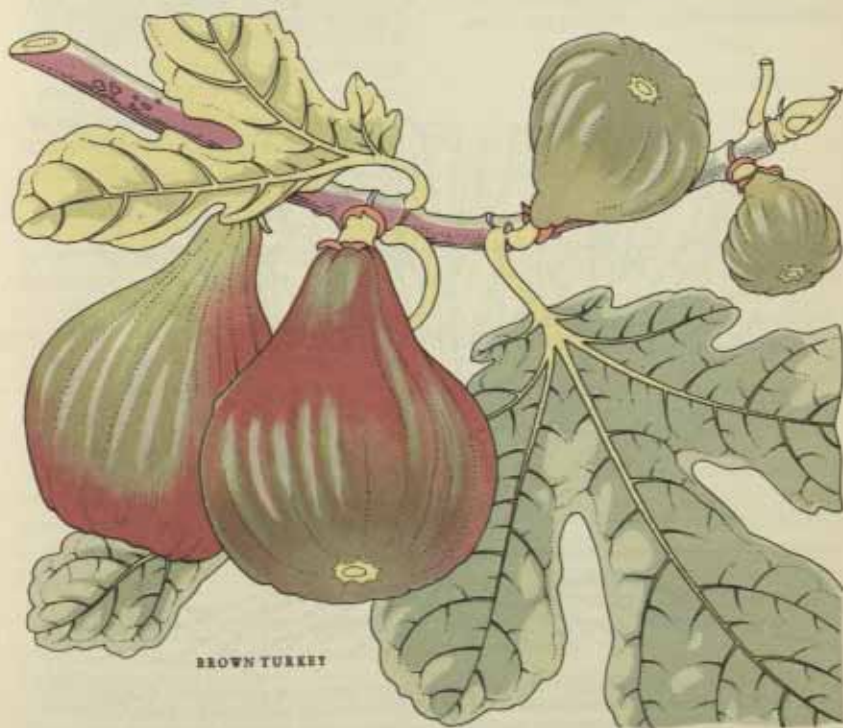
Although figs have been grown in Great Britain from the time of Henry VIII they have never been very popular, because the summer is too short for a second crop of fruit to ripen. Failure may also occur through frost killing the wood.

Figs are usually grown against a sunny wall to give them some added warmth. They do best on very poor unmanured soil, since if the land is fed, the tree will start to make rank growth and fruiting will be discouraged.

The fruit is produced on the young wood. Mature buds on the tips of the wood swell out the following summer to give the first crop of fruit.

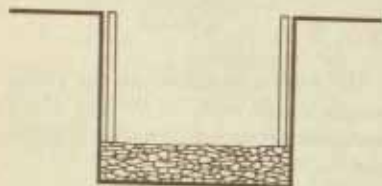
PLANTING

Plant near a warm wall as soon as possible after the leaves have fallen in November. Restrict the growth of the roots by digging a hole 1 yd. square to a depth of 2½ ft. Put pieces of brick into the bottom of the hole and tread them down

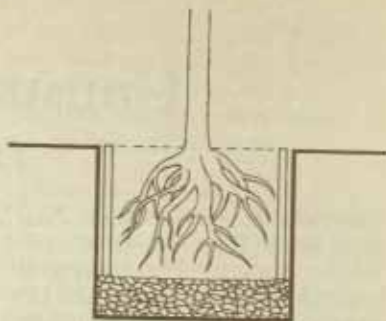


BROWN TURKEY

PLANTING A FIG TREE



Cover the bottom of a hole 3 ft. square and $2\frac{1}{2}$ ft. deep with pieces of brick, and line the sides with sheets of asbestos roofing; this is to restrict root growth

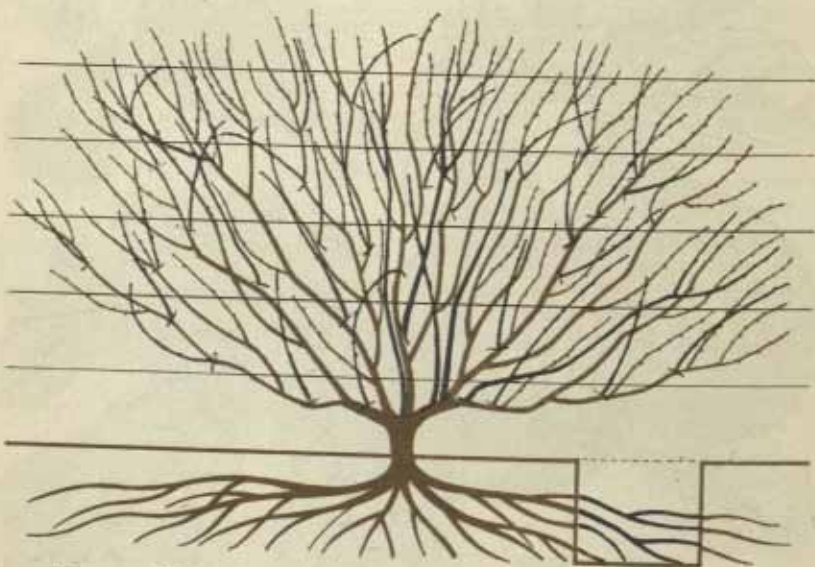


Plant the tree as soon as possible after the leaves have fallen. When replacing the soil, mix crushed chalk with it unless the soil is already chalky

tightly to ensure good drainage and to prevent the development of deep anchorage roots. Line the sides of the hole with sheets of asbestos roofing cut to size.

Place the plant in the hole and spread out the roots evenly. Replace the soil and, unless it is already chalky, mix in with it a 6-in. potful of crushed chalk.

CULTIVATION



Prune an established fan-trained tree to keep it "open". Remove a quarter of the branches each November and cut back some of the others. If the tree was not planted in a restricted hole, prune the roots every other year after the seventh, cutting them off 3 ft. from the tree

PRUNING

For the first six years, little pruning is necessary, but after this remove a quarter of the branches each November. Also cut back some of the other branches to keep the tree "open". The principal object is to encourage the production of new wood on which the fruit will be borne. Train the branches fanwise on wires attached horizontally to the wall at 1½-ft. intervals. Be sure to remove any branches which might shade other branches. A tree, when fully trained, can cover a wall space about 35 ft. square.

ROOT PRUNING

Where it has been impossible to plant the fig in a restricted hole, it will be necessary to prune the roots in winter every other year after the seventh year. If the tree is growing against a wall, make a half circle with a 5-ft. radius from the trunk. Plunge a sharpened spade perpendicularly into the soil at least 1½ ft. deep all round the half circle so as to cut off any roots there may be. If bushes are being grown, prune the roots all round them in a similar way. Even when grown in an asbestos box, some roots may escape and at the end of ten years root pruning may be necessary.

GENERAL MANAGEMENT

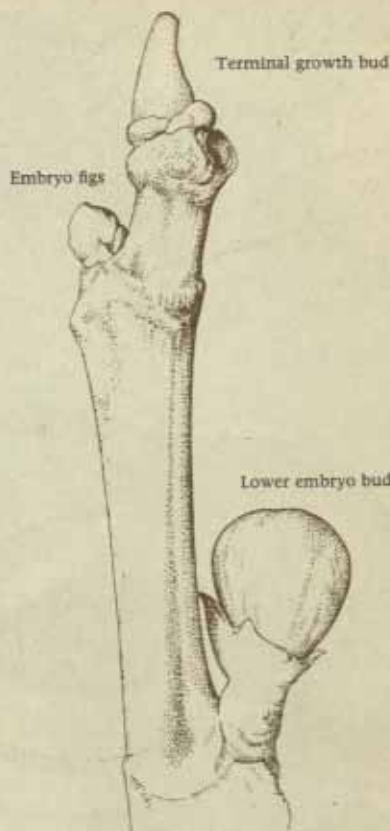
During a severe winter, protect the bunches of undeveloped fruits with straw, or hang sacking over the branches like an apron. Figs of the second crop never grow larger than walnuts and should be removed in November. If left in position they tend to check the formation of the embryo of the next year's fruits.

RECOMMENDED VARIETIES

Black Ischia, August or September. Large, brown. Very hardy.

Brown Turkey, August. Large, brownish-red with bluish bloom when ripe.

A YOUNG FIG SHOOT



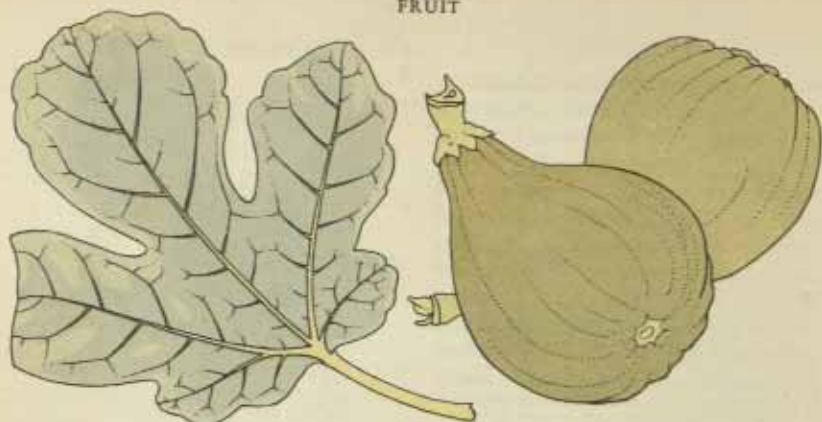
The following year's crop forms beneath the terminal growth bud. The lower embryo bud is of no value and should be removed

Deep red flesh, excellent flavour. Hardy, heavy cropper.

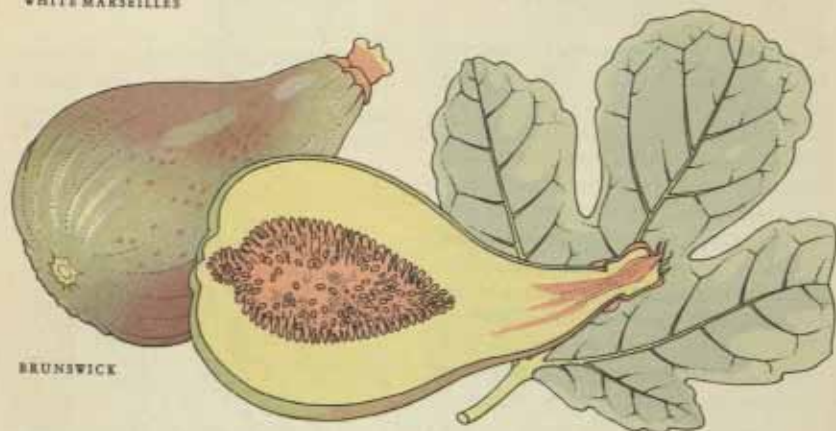
Brunswick, August. Very large green with bluish-brown flush and brown dots. Fairly good flavour. Tree needs water in a dry summer.

White Marseilles, August or September. Yellowish-green, medium size. For south of England only.

FRUIT



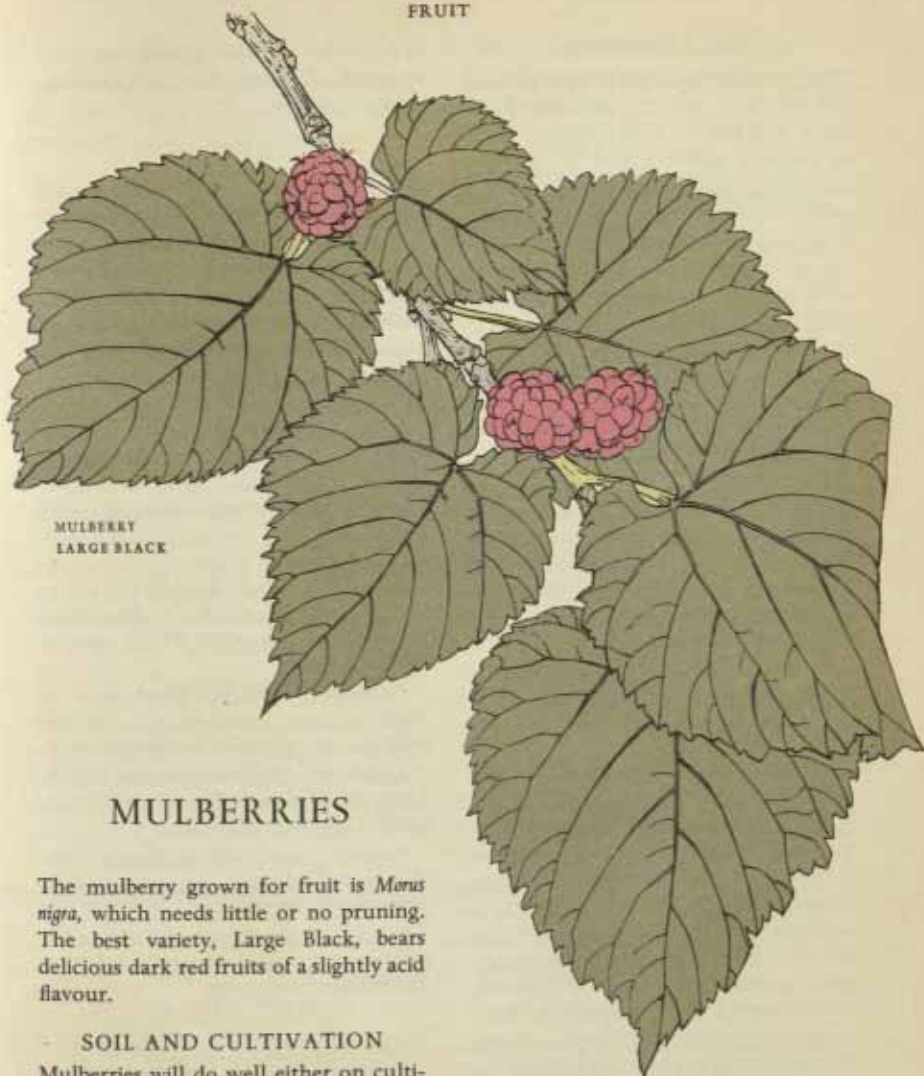
WHITE MARSEILLES



BRUNSWICK



BLACK ISCHIA



MULBERRY
LARGE BLACK

MULBERRIES

The mulberry grown for fruit is *Morus nigra*, which needs little or no pruning. The best variety, Large Black, bears delicious dark red fruits of a slightly acid flavour.

SOIL AND CULTIVATION

Mulberries will do well either on cultivated ground or on grass. The type of soil does not matter provided the position is sunny and the soil is not sodden. They grow very slowly but eventually take up about 30 ft. of space.

It is inadvisable to dig deeply round a mulberry tree at any time as the roots are apt to bleed if they are injured.

PLANTING AND STAKING

Buy three-year-old plants and plant in November. Dig out a hole 8 in. deep and 2 ft. across and spread the roots out carefully. Replace the soil and tread down firmly. Provide each tree with a good stake and tie with a proprietary plastic strap.

PROPAGATION

The trees are propagated by 1-ft. long cuttings from one-year-old wood taken from the tree in early October. Make a cut just above a bud at the top end of each cutting and just below a bud at the bottom end and insert the cutting 9 in. deep in sandy soil in a cold frame. Leave the cuttings in the frame under glass during the winter and remove the glass early in May. By the following September the cuttings should be well rooted. Dig them up in October and plant out where they are to grow.

HARVESTING

Unfortunately the fruits do not all ripen at the same time. The simplest way of harvesting, therefore, is to place old sheets under the tree on which the fruits will drop when ripe. They can then be collected easily and will not get dirty.

QUINCES

The quince is such an attractive tree that it looks well in the flower garden or as a specimen on the lawn, and need not be grown in the section of the garden devoted to fruit trees. It bears beautiful large white flowers in June, and the fruits, which are golden in the autumn, may be allowed to hang on the trees until well into the winter. Bush trees are convenient because it is easy to pick the fruit. Standards are taller and more decorative, but take longer to come into bearing.

Buy two-year-old plants for bushes and three- or four-year-olds for standards, and plant as for apples in any ordinary soil.

FEEDING

Apply bone meal in February at the rate of 4 to 5 oz. per sq. yd. all round the tree

as far as the branches spread, and apply a mulch of compost or peat over the same area in May.

PRUNING

For the first three or four years cut back the one-year-old growths on each branch by a good half and the stronger one-year-old side growths by about three-quarters, leaving the weaker ones below. After the fourth year no pruning is required except to remove an overcrowding branch or two in December if necessary.

HARVESTING

Pick the fruits in October or November if desired. Do not store them with other fruits, for their aroma will taint apples and pears.

RECOMMENDED VARIETIES

Champion, October. Apple-shaped, golden. Good grower. Flesh crimson when cooked.

Common Quince, November to March. Large, apple-shaped, golden-yellow. Strong grower, excellent flavour.

Meech's Prolific, November to March. Large, round, golden. Heavy cropper. Can be used very late.

Portugal, November to March. Pear-shaped, mild flavour. Vigorous grower. Large downy leaves.

Smyrna, November to March. Large, yellow, with mild flavour. Vigorous grower, heavy cropping.

MEDLARS

Medlars were great favourites in Victorian days, when they were served after dinner with port. The fruits are unusual in that they cannot be eaten until they are partially decayed. The trees are sometimes grown in the flower garden because their white flowers are beautiful in early June.

SOIL

The trees will grow on almost all soils, but if the soil is dry and sandy, plant trees grafted from white thorn stock.

PLANTING

Plant any time between November and March, the earlier the better. Buy two-year-olds on quince stock for bush trees and four-year-olds on seedling pear stock for standards. Provide a good stake, driving it in at an angle for bush trees (away from the bush and the opposite side to the prevailing wind) and upright for standards. Tie with a plastic tree strap.

FEEDING

Apply bone meal each February at 3 oz. per sq. yd. all round the tree as far as the branches spread. Apply a mulch round the tree early in June on sandy soil and on other soils in a dry season. Peat or compost, 1 in. deep, is suitable.

PRUNING

Cut back the one-year-old terminal growths by half for the first four years, and by a quarter for the next two years. Cut back the stronger one-year-old side growths by about half and leave the weaker side shoots.

After the sixth year allow the tree to grow naturally, except for cutting out one or two misplaced growths which fill up the centre of the tree.

HARVESTING

When the tree is growing in grass allow the fruits to fall to the ground. Otherwise, pick in November and store the fruits calyx downward on sheets of paper on a shelf in a greenhouse at a temperature of about 45 to 50° F. (6 to 10° C.). In three or four weeks the fruits will start to decay and turn a dark brown, and are then ready to eat. This ripening-off is called "bletting".

RECOMMENDED VARIETIES

Dutch, November to March. Large, good flavour. Free cropper, spreading in habit. Best variety for standard tree.

Nottingham, November to March. Medium-sized, pear-shaped, excellent flavour. Small-leaved. Upright in habit. Excellent as a bush tree.

The Royal, November to March. Medium-large with good acid flavour. Crops when young, excellent as a bush.

CRANBERRIES

The cranberry is an evergreen trailing hardy shrub.

SOIL AND PREPARATION

A peaty, sandy soil is best for the cranberry, but any well-drained soil will do. As plenty of moisture is required, fork in ample organic matter when preparing the bed. Old rotted compost or damp sedge peat may be used at 2 bucketfuls per sq. yd. The bushes do well in a moist situation, near a pool or stream.

PLANTING

Plant at any time between the end of September and the beginning of March. Buy 2-year-old shrubs and put them in 2 ft. square. Every fifth or sixth year split the plants up into two or three pieces during October or November and replant in properly prepared beds.

GENERAL TREATMENT

During a dry summer, flood the beds from time to time. Mulch in early June with well-soaked sedge peat.

RECOMMENDED VARIETIES

American Cranberry, September. Bears pink flowers on creeping growths. Berries are pinkish-red.

Common Cranberry, autumn. Pink flowers followed by globular red berries.

BILBERRIES

The bilberry, sometimes called the huckleberry or whortleberry, never grows higher than about 2 ft. It grows wild in many of the peaty soils of the British Isles and is particularly popular in the north of England.

SOIL

Bilberries like a sunny position in sandy soil into which sedge peat has been forked at the rate of 3 bucketfuls per sq. yd.

PLANTING

Plant one-year-old plants 2 ft. apart each way, any time in November or December.

FEEDING

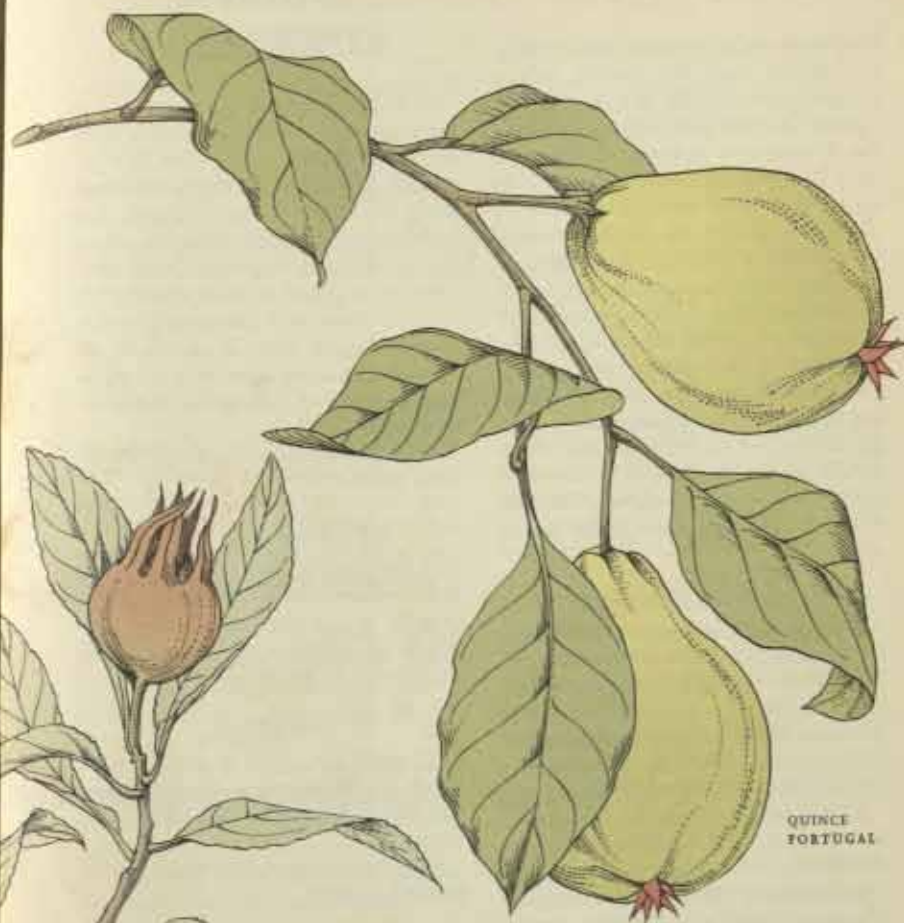
Every year, in February, apply a fish manure with a 6 per cent potash content at 3 oz. per sq. yd. and fork in very lightly. If the bilberries are mulched with peat 1 in. thick, apply the fish manure over it and allow it to wash in naturally. If the season is very dry, water the plants thoroughly in June.

HARVESTING

When ripe, the fruit is dark purple and the size of a black currant. The season is in June or July. The fruit is more suitable for tarts and jams than as a dessert.



BILBERRIES

MEDLAR
DUTCHQUINCE
PORTUGAL

CRAB APPLES

Crab apples are small round apples which are usually used for making jellies, though some varieties can be used for dessert. The trees bear particularly pleasing flowers, and as these are followed later by brilliantly coloured fruits, crab apples make most effective standards in the flower garden. Many varieties also have brilliantly coloured autumn foliage.

All varieties are happy growing in grass, for the sward takes up the excess nitrogen in the soil, which has the added advantage of making the fruits even more highly coloured and attractive. For easier picking, half standards are preferable to standards. The care and management of the trees is exactly the same as for ordinary apples. (The varieties listed below will be found in most catalogues under *malus* or *pyrus*.)

RECOMMENDED VARIETIES

Dartmouth, October or November. Deep crimson covered with blue bloom like a plum. Strong grower. Sometimes called Hyslop.

Golden Gem, October or November. Bright golden, like huge cherries. Attractive foliage. Medium grower.

John Downie, October or November. Rich scarlet, oval. Crops heavily. Very decorative.

Red Siberian, October or November. Cherry coloured, somewhat small. Strong grower. Makes large tree.

Siberian Yellow, October or November. Bright golden-yellow, somewhat small. Very prolific.

Transcendant, October or November. Yellow with crimson cheek. Medium grower. Fruit large enough for dessert.

Veitch's Scarlet, October or November. Golden, blushed crimson, oval. Strong grower. Sometimes used as dessert.

JAPANESE
WINEBERRIES

This fruit is a species of raspberry. The plant grows 7 or 8 ft. high and is often used as a climber over arches. It is extremely decorative, the stems and foliage being covered with woolly bristles. The berries are round, bright orange in colour and very juicy with a pleasant sweet taste. They are enclosed in hairy sepals which open up when the fruits ripen, generally in early August. Since all the berries on a spray ripen at the same time, cut whole sprays instead of picking the berries individually.

There are no varieties; simply ask for *Rubus phoenicolasius*.

SOIL AND MANURES

Any good garden soil will do. Fork it over well and add well-rotted compost or sedge peat at the rate of 2 bucketfuls per sq. yd. At the same time apply fish manure at 3 oz. per sq. yd.

PLANTING

Plant canes 5 ft. apart at any time between the beginning of November and the end of February when there is no frost.

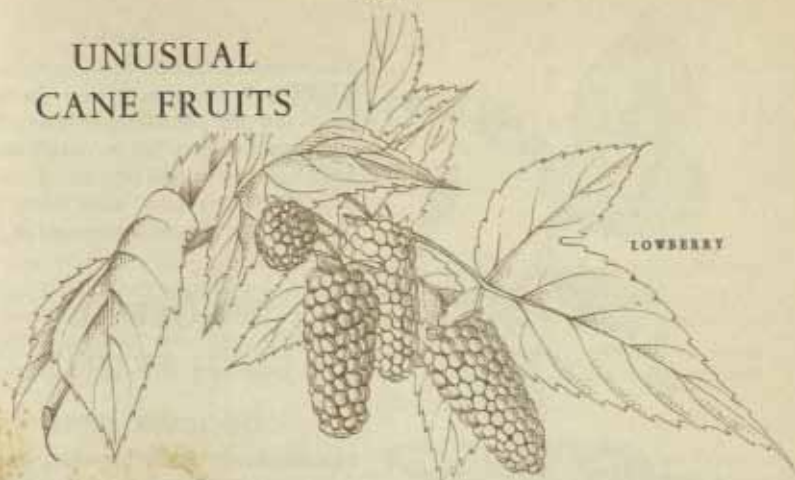
If not being used as climbers, put in the plants 4 ft. square.

PRUNING

Prune as for blackberries, cutting away the old canes when they have finished fruiting and then tying up the new canes in their place.

In some soils where the canes are too vigorous, move one or two of the older canes at the end of each season and prune back their tips in February by about 1 ft.

UNUSUAL CANE FRUITS



LOWBERRY

In addition to the Japanese wineberry, there are a number of unusual cane fruits which can be grown in exactly the same way as blackberries or loganberries. All of them must be trained up wires to keep them off the ground and all need heavy manuring.

Prepare the plot where the canes are to be planted by forking in well-rotted compost at 2 bucketfuls per sq. yd. and adding fish manure with a 6 per cent potash content at 3 oz. per sq. yd.

Buy one- or two-year-old canes, plant them in October or November in rows with 8 ft. between the plants and 8 ft. between the rows. Spread the roots out and plant firmly. Then mulch the ground with sedge peat for 2 or 3 ft. round each cane. All canes should be cut down to within 1 ft. of the ground each February.

BOYSENBERRY

This is one of the heaviest-cropping cane fruits and is said to have come from blackberry, raspberry and loganberry stock. Its large fruits are round and dark reddish-brown in colour, are not too seedy and have very little core. The canes do not usually start growing vigorously

until 18 months after planting. Once the roots are established, strong canes are produced which bear well. It is hardy and very resistant to drought. The fruit is ready to pick in July and August.

KING'S ACRE BERRY

This hybrid was produced by crossing a blackberry with a raspberry. The fruit comes away from the core like a raspberry and looks like a long blackberry. It has good flavour. The canes are sturdy and crop heavily. The fruit is usually ready to pick in mid-July or early August.

LOWBERRY

This is probably a cross between a blackberry and raspberry. The fruits, which are large, conical and dark-lilac coloured, are good for bottling and preserving. They are usually ready to pick in August.

PHENOMENAL BERRY

This is a kind of loganberry which produces larger fruit and ripens later. Do not pick the berries until they are fully ripe, otherwise they will be too acid. They are not ready until August, when they are a reddish-purple colour.

FRUIT

YOUNGBERRY

These originated from Young's Nursery, California, from a cross between the dewberry and the phenomenal berry. The plant is very thorny. The berries are black, large, juicy with few pips and are easy to pick as they grow away from the canes. May be planted as close as 7 ft.

UNUSUAL BUSH FRUITS

WORCESTERBERRY

This is said to be a cross between a gooseberry and a black currant. It grows as a strong, prickly bush like a gooseberry. The fruit is dark red, of gooseberry shape but of black currant size. Because of their prickles, the bushes are not easy to prune nor the berries easy to pick. Worcesterberries make a good impenetrable hedge if planted 3 ft. apart. When grown as bushes, plant them at least 6 ft. apart.

BLUEBERRY

This shrub, a native of North America, requires an acid soil and a site where the roots can find water about 20 in. below the surface. Plant in rows 6 ft. apart with 4 ft. between the rows. Hoe between the rows regularly during the first year but in May of the second year apply peat all over the ground to a depth of 1 in.

Propagate by means of 6-in. cuttings of hard wood from the previous season's growth. Insert these into the soil 4 in. deep. Do not prune until the third year, when some of the older wood may be cut out. The fruit is produced on the previous season's growth. The berries are ripe during August and September. The best variety to choose is Rubel, because it is the only kind which sets its fruit satisfactorily without a pollinator.



BLUEBERRY

VEITCH BERRY

This is a cross between a blackberry and the raspberry November Abundance. The fruits are ready to pick in August, when they are twice as large as blackberries and in fact look like large mulberries. The canes are reddish-purple and look very pretty in the winter.

Nuts

ALMONDS

The almond is regarded as a dual-purpose tree. It is sometimes cultivated for its beauty, and sometimes for the nuts it will bear. Almonds are therefore often planted as specimen trees on a lawn, and are not usually planted in an orchard.

SOIL AND PREPARATION

Almonds are not very particular about soil. Heavy clays should be well-drained. If the land is sandy and also acid, apply carbonate of lime at $\frac{1}{2}$ lb. per sq. yd.

Take care to choose a site for the trees where there is some protection from the freezing winds of early spring, otherwise the blossoms will not set and nuts will not be produced.

TYPE AND AGE OF TREES

Buy either three- or four-year-old standard or half-standard trees.

PLANTING

Plant the trees any time between November and January. Dig a circular hole 3 ft. across and 8 in. deep.

Examine the roots and if any of them have been damaged cut them back with a sharp knife.

Because of the height of the tree double stakes are necessary. Drive them in about 2 ft. apart on either side of the centre of the hole. Nail a cross bar from one stake to the other and tie the tree to it with a plastic tie. Place the tree in the centre of the hole and spread out the roots evenly all round. Put back the soil gradually and tread it down well from time to time as the hole fills up.

FEEDING

After planting, mulch all round the trees with sedge peat to a depth of 1 in.

Once a year in February apply hoof and horn meal at the rate of 3 oz. per sq. yd. all round the trees and as far as their branches spread.

PRUNING

For the first four years after planting, cut back the one-year-old leaders by about half to just above a bud to build up good, strong branches.

Also cut back by a half any of the side growths that tend to cross or rub one another.

This pruning encourages earlier successful cropping.

From the fifth year onward allow the tree to grow naturally: it will look more beautiful.

HARVESTING

Do not gather the nuts from the tree but wait until they fall to the ground, except where squirrels are a nuisance, when they may be picked about the third week in October.

RECOMMENDED VARIETIES

Prunus amygdalus dulcis produces a sweet almond with a mild nutty flavour. Does not crop as heavily as *P.a. praeox*.

P.a. praeox is the best variety. It crops well and the nuts can be used for both dessert and for cooking. Because the nuts contain a little hydrocyanic acid, children should not be allowed to eat very many of them.

P.a. macrocarpa is similar to *P.a. dulcis*.

ALMOND FRUIT AND BLOSSOM



COB-NUTS AND FILBERTS

Though cob-nuts and filberts are grown in exactly the same manner, the nuts themselves are quite different. The filbert has a husk longer than the nut itself, but the husk of the cob-nut is shorter.

SOIL AND PREPARATION

Cob-nuts and filberts do well on almost every type of soil but, on the whole, crop

better on light sandy soils because they do not then make strong growth. If they are grown on heavy clays do not give them fertilizers.

PLANTING

Buy two-year-old trees on 15-in. stems and plant them 15 ft. square in November, if possible, so that the roots can establish

FRUIT

KENTISH COB



themselves before the winter. Dig holes 3 ft. across and 9 in. deep and spread the roots out evenly and carefully in them. Ram the soil down firmly as it is put back to cover the roots. The trees need staking only if the situation is very exposed.

FEEDING

In May apply well-rotted compost or farmyard manure as a dressing all over the ground round the trees at the rate of a good barrowload to 10 sq. yds. On light sandy soil apply bone meal in addition at 3 oz. per sq. yd. in February.

PRUNING

Aim to produce seven or eight good branches and shape the tree like a cup

with an open centre. Cut back the leaders by half to just above an outward pointing bud and cut back the laterals by about three-quarters with the exception of those that may be needed to form new branches. Reduce the latter by about half only.

For the first five years prune early in March when the male catkins are opening. This will disturb the catkins and so help to distribute the pollen.

After the fifth year prune back the leaders by about a quarter only. Do not prune the short growing spindly laterals at all because it is these that bear the bulk of the female flowers.

Cut back any suckers right to their bases with a sharp knife.

In the summer break back the laterals by about half with the back of the knife blade and leave hanging. (This is known as *brutting*.) *Brutting* lets light and air into the tree and prevents the production of secondary growth.

PROPAGATION

The trees can be propagated vegetatively by bending a branch carefully so that a piece of two-year-old wood may be buried in the soil. (See *Propagation*.)

If this is done in the spring, the branch will root by the autumn, when it can be severed from the parent plant.

HARVESTING

Delay picking the nuts until the husks are quite hard. Then spread the nuts out on the shelving of a greenhouse or the floor of a dry shed, turning them every two or three days until they are really dry. They may then be stored in a cool, dry place until Christmas.

RECOMMENDED VARIETIES

Cosford, roundish, light brown with thin shell. Sweet-flavoured. Tall, upright tree, produces plenty of male catkins. Good pollinator for all other kinds.

Kentish Cob, light brown, long, flattened. Good flavour. Very heavy cropper. Clusters of two to five. Also known as Lambert's Filbert.

Kentish Filbert, dark brown in clusters of three or four. Vigorous, upright grower. Few male catkins.

Knight's Large Cob, large, square, with thick shell. Otherwise similar to Cosford in every way.

Red Filbert, red-skinned. Grows like white filbert. Few catkins. Must have a pollinator.

WALNUTS

Because walnut trees grow so large and take so many years to come into cropping, they are seldom planted. Nowadays, however, it is possible to grow walnuts as bush trees, which come into cropping earlier.

SOIL AND PREPARATION

Walnuts will grow on almost any soil but prefer a well-drained clay with a fair lime content. Where trees are planted in sandy soils, mulch the soil round them after

planting, using old rotted compost 3 in. deep in a ring 3 ft. wide. No special soil preparation is necessary.

As walnut flowers are easily ruined by frost, it is essential to plant the trees in a frost-free place, preferably on fairly high ground. Avoid depressions and low spots where frozen air tends to collect.

PLANTING

Plant between November and January. Dig a hole 9 in. deep and 3 ft. across.



GREEN WALNUTS

Spread the roots out evenly and cover with soil gradually, treading down well as the planting proceeds.

FEEDING

Each March apply bone meal all over the ground at the rate of 2 oz. per sq. yd. and in addition give young trees a mulch of rotted compost or leaf mould in spring.

PROPAGATION

The propagation of walnuts is specialized work for the nurseryman.

PRUNING

In July, when about six good leaves have formed, cut back the leaders by a quarter just above a bud and aim at keeping the tops of the branches level. As a result flower buds will then form on the lower parts of the shoots. Do not pinch back any weak laterals at that time for they will usually be the bearers of male catkins.

Do not prune walnuts at any time between November and May.

POLLINATION

It is important to grow a variety that has plenty of male catkins. Some kinds produce male catkins long before the female catkins are ready to be fertilized. In such cases plant another variety which will produce male catkins at the right time.

HARVESTING

Walnuts for pickling should be gathered when the shells are quite soft. The ripe fruits drop and the shells split.

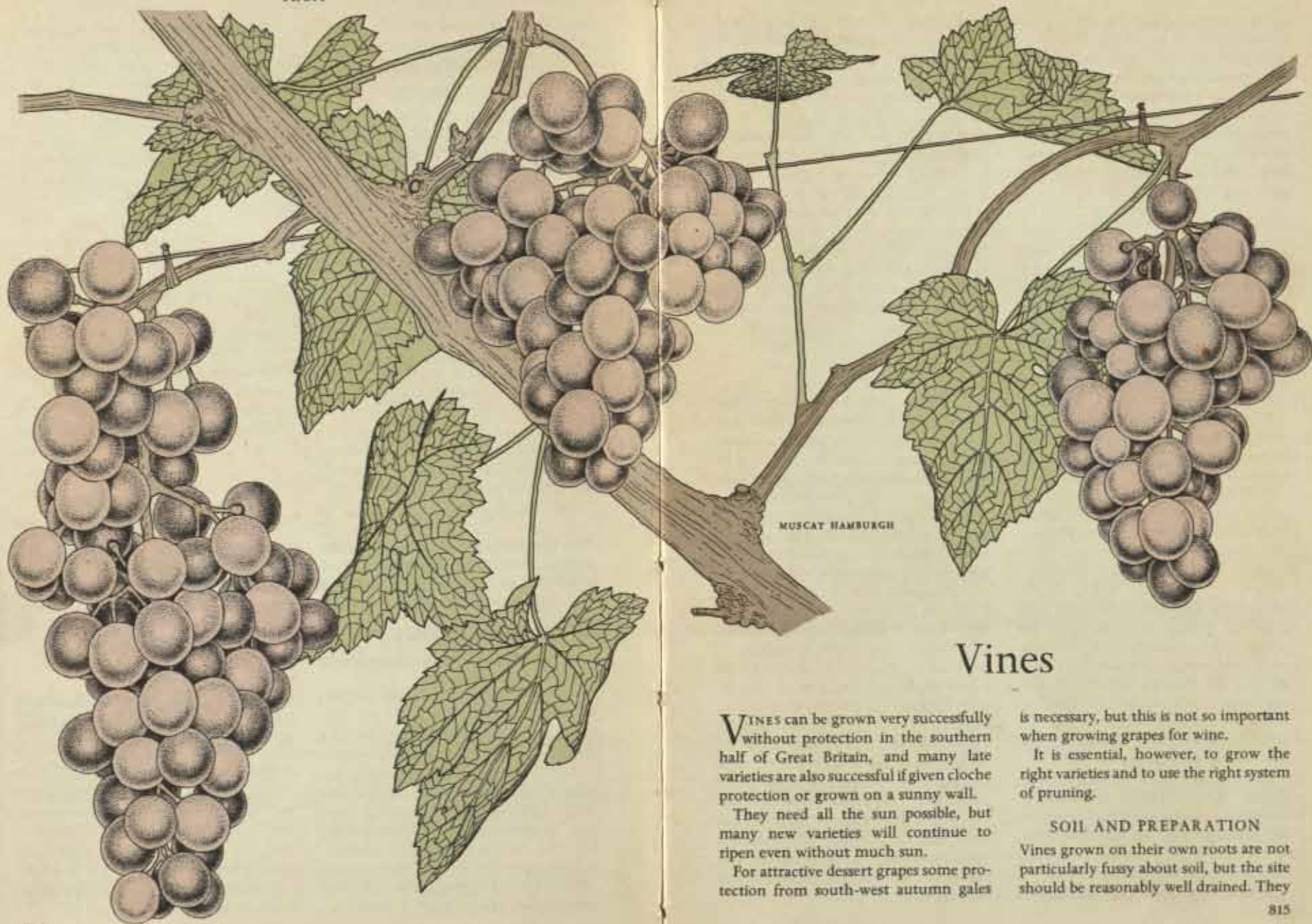
RECOMMENDED VARIETIES

Franquette, large, pointed, strongly shelled. Produces leaves late. Less susceptible to May frosts than other varieties.

Mayette, large, roundish, with thin shells flattened at one end. Easy to crack.

Northdown, oblong. Young growth is bronze in spring.

FRUIT



MUSCAT HAMBURG

Vines

VINES can be grown very successfully without protection in the southern half of Great Britain, and many late varieties are also successful if given cloche protection or grown on a sunny wall.

They need all the sun possible, but many new varieties will continue to ripen even without much sun.

For attractive dessert grapes some protection from south-west autumn gales

is necessary, but this is not so important when growing grapes for wine.

It is essential, however, to grow the right varieties and to use the right system of pruning.

SOIL AND PREPARATION

Vines grown on their own roots are not particularly fussy about soil, but the site should be reasonably well drained. They

do well in normal soils, but on very rich soil may give too much leaf. While they will grow on very poor soil, such as sand, gravel or chalk, they will not give best results unless a small regular addition of mixed fertilizer is given. When preparing the site, deep dig the ground to break up any hard pan below the surface, and, if the soil is poor, apply bone meal at $\frac{1}{2}$ lb. per sq. yd.

PLANTING

Buy one-year-old plants. If they are to be grown against a wall, it is best to plant them so that the main stem can be trained horizontally. If several horizontal stems are needed, it is best to make each one from a separate vine, as in the illustration. These vines can be planted close together. If only one vine is used the top stem will always take the sap from the lower ones.

If the vines are to be grown in the open, plant them in rows 4 ft. apart, with 3 ft. between the rows to permit the use of a modern small cultivator.

Plant in the spring, unless the site is well protected, otherwise the vines tend to die off in a hard wet winter if they have only just been moved.

CULTIVATION

Vines need very little cultivation after planting. Hoeing to keep down the weeds and occasional shallow digging over is normally sufficient. Let weeds grow in the autumn, and dig them in shallowly in the winter. As vines are extremely deep rooted, they will not suffer from drought or damage by shallow digging after the second year.

Vines are exceptionally susceptible to drought in the first spring after planting, and need watering until they are established and growing fast. Cold east winds in the spring kill many vines in their first year if they are dry at the roots.

If the vines are in normal soil, they will

grow at least 5 ft. high in the second year, and in rich soil 5 ft. in the first year. If they do not reach 5 ft. in the second year, apply mixed fertilizer of standard agricultural quality, such as Growmore, at the rate of 5 cwt. per acre. This rate of growth is the only criterion for adding fertilizer or not.

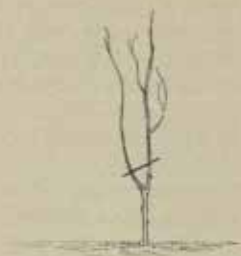
Do not cultivate or mulch in early spring, because if the soil is covered or very loose, the vines are more liable to damage from spring frosts since the soil stays colder longer. Spring frost is the great danger to young vines, as the leaves and flowers are very susceptible, but since vines normally come into leaf in May they escape most frosts. They are completely winter-hardy in Britain.

PRUNING

The normal methods of pruning that have developed in Britain are either long cordons on walls, or a replacement shoot system called Guyot. This latter can be varied to suit the conditions, and is suitable for all types of vine in the open or on walls. Cordon pruning, in which the vine has a permanent stem and the fruiting shoots are cut back to one eye each year, is completely unsuitable for certain vines where the basal buds are sterile. It is far safer to cut back the fruiting shoots to four buds, and rub out in spring the non-flowering shoots.

All vines when planted should be cut down to three buds, and allowed to grow freely for the whole year. When the shoots are 6 in. long, pinch out the tip of all but the best shoot. This leaves the maximum of leaves to feed the roots, but favours the production of one strong leader. If this main leader does not reach 5 ft. in the first year, cut back to three buds again, and repeat in the second year. The growth to 5 ft. in the one year shows that the vine is strong enough to start fruiting.

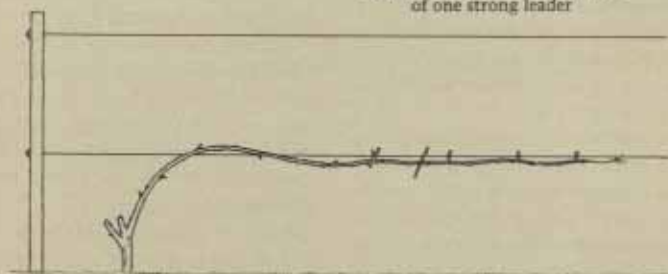
CORDON-PRUNED VINES



Cut the newly-planted vine down to three buds and allow the plant to grow freely in the first year



When the shoots are 6 in. long, pinch out the tip of all but the best shoot. This leaves the maximum leaves to feed the roots, and helps the production of one strong leader



When the leader is 3 ft. long, cut it back to six buds and bend it over horizontally



In the next year these six buds will grow laterals and some or all will bear flowers and fruit

CORDON PRUNING

If it is decided to grow a cordon, which is a convenient method on a wall or under cloches, cut back the leader to six buds when it is 5 ft. long or more, and bend it over horizontally. If a cordon is required at a greater height on the wall, rub out all the bottom buds and bend over the top at the appropriate height leaving six buds.

In the next year, these six buds will grow laterals and some or all will bear flowers and fruit. After the flowers have opened, pinch out the tips of the shoots at a point three or four leaves above the flower truss so that more sap will pass into the flowers and concentrate the growth where it is wanted. During the rest of the year, shorten any further side shoots that develop, keeping four or five leaves to provide plenty of foliage. Do not keep more than four bunches of grapes in the first year.

In the winter shorten two laterals to six buds each, and remove the others. The two laterals will then give twelve fruiting laterals and at the end of the year two or more of these laterals can be retained and the rest removed, and so on each year. On a wall the cordon may be permitted to grow to a considerable size, but it should be remembered that the bigger the vine the later it will ripen, and it is usually best to have a number of smaller vines rather than one large one.

GUYOT PRUNING

In the second or third year when the leader is 5 ft. or more long, cut it back to six buds as for cordons, and bend it down horizontally 1 to 1½ ft. from the ground. This method is normally used for vines grown in rows, and it is customary to use one of two methods—Single Guyot, or Double or Dwarf Guyot—but many variations are permissible.

When the main leader is bent over, cut back one of the other shoots from the

base of the vine to two buds, and remove all other shoots.

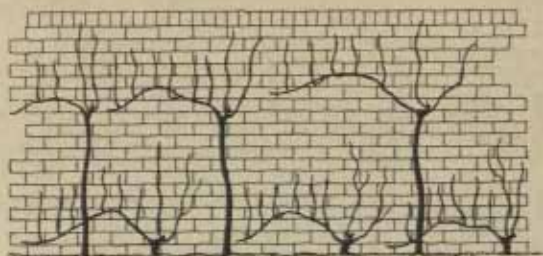
In the next year, the laterals on the leader will bear fruit, and the shoots from the other stem may be permitted to grow upward to form fresh replacement shoots for the following year.

Single Guyot: Stretch wires along the row at heights of 12 to 14 in., 30 in. and 50 to 60 in. Allow the new leaders to grow to the top wire and then cut them off so that the wood will ripen to form good new shoots. In the winter cut away the entire fruiting shoot with all its laterals to the base, and bend down the best of the two replacement shoots in its place, shortening it to approximately 4 ft. Cut back the other replacement shoot to two buds, and so on each year.

During the summer tie the fruiting shoots to the middle wire and top them with shears or a knife throughout the season to give a good head of foliage above the bunches of grapes. It is an advantage to do this for the first time when the flowers are in bloom.

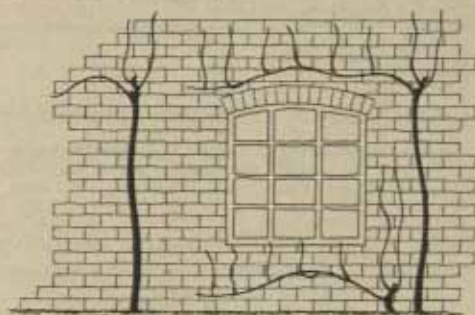
Double or Dwarf Guyot: In this system the principle is exactly the same, except that *three* new shoots are grown each year. Two of these are bent down one on each side, and the third is cut back to three buds. The ones to be bent down for fruiting carry five or six buds each, i.e. they are half the length of the normal long single Guyot bearer. This system has the advantage that the top wire need be at only 2½ ft., so that the vineyard is less susceptible to damage by high wind; it is particularly suitable in Britain. The total number of buds and bunches is the same by both methods.

As vines grown by the Guyot method get older and taller, the main stem will throw out fresh shoots from various points in the spring. If the main stem gets too tall, allow one of these shoots to grow on for a year, and when it has



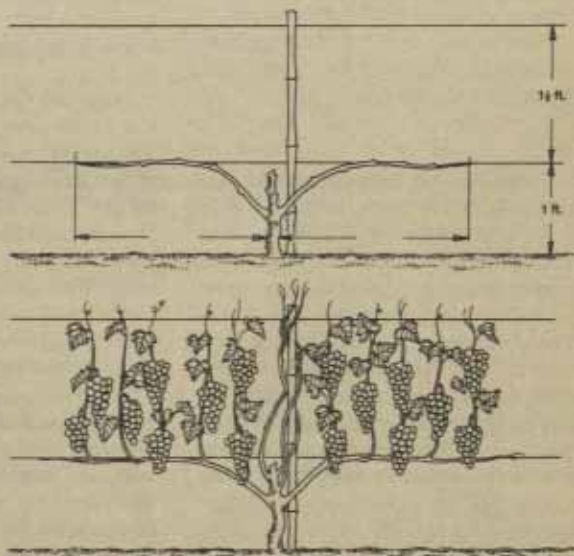
WALL-TRAINED VINES

Single-Guyot-pruned vines growing against a wall, showing laterals on the horizontal shoots and replacement shoots. Separate vines, planted close together, will produce several horizontal stems

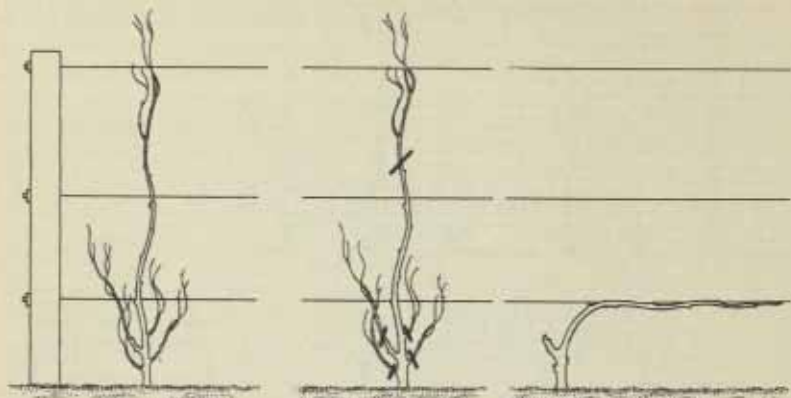


DOUBLE-GUYOT- PRUNED VINES

Treat in the same way as a single-Guyot-pruned vine but allow three new shoots to grow each year. Cut two new shoots down to five or six buds and bend them horizontally—one on either side. Cut the third shoot back to three buds. In the next year the laterals on the horizontal shoots will bear fruit



SINGLE-GUYOT-PRUNED VINES



Allow the vine to grow freely in the first year. In the second or third year, when the leader is at least 5 ft. long, cut it back to six buds and bend it horizontally, 1 to 1½ ft. from the ground. Remove all other side shoots except one, which should be cut back to two buds.

matured and is ready for fruiting, saw off the old stem. This will do no harm, and will leave the vine rejuvenated.

The time of pruning is important. It is usual to prune in winter after the hardest weather in order to delay the opening of the buds, thus avoiding damage from spring frost. Normally the vines bleed, but this has no ill effect.

SPRAYING

Almost all vines in Britain will be affected by one of the two vine mildews. These are easy to control, and on walls or in small areas the simplest remedy is to powder them every three or four weeks, depending on the weather, with a mixture of Bordeaux powder and ground sulphur dust. This controls both mildews, but it must be done before the trouble begins. It is usual to give the first powdering just before the vines blossom and, if the season is wet, four or five powderings may be necessary; if dry, two may be sufficient. Do not powder after the grapes change colour, as sulphur powder will then affect the flavour.

RIPENING AND PICKING

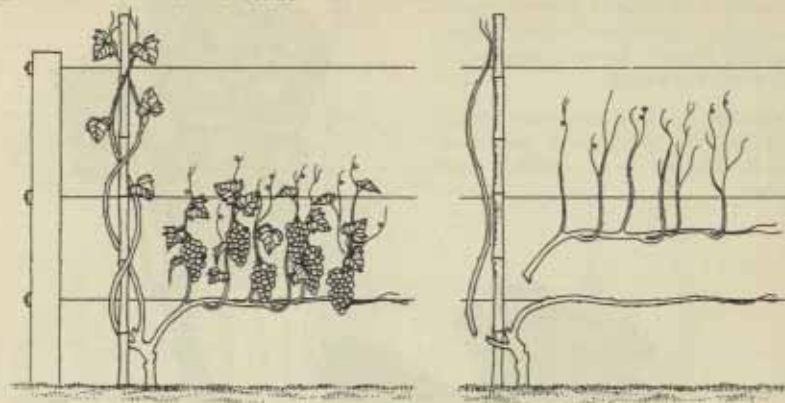
The grapes will swell at a tremendous pace from July to September, but at a certain point they will come to "veraison". This is the time when they cease to swell and begin to ripen, and is recognized by the transparent appearance of the berry.

After this the quantity of sugar in the berries will increase quickly in a warm season, and the acidity will decrease at the same time. The grapes will normally be ready for eating before they have enough sugar for a good wine, but if it is a wet autumn, watch carefully and pick before the berries rot too badly.

It is usual to permit a little rotting in order to make sure that the berries are as ripe as possible.

On a wall or under cloches, some varieties of grape, such as Muscat Hamburg, Chasselas 1921 and one or two others, will hang until November quite satisfactorily. This extends the season very considerably, but the fruit must be kept reasonably dry during the late autumn to prevent rotting.

SINGLE-GUYOT-PRUNED VINES



In the following year laterals on the leader will bear fruit. Allow the other shoots to grow upward to form replacement shoots the following year

RECOMMENDED VARIETIES

D = Dessert O = Ornamental W = Wine

Baco I (o, w), a rampant grower with small black berries, rather acid; tremendous crop.

Brant (o, D, w), small black berries, fair flavour, very reliable cropping, wonderful autumn foliage colour.

Chasselas 1921 (D, w), large golden berries, very good for walls; good champagne-type wine, and one of the finest eating grapes.

Chasselas Rose Royale (D, w), similar to 1921 but pink colour, very ornamental berries.

Excelsior (D), medium berry, very heavy cropper, white grapes of very low acidity; very reliable.

Muscat Hamburg (D), large black muscat berries hanging well on vine, rather late, wonderful flavour; no thinning necessary.

Madeleine Sylvaner 28/51 (w), heavy cropper, white grape, very good for white wine; excellent in open vineyard.

Muscat de Saumur (D), medium to large golden berries of excellent flavour; ripens in open vineyard.

Muscat Queen (D), large white berries of good muscat flavour; very good for walls but normally too late to ripen in the open.

Noir Hâtif de Marseille (D, w), small black muscat, very early, makes excellent wine; very suitable for walls or open vineyard.

Pirovano 14 (D), medium to large reddish-black berries, very early, good flavour; suitable for walls or open vineyard; may need hand fertilizing in cold springs.

Précoce de Malingre (D, w), small golden berries, excellent flavour, making very good white wine; very early and very prolific in Britain.

Seyve-Villard 5-276 (w), medium berry, white, very heavy cropping, slightly late but normally safe in good site in open vineyard; makes excellent white wine.

Strawberry Grape (o, D), black grape, medium to large berry, with faint strawberry fragrance, ornamental leaves; not a heavy cropper.

FRUIT

Siegenerrebe (D, W), new German variety with large golden-brown berries with very powerful muscat flavour; famous for wine and good eating.

Schuyler (D), new American hybrid, black medium berries with good non-muscat flavour; very prolific under cloches.





Home Wine-making

FRUITS, flowers and vegetables grown in the garden can easily be made into delicious wines. By following simple modern methods, it is possible to guarantee success and to produce wines that are better in colour, flavour and texture than ever before. The cost is negligible, and if a few simple rules are observed, even a beginner can win compliments for his cellar.

WHAT WINE IS

Wine is the fermented juice or extract from fruits, cereals, vegetables, flowers or leaves. If properly made, it is a delicious, invigorating, sustaining and health-giving drink, which can improve the appetite, quell nervous worries and beget a feeling of well-being.

A first-class wine is brilliantly clear, with no deposit and a bright colour; it has an attractive aroma or bouquet, and

is pleasant and clean to the palate. A poor wine is cloudy or dull, has a musty, acid or sour odour, an unpalatable flavour, or is excessively sweet and syrupy.

HOW WINE IS MADE

The production of wine is a simple scientific process. The fruit juice or vegetable extract, containing natural or added sugar, yeast and acid, ferments and produces carbon dioxide which appears as bubbles and escapes into the air, and alcohol which stays in the wine. According to method, the wine may contain from 9 to 17 per cent alcohol, be sweet, medium or dry, and still or bubbly.

It is the percentage of alcohol that determines the strength of the wine. Assuming that the wine is properly made and that fermentation is efficient, then the greater the sugar content, the higher will be the alcohol content, up to the

time when the yeasts cease to ferment.

To obtain an alcohol content of 10 per cent, each gallon of prepared juice or extract, known as "must", will require $1\frac{1}{2}$ lb. sugar. Add $\frac{1}{4}$ lb. sugar for every additional 1 per cent alcohol required.

Dry wines contain hardly any sugar, since the sugar has been used up during fermentation, and have a low alcohol content—about 10 per cent. A much weaker wine than this would not keep well and would have to be drunk young.

A sweet dessert wine, with an alcohol content of 17 per cent, needs more sugar for conversion into alcohol, and as much as $3\frac{1}{2}$ lb. sugar is added per gallon of juice or extract, so that when fermentation ceases some sugar still remains.

To produce a rich dessert wine with an alcohol content of more than 17 per cent, it is necessary to fortify the wine by adding a strong alcohol preparation such as vodka at the rate of 1 or 2 fluid oz. per 26 oz. bottle.

EQUIPMENT

The following items will be needed:

<i>Equipment</i>	<i>Purpose</i>
Stainless steel knife	Cutting
Wooden board	Chopping
Fruit press (home-made: two $\frac{1}{2}$ in. ply 18 x 6 in. boards, hinged together)	Pressing out juice
Wooden vegetable press (circular wooden base with centre handle)	
Mechanical juice extractor	
Colander	Coarse straining
Butter muslin or coarse nylon sieve	
Close texture nylon cloth or sieve	Fine straining
Saucepan or fish kettle	Boiling vegetables to extract juice
Spoons	Stirring
Graduated jug	Measuring liquids
Scales	Weighing produce etc.
Thermometer (air)	Taking room temperature
Thermometer (liquid)	Taking temperature of liquids
Earthenware crock (not lead-glazed) or old-fashioned wash jug	Preliminary soaking of fruit
Bowls and jugs	Mixing
Glass jars (1 gall.) and holed bungs	Fermenting
Fermentation locks (one for each jar)	Keeping air out
Rubber tubing, 4 ft. long and nearly $\frac{1}{2}$ in. in diameter	Siphoning from jar to bottle
Wine bottles (26 oz.) and corks	Storing wine
Bottle brush	Cleaning bottles
Corking tool (tube or plunger)	Corking bottles
Labels	Recording type and date
Wire loops	Securing corks
Funnel plugged with cotton wool	Filtering wine to clear
Polythene covers or cork bungs	Sealing jars

The necessary apparatus for wine-making is not costly. Never use equipment made of iron, brass, copper or chipped enamel, but only of stainless steel, aluminium, sound enamel, monel metal (a nickel-copper alloy) earthenware (not lead-glazed), china, glass or plastic. It is most important to keep all equipment scrupulously clean, and to sterilize crocks, jars and bottles. Do not use any detergents for cleaning wine-making equipment.

PROCEDURE

There are seven steps in home wine-making:

1. Selection and preparation of fruit or vegetables.
2. Extraction of juice.
3. Addition of sugar, yeast and nutrient.
4. Fermentation.
5. Racking off into jars.
6. Clearing as necessary.
7. Bottling and storing.

1. SELECTION OF FRUIT AND VEGETABLES

Fruit should be really ripe, sound and clean. Good wine cannot be made from decayed, diseased or bad fruit. Vegetables should be mature. Long-stored potatoes, parsnips and beet make excellent wine. Turnips, on the other hand, should be young.

2. EXTRACTION

Fruit. Break up soft fruit, such as blackberries, between the fingers; cut medium stiff fruits, such as plums, into $\frac{1}{2}$ -in. pieces, after removing the stones; and cut stiff fruits, such as apples, into $\frac{3}{4}$ -in. pieces. It is not necessary to strip currants or to peel and core apples. As much fruit juice as possible should be extracted, but it is usually difficult to do this when the fruit is fresh, because of the thickening effect of the pectin in the fruit cells. It is therefore wiser and easier to soak the fruit in

water. The fruit enzymes will act on the pectin in the presence of water and will thus produce much more juice more quickly.

Place the broken fruit in a polythene, glass, or earthenware bung jar with a mouth about 3 in. wide and add hot water (140 to 160° F. or 60 to 70° C.) according to the recipe. Stir thoroughly.

Fit a polythene cover or a cork bung, into which is inserted a fermentation lock, used in accordance with the supplier's directions. Stand the jar in a fairly warm position (50 to 60° F. or 10 to 16° C.) for three days. Stir well at least once a day. At the end of this period, pass the pulp and juice through a coarse and then a fine nylon sieve. The juice is then ready for the addition of sugar, yeast and nutrients in the fermenting jar.

Vegetables. Scrub the vegetables clean, remove any diseased parts, cut into $\frac{1}{2}$ in. slices or cubes, and boil slowly until tender but not mashed. Use the amount of water given in the recipe. Leave the lid off the saucepan, but replace water lost in boiling. Strain first through a coarse and then through a fine sieve to provide the liquid vegetable extract for fermenting.

3. MAKING THE MIXTURE FOR FERMENTING

Adding Sugar. White castor sugar, either refined beet or cane, is the most suitable for wine-making, as it dissolves readily. Granulated sugar or the same quantity of honey may also be used. Demerara or brown sugar will give a good brown or golden colour, but should not be used with delicately flavoured juices. Invert sugar speeds fermentation, but $1\frac{1}{4}$ lb. should be used in place of 1 lb. ordinary sugar.

Add the sugar gradually and stir until thoroughly dissolved. When making sweet, heavy wines, add the sugar in three parts, with an interval of three days

between each. The usual quantity is 2 lb. sugar to each gallon of fruit or vegetable juice for a dry wine; 2½ lb. for a medium wine; and 3½ to 4 lb. for a sweet wine.

Adding yeast. Although there may be natural yeast on the fruit, it is always best to add a specified quantity to the extract.

If brewers' or bakers' compressed yeast is used, mix ½ oz. yeast to a cream in a cupful of juice for each gallon of must, and stir in thoroughly. Far more satisfactory, however, are the proper wine yeasts, for the home-made wines then carry a better bouquet, a higher percentage of alcohol, are quick to clear, have a stiffer sediment or lees, and store better.

The most popular varieties of yeast are burgundy, champagne, claret, graves, hock, madeira, port, sauterne, sherry and all-purpose. Choose the yeast most suited to the fruit or vegetable (see section on Varieties and Recipes). For a limited quantity of wine, use all-purpose or neutral yeast.

Some special yeasts available in liquid or dry form have to be made active by growing them in fresh fruit juice before adding them to the must. Follow the directions provided with the bottle or tube, and reserve 48 hours for the preparation of the mixture. If fresh fruit juice is not available, make a special yeast feeding mixture by dissolving 1 tablespoonful pure malt extract in ¼ pint water; stir in 1 tablespoonful granulated sugar until dissolved, and the juice of 1 lemon, or ¼ teaspoonful citric acid powder. Bring this mixture to the boil, allow to cool, and add the yeast for fermentation. If the yeast is properly developed, it can then be used for four weeks or more.

It is very important to heat the must to between 65 and 75° F. (18 to 21° C.) before stirring in yeast of any sort; otherwise fermentation may not take place properly. Test the temperature with a thermometer (liquid).

Adding yeast nutrient and acid. A yeast nutrient is a chemical food, which also provides the necessary acid. While usually essential for root extracts, it helps to make all wine free from cloudiness and undesirable by-products, and assists vigorous yeast growth. It can be bought quite cheaply in a ready-made form containing citric acid, from suppliers of wine-making equipment. Use in accordance with the directions on the packet.

4. FERMENTATION

This is one of the most important phases of wine-making.

Pour the mixture into an absolutely clean glass, stoneware or plastic jar large enough to hold from 1 to 5 gall., until it reaches the shoulder of the jar, or until the jar is four-fifths full. A 1 gall. glass jar is particularly recommended, as this makes it possible to watch the fermentation process. Seal the top with a holed bung, plastic cap or other airtight cover, into which can be fitted a glass or plastic fermentation lock half-filled with cooled boiled water. This lock is extremely important, for it enables the carbon dioxide that bubbles out of the fermenting liquid to escape, but prevents air with its wild yeast and germs from entering. If this should happen, the wine may well turn sour and become vinegary.

Place the jar in a warm place such as near, but not on, a stove and keep the air temperature at 65 to 75° F. (18 to 25° C.). Fermentation will be profuse and strong at first, but it will become less vigorous after about 5 days, when the air temperature should be reduced to 60 to 65° F. (16 to 18° C.). Be sure that the temperature does not fluctuate seriously, especially at night. The liquid may be kept up to its first level in the jar by adding either a little sugar and water syrup of the same strength as that originally used, or fermenting liquid from other jars.

Always replace the fermentation lock immediately.

Fermentation may continue for three to six weeks for dry or medium wines, and for seven to twelve weeks for sweet wines. Examine frequently to see when bubbling has almost ceased and the wine has started to clear at the top. To produce a sparkling wine, siphon off into bottles just before fermentation is completed, or when the wine is still bubbling very slightly. Be sure to wire down the corks.

5. RACKING OFF INTO JARS

The important operation of racking off means the removal of the new wine from the deposit of dead yeast and other solids, known as lees, in the lower part of the jar. This can be done by carefully pouring off the wine without disturbing the deposit, but it is more satisfactory to siphon off, using a 4 ft. length of rubber tubing of nearly $\frac{1}{4}$ in. outside diameter.

Place one end of the tubing so that it reaches about half-way down the wine inside the jar, and fasten the tubing to the edge of the jar with a wooden clothes peg or thick rubber band. Place another clean, sterile jar below the level of the full wine jar, and suck at the free end of tubing until it is filled with wine; quickly wipe this end and place it in the second jar. The wine will then run through the tubing of its own accord into the jar. Lower the tubing in the first jar of wine as siphoning proceeds, otherwise the vacuum will be lost and it will be necessary to suck up the wine again. Take out the tubing immediately the wine is racked off, as it is very important not to get any lees into the newly racked-off wine.

The vessels used for the racked-off wine may be large jars of the same type as those used for fermentation. Do not use wine bottles.

Fill the jars to the bottom of the neck and again keep a fermentation lock in place.

Move the racked-off wine to the coolest part of the house to encourage clearing. When a further deposit has accumulated, in two to four weeks, rack off the wine again as previously described, and yet again after another three to five weeks. By this time the wine should be fairly clear, and there should be no bubbles rising through the fermentation lock. If a deposit is still forming, allow the wine to rest for a further four weeks and rack off once more.

6. ARTIFICIAL CLEARING

If properly made, the wine will eventually become brilliantly clear. While some wines, such as black currant, elderberry and orange, usually clear in eight weeks, others, such as parsnip, mangold and wheat, may take as long as 26 weeks. Patience is needed before adopting a remedy.

First try to find the cause of the cloudiness, so that it can be avoided in future. Likely causes are: over-boiling of vegetables; lack of yeast nutrient; absence of fermentation lock; infection by wild yeasts; delayed, careless or insufficient racking off; incomplete fermentation at the time of bottling; or storage in a warm cupboard.

If the wine does not become brilliantly clear after eight months, it should be cleared by "fining", or removing the minute suspended solids that cause the cloudiness. Add to the wine some asbestos and cellulose pulp, which is available from suppliers of wine-making equipment or most chemists and which should be used in accordance with the directions supplied. Mix thoroughly, and pour the mixture through a large funnel plugged with non-absorbent cotton wool. The pulp with the solids will be caught by the cotton wool.

It is quite in order to taste the wine at any stage in its manufacture, and to make any adjustment thought necessary.

7. RACKING OFF INTO BOTTLES

AND STORING

When the wine is quite clear, rack it off again, this time into ordinary 26 oz. wine bottles, taking care that no lees escapes into the bottles. Fill each bottle to within $\frac{3}{4}$ in. of the bottom of the cork. The cork, which should be new, clean and sterile, and softened by soaking in sterile cold water, is driven right in, level with the top of the bottle.

Wipe the outside of each bottle dry, and affix a label giving date, variety and any other helpful particulars. Be sure that the label does not cover the seam of the bottle, since this will spoil the appearance.

Store the bottles on their sides in a cool, dark place at about 45 to 55° F. (7 to 13° C.).

MATURING

Never be in a hurry to drink home-made wines. A newly made wine is certainly drinkable, but it will not be mellow to the taste nor have a pleasant aroma unless given time to mature and develop. Store light, dry wines with a low alcohol content for at least nine months, and the heavier, sweeter types with higher alcohol content for 12 months.

SERVING WINE

Serve pale, white and yellow wines cold (45 to 50° F. or 7 to 10° C.) but do not add ice. Pale red, deep red, purple or tawny wines are best appreciated if served at room temperature (62 to 70° F. or 16 to 21° C.), but do not place the bottle in hot water.

Wipe the top of the bottle thoroughly before drawing the cork, and then carefully wipe the inside top of the bottle. Examine for any sediment and if found, decant the wine slowly and carefully. Taste the wine before serving.

Generally, the wines chosen to comple-

ment a meal progress from a light dry white wine at the beginning of a meal, through medium dry white or rose, light red and heavy red, to sweet white and sweet red at the end of the meal. But probably only one, or at most two, wines will be drunk.

Home-made wine may not be sold without a special licence.

VARIETIES AND RECIPES

The most suitable varieties of fruit for home wine-making, with their corresponding grape-wine types, are: apple (graves), blackberry (port or burgundy), black currant, damson, plum, elderberry (port), bullace (burgundy), gooseberry, white currant, white grape, rhubarb (champagne or hock), cherry, mulberry (claret), orange, raisin, sloe (sherry), raspberry (tawny port) and red currant (madeira).

The most suitable vegetables are: beet-root (port), carrot (sherry), celery (dry white wine), mangold, sugar beet, turnip (white burgundy), parsnip (sherry or burgundy) and potato (dry or sweet white wine).

Suitable flowers for wine-making are cowslip (sauterne), dandelion (sherry) and elderflower (champagne). These require a special procedure, which is described under the individual recipes.

Unless otherwise noted, follow the standard procedure for all recipes.

APPLE

7 lb. windfall or crab apples; $4\frac{1}{2}$ lb. demerara sugar; 1 lb. raisins; 1 gall. warm water; graves or neutral yeast.

Cut apples into $\frac{1}{2}$ -in. pieces and pour on water. Soak for three days, stirring three times a day, then follow standard procedure, adding the raisins with the sugar. If apples are green and sour, use $5\frac{1}{2}$ lb. sugar. Can be drunk as young as three months. A dry wine to serve with fish or chicken.

BEETROOT

5 lb. red beetroot; juice of 2 oranges; 3½ lb. sugar; 1 gall. water; port yeast.

Follow standard procedure, adding orange juice with the sugar. After racking off, store the wine in a cool, dark room to clear thoroughly. A pleasant dessert wine.

BLACKBERRY

6 lb. blackberries; 4½ lb. sugar; 1 gall. water; port yeast.

A good sweet dessert wine. Allow to mature for at least a year.

BLACK CURRANT

4 lb. black currants; 4 lb. sugar; 1 gall. water; burgundy yeast.

Makes a fairly rich, medium dry wine to serve with dessert. Can be drunk as young as six months.

BULLACE

4½ lb. bullaces; 3½ lb. granulated sugar; 1 gall. water; burgundy or all-purpose yeast.

Follow standard procedure, but pour on boiling water, rather than the usual hot water, before soaking. Usually a well-flavoured wine, served as an aperitif or with red meat.

CARROT

6 lb. carrots; 1 lb. wheat; 3 oranges; 3½ lb. demerara sugar; 1 gall. water; sherry or madeira yeast.

Follow standard procedure, adding the wheat and sliced oranges to the cooking water. Finished product may be similar to whisky. Store for at least six months before drinking. Serve as an aperitif.

CELERY

4½ lb. celery; 3 lemons; 3½ lb. sugar; 1 gall. water; graves or white burgundy yeast.

Follow standard procedure, adding the sliced lemons to the cooking water. Granulated sugar will produce a very pale wine, demerara sugar will give a golden-coloured wine. Has a delicate flavour and may possess medicinal qualities, especially in the treatment of rheumatism. Serve with soup.

CHERRY

7 lb. sweet cherries; 4 lb. granulated sugar; 1 gall. water; claret yeast.

Follow standard procedure, but pour on boiling water before soaking the fruit. Black cherries usually produce a wine of good flavour but poor appearance, while white cherries yield a pale fawn-coloured wine, but flavour is never very pronounced. An attractive dry wine can be obtained from Morello cherries, used with 3½ lb. sugar. Serve cherry wine with chicken.

COWSLIP

1 gall. fresh, pressed down flowers; 3 sweet oranges; 3 lb. white sugar; 1 gall. water; all-purpose yeast.

Select the yellow parts of the flowers only. Add the sugar to the water, bring to the boil, and pour this syrup over the orange juice and peel, without pith. Allow to cool to 70° F. (21° C.) and stir in the flowers, yeast and nutrients. Pour into a large-mouthed jar, cover, fit fermentation lock and allow to infuse for four days. Strain off into normal fermenting jar, and continue standard procedure. Medium dry; serve with soup or fish.

DAMSON

4½ lb. damsons; 3½ lb. sugar; 1 gall. water; port or burgundy yeast.

If desired, ½ oz. root ginger can be added when soaking the fruit, which should be halved. Allow to mature for eight months, and serve with dessert. For a dryer, burgundy-type wine, use only 2½ lb. sugar.

DANDELION

1 gall. dandelion flower heads; 2 oranges; 3 lb. demerara sugar; 1 gall. water; sherry yeast.

Pour boiling water over the dandelion heads and sliced oranges, and soak for four days, stirring frequently. Strain and follow standard procedure. A popular dry wine, served as an aperitif, and said to have tonic qualities. Drink young—after it has matured for three months.

ELDERBERRY

3½ lb. elderberries; 3 sweet oranges; 3½ lb. sugar; 1 gall. water; port yeast.

Follow standard procedure, adding the thinly sliced oranges just before soaking the fruit, and using boiling water. A

medium sweet wine served as an aperitif or with dessert.

ELDERFLOWER

1½ pints elderflower heads, in full bloom, and pressed down; 2 grapefruit; ¾ lb. granulated sugar; 1 gall. water; champagne yeast.

Pour boiling water on to the flower heads and sliced grapefruit, and soak for three days, stirring frequently. Strain and continue standard procedure. Can be wired down just before completion of fermentation to produce an effervescent wine. Medium sweet; serve with chicken.

GOOSEBERRY (green)

6 lb. green gooseberries; 2½ lb. sugar; 1 gall. water; all-purpose yeast.

Top and tail the fruit to preserve the full flavour. Follow standard procedure, but pour on boiling water before soaking. An attractive aperitif or dry dinner wine, particularly when served with fish. To make an effervescent wine, use champagne yeast, and add one heaped teaspoonful of sugar to each bottle before corking. Alternatively, bottle the wine just before fermentation is completed, and wire down the corks.

GOOSEBERRY (red)

5 lb. red gooseberries; 4 lb. castor sugar; 1 gall. water; port yeast.

Top and tail the gooseberries and follow standard procedure, but allow to stand for only two days, stirring three times a day. Repeated racking off may be necessary. Makes a pleasant pale tawny dessert wine.

GRAPE

5 lb. green or amber grapes for white wine, or black grapes for red wine; 1 gall. water; granulated sugar; graves, hock, sauterne or champagne yeast. (Use sugar and yeast according to type of wine required—see below.)

Follow standard procedure, but soak the fruit for only two days. When making white wine, use 2½ lb. sugar and graves yeast for a dry wine; 3 lb. sugar and hock yeast for a medium wine; and 3½ lb. sugar and sauterne yeast for a sweet wine. Wire down just before fermenta-

tion is completed to produce a high quality champagne-type wine. Usually served as an aperitif.

To make red wines, use black grapes, including the skins, and burgundy or port yeast, and follow the same recipe.

MANGOLD

4½ lb. mangolds; 2 lemons; 3 lb. sugar; 1 gall. water; burgundy yeast.

Follow standard procedure, adding the lemon juice and thin peel, without pith, just before fermentation. Demerara sugar can be used to add colour. A rather dry, sharp wine to serve with soup.

MULBERRY

4 lb. mulberries; ¾ lb. granulated sugar; 1 gall. water; claret yeast.

Follow standard procedure, but stir soaking fruit twice a day for three days. Yields an excellent medium dry red wine. Reverse the quantities of mulberries and sugar to produce a sweet rosé wine. Serve with dessert.

ORANGE

12 sweet oranges; ¾ lb. sugar; 1 gall. water; sherry yeast.

Scrub the rind and peel very thinly. Do not use the white pith. Pour ½ gall. boiling water on to the whole oranges and the rind, cover, and stand for 48 hours. Press out the juice and add the remaining ½ gall. water (cold). Add sugar and yeast and continue standard procedure. A medium dry wine served as an aperitif.

PARSNIP

4 lb. parsnips; 1 oz. root ginger; 3 lb. white sugar; 1 gall. water; sherry yeast.

Follow standard procedure, adding ginger in the preliminary cooking. Take care not to overcook. May take at least six months to clear. A pleasant dry wine served as an aperitif.

PLUM

6 lb. plums (weighed whole); 2 lemons; 4 lb. white sugar; 1 gall. water; port or claret yeast.

Follow standard procedure, adding the thinly sliced lemons before soaking. Use red or yellow dessert plums for a sweet,

heavy dessert wine with a superb flavour. Blue or red cooking plums with only $3\frac{1}{2}$ lb. sugar will yield an attractive dry red wine to serve with red meat. Should mature for eight months.

POTATO

5 lb. potatoes; 1 lb. chopped raisins; $3\frac{1}{2}$ lb. demerara sugar; 1 gall. water; graves yeast.

Proceed as for beetroot, adding the raisins to the cooking water. Will make a medium dry white wine to serve with fish; for a sweeter variety, use 4 lb. sugar.

RAISIN

3 lb. raisins; 2 lemons; 2 lb. demerara sugar; 1 gall. water; sherry or all-purpose yeast.

Chop raisins, add sliced lemons and hot water, stir, and leave for 24 hours. Strain, and continue standard procedure. Medium sweet; serve with dessert.

RASPBERRY

$4\frac{1}{2}$ lb. raspberries; $3\frac{1}{2}$ lb. granulated sugar; 1 gall. water; port yeast.

Follow standard procedure, but leave to soak for only two days. Makes an excellent aromatic sweet wine to serve with fish. To make a medium, sherry-type wine, use 4 lb. raspberries, 3 lb. sugar, and sherry yeast.

RED CURRANT

4 lb. red currants; $4\frac{1}{2}$ lb. granulated sugar; 1 gall. water; madeira yeast.

Follow standard procedure, but leave to soak for four days. Makes a rich dessert wine. For a fairly dry table wine, use $3\frac{1}{2}$ lb. sugar.

RHUBARB

4 lb. rhubarb; 1 lb. raisins; 2 lemons; $1\frac{1}{2}$ lb. white sugar; $1\frac{1}{2}$ lb. demerara sugar;

1 gall. water; hock or champagne yeast.

Always use young rhubarb or the wine may be sharply acid. Cut rhubarb into $\frac{1}{4}$ -in. pieces, add sliced lemon and bruised raisins, and follow standard procedure. Can be drunk as young as three months. The bottles may be wired down just before fermentation is complete to produce an effervescent wine. Serve with soup or chicken.

SLOE

4 lb. sloes; $3\frac{1}{2}$ lb. granulated sugar; 1 gall. water; sherry or all-purpose yeast.

Follow standard procedure, but pour on boiling water before soaking. Mature for at least nine months. Makes a good, very dry aperitif. For a medium dry wine to serve with red meat, use 4 lb. sugar.

TURNIP

4 lb. young turnips; 2 lemons; 1 oz. root ginger; 3 lb. white sugar; 1 gall. water; white burgundy or sherry yeast.

Do not use coarse or mature vegetables. Follow standard procedure, adding the thinly sliced lemons and ginger to the cooking water. Medium dry; serve with soup.

WHITE CURRANT

6 lb. white currants; 4 lb. castor sugar; 1 gall. water; sauterne yeast.

Remove stalks, and follow standard procedure. If large quantities are being processed, the smaller stalks should also be removed, but the fruit should then soak for only 24 hours. Makes a bright, pleasant, pale yellow dessert wine that can be drunk as young as two months. For a dry dinner wine, use $4\frac{1}{2}$ lb. fruit, $2\frac{1}{2}$ lb. sugar and sherry yeast; for a light-bodied medium sweet wine, use 5 lb. fruit, $3\frac{1}{2}$ lb. sugar and all-purpose yeast.

PRESERVING

JAMS, MARMALADES AND CONSERVES

GOOD home-made jam is a luxury which everyone can enjoy, and indeed in these days when there is plenty of fresh fruit and sugar available, the housewife can have a variety of jams at the end of the season.

Jams may be divided into two categories, jam as we know it and conserves.

Conserves, or preserves as they are sometimes called, were much in vogue over 100 years ago when fruit bottling was little known, and were made by preserving whole or sliced fruit in syrup. Conserves were eaten, as they are abroad today, with a spoon, rather than spread on bread and butter.

The consistency of a good conserve is, as a rule, a little more syrupy than the ordinary jam and sweeter and richer in flavour.

As in most branches of cooking, certain rules must be observed when making jam in order to get a good result. They are simple and if read before starting the recipes, jam-making should be successful.

RULES FOR JAM-MAKING

1. Use dry, barely ripe fruit and either loaf (preserving) sugar or granulated sugar, as this helps the colour and the keeping power of the preserves.
2. Wash or wipe the fruit according to the kind, and pick it over.
3. Warm the sugar before adding it to the boiling fruit, as this prevents lowering the temperature and consequent overcooking of the jam. Soft fruit gathered fresh from the garden needs less preliminary cooking than bought fruit.
4. When the sugar is completely dissolved, but not before, boil briskly, stirring gently and slowly until the jam sets when tested. Boiling too long darkens the colour and spoils the flavour of the jam. To test the jam, remove the pan from the heat and put a little on a plate and cool it quickly. Run the little finger through the centre and if the jam is ready it will crinkle slightly and remain in two separate portions. It will also form a drop on the finger which will not fall.
5. Skim the jam if necessary towards the end of cooking only, as continuous skimming is unnecessary and very wasteful.
6. Have the jam jars perfectly clean, dry and warm before filling, and fill quite full to allow for shrinkage. In the case of strawberries or cherries, to

EXCERPTS FROM *Jams, Preserves and Pickles*
BY ROSEMARY HUME AND MURIEL DOWNES

avoid the fruit rising, leave to stand in the pan 20 to 30 minutes to thicken. stir up and then pour into the jam jars.

7. Wipe the jars with a cloth wrung out in very hot water. Tie down, label, and store in a cool, dry place.
8. The setting power depends on the amount of pectin in the fruit being used. This is a natural gum-like substance and is found only in small quantities in strawberries, cherries, raspberries and vegetable marrow, but is plentiful in black currants, red currants, gooseberries, damsons and apples.
9. The amount of pectin in any fruit is always greater when the fruit is slightly under-ripe.
10. When using fruit with a very low pectin content it is advisable to use one of the following ingredients to be certain that the jam will set:
 - (a) The acid juice of gooseberries, apples or red currants.
 - (b) Commercially prepared pectin.
 - (c) Tartaric or citric acid added either in powder form dissolved in a little water, or the latter in the form of lemon juice.

REASONS FOR JAM NOT KEEPING

MILDEW MAY BE CAUSED BY:

1. Using wet, cold jars.
2. Covering when neither hot nor cold.
3. Insufficient sealing when covering.
4. Storing in a damp place.

CRYSTALLIZATION MAY BE CAUSED BY:

1. Using too much sugar.
2. Allowing the jam to boil before all the sugar has dissolved.
3. Too much stirring when boiling.
4. Leaving uncovered too long.

FERMENTATION MAY BE CAUSED BY:

1. Insufficient boiling.
2. Using too little sugar.
3. Storing in a warm place.

EQUIPMENT FOR JAM- AND JELLY-MAKING

The most important piece of equipment is the preserving pan. This may be of copper or aluminium. On the whole the latter is the most useful as both jams and chutneys can be made in it. Two preserving pans are ideal, one smaller than the other, for small batches of fruit or jelly.

Glass jam jars of good quality. Small 4- to 8-oz honey jars. These have metal covers and are particularly suitable for special jellies—mint, rowan, and so on.

A jam funnel or filling funnel. These are 4 to 5 in. across at the top with a 1½- to 2-in. tube and are extremely useful for putting the jam or jelly into the jars. They prevent stickiness on the outside of the jars and avoid any possibility of scalding.

Large wooden spoons, kept specially for jam or chutney. Wooden spoons can be bought with a notch in the handle to catch on the side of the pan and so stop the spoon from sliding into the jam.

Jam spoons have a wide bowl and may be bought in varying sizes.

Jam covers in Cellophane, parchment, etc., and wax tissue for laying on the surface of the jam itself. Rubber bands or fine string for tying down.

Labels. The pots should be clearly labelled with the date of making. Proper covering and labelling adds a great deal to the attractiveness of the jam or jelly.

A flannel jelly bag or a piece of linen for straining fruit for jelly-making.

A jelly stand is a help, particularly if a jelly bag is used.

A nylon sieve for fruit purées.

Butter muslin or cheese cloth.

A sugar thermometer.

JAMS

APPLE GINGER

4 lb. apples: 3 lb. brown sugar: 1 oz. whole ginger: pared rind and juice of 2 lemons.

Peel, quarter and core the apples. Bruise the ginger thoroughly by pounding or beating it in a mortar, or with a rolling pin.

Place the apples and sugar in layers in an earthenware crock or bowl, adding the ginger and lemon rind tied in a bag, and the juice.

Cover and leave for 48 hours.

Then turn into a preserving pan, bring to the boil and boil rapidly for 20 to 30 minutes or until a little will set when tested. Remove ginger and lemon rind, and pour into warm jars.

Tie down when cold.

This is a good preserve for a lunch sandwich with cheese.

FRESH APRICOT JAM

6 lb. apricots: $\frac{1}{2}$ pint water: $6\frac{1}{2}$ lb. sugar.

Wash the fruit, cut in half and remove the stones. Tie half the stones in a small piece of muslin and remove the kernels from the remainder.

Place the fruit and water in a preserving pan and cook gently until the fruit is tender. Add the warmed sugar, heat until dissolved and then add the stones tied in muslin and boil rapidly for about 25 minutes, or until the jam sets when tested. Skim if necessary, remove the stones in the muslin, add the prepared (blanched and skinned) kernels and pour and bring slowly to the boil.

BLACK CURRANT JAM

4 lb. black currants: 2 pints water: 5 lb. crushed preserving or granulated sugar.

Wash and stalk the currants, put them into the preserving pan with the water and simmer gently for a good hour or until thoroughly soft, then add the warmed sugar. Stir occasionally until boiling and boil rapidly until the jam will set—about 15 to 20 minutes. Pour into warm, dry jars. Tie down.

BLACKBERRY AND APPLE JAM

6 lb. blackberries: 2 lb. apples (weighed when peeled and cored): 8 lb. sugar: $\frac{1}{2}$ pint lemon juice: 1 pint water.

Simmer blackberries and sliced apples, with peel and pips tied in muslin, in the

water until soft and pulpy. Add lemon juice and sugar and boil rapidly until jam sets when tested.

MORELLO CHERRY JAM

4 lb. Morello cherries: 1 teaspoon tartaric acid: 3 lb. crushed preserving sugar: small tea-cup of water.

Stone fruit and tie stones in a muslin bag. Put the fruit into a preserving pan with water and stones. Simmer gently until the cherries are tender, then add tartaric acid followed by the dissolved sugar. Boil rapidly until it will set when tested. Remove muslin bag. Turn into warm, dry jars, and tie down.

DAMSON JAM

6 lb. damsons: 7 lb. sugar: 1 pint water.

Gently simmer the damsons in the water until soft—about 20 minutes. Add sugar, and boil rapidly until it sets when tested. Most stones can be skimmed from the top of the jam during boiling. Turn into warm, dry jars. Tie down.

GOOSEBERRY JAM

6 lb. gooseberries: 8 lb. sugar: 2 pints water.

Wash, top and tail gooseberries. Place in the preserving pan with the water and stew gently until soft and mushy—about 20 minutes. Add warmed sugar, dissolve slowly. Then boil rapidly 15 to 20 minutes or until the jam sets when tested. Skim and pour into warm, dry jars.

GREENGAGE JAM

6 lb. greengages: $\frac{1}{2}$ pint water: $6\frac{1}{2}$ lb. sugar.

Wash the fruit, cut in half and remove the stones. Tie half the stones in a small piece of muslin and remove the kernels from the remainder.

Place the fruit and water in a preserving pan and cook gently until the fruit is tender.

Add the warmed sugar, heat until dissolved and then add the stones tied in muslin and boil rapidly for about 25 minutes, or until the jam sets when tested. Skim if necessary, remove the stones in the muslin, add the blanched and skinned kernels and pour into warm, dry jars.

LOGANBERRY JAM

4 lb. loganberries; 4 lb. sugar.

Hull the loganberries, wash quickly and carefully in a colander. Place in preserving pan and heat gently until the juice begins to flow. Add the warmed sugar, dissolve slowly and then boil rapidly until it sets when tested. Pour at once into warm, dry jars.

PLUM JAM

This is a particularly juicy plum jam, soft and rich.

6 lb. plums; $\frac{3}{4}$ to 1 lb. preserving sugar to every lb. of fruit.

Split plums with a stainless-steel knife and remove the stones. Weigh the fruit and allow $\frac{3}{4}$ to 1 lb. sugar to every pound of fruit. Put the fruit and half the sugar in layers in an earthenware bowl and leave overnight. Tip into a preserving pan and bring slowly to the boil. Simmer with the stones tied in a muslin bag until the plums are tender, add remaining sugar and boil rapidly until a little will set when tested—about 20 to 30 minutes. Remove the stones and then pot.

Note: This recipe can be used for damsons and bullaces, when the fruit is cooked whole and the stones removed.

RHUBARB AND GINGER JAM

7 lb. rhubarb (weighed after removing leaf and bottom of stalk); 3 large cooking apples; $5\frac{1}{2}$ lb. sugar; 2 oz. candied peel; 2 oz. crystallized ginger; 1 lemon.

Wipe and cut up the rhubarb; peel, core and slice the apples; mix all with the sugar and leave on a large dish overnight. Tip into a preserving pan, add the finely chopped peel and shredded ginger, the grated rind and juice of the lemon and bring slowly to the boil.

Boil quickly until a little will set when tried on a cold plate.

RASPBERRY JAM

6 lb. raspberries; 6 lb. crushed preserving or granulated sugar.

After cleaning, put the fruit into the pan, set on a slow fire to draw out the

juice. Have the sugar warmed and add carefully to the fruit; bring slowly to the boil and stir occasionally. When the sugar is completely dissolved, bring rapidly to boiling point and when this is reached, draw aside, pot and tie down when cold.

Note: This is particularly good, fresh-tasting jam, and as a rule keeps very well. However, if the season has been wet and the fruit itself full of moisture, mould may be inclined to form on the top of the jam. If this is so, the jam must be watched carefully and any mould removed at once. The jam must actually boil and so it is advisable to use a thermometer to make sure that it does so. If a thermometer is not available, stir the jam two or three times round, just before the boil.

STRAWBERRY JAM

4 lb. strawberries; 2 lb. granulated sugar or finely crushed preserving sugar; juice of 1 lemon; $\frac{1}{2}$ oz. fresh butter.

Crush a small saucerful of the berries with a silver fork and put into the bottom of a preserving pan with a large spoonful of the sugar. Melt on a slow fire, then add the remaining fruit and bring to the boil, stirring occasionally. Add the previously warmed sugar to the pan with the strained juice of the lemon. Boil rapidly for about 12 to 15 minutes. Test for setting and stir in the butter to finish. Pour into warm, dry jars and tie down.

MARMALADES

QUINCE MARMALADE

7 lb. quinces; 1 pint water; 7 lb. sugar.

Weigh the fruit, then peel, core and quarter it, reserving the peelings. Put fruit into a pan with about a pint of water, cover tightly and cook gently in the oven until it is pink in colour and quite soft. In the meantime, put peelings into a pan with a pint of water, cover and cook until soft, then strain. Put this juice into the preserving pan, add the weight of the fruit in sugar, and heat, stirring until dissolved. Then add the quince pulp and boil gently, stirring constantly, for about half an hour or until the marmalade will

set. Pour into small jars or moulds and tie down.

This may be turned out and eaten with cream cheese.

PEAR MARMALADE

6 lb. pears: $\frac{1}{2}$ lb. loaf sugar.

Peel, halve and remove the cores from the pears. Set the peelings and cores on one side, place the pears in a stewpan with sufficient water to cover and cook until tender. Lift out the pears with a draining spoon, put the peelings and cores into the pan, boil hard until reduced by half and then strain.

Dissolve the sugar in the liquid and boil until it "jellies on the spoon"; replace the pears and boil up.

Stir for a few minutes until the marmalade is smooth, then pour into warm, dry jars. Tie down when quite cold.

CONSERVES

BLACK CHERRY CONSERVE

4 lb. cherries: $\frac{1}{2}$ lb. sugar: 1 rounded teaspoon citric acid or scant $\frac{1}{4}$ pint lemon juice.

Stone the cherries, crack about 2 dozen of the stones, add the kernels, blanched and skinned, to the fruit with the sugar, and stand overnight. Barely cover the rest of the stones with water, boil for 30 to 40 minutes and strain. Keep the water, add to the cherries with the acid or lemon juice and bring slowly to the boil. Then boil hard for about half an hour until set. Turn into warm pots, cover with a waxed paper dipped in brandy and then with parchment or Cellophane covers.

STRAWBERRY CONSERVE

The strawberries for this ought to be picked right from the garden. They must be perfect. A thermometer is necessary for complete success.

5 lb. strawberries, weighed after picking over and hulling: 5 lb. granulated sugar: $\frac{1}{2}$ pints of water.

Dissolve the sugar in the water slowly, in a copper preserving pan. When it has completely dissolved boil rapidly to the soft ball degree, 234 to 238° F. (112 to 114° C.). Add the fruit, place a cover over the pan, remove from the heat and allow the strawberries to soak in the syrup for a quarter of an hour. Return to the heat, bring rapidly to the boil until the syrup boils up over the fruit. Draw off the heat and allow the syrup to subside. Skim if necessary. Repeat this process of bringing to the boil, drawing off the heat and skimming twice more. Remove the strawberries with a perforated spoon, and spread them in a single layer on a wire sieve, putting a large plate or a dish under the sieve to catch the syrup. The syrup is scraped back into the pan and reduced by rapid boiling until a drop will set on a plate. Return the strawberries and boil for 5 minutes. Put into hot, dry jars.

A few cloves tied in a muslin bag are often cooked with this conserve.

PRESERVED PEACHES

10 to 12 yellow "Hale" peaches: 3 lb. sugar: 1 qt. water.

First prepare a sugar syrup with 1 qt. water and $\frac{1}{2}$ lb. of the sugar. Skin the peaches and cut into even slices. Place the fruit in the syrup and cook gently until the fruit is tender but in no way soft. Remove from the heat and cool quickly by standing the pan in a bowl of cold water. Set aside for 24 hours, then add a further 11 oz. of the sugar, dissolve over gentle heat and boil carefully for 2 minutes. Remove from the heat, cool quickly and leave for 24 hours. Add remaining sugar, dissolve slowly, and again boil for 2 minutes. Remove from the heat, allow to cool to form a skin and then stir two or three times to distribute the fruit. Pour into hot jars and seal at once.

Note: This recipe is also suitable for apricots, fresh pineapple, strawberries and greengages.

JELLIES, FRUIT CHEESES AND BUTTERS

JELLIES

For jelly-making the juice of the fruit only is used and the fruits most suitable are those with good setting power and with a strong natural flavour, such as red and black currants, raspberries, plums, damsons and crab apples. Cooking apples and windfalls particularly are excellent for jelly-making and here a second ingredient in the form of fruit or herb, to give extra flavour and colour, is a good addition.

CHOICE AND PREPARATION OF FRUIT

1. Fruit for jelly-making should never be over-ripe; in fact it is better to err on the side of under-ripeness to get a really good "set".
2. Soft fruit, such as currants, need only be washed in a colander. After draining, they are ready for the stone jar or double saucepan and it is not necessary to remove the stalks.
3. Hard fruit should be washed and wiped and, if very large, cut into rough pieces. Do not remove the peel or core from apples as these are a valuable source of pectin and improve the "set" of the jelly.

The juice of the fruit for jelly-making is extracted in the following way.

SOFT FRUITS

Here the juice is obtained without the addition of water.

1. Place the fruit in a stone jar, crush lightly with a wooden spoon, cover with a plate and either stand in a deep pan of water and simmer gently for about 1 hour, until all the juice is extracted, or, cook in a very slow oven.

Note: For a small quantity of fruit this can be done quite satisfactorily in a double saucepan.

HARD FRUITS

1. Place the fruit in a preserving pan, add water to reach about a quarter of the way up the fruit, crush with a wooden spoon and simmer gently until pulpy.
2. Turn the cooked fruit into a jelly bag or double linen cloth and leave to drain overnight. Do not disturb or press the fruit in the bag in any way.
3. The following day, measure the juice and allow 1 lb. of preserving or loaf sugar to every 1 pint of juice, except for red and black currants, when as much as 1½ lb. can be used.
4. Heat the extracted juice, add the sugar gradually and stir until dissolved.
5. Boil rapidly and test for set after 3 minutes for soft fruit, and after 5 minutes for hard fruit, although the latter may need up to 10 minutes cooking, particularly if it is a wet season.
6. Skim immediately and pour at once into small warm pots. Work quickly at this stage as the jelly tends to set round the sides of the preserving pan.

APPLE JELLY

6 lb. tart cooking apples or crab apples:
3 pints water: 1 lb. sugar to every pint of juice: lemon rind to flavour.

Wash apples, wipe and cut into pieces, removing the bruised parts. Crab apples may be left whole. Put into the pan with the water, simmer until very soft, stirring and crushing the fruit occasionally. Turn on to a cloth to drip. Measure the extracted juice and add sugar in proportion. Stir over the heat until the sugar has dissolved. Add 2 or 3 strips of lemon rind, then boil rapidly until the jelly will set when tested.

Pour into small glass jars, removing the lemon rind. Tie down.

Apple jelly may be flavoured in various ways; rose geranium, lemon verbena, and mint for serving with roast lamb. For mint jelly, use the tart cooking apples rather than the crab-apples.

ROSE GERANIUM JELLY

Make the apple jelly with either crab or ordinary apples. When the sugar has dissolved in the juice, add 3 to 4 rose geranium leaves tied together, continue to boil and remove the leaves when jelly is well flavoured.

Flavour in the same way with lemon verbena, tying half a dozen or more leaves in a small muslin bag.

PEACH SLICES IN JELLY

Thin slices of ripe peaches: apple jelly flavoured with lemon, lemon verbena or rose geranium.

Make a good apple jelly, flavoured with lemon or leaves of rose geranium or lemon verbena. Peel the peaches, slice thinly and drop into the jelly when it has almost reached setting point (after about 15 to 20 minutes boiling). Simmer gently for a few minutes, and then boil rapidly until the peach slices are cooked and the jelly sets.

The proportion of jelly to peaches is a matter of taste; but the appearance and flavour are better if the jelly is not too full of peaches.

QUINCE JELLY

6 lb. quinces: water: pared rind and juice of 2 lemons: sugar.

Wash quinces and remove all blemished parts. Cut up and put into a pan with cold water to come barely level with the fruit. Simmer until pulpy. Turn into a jelly bag or cloth and leave overnight. Measure the juice and allow 1 lb. sugar per pint of juice. Put together into a preserving pan, add strips of lemon rind tied together and the strained juice. Bring to the boil slowly, stirring from time to time to dissolve the sugar.

Boil rapidly, skimming occasionally, until the jelly will set when tested. Fill into warm jars and tie down. A piece of the peel may be put into each jar if wished.

GRAPE JELLY

4 lb. grapes: 2 tablespoons lemon juice: 1 lb. loaf sugar to each pint of juice: clove or cinnamon to flavour.

Crush grapes lightly and put them into a jar or pan and heat gently to extract the juice. Turn into a jelly bag or cloth and leave to drip overnight. Measure the juice, add sugar in proportion; add lemon juice and flavour, if liked, with a few cloves or sticks of cinnamon, tied in a muslin bag. Put this with the grape juice and sugar. Stir until the sugar has dissolved, then boil until a little will set on a plate. Remove flavouring and pour the jelly into small, warm glass jars and tie down.

ROWAN JELLY

Rowan berries: apples: water: sugar: peeled rind of 1 lemon and 2 cloves, to not more than 2 qt. of juice, tied in a muslin bag.

The proportion of rowan berries to apples is about 2 lb. to 1 lb. of apples or to taste.

Pick berries from the stalks and wash. Wash, wipe and slice the apples and put berries and apples into a pan with water to come level with the fruit.

Simmer until pulpy. Strain through a cloth or jelly bag. Measure the juice and allow 1 lb. sugar to every pint. Put together into a copper preserving pan rubbed round with a piece of lemon. Bring to the boil, stirring occasionally, then add the flavouring and boil rapidly until a small quantity will crinkle when it is cold and pushed with the finger. Remove flavouring. Turn into small pots and tie down.

This jelly does not always have a firm and jelly-like set; it depends on the proportion of apple and berries used. Serve with game or rich meats.

DAMSON JELLY

6 lb. damsons: 3 pints water: 1 lb. sugar to 1 pint of juice.

Simmer fruit in water until pulpy. Drain to extract all the juice. Measure and add sugar in proportion. Dissolve

sugar and boil rapidly until it sets when tested. Pot.

ELDERBERRY AND APPLE JELLY

3 lb. tart cooking apples (windfalls are particularly good); 2 qt. elderberries, picked from their stalks: peeled rind of 1 orange and a half-stick of cinnamon, tied together with cotton: 2 pints water: sugar.

Wash the apples well and remove the blemished parts. Cut into pieces and put into a pan with the elderberries. Add water, cover the pan and simmer to a pulp. Turn into a cloth or jelly bag and leave to drip. Measure juice and allow 1 lb. sugar to 1 pint juice. Put together into a pan, stir over moderate heat until dissolved, then add the orange rind and cinnamon. Boil rapidly until a little will crinkle on a saucer when it is cold and is pushed with the finger. Remove flavouring, and then turn into warm jars and tie down.

This jelly should be of a soft, rather than a too firm, consistency. The above recipe could be used for blackberry and apple jelly.

GOOSEBERRY AND ELDERFLOWER JELLY

This jelly has a pronounced muscat flavour.

6 lb. green gooseberries: 1½ pints water: 1 lb. sugar to 1 pint juice: 3 to 4 large elderflowers.

Wash gooseberries, put in pan with the water. Simmer till pulpy. Drain in cloth to extract all juice; measure; add the sugar and stir till dissolved. Boil and add 3 to 4 large elderflowers tied in a piece of muslin. Continue boiling until a little will set when tested. Remove flowers, pot and tie down.

BLACK CURRANT JELLY

6 lb. black currants: 2½ pints water: 1 lb. sugar to 1 pint juice.

Wash fruit, add water, and simmer until very soft. Drain in a cloth to extract all juice. Measure, and add the sugar in proportion, boil rapidly until set when tested. Pot and tie down.

MEDLAR JELLY

Ripe medlars: water: loaf or preserving sugar: lemons.

Peel and slice the medlars, put into a pan with water barely to cover. Simmer until the fruit is very tender. Turn all into a jelly bag or cloth. Leave for some hours. Measure juice and allow 1 lb. of sugar and the juice of 1 lemon to each pint. Return to the pan with a few strips of the pared lemon rind tied together with a piece of cotton. Heat slowly until the sugar has dissolved, then boil rapidly until the jelly will set when tested. Remove lemon rind and place in pot.

RED CURRANT JELLY

6 lb. red currants: castor or granulated sugar.

Pick off the currants into earthenware or Kilner jars. Cover and put into a slow oven until the juice has run well. Turn into a jelly or muslin bag. Next day, measure the juice and weigh out 1 lb. sugar to every pint of juice. Spread out the sugar on to trays, and put it into the oven to make it as hot as possible *without* colouring. Have ready the currant juice heated to boiling point (but on no account allow to boil), draw aside and add the sugar gradually, stirring all the time. When the sugar is melted, pour at once into pots.

Jelly made in this way keeps the flavour of the fresh fruit.

FRUIT CHEESES AND BUTTERS

Fruit cheeses and butters should be made with such fruit as damsons, apples, red plums, quinces, gooseberries, etc. Sometimes fruit cheeses are made from the pulp in the jelly bag after the juice has been extracted for jelly making. This should only be done as an economy measure and is not really to be recommended. As most of the pectin has been drained away, the resulting "cheese" has a poor set and is best used within a month.

A fruit cheese is of a firmer and more

PRESERVING

solid consistency than a fruit butter. A cheese can be cut into slices or shapes, while a butter, as the name indicates, is of a soft, spreadable consistency. A cheese contains an equal quantity of sugar to pulp, but a butter has half that amount and is therefore made for immediate use.

These rules will indicate the process to be followed for making fruit cheeses and butters. Those not familiar with them will find that they are especially good with biscuit and butter, or with cream cheese as a finish to a lunch or supper:

1. Prepare the required quantity of fruit and place in the preserving pan with water to come barely level with the fruit.
2. Simmer well until reduced and well pulped.
3. Rub the pulp through a sieve, preferably of hair or nylon.
4. Measure the pulp and allow 1 lb. sugar to each pint of pulp obtained.
5. Dissolve the sugar, boil, stirring constantly until setting stage is reached, then pot and tie down as for jam, in small jars or bowls.

DAMSON CHEESE

(Make apple, apricot and quince cheese in the same way.)

Damsons: sugar: water.

Put the clean fruit in the pan, add water to come barely level with the fruit. Simmer gently until fruit is thoroughly soft and pulpy. Remove as many stones as possible. Rub the pulp through a nylon sieve. Weigh the pulp and allow 1 lb.

sugar to 1 lb. pulp. Now boil gently for about 1 to 1½ hours until very thick, stirring constantly and taking care to scrape the bottom of the pan from time to time. Test for setting. Pot in small jars or bowls and tie down.

For use, turn out and cut into slices.

CHERRY BUTTER

This is not sieved.

4 lb. cherries: grated rind and juice of 1 lemon: 2 lb. sugar.

Stone cherries, crack a reasonable number of the stones, extract the kernels, blanch and skin. Add the lemon to the fruit and put into a bowl with the sugar, in layers. Leave overnight. Bring to the boil, simmer for 15 to 20 minutes, then boil rapidly until very thick. Add the kernels. Turn into small pots, cover and tie down.

APPLE AND PLUM BUTTER

3 lb. apples: 1 lb. plums: ¾ lb. sugar to each pint of pulp.

Peel, core and cut apples, then cook in a little water until soft. Stone plums, add and cook until soft. Put through a sieve, add sugar and boil until setting. Pot at once.

APRICOT CURD

½ lb. apricots, fresh: 1 lemon: 2 oz. butter: ½ lb. castor sugar: very little water: 2 eggs.

Wash the fruit and put in a preserving pan with a very little water and cook until soft. Sieve. Put the fruit in a double saucepan, with the sugar, butter, the juice and grated rind of the lemon. When the sugar has dissolved, add the beaten eggs and stir the mixture until it thickens. Pour into hot jars and cover.

PICKLES AND SPICED FRUITS

PICKLES SWEET AND SOUR

Pickles can be made in great variety and are a welcome addition to the table.

The rules and ingredients for success are simple—well-chosen fresh vegetables

without blemish, good quality vinegar and careful and neat arrangement in the jars.

When they have been washed and prepared, the vegetables are salted (i.e.

sprinkled with dry salt, or soaked in brine). For this, use a good quality block salt—in preference to the packet salt—and grind down to a powder for use. An easy method is to cut the block in half and rub the halves together, or rub the block on a coarse grater.

After the preliminary salting, which is usually 12 to 24 hours, the vegetables may be rinsed in cold water or left salted, as stated in the recipe.

Brine is a mixture of salt and water, and the strength varies according to the purpose for which it is to be used. Standard strength is 1 lb. salt to 1 gal. boiling water. Pour the boiling water on to the salt, strain through a muslin and use when cold.

It is important to use a first quality vinegar for the making of pickles. This means that the vinegar will contain the correct amount of acetic acid to ensure that the vegetables will keep properly. Brown malt vinegar is the vinegar usually preferred, as the pickles have a better flavour when preserved in it. White malt gives a better appearance as the colour and variety of the vegetables are more easily seen when in the jar.

White wine or cider vinegars may also be used, but are rather expensive for ordinary pickles.

Vinegar is usually spiced before being poured over the vegetables etc. to be pickled. It may, of course, be spiced when the pickle is being made, but it is more convenient to spice a certain amount of the vinegar well beforehand and keep it in bottles ready for use. Different combinations of spices for vegetables may be used, or pickling spice, a mixture of ready prepared spices, may be bought from the grocer.

Vinegar may be poured either hot or cold over the vegetables, which have already been packed in the jars.

A general rule is to pour cold vinegar

over the vegetables that must be crisp when eaten, such as cabbage, and hot vinegar over softer vegetables, such as cucumber.

Special jars, four square with lined screw lids, are well worth buying if pickles are to be made. They prevent the spilling and evaporation of the vinegar and are easy to pack and store.

Sauce ketchup bottles may also be bought; they are convenient as they have screw tops and so are simple to sterilize.

Vinegars, pickles and chutneys should be made in aluminium, stainless steel or enamel pans, and should not come in contact with copper, brass or iron. A wooden spoon should always be used.

SPICED VINEGAR

To keep for pickles.

These spices may be varied to taste, but the following is an average mixture. If a hotter one is required, bruised root ginger and chillies may be added and an additional quantity of mustard seed.

To 1 qt. vinegar take:

1 stick cinnamon: $\frac{1}{4}$ oz. blade mace;
 $\frac{1}{4}$ oz. black peppercorns: $\frac{1}{4}$ oz. allspice
(pimento or Jamaican pepper): $\frac{1}{4}$ oz.
mustard seed.

Tie the spices together in a small muslin bag. Put into an enamel pan with the vinegar. Cover the pan and bring slowly to the boil, but do not allow actually to bubble.

Draw off the heat and leave for 2 hours, to allow the flavour of the spices to get into the vinegar. Then remove bag and pour off the vinegar into bottles.

If using the bought pickling spice, allow between 2 and 3 oz. to 1 qt. of vinegar.

GARDEN PICKLE

2 lb. tomatoes: 1 lb. onions: 1 small white cabbage: 1 small marrow: $\frac{1}{4}$ lb. sugar:
2 oz. dry mustard: 2½ tablespoons curry powder: 2 lb. small outdoor cucumbers:
2 cauliflowers: 1 lb. runner beans: $\frac{1}{4}$ lb. flour: 4½ tablespoons salt: 2 qt. vinegar.

Wash, drain and slice the tomatoes. Sprinkle them with salt and leave for 12 hours. Wash and prepare the other vegetables, chop and shred them, put in a large pan with the tomatoes, cover with boiling water and add 3 tablespoons salt. Simmer until all the vegetables are tender. Drain and cover with the following mixture:

Mix flour, sugar, mustard, $1\frac{1}{2}$ table-spoons salt and curry powder. Blend to a thin cream with a little cold vinegar. Bring the rest of the vinegar to the boil and pour it on to this mixture. Stir well, return to the pan and cook for 5 minutes after it comes to the boil. Pour over the strained vegetables and simmer for 5 minutes. The mixture should cover the vegetables well. Pot and tie down while hot. Keep at least 6 months before using.

MARROW PICKLE

4 lb. marrow: 1 lb. onions or shallots: 1 lb. sugar: 2 pints vinegar: pickling spice: about 1 oz. turmeric and about 3 oz. flour mixed together with a little water.

Cut up onions and marrow, lay on a big dish, sprinkle well with salt and stand overnight. Pour off juice, wash if too salt. Cook with sugar, vinegar and pickling spice for 20 to 30 minutes, then thicken with turmeric and flour. Reboil.

PICCALILLI

2 cauliflowers: 2 medium-sized cucumbers: 16 french beans: 1 lb. onions: 1 medium-sized marrow: 1 qt. vinegar: 1 oz. whole spice: 4 oz. Demerara sugar: $\frac{1}{2}$ oz. ground ginger: 1 oz. mustard: $\frac{1}{2}$ oz. turmeric: 1 tablespoon flour.

Cut the vegetables into small pieces. Lay on a dish and sprinkle with salt. Leave 12 hours. Drain off the water, boil nearly all the vinegar with the spice, then strain. Mix the other ingredients, with the remaining cold vinegar, into a smooth paste: then mix with the strained boiled vinegar. Pour into a saucepan, add vegetables, and boil for 15 minutes.

RED CABBAGE

Choose firm solid hearts of a good colour. Cut into four and remove the stalk, then

shred downward in thin slices. Put the shredded cabbage on a big dish and layer well with salt. Leave for 24 hours. Drain off the brine and pack into jars. Have ready a spiced vinegar and pour into the jars. Make sure that the cabbage is well covered. Tie down securely.

Kilner jars are good for storing red cabbage.

This pickle may be used after one week. Do not keep it more than 2 to 3 months as it will lose its crispness.

CUCUMBER PICKLE—SOUP

3 to 4 cucumbers: salt or brine: spiced vinegar.

Peel cucumbers with a potato peeler, cut into four and then across into 2-in. lengths. Sprinkle with salt or soak in brine for 24 hours.

Drain well, do not wash, and pack upright into jars. Fill to the top with hot spiced vinegar and screw down. Use after a week in pickle.

A small capicum or chilli may be put into each jar if a hot pickle is liked.

RIPE TOMATO PICKLE

(A useful pickle when there is a glut of tomatoes.)

6 lb. ripe, firm tomatoes: brine or salt: 2 lb. brown sugar: 2 cloves of garlic: 1 qt. vinegar: 2 blades mace: 2 sticks cinnamon: 1 oz. allspice (pimento).

For the brine, take $\frac{1}{2}$ lb. block salt to 2 qt. water. Allow to dissolve before using.

Wipe and cut the tomatoes into thick slices (they can be skinned if wished). Put the slices into a crock and cover with brine or layer well with dry salt. Leave 24 hours. Then drain well.

Put sugar, garlic and vinegar together. Bring to the boil in a preserving pan, add the spices tied together in a piece of muslin. Add the tomatoes, and simmer for 2 minutes. Remove them carefully with a slice and pack them in layers in clean, dry jars.

Boil the syrup and spices together until the syrup is thick when tested, as for a jam.

Pour into the jars and cover closely when cold.

PICKLED ONIONS

2 qt. peeled "pickling" or silverskin onions: $\frac{1}{4}$ cupful salt: 2 oz. mixed pickling spice tied in a muslin bag: 1 qt. good malt vinegar, brown or white, 2 oz. sugar.

To peel the onions, slice off the root and as little as possible of the crown. Scald with boiling water, drain after 1 minute, put into cold water and peel.

Put the onions into a bowl; sprinkle over the salt and stand overnight. Next day, rinse well and dry.

Boil the vinegar, sugar and spices together for 5 minutes. Throw in the onions and bring to the boil. Then pack them into glass pickle jars, and cover well with the vinegar.

When cold, screw on the lids or cover with parchment.

SWEET PICKLED ONIONS

Small pickling onions: tarragon: mixed spice: wine vinegar: salt: green or red pepper: white sugar.

Put the onions on a large plate and cover well with salt. Leave for 12 hours, wipe all the moisture off and pack into jars with sprigs of tarragon and a piece of red or green pepper. Add 1 teaspoon of whole mixed spice to every 1 lb. jar. Boil sugar in the proportion of 6 oz. white sugar to every $1\frac{1}{4}$ pints wine vinegar, or a little more sugar if the vinegar is unusually strong. Pour into the jars and tie down at once.

PICKLED WALNUTS

Walnuts for pickling must be picked before July for preference, or they become woody. It is best to wear rubber gloves when picking the walnuts as they stain the fingers very badly and it is impossible to remove the stains.

Young green walnuts: salt: water: malt vinegar: peppercorns: allspice: root ginger.

Prick the walnuts all over with a long packing or carpet needle. Cover with brine—6 oz. salt to each qt. of water. Leave in brine 5 to 6 days, then drain, cover with fresh brine and leave for another week. Drain and place on a tray

in a sunny place, turning occasionally. When the walnuts are dry and black, pack them into jars and cover with vinegar spiced as follows:

Allow 1 oz. peppercorns, 1 oz. allspice, $\frac{1}{2}$ oz. root ginger, to each qt. of vinegar. Bruise the spices, put in a muslin bag and boil in the vinegar for 10 minutes. Allow vinegar to cool. Remove spices. Cover walnuts and tie down. These will be ready to use in 6 to 8 weeks.

SWEET CUCUMBER PICKLE

This is a pickle to make either with the hothouse or outdoor cucumbers when they are plentiful.

Sound cucumbers: alum water made with 1 dessertspoon of powdered alum to each qt. of water: syrup made with 2 lb. sugar, 1 pint vinegar and 2 tablespoons each of whole cloves and stick cinnamon tied together in a piece of muslin.

Pare the cucumbers thinly and, if very large, cut into quarters lengthways and then into 2- to 3-in. pieces. If medium or small, halve and cut across in the same way. Cover with the alum water and bring slowly to the boil. Then drain and chill the cucumbers in iced water.

Have the syrup ready with all the ingredients boiled together for 5 minutes. Remove the muslin bag. Add the cucumbers and simmer for 10 minutes. Turn all into an earthenware crock or bowl. Leave till next day. On 3 successive days, drain off syrup, boil hard for 1 minute and then pour over the cucumbers. On the last day, pack the pieces carefully into jars and fill up with the boiling syrup. Tie down when cold.

SWEET GREEN TOMATO PICKLE

3 lb. small, even-sized, green tomatoes: $1\frac{1}{4}$ pints water: $\frac{1}{2}$ pint good vinegar: 1 level dessertspoon of salt.

Pickle: $\frac{1}{4}$ pint wine vinegar: 1 pint water: 2 lb. sugar: 1 fresh chilli or 2 dried: 10 cloves.

Wipe tomatoes and prick all over with a silver fork. Boil water, salt and vinegar together, pour over tomatoes and leave for 24 hours. Prepare pickle by boiling the

vinegar, water and sugar together with the spices tied in a piece of muslin. When a clear syrup appears (after about 5 to 7 minutes boiling), put in the tomatoes, well drained from the vinegar water, and simmer until tender. Remove carefully and put into wide-necked glass jars.

Remove spices and boil syrup 7 to 10 minutes longer, pour over the tomatoes and cover well. This pickle is best preserved in bottling jars.

DAMSON PICKLE

4 qt. damsons: 4 lb. cane or preserving sugar: $\frac{1}{2}$ pint good vinegar: 1 stick cinnamon: 6 cloves.

Wash and prick damsons with a silver fork. Put them in alternate layers with the sugar in the preserving pan, add the vinegar. Bring slowly to the boil, shaking the pan occasionally to bring the liquid up over the damsons.

Simmer for 5 minutes, then lift the damsons from the syrup with a perforated ladle or fish slice, and lay them on flat dishes.

Add the spices to the syrup and boil for a further 15 to 20 minutes or until thick and syrupy. Put the fruit carefully into glass jars, strain the syrup and pour it on boiling hot.

Cover when cold.

SPICED FRUITS

SPICED CRAB APPLES

3 lb. good sound crab apples: 2 lb. sugar: 1 pint vinegar.

Spices: 1 root ginger, well bruised; pared rind of half a lemon: 2-in. piece stick cinnamon: 2 to 3 cloves: 1 teaspoon whole pimento (allspice).

Wash and pick over the crab apples. Put the vinegar and sugar into a saucepan, heat slowly, stirring occasionally. Add spices, tied in a small muslin bag, to the fruit. Cover pan and cook very gently until just tender. Then remove fruit carefully with a perforated spoon and pack into small-to medium-sized jars. Remove spices and strain liquid. Now boil the liquid in the uncovered pan until it is the consistency of syrup. Pour hot into the

jars to cover the fruit by $\frac{1}{2}$ in. Seal tightly and store in a cool, dark place for 6 weeks before using.

SPICED PEACHES

2 pints white wine or white distilled vinegar: 1 oz. cloves: $\frac{1}{2}$ oz. cinnamon stick and 1 oz. allspice (tied in muslin): 4 lb. sugar: 7 lb. peaches.

Bring vinegar, containing spices, and sugar to boiling point.

Peel the peaches. The golden-yellow, thick-skinned imported peaches called "Hale" or "Cling" are best for this, and these must be scalded for peeling. If garden peaches are used they should not be too ripe and may also need scalding. Large peaches should be split and stoned. Drop the peaches into the boiling liquid. Cook till tender, taking care to see that they are cooked through. Lift out into jars. Remove spices. Boil syrup until thick and pour over the peaches. Tie down.

Treat apricots in the same way, either whole or split.

CHUTNEYS

There are no special rules for these. Generally speaking the main ingredients are salted overnight, or for some hours before being simmered with spices and vinegar. It is advisable to cover the jars with a specially prepared paper to help to prevent evaporation of the contents. Preparations containing vinegar are liable to dry out and so chutneys, pickles, etc., must be well sealed.

APPLE AND TOMATO CHUTNEY

2 lb. apples: 2 lb. tomatoes (red): 2 onions: 1 pint vinegar: 1 teaspoon peppercorns: 1 level dessertspoon ground ginger: $\frac{1}{2}$ lb. brown sugar.

Peel, core and slice the apples, tomatoes and onions. Put them in a large bowl, pour the vinegar over them, add the peppercorns and ginger, cover and leave until the next day. Turn all together into a preserving pan with the sugar, stir frequently and simmer until tender. Pour into jars and cover closely when cold.

PRESERVING

APRICOT CHUTNEY WITH FRESH APRICOTS

5 lb. apricots, weighed when split and stoned; 3 lb. onions; 1 lb. raisins, stoned; 2 lb. brown sugar; 2 tablespoons mustard seed; 1 level teaspoon chilli powder; 2 dessertspoons salt; 2 pints malt vinegar; grated rind and juice of 2 oranges; 1 teaspoon cinnamon; 2 level teaspoons turmeric; 4 oz. shelled walnuts: grated rind and juice of 2 lemons.

Put all ingredients into preserving pan with the exception of the walnuts. Simmer until soft and pulpy, add walnuts and pot.

MARROW CHUTNEY

4 lb. marrows; $\frac{1}{2}$ lb. pickling onions; 6 cloves; $1\frac{1}{2}$ lb. loaf sugar; $\frac{1}{4}$ oz. turmeric; 9 chillies; $1\frac{1}{2}$ oz. ground ginger; $1\frac{1}{2}$ oz. mustard; 2 qt. vinegar: salt.

Cut the marrow into small cubes (about $\frac{1}{2}$ in.), lay on a dish and shake some salt over it and leave overnight. Drain. Boil remaining ingredients for 10 minutes, then add the marrow and boil for half an hour or until tender and put into jars.

PLUM CHUTNEY

3 lb. plums; 1 lb. soft brown sugar; $\frac{1}{2}$ pint vinegar; 1 oz. salt; $1\frac{1}{2}$ tablespoons allspice; 1 tablespoon ground ginger; 1 dessertspoon mustard seed; 6 chillies; 10 cloves.

Wash and stone plums, put into a pan with ginger. Crush mustard seed and put with rest of spices in a muslin bag. Tie bag and put in pan. Add salt and $\frac{1}{2}$ pint of vinegar. Put on lid, simmer gently until soft (about 3 hours). Cover sugar in basin with rest of vinegar, leave to dissolve and add to plums when cooked. Bring to boil and continue to boil gently until chutney is thick (another 2 hours). Remove bag. Pour into hot jars and cover at once. Leave 4 to 5 weeks before use.

GREEN TOMATO CHUTNEY

9 lb. tomatoes; 4 green or red peppers, chopped; 2 $\frac{1}{2}$ lb. onions, sliced; 2 $\frac{1}{2}$ lb. apples, weighed when cored and sliced; $1\frac{1}{2}$ lb. sultanas; 2 oz. mustard seed; 2 oz. salt; 1 large root of ginger, well bruised;

$\frac{1}{2}$ teaspoon Cayenne; 2 $\frac{1}{2}$ lb. brown sugar; 3 pints good vinegar.

Place all ingredients in a preserving pan. Simmer slowly 2 to 3 hours or until thoroughly cooked. Remove ginger before putting into pots.

RED TOMATO CHUTNEY

2 lb. ripe but firm tomatoes; 2 lb. apples; 1 lb. onions; $\frac{1}{4}$ lb. sultanas; 1 level teaspoon dry mustard and ground ginger; 1 level tablespoon salt; 1 lb. brown sugar; 1 qt. vinegar.

Scald and skin the tomatoes and cut into thick slices; wipe and core the apples and cut into small pieces; do not remove the peel. Place the prepared fruits into a pan with the finely chopped onions, the sultanas, sugar and seasonings; cover with the vinegar and cook slowly for about 2 hours. Pour into warm, dry jars and tie down when cold.

PEAR CHUTNEY WITH WINDFALL PEARS

3 $\frac{1}{2}$ lb. windfall pears, weighed when peeled, cored and quartered; 1 lb. onions, sliced and chopped; $\frac{1}{4}$ lb. raisins, stoned and chopped; $\frac{1}{4}$ lb. apples, weighed when peeled, cored and sliced; $\frac{1}{4}$ lb. sliced stem ginger; 3 cloves of garlic, crushed with a little salt; 1 oz. salt; grated rind and juice of 1 small lemon; $\frac{3}{4}$ lb. brown sugar; 4 dried capsciums; 3 to 4 cloves tied in a muslin bag; 1 qt. of good vinegar.

Put the pears into an earthenware crock or bowl with the onions, raisins, apples, ginger, garlic, salt and lemon. Put sugar, spices and vinegar into a pan and boil for 3 to 4 minutes. Pour over the contents of the bowl and leave for 12 hours. Boil gently for 3 to 4 hours or until dark and rich. Remove bag of cloves half-way through the boiling or when you have sufficient flavour.

TOMATO SAUCE

A useful sauce that improves with keeping. Choose very ripe and red tomatoes.

6 lb. tomatoes; 2 level tablespoons salt; 2 tart cooking apples; $\frac{3}{4}$ lb. onions; 6 oz. sugar; $\frac{1}{2}$ pint vinegar; 1 dessertspoon pepper; 1 level teaspoon ground mace; 1 level teaspoon ground cloves.

Wipe and slice tomatoes, lay them on a dish and sprinkle them with the salt. Leave for about an hour. Wipe apples, quarter and core and chop roughly. Chop the onions. Put them both into the pan with the sugar, vinegar and spices. Bring to the boil, then add the tomatoes. Simmer *gently* for about 2 hours, by which time the mixture should be thoroughly pulpy and well flavoured. Pass through a

sieve. Return to the cleaned pan and continue to simmer until fairly thick, probably for $\frac{1}{2}$ to 1 hour. This depends on the juiciness of the tomatoes, but the sauce when cold must not be too thick to pour out of the bottles.

When the mixture is the right consistency, cool slightly and pour off into sauce bottles. Screw down tightly and label when cold.

BOTTLING AND CANNING

BOTTLING

The principle of preserving fruit by bottling depends firstly upon the destruction by heat of all the moulds and bacteria in the air, fruit, or water in the bottles; and secondly, on the exclusion of air during sterilization and the complete sealing of the bottles by vacuum afterwards. Acid in the fruit maintains sterilization and consequently acid fruits are the most satisfactory to bottle.

For the same reason when vegetables are being bottled a solution of lemon juice, salt and water is used. This also destroys any soil bacteria when a pressure cooker is not available.

Equipment is simple and may be used year after year with only small replacements.

Two or three firms specialize in bottling apparatus, bottles, sterilizers and so on, and though makeshifts can be used, a more reliable and better result is obtained from using the proper equipment. Sterilizing outfits are available, complete with bottles, rings, clips, thermometer, etc., in varying sizes. These simplify the process for those who have had little experience in bottling. The number of jars can be added to from time to time according to the amount of bottling done.

There are two main types of jar or bottle—those with a glass lid and metal

screw-cap, and those with a metal lid and clip. Both types have rubber rings and are made in different sizes. The advantage of the latter type is that the neck of the jar also varies in size, which makes for ease and speed in packing. For example, a small-sized jar can have a wide neck so that the hand may be inserted.

All sterilizers should have a false bottom so that bottles do not come into contact with the direct heat, and a slot at the side or in the lid for the thermometer. If a proper sterilizer is not available, a bread bin or flour bin with a doubled piece of wire netting placed in the bottom may be used.

One essential is that the water must come up to the neck of the bottles and therefore, if fair-sized bottles are used, the pan must be deep. For small-sized jars a fish kettle is useful.

EQUIPMENT FOR BOTTLING

A sterilizer complete with false bottom, lid and thermometer.

Bottles or jars. The number and size of these will vary with the size of household and the amount and kind of fruit you wish to preserve. As a general rule, keep the smaller jars for soft fruit, such as raspberries or strawberries, and the bigger ones for pears, plums, apples, etc.

Bottle tongs. These are of great help in lifting out the jars from the sterilizer.

The grips are covered with rubber and hold the bottle firmly.

Packing spoon. This is a long-handled, small-bowled spoon and is invaluable for packing in the fruit, vegetables, etc.

Serrated-edged knife, made of stainless steel—invaluable for cutting tomatoes, plums, apricots, etc.

Butter muslin for blanching.

METHODS

There are two main methods of sterilizing or bottling fruit, the hot-water bath method and the oven method. Whichever method is chosen, the following rules must be observed:

1. Choose fruit that is perfectly sound, firm, barely ripe and without blemish. Grade, so that all the fruit in one bottle is approximately the same size.
2. Pack firmly into thoroughly clean jars that have been rinsed in cold water and left wet inside. Avoid crushing the fruit in any way. Fill to within $\frac{1}{2}$ in. of the top, using a wooden packing spoon or the handle of a wooden spoon.
3. Fill with water or syrup—which may be cold or boiling, according to the method used. Both colour and flavour are improved if syrup is used. The syrup may vary in strength, according to the acidity of the fruit, from 1 lb. to 1 qt. of water to $1\frac{1}{2}$ to 2 lb. to 1 qt. of water. Too heavy a syrup may make some fruit rise in the bottles and in the case of gooseberries will toughen the skins.

Prepare the syrup by dissolving the sugar in the water over gentle heat and then bring to the boil. Boil for 2 to 3 minutes, then strain through muslin into the jars.

Make sure that all air bubbles disappear before you put on the lid. This can be helped by gently tapping the jar on the table or patting the top of the liquid with the spoon.

4. Soak rubber rings in cold water before use and renew every year. Discard any jar with a chip on rim or lid as it will never seal.
5. After sterilizing, do not remove clips or screw bands for 48 hours; after this time, test for sealing before storing. The lids should be firm on the bottles. Replace screw bands, smearing lightly with a little salad oil. Do not screw down too tightly.
6. Store the bottles in a cool, dry cupboard away from the light if the colour is to be preserved.

HOT-WATER BATH METHOD

Here a special sterilizer and thermometer simplifies the operation and makes for better results.

1. Pack the jars with the chosen fruit.
2. Fill to the brim with cold syrup or water; seal firmly with the rubber rings and caps. If screw bands are used do not tighten.
3. Stand jars in sterilizer or in a deep pan or container with a piece of wood or wire netting laid in the bottom. A bread or flour-bin answers well in an emergency.
4. Fill with cold water up to the neck of the jars.
5. Put in thermometer and heat *slowly* to correct temperature, which varies according to the kind of fruit. Allow $1\frac{1}{2}$ hours for this. (See chart on page 857.)
6. If no thermometer is available, bring water in pan to simmering point only, taking $1\frac{1}{2}$ hours to do so. Maintain at that temperature 6 to 15 minutes for soft fruit, 20 minutes for pears, and 30 minutes for tomatoes.
7. Lift jars out on to a wooden board or table and allow to cool; tighten screws slightly.
8. Test for sealing after 48 hours, by removing screw band or clip. The lids should be fast on the bottles.

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This method gives the best results for colour, texture and flavour. Always use a thermometer if possible, otherwise the fruit is inclined to crack and rise unduly in the jar and the appearance is spoilt.

For a quicker version of this method:

1. Fill the jars, after packing them with the fruit, with boiling syrup or water; screw down lids or clip on the caps.
2. Set jars in sterilizer or pan and pour in enough boiling water to cover the jars completely. Leave on the boil from 5 to 20 minutes.

This method is not to be recommended if the fruit is required whole and of good appearance, but the flavour is excellent.

OVEN METHOD A

1. Use special bottling jars with rubbers rings, clips or screw tops.
2. Pack fruit in and fill to within $\frac{1}{2}$ in. of the brim with cold syrup or water.
3. Put rings on with the lids, but do not clip or screw right down.
4. Stand jars in cool oven on a piece of thin wood or thick cardboard, taking care that they do not touch one another or the oven wall.
5. Oven temperature must be between 280 and 340° F. (138 and 171° C.), Reg. $\frac{1}{4}$ and 3 to 4. Start at the lower temperature and raise to the higher if necessary (pears, apples, etc.).
6. Keep in oven $1\frac{1}{2}$ to 3 hours, again according to the variety of fruit. When shrinkage occurs and there is a slight space at the bottom of the jars and bubbles appear on the fruit, the jars are ready to be lifted from the oven.
7. Take out one at a time and clip or screw down firmly.
8. To get a good result, heating must be slow and gradual.

OVEN METHOD B

1. Any large jam jars or bottles can be used.
2. Pack with fruit as before, and cover the

jars with a saucer or lid of some kind.

3. Heat in oven as before, very gradually, at temperature of 250° F. (121° C.).
4. After about an hour or less, when the fruit has shrunk slightly, remove jars from oven one at a time.
5. If fruit has shrunk well the jar may be filled up with fruit from another jar. Pour on boiling syrup or water at once to cover.
6. Immediately put on rings and lids (snap closure type) and clip down, or tie down securely with parchment or skin (Porosan).

TOMATOES

Tomatoes may be bottled in various forms:

in their own juice; whole in brine; as a thin puree; as juice.

Solid pack, or tomatoes in their own juice

1. Blanch the tomatoes by dipping into boiling water for 10 seconds, and then plunging into cold water before removing their skins. Pack the fruit into the jars very tightly, leaving no air spaces, halving or quartering the fruit if large, and adding $\frac{1}{4}$ oz. salt and 1 teaspoonful sugar to each 2 lb. tomatoes.
2. Fix the rubber bands, put on lids, bands or clips and place in the sterilizer. Take $1\frac{1}{2}$ hours to reach simmering point and maintain this temperature for a further $\frac{1}{2}$ hour.

Whole tomatoes in brine

1. Skin the tomatoes in the usual way and preserve, using either the water-bath or the oven method. In each case the liquid used is a brine solution made from $\frac{1}{2}$ oz. salt to 1 qt. of water.

Tomato purée

1. Wash the tomatoes, cut in half and cook gently in a covered pan until soft.
2. Rub through a hair or nylon sieve, reheat, adding sugar and salt to taste, bring to the boil and pour into hot, clean preserving jars and seal immediately.
3. Place the jars in a pan of hot water,

PRESERVING

bring slowly to boiling point and continue boiling for 10 minutes.

Tomato juice

1. Prepare the tomatoes in the same way as for the purée and add to each quart of sieved tomato pulp $\frac{1}{2}$ pint water, 1 oz. sugar, 1 teaspoonful salt and freshly ground black pepper.
2. Reheat, pot and sterilize in the same way as the purée.

BOTTLING VEGETABLES

Vegetables must be bottled in a different way from fruits (this also applies to canning), because being low in acidity they need a greater temperature than that of boiling water to sterilize them effectively (i.e. the temperature obtained in a pressure cooker). Alternatively, an acid-brine solution, sometimes known as the lemon-juice method, may be used; this obviates the use of the pressure cooker. Vegetables insufficiently sterilized can be dangerous and the use of a pressure cooker is preferable. The acid-brine method and the water-bath method are, however, satisfactory, provided every detail is carried out correctly and with care.

The most popular vegetables for home bottling are peas and broad and french beans. These should be freshly picked from the garden and bottled the same day. This is most important as bacteria are more difficult to kill on stale vegetables. All vegetables must first be blanched as a preliminary sterilization. This process must not be omitted. It also "brings up" the colour and makes the vegetables easier to pack.

BLANCHING AND STERILIZING

1. Have ready a pan of sufficient boiling water to cover the vegetables.
2. Put the prepared vegetables into a piece of muslin or salad basket.
3. Plunge the muslin bag or salad basket into the boiling water and leave for

3 minutes for peas and broad beans, and 5 minutes for french beans.

4. Drain and pack at once into hot jars. Do not pack down tightly. Leave a space of about $\frac{3}{4}$ to 1 in. from the top of the jar. Pour on the boiling liquid required in the method being followed, and put on the lids. If screw-top jars are being used, leave bands half unscrewed but clip down the lids.
5. Sterilize at once, preferably in a pressure cooker. The temperature should reach 240° F. (116° C.). This temperature is indicated on the pressure gauge, i.e. 10 to 15 lb., and should be kept there for 35 to 40 minutes to ensure complete sterilization. The cooker is then allowed to cool down completely before the lid is removed.

WATER-BATH METHOD

Vegetables preserved by this method, a much longer one, have not the flavour of those sterilized by pressure cooker.

1. Blanch vegetables. Have ready the hot, scrupulously clean jars and fill with the vegetables, leaving a $\frac{1}{2}$ -in. gap at the top.
2. Fill with boiling blanching water, adding $\frac{1}{2}$ teaspoon salt to each 1 lb. jar, and making up with fresh boiling water if necessary.
3. Seal down at once and put into sterilizer, cover with hot water, making sure that the water comes at least 3 to 4 in. over the tops of the jars.
4. Bring to the boil and boil hard for 3 hours, counting the time from when the water boils.

Note: When you are bottling vegetables, choose small jars to ensure that the heat will penetrate to the centre of the jar.

LEMON JUICE OR ACID-BRINE METHOD

1. Here great care must be taken to see that the bottles or jars are scrupulously clean. Choose small jars and new rubber rings. Heat jars.

PREPARATION OF FRUIT AND TEMPERATURE CHART

<i>Fruit</i>	<i>Preparation</i>	<i>Sterilization temperature</i>
APPLES	Peel and core, cut into quarters or eighths, or into rings $\frac{1}{4}$ in. thick and dip into boiling water 2 to 3 minutes. Pack into jars in the usual way.	165° F. (74° C.) Maintain for 10 minutes.
APRICOTS	Usually left whole but may be halved if large as this fruit may be packed quite closely. Crack some stones and add the blanched kernels to the jars.	165° F. (74° C.) Maintain for 10 minutes.
BLACKBERRIES	Inspect carefully and, if they appear to contain maggots, soak for $\frac{1}{2}$ hour in salt water to draw the grubs out. Berries should be large, juicy and quite ripe.	165° F. (74° C.) Maintain for 10 minutes.
CHERRIES	Choose Morello or the red acid varieties, not the black or whiteheart cherries. Remove the stalks and wash in cold water. Add $\frac{1}{4}$ oz. citric acid to every 1 gallon syrup or water.	190° F. (88° C.) Maintain for 10 minutes.
CURRENTS	Remove from the stems and wash.	180° F. (82° C.) Maintain for 15 minutes.
GOOSEBERRIES	Top and tail and wash in cold water. Prick each berry several times with a needle to prevent the skin toughening. Flavour the syrup with one or two heads of elderflower tied in muslin.	165° F. (74° C.) Maintain for 10 minutes.
PEACHES OR PLUMS	Skin the peaches by covering with boiling water for 1 minute. Halve or cut in slices. Wash plums in cold water and halve if large.	165° F. (74° C.) Maintain for 10 minutes.
PEARS	Halve the pears, remove the core and fibres up to the stem with a sharp-pointed teaspoon, peel and drop immediately into the hot syrup. Allow to cool completely before sterilizing.	190° F. (88° C.) Maintain for 20 minutes.
RASPBERRIES OR STRAWBERRIES	If clean and dry, pick straight into bottles to prevent unnecessary crushing.	165° F. (74° C.) Maintain for 10 minutes.
QUINCES	Prepare as for pears.	190° F. (88° C.) Maintain for 20 minutes.

PRESERVING

2. Pick over and wash vegetables carefully.

3. Prepare acid-brine solution with:

4 pints water: 1 level tablespoon salt: $\frac{3}{4}$ pint strained lemon juice: for peas, take 1 pint lemon juice, the same proportions of water and salt, and 1 tablespoon sugar.

4. Dissolve salt in the water and add lemon juice.

5. Put the vegetables into a pan, cover well with the solution, bring to the boil and boil 6 to 10 minutes. Then pack hot into the hot jars, not too tightly, and fill with the boiling solution to the brim. Seal at once.

6. Put the jars at once into a sterilizer of boiling water, making sure that the tops are covered with at least 2 in. of water.

7. Boil hard for $1\frac{1}{2}$ hours for 1 lb. jars and 2 hours for 2 lb. jars.

8. Screw tops down securely. The liquid in the jars should cover the vegetables. If any are uncovered, open and use straight away. Do not attempt to fill up and re-sterilize.

9. To use—turn out contents of bottle with the liquid into a pan; if there is not enough liquid to cover, add water. Boil hard for 15 minutes, stirring occasionally. Then drain, add butter and serve.

A pinch of bicarbonate of soda may be added to the boiling water to counteract the acid flavour.

10. If any bottles or jars have an unpleasant smell and have gone bad, do not taste the contents, but bury or burn them.

CANNING

BY HOM-CAN OR DIXIE CANNING MACHINES

Fruit and vegetables can be canned: fruit in a hot-water sterilizer and vegetables in a pressure cooker.

PRELIMINARY PREPARATION

As for bottling, fruit should be chosen with care, be ripe but firm, and should be prepared as for cooking, i.e. topped and tailed, in some cases peeled, stoned and sometimes halved, and in every case carefully washed and examined for blemishes.

Vegetables should be young and fresh, and they should also be prepared as for cooking.

Apparatus for home canning usually includes a booklet of instructions—*this should be carefully read and followed with exactitude*. The directions for sealing the cans, in particular, must be exactly followed for successful canning.

First of all, soak cans and lids in boiling water for 2 to 3 minutes to sterilize them. Drain well and set on a tray.

Fill the cans with fruit or vegetables to within $\frac{1}{4}$ in. of the top and pack fairly firmly, using the handle of a wooden spoon or spatula. Tap the bottom of the can on the table to settle the contents.

Fill to within $\frac{1}{2}$ in. of the brim of the can with boiling water or syrup, and be sure it is boiling. Have a boiling kettle at hand, or a saucepan of boiling syrup, fill one can at a time and seal it *at once*. This is important.

Lift the can on to the stand of your canning machine with a folded cloth, or with tongs (these are very useful in bottling and canning), and seal as directed in the booklet provided with the equipment.

Take the can and plunge it at once into a large container of fast-boiling water. Boil rapidly for 23 to 25 minutes, consulting the chart opposite. If, after all the cans are in, they take some minutes (say 10) to come to the boil, deduct this time from the time allowed for sterilizing.

Lift out the cans with tongs and plunge them into cold water. A deep sink is convenient for this soaking, and the tap should be allowed to run for some time to cool the cans quickly. When they

PRESERVING

TIME-TABLE FOR STERILIZING CANNED FRUIT (Large 2½-lb. size)

Deduct time taken to come again to the boil after cans have been put into sterilizer

<i>Fruit</i>	<i>Boiling time in minutes</i>
APPLES, packed raw in liquid	20
APRICOTS	25
BLACKBERRIES	22
CHERRIES	25
CURRANTS, red, white and black	22
DAMSONS, stone if desired	25
FIGS, fresh, with lemon juice	75
GOOSEBERRIES	22
GRAPES	24
LOGANBERRIES	22
MULBERRIES	22
NECTARINES	25
PEACHES, stoned, in halves	25
PEARS, peeled and cut in halves or slices	25
PINEAPPLE, peeled, cut in slices	30
PLUMS, ripe	22
PLUMS, unripe	25
QUINCES	30
RASPBERRIES	22
RHUBARB	24
STRAWBERRIES	22
TOMATOES, whole in brine	40
TOMATOES, pulped	50

TIME-TABLE FOR STERILIZING VEGETABLES IN PRESSURE COOKER

You are strongly recommended to boil all home-canned vegetables for 10 minutes before serving them. This does not apply to tomatoes

<i>Vegetables</i>	<i>Preparation</i>	<i>Time in minutes at 10 lb. pressure</i>
ASPARAGUS	Pre-cook 3 minutes, add water used in cooking.	30
FRENCH BEANS	Pre-cook 1 minute, add cooking water.	25
CELERY	Trim, cut and pack, add boiling water.	30
PEAS	Pre-cook 3 to 7 minutes according to size, add cooking water.	40

PRESERVING

are quite cold, lift them out, dry them, write the contents on the tin with the pencil specially provided with the equipment for this purpose, add the date, and store the tins in a cool, dry place.

Syrup for filling the cans of fruit varies according to the acidity of the fruit. The strength should be the same as that used in bottling.

Vegetables are filled into the tins in the same way, and the tins are then placed in

a large pressure cooker, on a rack, and sterilized for the times specified on the chart. When the time has elapsed, they are lifted out of the cooker and plunged into running cold water. The water in the pressure cooker should cover the rack—for over 30 minutes pressure cooking, allow 1 pint of boiling water for safety's sake.

All vegetables are pre-cooked or blanched for a time before canning.

PRESERVING FOR WINTER USE

SALTING BEANS

The beans may be either french or runner beans. Leave whole or slice, according to size. The salt must be good-quality block salt and ground down before use. Weigh beans and salt in order to get the right proportion of each. Failure to do this may mean that the beans will not keep. Use large earthenware or glass jars, or small crocks with lids.

To use the beans, wash 5 or 6 times in cold water. Then pour on scalding hot water and leave to soak for about 1½ hours, not longer. Rinse again, put into boiling unsalted water and cook until tender, for about 30 minutes. Drain and add a good lump of butter.

If you wish you may add a good pinch of bicarbonate of soda to the cooking water.

To 3 lb. prepared beans take 1 lb. ground block salt. Wash beans thoroughly, dry, top and tail, and string if necessary. If tender, snap french beans in two or three pieces; if they are small, leave whole. Slice runner beans.

Have ready the jars or crock, put a layer of salt in the bottom, about ½ in. Cover with the prepared beans, scatter over a layer of salt and continue until all the beans are used. Finish with a layer of salt. Cover with a plate and leave for 48 hours, pressing down occasionally as

the beans shrink and become wet. Then fill up with more beans and salt in proportion, always leaving with a layer of salt on top.

When the jars are full (and this is important), tie down securely with three layers of greaseproof paper.

The beans should keep sweet and good for several months.

SAUERKRAUT

Sauerkraut is cabbage preserved partly by salting and partly by fermentation. The hard white cabbage is the most satisfactory.

Trim the cabbage, cut into four, remove most of the hard stalk, then cut down into very fine shreds. Pack into a large stone crock or wooden tub in layers with salt, in proportion, not more than about 2 to 3 oz. per 5 lb. cabbage. Cover the top with cabbage leaves, press down well. Cover with a piece of muslin and put a wooden board on the top with a heavy weight on it. Leave in a warm place between 70 and 78° F. (21 and 25° C.), for 2 to 3 weeks to allow fermentation to take place. Drain off the liquid. If the sauerkraut is not for immediate use, pack into bottling jars when all fermentation has ceased, and sterilize for 40 minutes with the lid on the pan and the bottles well screwed or clipped down. Keep in a cool place till required.

TOMATO PURÉE

To every 4 lb. tomatoes add 1 chopped onion, 1 clove of garlic, 3 large sprigs of parsley, a sprig of thyme and a bay leaf, salt, and freshly ground pepper to taste.

Wash tomatoes, cut in half and put into a preserving pan with the onion, garlic and herbs tied together. Heat on a slow fire, bruising well with a wooden spoon. When a pulp forms add seasoning to taste, but do not season too highly as the reduction will concentrate the flavour. Continue to simmer for a further 45 minutes or until the whole mixture is very soft, then rub through a nylon sieve, first removing the herbs.

Put the pulp back into the cleaned pan and boil, stirring frequently until well reduced. Pour this into hot small jars with screw-top lids (honey jars are suitable for this), then sterilize them for 45 minutes.

The jars must be stood on the stand in the bottom of the sterilizer or on a piece of wood or wire at the bottom of a pan. Fill with water two-thirds of the way up the jar, cover the pan, bring slowly to the boil and boil gently for the time prescribed.

FRUIT SYRUPS

Fruit syrups are an asset in the store cupboard. Pleasant to the taste, they make excellent sauces to serve with puddings, for flavouring sweets or as a basis for fruit drinks.

Black currant syrup is soothing for a cold in winter, and other flavours make delicious iced fruit cups for parties.

If syrups are to be made regularly it is well worth while investing in special bottles in which to store them. The best are the lever-stoppered type with a china cap and rubber washer. The latter has to be renewed every year, but they are easy to handle, the general appearance of the bottle is good and, with care, they can be used year after year. They are obtainable in pint sizes. Another suitable bottle is

the sauce bottle with a screw cap; this is obtainable in smaller sizes.

The rules for making a syrup are similar to those of jelly making. The juice from the fruit is extracted in gentle heat; but here a little water is usually employed. The resulting juice is measured when cold, and the sugar added and stirred until dissolved. It should then be bottled immediately and sterilized.

Store in a cool, dark place. Light will cause the colour of the syrup to fade. A little colouring may be added to deepen the colour of pale syrup and certainly improves the appearance and attractiveness of the syrup.

SYRUP FROM SOFT BERRIED FRUITS

Raspberries, currants, strawberries, elderberries, blackberries and loganberries can be used singly or as a mixture, such as raspberries and red currants. Choose fresh, clean, ripe fruit and avoid washing if possible. Pick over well and discard any mouldy or blemished fruits. Turn into a double saucepan and add $\frac{1}{4}$ to $\frac{1}{2}$ pint of water according to the firmness of the fruit. For example, $\frac{1}{4}$ pint for raspberries or strawberries and $\frac{1}{2}$ pint for black currants. Cook for about 1 hour, crushing the fruit down at intervals.

If a double saucepan is not available, use an ordinary saucepan, preferably enamel, and draw out the juice as slowly as possible.

When the mixture is thoroughly soft turn it into a cheese cloth or jelly bag to drain. Leave overnight until all the juice has run through. Then measure and add $\frac{1}{2}$ lb. cane preserving or loaf sugar to each pint of juice. Stir occasionally until dissolved. Strain again through muslin, pour at once into bottles and seal down.

Stand the bottles in a sterilizer and fill with cold water to cover. Heat slowly so that a temperature of 170 to 175° F. (77 to 79° C.) is reached in 1 hour, i.e. about simmering point. Keep at this temperature for 20 to 30 minutes according to the size of the bottles.

Remove, cool, label and store.

PRESERVING

Fruit with little colour or flavour, such as gooseberries and apples, makes an excellent basic syrup for other flavours. The following recipe is an example of this.

MUSCAT SYRUP

This is so called because the flavour is that of muscat grapes. It is delicious for fresh fruit *compotes*, water ices, drinks and so on. Use an ordinary saucepan or preserving pan for this.

3 lb. green gooseberries: $\frac{1}{2}$ pint water:
2 lb. 12 oz. loaf sugar: about 8 large elderflowers, washed but left on the stalks.

Top and tail and wash gooseberries, put them into a pan with the water and simmer gently until soft, but without breaking the fruit. Add the warmed sugar, allow to dissolve and bring up to the boil. Tie the elderflowers in a piece of muslin and add to the syrup. Draw aside and allow to infuse for 7 to 10 minutes. Then strain all through muslin.

Bottle syrup and sterilize.

The gooseberries may be used for a puree or a fool.

ROSE HIP SYRUP

This, as a rich source of Vitamin C, is much cheaper to make than to buy. Use exactly as the bought product, i.e. 2 teaspoonsful of syrup daily. It should be stored in small bottles.

$2\frac{1}{2}$ lb. ripe red rose hips, wash and remove the calyces. Put through a mincer and pour on 3 pints boiling water. Turn into a pan and bring up to the boil. Draw aside and stand for 15 minutes. Strain through a jelly bag or muslin. Measure juice and, if more than $1\frac{1}{2}$ pints, boil down in a clean pan until the juice measures that amount. Add $1\frac{1}{2}$ lb. sugar, allow to dissolve, then boil hard for 5 minutes. Bottle when cold and sterilize.

DRYING FRUIT

When there is a glut of apples, plums or pears, it is of great advantage to dry them, as they take little room to store and are cheap to prepare. The equipment required is simple, the most essential being

wooden frames over which butter muslin can be stretched, and an even source of heat such as an oven, airing cupboard, etc. An oven thermometer also ensures success.

The trays are made simply by nailing four pieces of wood together to form a square which will fit into the oven, and stretching pieces of butter muslin or cheese cloth over and tacking them down. For apple rings, bamboo canes, which will also fit into the oven, are needed. Sliced apples can be dried on the muslin.

FRUIT

Apples, pears, plums are the most suitable for drying. The fruit should be perfectly sound and quite ripe.

To prepare: For apples—peel, core and cut into rings about $\frac{1}{4}$ in. thick, or quarter and cut into thick slices. Drop them at once into slightly salted water—1 tablespoon to 1 qt. water—to prevent discoloration.

Treat pears in the same way but leave in quarters.

For plums—either leave whole or cut in half and remove stones. Remember that fruit shrinks very much in drying, so choose the large, firm, fleshy type of plum. If left whole and dried a little more slowly, they will resemble prunes and are delicious. After blanching, dry thoroughly in clean cloths, thread apple rings on to the canes and arrange the sliced apple and pears on the muslin trays close together, but not touching one another.

Arrange plums in the same way. Place trays or canes in the oven, having first got it to the required temperature.

To dry: The most important part of this process is that the heat should be very gradual, otherwise a skin will form on the outside and so harden the fruit. In the case of plums, too much heat would cause the skins to burst. The temperature for drying varies from about 120° F. (49° C.), to about 145° F. (63° C.). Always start at the lowest temperature and keep at that for the first hour, then increase to 140° F. (60° C.). Keep at that temperature

until the fruits are dried; this will take from between 3 to 6 hours, according to the size of the fruit. Oven temperatures are more easily controlled than those of an airing cupboard etc.

The fruit when properly dried should be soft, pliable and springy in texture. No excess moisture should be present when the fruit is pressed, though the fruit must not be dry and brittle in any way.

To condition: After drying, the fruit must be conditioned by being spread out on clean paper to cool. Cover with muslin or paper and leave in a dark, cool place for 12 hours. Turn the fruit over two or three times during this period.

To store: Pack carefully into glass jars, clean biscuit tins, etc. Ensure that these are completely air-tight by using a screw-type lid on the jar, or sealing round the tin lid with adhesive tape.

Store in a very dry room or cupboard.

DEEP FREEZING

Foods for deep freezing may be divided into two categories:

(a) Foods already cooked, either specially prepared for freezing and use at a later date or any left-overs.

(b) Raw foods, and garden produce.

All foods for deep freezing should be prepared and packaged in polythene bags, cartons or containers made specially for the purpose, with liquids and sauces in cartons.

Garden produce should be frozen as soon as possible after gathering. Broad, french and runner beans, peas and leaf spinach freeze well. All vegetables should be blanched before putting down by plunging the washed and prepared vegetables into fast boiling water for 1 to 2 minutes, then draining and holding them under running cold water for 2 minutes.

Drain again before packing into boxes or bags.

Spinach is especially good if cooked

and puréed before freezing and is economical of space.

Fruits, such as raspberries, strawberries and peaches, should first be moistened with a cold heavy syrup—10 to 12 oz. sugar to 1 pint water, according to the acidity of the fruit.

If space is short, stone fruits, gooseberries, plums and damsons are best made into a well-sweetened purée before freezing in cartons. Otherwise they may be moistened with the syrup or just prepared and packed dry into boxes and then stored in the deep freeze.

PACKING INTO THE FREEZER

Remember to put heavy foods at the bottom of the freezer and to be as economical of space as possible.

Special racks are available to fit into the freezing compartment and instructions as to de-frosting are usually given with the freezer.

VARIETIES OF VEGETABLES FOR DEEP FREEZING

Broad Beans:

Green Longpod; Masterpiece

French Beans:

Masterpiece; Granda

Runner Beans:

Streamline; Cookham Dean Improved

Broccoli:

Green Sprouting Calabrese

Brussels Sprouts:

Cambridge Special; Irish Glacier

Carrots:

Early Horn; Amsterdam Forcing;
Chantenay Red Core

Cauliflowers:

Snowball

Peas:

Kelvedon Wonder; Early Onward;
Onward; Raynes Park

Spinach:

Goliath; Perpetual

Sweet Corn:

Early Golden Market

CRYSTALLIZATION AND PRESERVATION OF
FLOWERS AND FRUIT

True crystallization of flowers and the candying of fruit is a skilled and long process involving the use of specialized equipment. A quick, attractive method can, however, be used at home for certain flowers and fruit. These can be used for cake decoration, but they will not keep as long as the bought varieties.

CRYSTALLIZED VIOLETS, PRIMROSES OR
LILAC BLOSSOMS

Choose perfect flowers that are quite dry and clip the stalks neatly near the back of the flowers. Take a little slightly beaten white of egg and brush the petals front and back using a very fine paint brush. Dust and roll gently in fine castor sugar. Place on tissue paper. Spread on a wire cake rack. Leave to dry in a warm kitchen for about 12 to 24 hours. Pack carefully

between layers of tissue paper in an airtight tin.

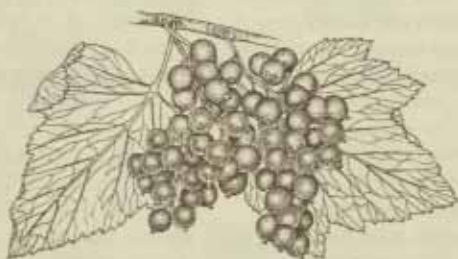
Red currants and strawberries can be crystallized in the same way, but these must be eaten within 1 or 2 days.

CANDIED PINEAPPLE

Fresh, tinned or frozen pineapple can be candied quite successfully at home and is useful to store for cake decoration.

Place the sliced pineapple in a large frying pan and just cover with a sugar syrup made with equal quantities of sugar and water. Place over gentle heat and cook very slowly for about 2 hours. When the pineapple is ready it should look almost transparent and this will only happen if the fruit is cooked the whole time well under boiling point.

If the syrup boils the pineapple will caramelize and become hard.





HERBS

POWDERS, JUICES, perfumes, oils and seeds extracted from herbs were used from the earliest times in religious ceremonies, in cooking, and by magicians in making philtres and other mysterious potions. Today herbs are usually grown for their great value in cooking, and it is well worth finding a small place for herbs in any garden. Some herbs are still grown for their medicinal properties, which are described in Chinese herbals compiled 2,700 years ago, and were also known to the ancient Egyptians.

The Anglo-Saxons were not familiar with the exotic, aromatic plants grown in the East, but they used the herbs growing wild in Britain for both flavouring and medicinal purposes. The use to which various plants were put is reflected in their English names, such as lungwort, liverwort, coughwort, throatwort and woundwort—the word “wort” meaning “plant”. These names are still in use today. The monks continued this tradition

of herbal medicine, and almost every monastery had a herb or “infirmiry” garden; but after the dissolution of the monasteries the cultivation and use of herbs gradually spread to the rest of the country, and it fell upon the woman of the household to grow the herbs needed for physic and in the kitchen.

WHAT TO GROW

Most herb plants have a spreading habit, and the garden can soon look untidy and neglected if the useful parts of the plants are not harvested as they become available, and if more herbs are planted than are needed.

Which herbs can be grown depends on the size and location of the garden, but a few plants of borage, chives, fennel, mint, parsley, rosemary, sorrel, summer savory, tarragon, thyme and a sage bush will provide a representative and varied collection which can be used either in salads or in cooked dishes.

HERBS

Borage, thyme and chives will grow well in window-boxes, and parsley will also thrive, even in towns, as long as the air is not too sooty.

WHERE TO GROW

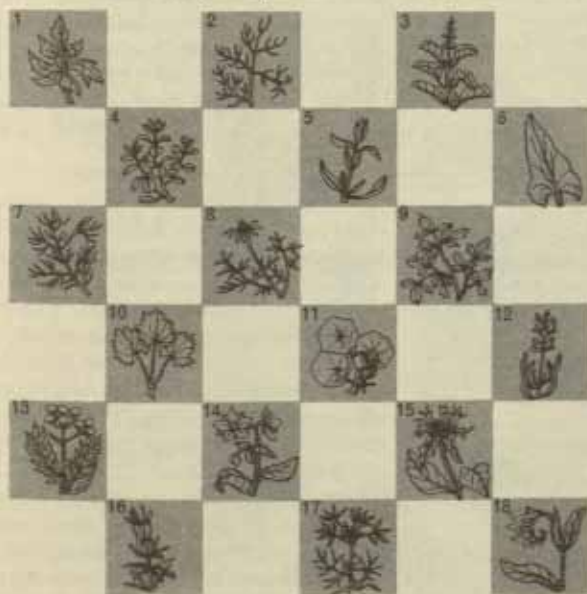
Herbs should be planted in a sunny position that faces south and is sheltered to the north and east from wind and frost (the part of the garden immediately outside the kitchen door, which is often thought to be the best place, is therefore sometimes impracticable).

Ideally, the ground should slope slightly towards the south so that the herbs that need more sun can be planted at the top, and those that need a damper soil and less sunshine can be placed at the bottom. If herbs are grown in a vegetable garden, make sure that they are not liable to be overshadowed by tall plants.

SOIL

Most herbs thrive on a well-drained, light soil; many, including marjoram and thyme, will flourish on chalky ground; while angelica, bergamot, chamomile, chervil and mint prefer the heavier soils. Herbs on the whole, however, are not fussy about soil and will generally succeed in any garden.

Clean the ground well, being particularly careful to get rid of perennial weeds such as couch grass and ground elder. Soil that is heavy or really sticky can be lightened by forking in up to 2 bucketfuls of mortar rubble or wood ash to the sq. yd., but generally no special preparation is needed. If herbs are to be grown on a large scale, it is wise to send soil samples to be analysed by the county agricultural adviser, whose address can be obtained from the local council.



1. Angelica
2. Dill
3. Peppermint
4. Thyme
5. Hyssop
6. Sorrel
7. Southernwood
8. Chamomile
9. Chervil
10. Anise
11. Nasturtium
12. Lavender
13. Tansy
14. Borage
15. Bergamot
16. Rosemary
17. Caraway
18. Comfrey

A CHESS-BOARD HERB GARDEN

The herbs are planted in 1-yd. squares. Alternate squares can be paved or filled with granite chippings or gravel

PLANNING

Herbs can be grown in a border, or in rows as in a vegetable garden, but if many different herbs are to be grown in the same part of the garden, care should be taken to plant the taller herbs, such as angelica, fennel, rosemary and sage at the back, and the smaller ones, such as chives, balm, marjoram, mint and thyme near the front.

Irregularly-shaped patches dovetailing with one another can be filled with individual plants, though for effect, patches of herbs that flower at the same time should be planted well apart.

A pleasing arrangement can be obtained by growing the plants in square blocks arranged like a chess-board, squares filled with various herbs alternating with squares filled with gravel, granite chippings or even paving stones.

Plants that vary in height can then be grown in squares near to each other without encroaching upon or overshadowing their neighbours. Each plot should be about 1 yd. square.

Alternatively, plants of the same natural order can be grouped in one bed and those of other orders in further beds. For example, beds could be devoted to the natural order *Labiatae* (basil, lavender, marjoram, mint and sage), and other beds to *Umbelliferae* (angelica, caraway, coriander, dill and fennel).

If more complicated designs are required, it is advisable to draw a detailed plan before beginning work in the garden. Various patterns can be used, with beds arranged round a central feature such as a sundial or bird bath. Four borders built round a central grass plot, or a chamomile lawn (see Chamomile),



1. Winter savory
2. Fennel
3. Rosemary
4. Tarragon
5. Marjoram
6. Sorrel
7. Balm
8. Borage
9. Thyme
10. Chives
11. Mint
12. Parsley
13. Sage

SUGGESTED PLAN FOR A KITCHEN HERB GARDEN

Draw up a detailed plan to scale, based on the space available. Use the contrasting effects of leaf shapes and colours to give the plot an interesting appearance

can be most attractive. If there is enough space, a rowan, mulberry or magnolia tree can be placed in the middle of the lawn, although the amount of shade that will eventually be cast by the tree should be considered before planting.

If the plot is large, a paved herb garden is probably the most attractive, not only because so many fascinating plants can be introduced between the stones, but also because the colour of the stones themselves will provide a perfect background for the herbs. The beds within the paved area can be either circular or square.

Various intricate designs based on the Elizabethan knot gardens can also be used, the beds being edged with santolina, box, violets or thyme, and the plants within the beds being arranged so that the maximum decorative effect is derived from the juxtaposition of one plant with its neighbours. Contrasting effects of leaf form and colour make the garden very attractive; mint can be contrasted with parsley, tansy with poppies, or catmint with verbenas.

PROPAGATION

SEED

Some herbs, such as anise, borage, chervil, coriander, dill and summer savory are treated as annuals, and the seed is freshly sown each spring.

When the soil is warm enough, usually in April or early May, draw drills 8 in. apart and sow a pinch of seed along each drill. When the seedlings are large enough to handle, thin them out so that they are 3 in. apart, and later from 6 in. to 2 or 3 ft. apart according to the ultimate size of the plants. If the plants are to be used decoratively, sow the seeds broadcast and rake them in. Thin the seedlings in two stages to about 9 in. apart.

CUTTINGS

Most herbs, other than annuals, are propagated by cuttings in summer—sage,

lavender, rosemary, thyme and winter savory are examples.

Take 3- to 4-in. cuttings from the parent plant, using only the previous year's growth. Prepare them in the way described in *Propagation*, and put them in the soil very firmly. Most cuttings can be planted in rows in the open ground during the summer. The soil should be gritty. Alternatively, put in the cuttings round the edge of a clay pot filled with sand and leave them to root. Plant them out later. Whichever method is used, label the herbs, and also protect them from wind and sun for about two weeks. Spray them with water in the evenings until the roots have formed and are able to support the plants.

Cuttings can also be made in November and overwintered in a frame or cold greenhouse, or even in a sheltered spot out-of-doors with some close protection during the worst weather. They will be ready for planting in their permanent positions the following spring.

DIVISION

The mints can be propagated in a simpler way—by division. They form long runner-like growths, which creep along just under the surface of the soil and produce little groups of roots at each node. In early spring, uproot the runners, break them off from the parent plant and put them in the soil on their own.

The crowns of such herbs as tansy and tarragon can also be divided and replanted in spring or autumn. Instructions in the method of propagation by division are given in *Propagation*.

MANAGEMENT

Occasional weeding with a hoe in summer is the principal task in the herb garden. Twiggy plants with aromatic leaves such as lavender, sage and thyme do not usually need watering, but some herbs with soft growth and leaves, such as

HERBS

angelica and the mints, will require a certain amount of moisture.

HARVESTING

If herbs are harvested incorrectly or at the wrong time their value is lost. It is important to know exactly which part of the plant is to be used subsequently, and this information is given in the list of recommended herbs.

When the particular part of the plant is ready choose a dry day, and do not work until the dew has left the plants.

Collect the herbs into a flat box or basket to avoid crushing and bruising them, and do not gather more than can be dealt with at the time, because they do not retain their fragrance for long once they are cut.

Herbs are generally used fresh in the summer and dried and packaged for winter use. Most herbs can be used either fresh or dried, although chervil, chives, mint, rosemary and sage should be taken fresh from the garden if possible.

ROOTS

Lift the roots carefully in autumn when they are mature, wash free from soil and immediately drain off all water. Trim off any underground stems or fibrous roots.

WHOLE PLANT

When both roots and above-ground parts are to be used, lift the plant when in bloom and wash the roots free from soil.

HERB

The above-ground parts of the plant are known as the herb. When this is mature—after the plant has flowered—cut it off at ground level with a really sharp knife. Only clean and healthy plants are useful.

LEAVES

Harvest leaves just before the flowers are fully open, for at this time the plant is bursting with life. Choose leaves that are perfect and not those spoilt by insects.

FLOWERS

Nip off the flower-heads the day before maturity (if this can be judged), in order to make sure that the essential oils have not been lost. The blooms should be perfect so that they do not deteriorate while drying and spoil the perfume of the pot-pourri or other product for which they are used. They should be as free from insects as possible, and if they are destined for floating in drinks or for candying, drop them into a bowl of water and leave them for a minute or two to wash any earwigs away.

SEED

It is difficult to estimate when some seed is mature. Colour is usually the best indication, and a year or two of experience will enable the gardener to decide.

To extract the seed, cut off the whole flowerhead and tie it in a paper bag; then hang it upside down in a light, airy place so that the seed will fall into the bag as the head dries. This method ensures that the seeds will remain free from dust and that those of different plants will not get mixed together. Sometimes seed has to be shaken or rubbed out of seed capsules. Do this over a clean shoe-box or other container with deep sides, after the plants have been dried.

DRYING

Herbs should be dried indoors. The necessary conditions are: (a) good ventilation, (b) shade, except for roots, which should be dried in full sun, and (c) a steady initial temperature of about 90° F. (32° C.), checked with an air thermometer.

The best places to use for drying are a well-shaded greenhouse, the airing cupboard, an airy loft or spare room, or a shed or garage.

Do not use a kitchen, wash house, or bathroom, or a shed or garage made of corrugated iron, because all will produce too much condensation.

Dry the herbs as soon as they are harvested, to prevent decomposition. Spread the plants or parts collected in a shallow box without a lid, or on trays, butter muslin or wire netting. Space out the plants or parts so that they lie flat and do not overlap. Keep one kind of plant separate from another.

Some plants, such as artemisia or sage, can be hung upside down in small bunches from the rafters of an airy shed, garage or greenhouse, or indoors on a rod or cord stretched across a suitable place out of cold draughts. So that the air can circulate freely among the plants, the bunches should not be large or tied tightly.

The object of good drying is to reduce the moisture in the plant before it starts to die. It is therefore important to maintain a temperature at 90° F. (32° C.), or slightly over for the first 24 hours, and then to reduce it without letting it fall below 72° F. (22° C.); otherwise the drying process will not be completed satisfactorily and the plants will reabsorb moisture from the atmosphere. Turn the plants once or twice during the first 24 hours and once a day thereafter. Inadequate drying results in dead material, and hurried or excessive drying results in brittle, parched and useless material.

Roots take the longest time to dry, and stems take longer than leaves or flowers. The herbs are sufficiently dry when they snap readily without too much pressure. Seeds are dry when they can be shaken easily from their seed pods.

STORING

After crumbling the dried herbs between the hands to remove twiggy pieces, and discarding the stems if not required (as in the case of sage, for example), store the herbs at once before dust collects on them. Use airtight containers such as wooden bins, boxes, bottles, jars or paper



ANGELICA

bags. Bags should be hung up so that air can circulate round them. If moisture forms on the inside of the containers, the herbs have not been properly dried. Tip them out on to clean white paper and give them further time to dry.

USING HERBS

Herbs are now used mainly for flavouring, although a few are still grown for their medicinal properties. Culinary herbs bring out the best in food, provided they are used in the right quantities. It is wise to remember that they are added to a soup, sauce, salad or protein dish to provide subtlety of flavour and not to swamp it. Herbs used with warm dishes are usually added just before cooking is complete, but they are added early in the preparation of uncooked and cold dishes to allow the flavour to develop. If fresh herbs are used for flavouring, do not chop or crush them on a board, but snip them repeatedly with scissors so that the essence is retained. The foods with which

HERBS



BASIL



COMFREY



BAY

various herbs can be used are mentioned in the list of recommended herbs.

SPECIAL MIXTURES OF HERBS

Fines herbes are usually chervil, chives, parsley and tarragon finely chopped.

Bouquet garni is a bunch of herbs, usually parsley, thyme, bay, tarragon and sometimes marjoram, tied with thread and added during cooking to stock or water. Dried herbs can be used if tied in a small piece of muslin. Remove the herbs before serving.

HERB TEA

Herb teas or tisanes have been drunk for many centuries, and their various uses are listed in herbalists' catalogues. They are not only taken as a medicine but also for their refreshing flavour, pleasant aroma and colour. To make a tisane, pour boiling water over the fresh or dried plants and let the infusion stand for seven to ten minutes before drinking. Tisanes are sometimes bottled, but this is not a common practice.

POT-POURRI

A pot-pourri is a mixture of flower-heads and leaves preserved with some of their essential oils. It is usually kept in a place where its scent can pervade a room or cupboard.

Many different mixtures can be made of flowers and leaves that hold their scent when dried, such as roses, lavender, rosemary, bergamot, verbena and geranium leaves. A pot-pourri can be expensive to make, but an economical recipe will produce a satisfactory result.

Mix together 1 oz. allspice, 1 oz. cloves, 1 oz. ground nutmeg and 4 oz. orris-root; add the juice and grated rind of 3 lemons. Any or all of the following can also be added: $1\frac{1}{2}$ oz. oil of geranium, 1 oz. essence of lemon, $\frac{1}{2}$ oz. oil of bergamot, $\frac{1}{2}$ oz. spirit of lavender.

Make a separate mixture of handfuls of rose petals that have been dried for an hour or two in the sun, salt and salt-petre—a few pinches of each of these are enough for each handful of petals. Let

the two mixtures stand for a few hours, and then stir them together. Put this mixture into a tightly fastened container and, as more scented flowers and leaves become available, add them without drying them first. The mixture should remain moist, so add more salt if it tends to dry out. At the end of the season, when no more plants are to be added, stir the pot-pourri again and put it into a bowl. Its perfume will last for a long time.

RECOMMENDED HERBS

Unlike most English plant names, the names given to herbs are remarkably consistent all over the British Isles. The herbs are therefore listed here under their English names as they are in herbalists' and seedsmen's catalogues, and their Latin names follow in brackets. A plant with the specific name *officinalis* is the official or medicinal member of its particular family. The part of the plant to be used is stated in each case.

ANGELICA (*Angelica archangelica*) Stem
Annual. Sow thickly because the seed is not very viable, and choose a damp and shady spot. Thin seedlings to 1½ ft. apart. Cut the stems in May and June while they are tender, or cut from the side shoots as late as mid-August. Crystallize the stems for use in confectionery, or use them fresh with rhubarb in compote or jam to reduce the acidity and to add flavour. Essential oil from the seed is used in liqueurs.

To crystallize, cut the young stems into short lengths and boil until tender in a little water in a covered pan. Remove from the water, drain and strip off the outer skin, return to the water and simmer for a further 25 min. The stems will take on a green colour.

Drain, dry, weigh and, after scattering them on an oven tray, sprinkle them with an equal weight of sugar. Cover and leave to stand for two days.

Put the resulting mixture in a pan, add a few drops of water to prevent burning, and bring just to the boil. Remove

and drain; then add to a fresh syrup made of equal quantities of sugar and water and simmer for 10 min. Then spread out the pieces on a baking sheet covered with greaseproof paper, and place them in a cool oven until dry to the touch.

ANISE (*Pimpinella anisum*) Seed
Annual. Grow 1 ft. apart in warm border in dry, light, fairly rich soil. Gather seed in August, dry it and use for scattering over cakes, pancakes, salads, soups and young carrots.

ARTEMESIA (*Artemisia spicata*) Whole herb
Propagate by division. Use either fresh or dried for flavouring, or include in a mixture of aromatic leaves. It is also used as an ingredient of vermifuge medicine and tonics.

BALM (*Melissa officinalis*) Leaves
Propagate by division. Plant 1 ft. apart in any soil. Use leaves fresh or powdered in fish sauces, stuffings, or as substitute for lemons. Use fresh leaves in salads and summer drinks.

BASIL, SWEET (*Ocimum basilicum*) Leaves
Annual. Sow under glass in February and plant out in May 1 ft. apart. Use the leaves of this clove-scented plant sparingly to flavour soups—especially turtle, mock-turtle and tomato—and in tomato dishes, salads, omelets, sausages, minced meat and drinks.

To make basil vinegar, pick the leaves before the plants flower, allowing 8 oz. leaves to 2 qts. white wine vinegar. Wash the leaves, put them in a bowl and cover them with the vinegar. Cover the bowl and leave to soak for a fortnight. Strain and bottle.

BAY, SWEET (*Laurus nobilis*) Leaves
Propagate by cuttings. Use whole leaf in fish dishes, milk puddings, sauces or game, but remove before serving. Bay leaf is always included in *bouquet garni*.

BERGAMOT (*Monarda didyma*) Leaves and flowers

Propagate by division or cuttings. Plant in sun, in deep rich soil, 1 ft. apart. Use leaves, or leaves and flowers, as an

infusion or a flavouring. Varieties with red flowers, such as Cambridge Scarlet, make an exotic decoration for a salad, or can be floated in punches or fruit cups. Dip the flowers in water first, because earwigs are particularly fond of hiding in the flute-shaped florets. Bergamot is sometimes called bee balm or Oswego tea.

BORAGE (*Borago officinalis*) Leaves and flowers

Annual. Grow in poor, stony soil 2 ft. apart. Use leaves for flavouring claret cup or soft drinks. An infusion of the leaves, fresh or dried, allowed to cool and served with ice, makes a refreshing drink, and looks most attractive with the blue borage flowers floating in it. Flowers can be candied.

CARAWAY (*Carum carvi*) Seed

Annual. Grow on any soil 1 ft. apart. Dried seeds are used in cakes, bread, salads and mixed with cream cheeses. Can be sprinkled on lamb or pork chops before cooking to enhance the flavour.

CHAMOMILE (*Anthemis nobilis*) Flowers

Perennial. Grow in a rich soil 9 in. apart. Use flowers either dried or fresh to make chamomile tea, a treatment for insomnia and a tonic. Dry the flowers quickly if they are to be used for tonics and shampoos.

To make a chamomile lawn, put the young plants raised from seed into a previously raked and level plot in April or May, 4 or 5 in. apart in staggered rows. Allow the chamomile to flower in the first season in order to develop and spread the plants. Thereafter mow the lawn, making sure that the blades are set as high as possible. The plant gives off a musky perfume when trodden.

CHERVIL (*Anthriscus cerefolium*) Leaves

Annual. Make successive sowings from February to September, thin seedlings to 6 to 8 in. apart, and water in dry weather. To produce good leaves, discourage the plant from flowering. Cut the leaves six to eight weeks after sowing. Fresh chopped leaves impart an aniseed flavour to salads, sauces (*sauce tartare*) and soups. Use

the dried leaves in stuffings. Chervil vinegar is made in the same way as tarragon vinegar and can be used in the preparation of salad dressings.

CHIVES (*Allium schoenoprasum*) Leaves

Perennial but needs dividing every four or five years. Plant 1 ft. apart in May and divide a few in autumn. Put a cloche over a few crowns during the winter so that fresh leaves can be pulled in March or April. Fresh leaves impart a mild onion flavour to salads, egg and cheese dishes, and are used in *sauce tartare* and *fines herbes*.

COMFREY (*Symphytum officinale*) Leaves and roots

Propagate by seed or division. Grow in damp soil 2 ft. apart. The leaves alleviate pain and reduce the swelling attendant upon breaks and sprains. Soak a few dried leaves in hot water and allow to cool before bathing the affected part with the liquid. To relieve congestion of the chest, boil the roots and leaves in twice their depth of water until the liquid is reduced to a third, and add sugar or lemon before drinking. The young shoots can be eaten like asparagus after blanching. Comfrey is often called knibbone or boneset.

CORIANDER (*Coriandrum sativum*) Seeds and leaves

Annual. Sow seeds at monthly intervals throughout the summer, thin seedlings to 1 ft. apart, and gather the leaves when young to use in soups and salads. Flavour like dried orange peel. Use seeds in curries and chutneys, and on cakes, bread, milk puddings and cream cheeses.

DILL (*Peucedanum graveolens*) Seed and leaves

Annual. Grow anywhere 6 in. apart. Use with restraint. The seeds add an anise flavour to pickles and soups and, if soaked in wine vinegar for a few days, produce dill vinegar, usually used for pickling gherkins. Dill water is a well known liquid for soothing babies. Use chopped leaves in sauces for fish, sprinkled on boiled potatoes or fresh salmon and, mixed with other herbs, for omelets and salads.

FENNEL (*Foeniculum vulgare* syn. *F. officinale*)
Leaves, seed and stem

Sow seed in a sunny place. Can grow to 6 ft. Use fresh or dried leaves for flavouring sauces, particularly those served with oily fish—blanch the fresh leaves in hot, salted water and then chop finely—or for making fennel tea. Seed can be added to soup and pastry, but the anise flavour is strong. Cook the thick fleshy stalks like celery or use shredded in salad.

GARLIC (*Allium sativum*) Bulb

Plant sets in light soil 9 in. apart. The type grown in England is rather coarse and strong—the Mediterranean variety is more delicate. Use the cloves of garlic with discretion in sauces and salads.

HYSSOP (*Hyssopus officinalis*) Young shoots
Propagate by cuttings. Plant in a sunny position in dry soil 1 ft. apart. Hyssop is an evergreen shrub with blue, pink or white varieties. It is now grown chiefly for garden decoration, although its shoots are sometimes used to make hyssop tea—a

remedy for the relief of coughs, colds and sore throats. Infuse $\frac{1}{4}$ oz. crushed dried leaves in 1 pint boiling water and leave to stand for 15 min. before taking.

LAVENDER (*Lavandula spica*) Whole herb
Propagate by cuttings. Plant in sun and poor soil 2 to 3 ft. apart. Strong aroma. Used commercially for the distillation of lavender water, and domestically as a moth deterrent and ingredient of pot-pourri. The flowers can be candied for confectionery according to the instructions given in *Preserving*.

For use in lavender bags, cut the flower stalks in the first week of July when the flowers are almost mature, to capture most of the essential oils. Dry in the usual way, and then rub the flowers from the stalks between the hands or on a hard board.

If dealing with any quantity of lavender, wear a damp handkerchief or scarf over the nose and mouth as a protection against the dust.



BERGAMOT



CHAMOMILE

HERBS

MARJORAM (*Origanum onites*) Leaves
Propagate by cuttings or division. Plant in hot, dry position 1 ft. apart. One of the *bouquet garni* herbs, used in most stuffings, and also to flavour omelets.

MINT or SPEARMINT (*Mentha spicata*) Herb
Propagate by division. Plant in shade in damp soil 1 ft. apart. Use to make mint sauce, jelly, butter and tea; use sprigs in iced drinks or cook with young vegetables. Mint can be dried for winter use and is used as an ingredient of some pot-pourri and as a basis for hair tonics.

Apple mint (*Mentha rotundifolia*) is often used as a substitute for spearmint.

To make mint jelly, take 1 pint apple juice, 1 lb. sugar, a few drops of vinegar or lemon juice, and mint. Put the apple juice in a saucepan, add a small bunch of mint and a few drops of either wine vinegar or lemon juice, and boil until the liquid is flavoured. Add sugar, remove mint and boil until setting point is reached. Add a little finely chopped fresh

mint and a few drops of green colouring. Pour into jars and cover when cool.

To make mint julep, dilute 1 cup fresh lemon juice with 1 cup water and add as many mint leaves as the liquid will hold. Leave for half an hour, then pour on to ice and add 6 small bottles of dry ginger ale.

NASTURTIUM (*Tropaeolum majus*) Young leaves, flowers and seed
Annual. Grow in poor, hot soil 6 in. apart. Use leaves and flowers in salads. The seeds, if picked when young, are a perfect substitute for capers.

PARSLEY (*Petroselinum crispum*) Leaves
Grow in damp, shady position 10 in. apart. Used fresh for flavouring salads and vegetables, and fresh or dried in stuffings. Parsley tea, butter or jelly (see recipe for mint jelly) are also well known. To fry parsley as an accompaniment to fried fish or gammon, scatter it into fat and cook for a minute over a low heat, then drain on paper before serving. As



CHERVIL



HYSSOP



MARJORAM



MINT



ROSEMARY



RUE

parsley shrinks when cooked, use four times as much as is required.

Parsley does not dry if treated in the usual way for drying leaves. Wash the leaves, preferably the tender, uncurled French type, dip them in boiling water and put on a baking tray in a very hot oven for just a minute. Bottle at once.

PEPPERMINT (*Mentha piperita*) Herb
Propagate by division. Plant in rich, moist soil 9 in. apart. Use dried for flavouring sweets. Store the dried leaves for making peppermint tea.

PENNYROYAL (*Mentha pulegium*) Young shoots
Propagate by division. Plant in moist and shady place 6 in. apart. Use tender tips of shoots sparingly to add peppermint flavour to salads.

ROSEMARY (*Rosmarinus officinalis*) Whole sprig
Propagate by cuttings. Plant in dry, sunny place 3 ft. apart. Use the sprigs as cut

flowers in early summer. Rosemary is the herb of remembrance used on Remembrance Sunday. Use the leaves fresh for flavouring mutton, lamb or rabbit and in a veal stuffing—only one small sprig is needed for each dish. Rosemary tea is a pungent and refreshing tisane for the treatment of head colds—pour 1 pint boiling water over a handful of rosemary sprigs (fresh or dried) containing both leaves and flowers.

Rosemary is also used as a constituent of hair tonics and oils. Make a scalp tonic by mixing equal quantities of southernwood and rosemary with a quarter of the quantity by weight of camphor. Put the mixture in a bowl or jug and pour over it 1 pint boiling water. Leave it to stand for an hour, then strain and bottle. Rub a little into the scalp each day.

RUE (*Ruta graveolens*) Leaves
Propagate by seed or cuttings. Grow in dry position 2 ft. or more apart. Makes a rounded evergreen bush, with deeply



SAGE

divided leaves of a dark blue-green, which have a bitter, acrid taste. The variety Jackman's Blue is worth a place in the decorative garden. Rue is grown mainly for its medicinal value for poultry and cattle diseases, although rue tea is made for the relief of indigestion.

Make an infusion by pouring 1 qt. boiling water over a handful of rue leaves. Leave it to stand for 24 hours, strain and bottle. Take about a wine-glassful each day.

SAGE (*Salvia officinalis*) Leaves

Plant 4 ft. apart in a light soil and a dry or well-drained position. A rather spreading, grey-leaved evergreen shrub, which can be propagated by spring or summer cuttings. When old and leggy, pull the branches down on to a mound of soil and they will root themselves. Sever these layers from the parent plant in May.

Use chopped fresh leaves sparingly in porridge or sandwiches; use dried leaves in stuffings for pork, duck and goose.



TANSEY

SAVORY, SUMMER (*Satureia hortensis*) and **WINTER** (*Satureia montana*) Leaves

Summer savory is an annual, while winter savory is a perennial propagated by cuttings. Grow in poor soil 6 in. apart. Use fresh leaves of either plant for flavouring broad beans, and use fresh or dried in fish, cheese and egg dishes, stuffings and soups.

SORREL (*Rumex acetosa*) Leaves

Propagated by seed or division. Grow in deep, moist soil 1 ft. apart. Use the acid-tasting leaves when young, before the plant has flowered, in salads. Bring a few crowns into the greenhouse or frame for forcing to maintain a winter supply. The French sorrel (*Rumex scutatus*) is sometimes cultivated and used to flavour soups.

SOUTHERNWOOD (*Artemisia abrotanum*) Leaves

Propagated by seed or cuttings. Grow in any soil, grows to 3 ft. Often found in old gardens and worth including in the

herb garden for its fresh scent and green plume-like branches of soft leaves. Used in pot-pourri and as a moth deterrent.

SUNFLOWER (*Helianthus annuus*) Leaves and seeds

Sow seeds under glass in March. Plant out in late May 2½ ft. apart and provide stout stakes. Sunflowers form a quick-growing screen and are gross feeders.

The leaves are used as fodder for rabbits, horses and cattle, or, dried, as a herb tobacco. The flower buds are used as a vegetable in the same way as artichokes. Oil is extracted from the seed and used in the manufacture of soap and cattle cake. The seeds are used as food for poultry, or roasted and ground to make sunflower coffee.

TANSY (*Tanacetum vulgare*) Leaves

Propagate by division. Plant in any soil 1 ft. apart. An old-world plant with coarse, well-divided leaves and an unpleasant smell. It produces yellow button-like flowers in July, and once introduced into the garden spreads rapidly unless checked.

Tansy was formerly used as a pot herb and in tansy cake for Easter, but is now included only in collections and in cottage and old-world gardens. Tansy wine was once used as a tonic, but is too bitter for present-day palates.

TARRAGON (*Artemisia dracunculus*) Leaves
Propagate by division. Plant in dry, sunny spot 2 ft. apart. Use fresh leaves in bouquet garni and in tarragon vinegar; in sauces such as *sauce tartare*, and in omelets as *finer herbes*. Tarragon leaves are sometimes added to chutneys and are also dried for winter use.

To make tarragon vinegar, wash the fresh leaves and barely cover them with white wine vinegar in a bowl. Soak them for a fortnight with a cover over the bowl. Strain carefully and bottle.

THYME (*Thymus vulgaris*) Leaves

Propagate by cuttings. Plant in hot, dry soil 1½ ft. apart. Use fresh or dried in stuffings for veal, poultry and fish, and in stews and casseroles.

VIOLET, SWEET (*Viola odorata*) Leaves

Native. Sow seed in pots or boxes in spring under cloches or in a cold frame; plant out at the end of April. Or sow in April where they are to flower as an edging to the herb border and thin to 5 in. apart. They will seed themselves or spread by runners in places where the soil is poor and dry. Cuttings can be taken in summer.

Use fresh as an antiseptic or dried and infused with boiling water to make violet tea. A refreshing and stimulating tonic used for the relief of headaches.

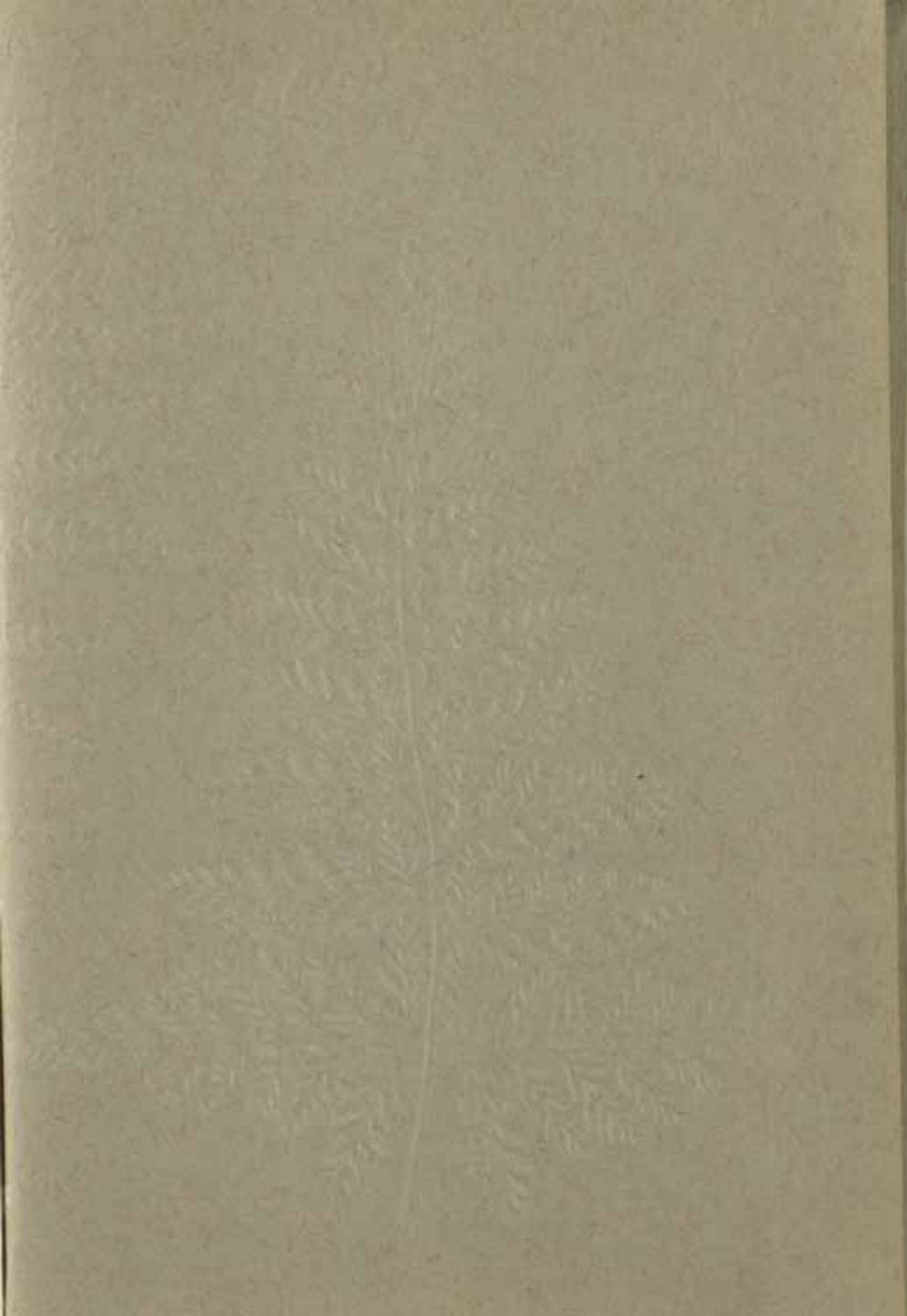


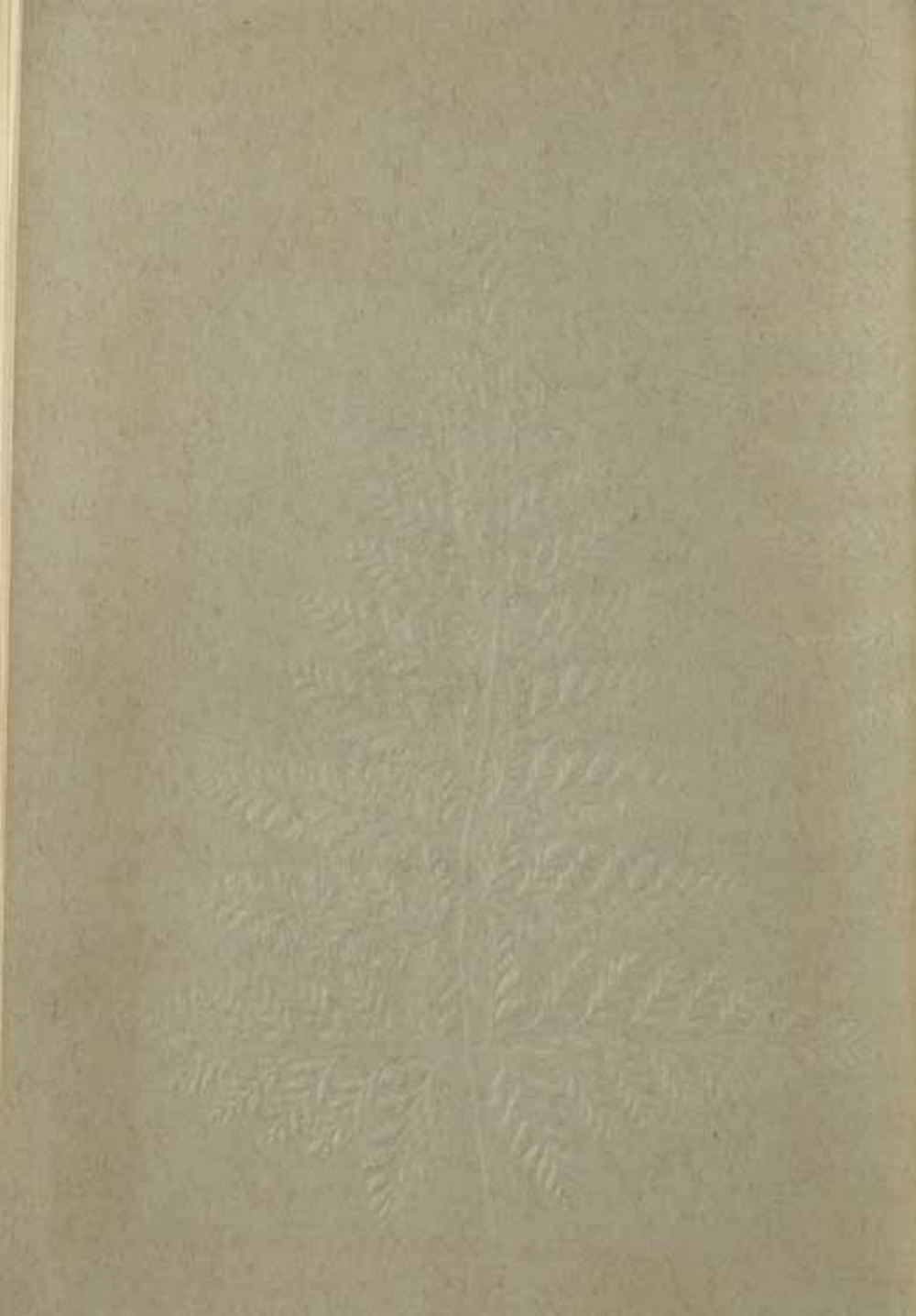
SWEET VIOLET



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