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THE STORRS & HARRISON CO.
Box 740, Painesville, Ohio
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GARDENERS’ CHRONICLE
(OF AMERICA)
Devoted to the Science of Floriculture and Horticulture

Vol. XXIII JANUARY, 1919 No. 1

Greetings To Our Readers—
May the Year 1919 be the Harbinger of Eternal Peace and Good Will to all Mankind

Things and Thoughts of the Garden
THE ONLOOKER

A HAPPY NEW YEAR to the editor and every reader of GARDENERS’ CHRONICLE. Once more this time-honored salutation rings true. The energies of men are again directed into channels of peace, never more, we hope, to be interrupted by the destructive scourge of war. Vast efforts will be made to repair as quickly as possible some of the ravages of the terrible conflict, and while the scars will remain longer than those who caused them, we have every reason to look forward with bright hopes to a better order of things. With a more widespread love of the things which grow in God’s earth we can confidently expect to see horticulture advance still more rapidly. With the proposed plant import restrictions likely to be put into effect in the immediate future, our nurserymen and horticulturists are challenged to new endeavors, and who can foretell the limit of accomplishment along the line of new plant introduction? Certainly there is no lack of material to work with. The oft cited case of what European raisers did with our native Asters should suggest possibilities for plan raisers at home.

One of the fascination of a garden is, that not only does it provide recreation and pleasure for the time being, but it also keeps one forever looking ahead anticipating joys of the future, and the more we plan before planting the greater the success likely to reward our efforts. Now is the time to be taking a retrospective view of our gardening achievements and see if past failures and disappointments cannot be made the stepping stones for future success. Here is where the garden note-book proves its value. It is a profitable thing these long winter evenings to look up the back numbers of the Chronicle and other horticultural mediums. We don’t always extract all the meat from current articles, and many a helpful piece of knowledge may be gleaned by a rummage amongst the dusty magazines laid aside. Pretty soon the seed catalogs will be coming along with their claim upon our attention. Right here is where we should have our plans for the coming season in definite shape, check off at once our needs in the way of seeds, plants, fertilizers, tools, and other supplies; then act on the principle that it is the early order which brings the goods. By having our supplies on hand when needed we not only escape unnecessary irritation of spirit ourselves, but incidentally we make things easier for those hard-working and often much abused men, the seedsmen, and nurserymen. It is so easy to wait until about the day before it is time to plant, then send in a rush order and imagine that the seedsmen or nurseryman was quietly waiting to receive it in order to give him something to do. Let us imagine ourselves in the other fellow’s place occasionally and act accordingly.

A subject which has long attracted the interest of the writer is that dealing with Plant Lore. There is a quite extensive and highly entertaining literature relating to it, and at different times it has been my good fortune to have access to various of these books describing the origin of various myths and legends associated with many of the plants with which we are familiar. This has resulted in a disconnected lot of notes, which I now propose to try and present in readable form for no better excuse than that I find it interesting.

Many plants were endowed with such virtues, and regarded with so much veneration by the ancients, as to be almost unbelievable in our day and generation. Though many of the quaint old customs no longer survive, relics of others still remain, even if shorn of their original significance. One of these old customs, which is still largely practised, is that of decorating our churches and homes with evergreens at Christmas, which is generally supposed to have originated with the ancient Romans. The Holly is the most familiar plant material used in this connection, and from its use for church decoration we learn it was called Holy tree by the monks. Witches are reputed to have detested it on account of this name, and also because “its thorny foliage and blood-red berries are suggestive of the most Christian associations.” It was an old Roman custom to send sprigs of Holly with gifts to their friends as an emblem of good wishes, which custom is said to have been first introduced into England during the fifteenth century. In many English homes the outstanding feature of the Christmas feast was the celebrated plum pudding, which Dickens has so well described in his “Christmas Carol” as “like a speckled cannon ball, so hard and firm, blazing in half of half a quar-
ter of ignited brandy, and bedight with Christmas Holly stuck into the top."

According to an old English superstition the elves and fairies joined the social gathering at Christmas and this led to branches being hung in the homes to afford them a place of rest. This decoration was to be taken down on Candlemas Eve or else the goblins would take possession. In the time of Pliny magic properties were ascribed to the Holly tree, for it was believed that if planted about a house it would keep away all evil spirits and protect the house from lightning.

Weather prophets used to affirm that a plentiful crop of Holly berries indicated a hard winter. Birds do not seem to be specially fond of them, only eating them when other food is hard to get.

For most young people, (and some who can no longer claim that distinction in years), a Yuletide party would be lacking that completeness of joviality characterizing such affairs, without a bunch of Mistletoe suspended from the ceiling. The custom of suspending it from ceilings is said to have originated from the Scandinavian legend relating to Balder, the god of light and peace, who had been rendered by his mother immune from all injury by fire, air, earth, and water. But an enemy fashioned an arrow from Mistletoe, which proceeded from neither of these elements, and with which he was fatally stricken. The gods restored him to life and in reparation for his injury dedicated the Mistletoe to his mother with the understanding that it could not again be used against her so long as it did not touch the earth. According to another old tradition the Mistletoe was formerly a fine forest tree, but was degraded to a parasite because it was the tree which furnished the Cross of Calvary. To the Druids it was most sacred, especially when found growing on the Oak. They attributed to it marvelous curative properties, giving it on this account the name of All-heal. Some naturalists have stated that the seeds will not vegetate unless they have passed through the stomach of a bird, but that is not founded on facts as any one may prove. Great quantities of it used to come into the London markets chiefly from the apple orchards of neighboring counties. Besides the apple it grows freely on poplar, hawthorn, linden, and mountain ash, while it seems to have been found but seldom on the oak.

Certain trees and plants were long regarded as sacred, and in consequence were treated with a special reverence. The oak was regarded as sacred by the Romans and was frequently called the tree of Jove. The Greeks called it the mother-tree, regarding it as the tree from which the human race originally sprung, and its acorns as being the first food of man. The oak is mentioned in the Bible as one of the trees beneath which the Israelites worshipped and offered sacrifice. The Druids had their sacred oak groves beneath which they performed their sacred rites and held their trials, the victims of their human sacrifices being crowned in mockery with oak leaves.

The peepul or bo-tree, *Ficus Religiosa*, which by the way makes an excellent conservatory plant, is held sacred by the followers of Buddha, and has been freely planted in India near the temples. The Buddhists of Tibet pass the time of bething, as they are spat upon by the devil on that day, and to eat them after that would result in dire trouble. The poisonous Puff-balls are known as Devil's Snuff-boxes, and in Ireland the stinging nettle is the Devil's apron.

We all know that the influence of the weather on plant life is very apt to upset our best laid plans, and in case of failure from any cause we can generally make out a plausible story blaming it all on the weather. In the sixteenth and seventeenth centuries the belief was quite general that every plant was under the direction of a particular planet, and that in order to be successful all details of culture must be conducted in strict accordance with this belief. The moon was held to exercise a particularly strong influence over the growth of plants, and many of the old gardening books gave careful instructions as to the manner of treating plants with regard to the changing phases of the moon.

This jingle appears in "Five hundred points of Husbandry," published in 1562:

Sow Peas and Beans in the wane of the moon,
Who soweth them sooner, he soweth too soon;
That they with the planet may rest and rise,
And flourish with bearing, most plentiful-wise.

In some parts of England, apples for storing were supposed not to keep well unless gathered in the wane of the moon, and it was a wide-spread theory that timber would decay much sooner if the trees were felled while the moon was on the increase.

A curious system worked out by the old herbalists was that known as The Doctrine of Plant Signatures, whereby the external characters of the plants were supposed to indicate their use in the cure of particular diseases. For example the common *Prunella* has a corolla resembling a bill-hook in shape, therefore it was supposed to be specially adapted for the healing of wounds inflicted by edge-tools, hence the common name of Leaf-heal. *Chelidonium*, having yellow juice must therefore be a remedy for yellow jaundice. If the roots of *Polygonatum multiflorum* are cut transversely, certain marks are said to be seen which resemble a device known as Solomon's Seal, hence the common name. To the old herbalists these marks indicated its use as a seal for wounds and wonderful things were claimed for it. It was said to be specially effective in the removal of bruises, as "might be gotten from falls, or women's wilfulness in stumbling upon their hasty husband's fists." A choice statement that.

(Continued on page 21)
Planning for the 1919 Victory Gardens

W. N. CRAIG

The great war, which we have helped to win, is over. Our fighting men are gradually laying down their arms and are returning to their former vocations, but, though the sound of the guns has ceased, there is no rest in sight for the American tillers of the soil who have helped to win the war by largely increasing food supplies in spite of serious labor shortage and other drawbacks. Hundreds of millions of people as a direct result of the war, are facing starvation and farmers, gardeners, and small cultivators cannot afford to lay aside their fighting tools while such conditions exist. We shall need careful conservation of food supplies at home, not for one but for several years, so let there be no lessening of our plantings of food crops.

Mr. Hoover estimates that America must export not less than 20,000,000 tons of food in 1919 and in order to spare this enormous sum it is absolutely necessary that not only large but small growers shall maintain their interest in the raising of food crops. The mere fact that in 1918 the so-called war gardeners produced some $500,000,000 worth of food F. O. B. the kitchen door, is proof positive that the great army of amateur cultivators who never before came into close contact with the soil, from which practically all of the wealth of the world is derived, has decidedly made good.

With the passing of the war, there is a danger of over-optimism which we must guard against. We cannot afford to allow this great army of small growers to go back to its former status. Hundreds of thousands who have derived pleasure, profit, and physical betterment from their war garden work, will plant Victory Gardens next year; an equal number must be reached, persuaded and encouraged to do likewise. There should be no general disbanding of the committees appointed in the cities, towns, and villages, to assist in producing more food, and it is hoped that while the world faces near famine conditions, public spirited citizens will continue to lend hands for planting purposes; while in past and other public grounds it will be no hardship for would-be golfers and others to wait a year or two for ground required for planting purposes; while in parks and other public grounds it will be no hardship for would-be golfers and others to wait a year or two for ground required for more vital purposes.

We in America, living in a land of plenty, have complained about high prices, which always come as a result of war, but we know practically nothing of rationing as do our European Allies, who have borne the brunt of the colossal struggle to save civilization and democracy. We are justly proud of the fact that we trained and sent to Europe an army two million strong in so short a time, but how few of us pause to think that to accomplish this feat two-thirds of the ships transporting these men were British and that the British people voluntarily placed themselves on rations of the barest necessities of life to spare the ship bottoms needed to send over our men required to help win the war?

The war gardens of 1917-1918 in spite of much pessimistic talk, accomplished their purpose and in their place must come the Victory Gardens of 1919 and succeeding years. The experience gained in the last two years will discourage some to continue their work, but a much greater number with more courage are eager to plant again and this is a wonderful asset to American agriculture and horticulture, showing that blessings come even from the most terrible of all wars. No amount of campaigning in times of peace could have accomplished what the war has done. The producers of food crops seemed of small consequence to the vast army of non-producers, while prices were low and supplies abundant, but their eyes are opened now and never again will those who feed the world be looked upon as of no importance.

It is not too early to start planning now for next year's Victory Gardens and it is the duty of every horticultural society, gardeners' and florists' club, improvement associations, public safety committees, farm bureaus, and similar bodies, to begin now and in every possible way encourage and stimulate interest in the 1919 gardens. I am aware that the amateur gardeners are viewed with disfavor in some quarters. We are told that the increased production in small gardens has reduced the call for farmer's products but prices of nearly all vegetables have been very satisfactory to these growers in 1918. We are further told that much energy, fertilizer, seed, etc., has been wasted, but each year these things are being improved. We are also told that it will be impossible to produce far more food if small gardens were abandoned and if their cultivators went out into the country to help the farmers. The absurdity of this latter plea is very evident as the small grower tends his garden before and after regular working hours and on occasional holidays, and he seldom lives where even his spare hours could be available on either farm or market gardens.

During the past two years small growers have been very wisely advised to concentrate their efforts on a few crops rather than on a variety which have but a short season and are of little value during the winter. It would be well to continue this practice for another year, planting chiefly vegetables which can be kept during the winter, rather than the luxurious varieties.

In order of value I would place potatoes first, followed by beans in variety which include dry sorts for baking as well as the string types; miscellaneous root crops, including carrots, turnips, beets, parsnips, and salsify; sweet corn, onions, cabbage, and squashes. All the aforementioned have considerable food value either in the fresh dried, or canned state. If to these are added tomatoes, celery, lettuce, radishes, leeks, peas, cucumbers, cauliflowers, spinach, Scotch kale, and Swiss chard, with, in some cases, a few plants of peppers, Chinese cabbage, egg plants, kohlrabi, and pumpkins, we have practically all vegetables of value to the small grower. In the warmer states, sweet potatoes are important and in these same states some of the vegetables which do splendidly in the more northerly states, will prove of little value and vice versa.

Practical gardeners would, of course, insist on peas, cauliflowers, asparagus, mushrooms and celery being amongst the most important. On the private estates they are considered a necessity, but are luxuries compared to potatoes, beans, miscellaneous root crops, onions, cabbages and squash, and with the exception of celery are of little value in winter. These notes are intended for the amateur rather than the professional gardener as the latter should need little instruction as to what to plant, although it is a lamentable fact that a great many gardeners are mighty poor vegetable growers.

Seeds promise to be more reasonable in price the coming season and of quite good quality, thanks to more favorable harvesting weather than in 1917. Growers should look over catalogues early, make their selections and place their orders before the seedmen's rush season commences. I have been pleased to note that quite a number of war gardeners saved seeds of beans, cucumbers, tomatoes, sweet corn, and peas. This is highly
commendable, for the world's seed supply is low and if each one of us could save some seeds at home it would help to relieve the situation.

Little can be done in the garden at this season. It has been very encouraging to see so many small gardens seeded down with winter rye, which will give the soil much needed humus when plowed or spaded in next spring. Given an open spell of weather it may still be possible to plant or spade the ground which has proved retentive or sour, leaving it rough over winter for frost to sweeten and pulverize it. Fertilizers, we are assured, will cost high next season and supplies should be ordered early. A good many small growers keep poultry and all droppings from the roost should be saved, sand, fine loam, or wood ashes added to them and then placed in barrels or boxes, where it can be kept dry. Poultry manure is too strong for some crops. But for such strong feeding crops as onions, corn, squash, etc., it proves excellent. It is also valuable as a top dressing for many growing crops. Save all wood ashes from open fires, kitchen stoves, furnaces and bonfires, and keep them dry, as we need all the potash we can pick up at home for fertilizers have contained but little of it of late.

Make plans for the gardens now so that some crops at least can have a change of location. It is not necessary to rotate all crops as I find onions succeed better on the same ground each year, and even potatoes can be profitably grown two seasons in the same soil.

With the coming of peace, there should be some space allotted to flowers in the 1919 Victory Gardens. It was inspiring to note that a great many small gardens contained flowers last season, including such annuals as nasturtiums, morning glory, sweet Alyssum, mignonette, asters, zinnias, marigolds, ten weeks stocks, and poppies; a few planting tulips, daffodils, crocus, and glad-ioli, in addition to geraniums, heliotropes, and other bedding plants. Let the 1919 garden contain a few roses, than which nothing could be more appropriate, pansies, forget-me-nots, hollyhocks, peonies, larkspurs, lupines, columbines, phloxes, hardy asters, day lilies, iris, sweet Glory of the Vine (Ampelopsis arborea). This vine is also easily raised from seed sown early in the spring in the house, or outside in the open ground about the first week of May. Its very distinct tubular flowers are scarlet, yellow, or white, and others of the hardy recreation vines. The Cup and Saucer Vine (Cobaea scandens) is a splendid annual climber. Well known, but not known well enough, it is popular because it can be started from seed in the early spring and will cover an arch or trellis work by the middle of August. Its flowers are cup-shaped with a saucer-like basal part, hence its name. Its foliage, except on poorly grown specimens or those planted in poor soil, is generally free from insects and very pleasing in appearance.

Amongst the annual climbers which deserve a very much larger measure of popularity is the Chilian Glory Vine (Eccremocarpus scaber). This vine is easily raised from seed sown early in the spring in the house, or outside in the open ground about the first week of May. Its very distinct tubular flowers are scarlet, yellow, or orange and show up attractively against the clean, bright, abundantly produced foliage. Planted in rich soil and trained to a trellis or south wall it makes luxuriant growth. It is one of the noted tropical climbers and therefore will not withstand much frost. It makes its growth rapidly enough, however, to give good results during July, August and September.

The seed coats of the seeds of these two vines are rather hard and when the weather or soil is not of the best for growth it may pay to soak the seeds for a few hours before planting. However, in good, moist soil, this should not be necessary.—F. E. Buck in Canadian Horticulturist.
Berry-Bearing Plants and Their Ornamental Value

ARTHUR SMITH

In recent years there have been increasing signs that a larger number of country estate owners are gradually becoming able to appreciate the beauties of nature at other seasons than midsummer, and are therefore spending a more extended period in the country, and, as it has been said, they are acquiring a large measure of the "country life habit."

After the glorious shades of autumn foliage have passed, nothing more greatly enhances the beauties of home surroundings than the various colored berries which so many shrubs and trees carry. But too often these berried plants are conspicuous by their absence, or at the most only one or two species have been planted. This omission is generally because many estate owners, landscape men and gardeners do not fully realize the quantity of berried species which can be used for ornamental purposes. They should be more extensively used even upon comparatively small places; but upon the larger, and where possibilities in the way of landscape forestry exist, the scope for their use is practically unlimited. Berried plants should not only be planted for their artistic effects, but also for the important purpose of feeding and encouraging birds.

Obviously, plants which possess an ornamental value in their fruiting stage have other traits of beauty as well; as when in flower; the autumn tints of their foliage; the conspicuous coloring of their bark, and nearly every showy berried-plant is effective at other seasons. Many shrubs are beautiful for the week or two they are in flower, but they give no distinctive effect at any other period, and it is therefore desirable, especially where space is limited, to use subjects which give more than one season of color. In fact by the more extended use of berried-plants they may be made an interesting feature of home grounds for every month in the year, and the production of a Winter Garden out of doors rendered possible.

Those who have given any time to the study of those plants which are ornamental in their fruiting stage, will readily understand that it is impossible, within the limits of an article, to mention more than a few species of the various genera which are valuable in this direction, and those readers who may find some of their favorites passed over without mention will therefore understand the reason for the omission.

While the majority of berried-plants are found among those classed as shrubs, there are some trees which come under this head; notably, the Mountain Ash, which is doubtless the showiest of the trees. The European Mountain Ash, Sorbus aucuparia, has been for many years planted for its berried effects alone, and its abundant heads of rich orange-red fruit make it a very conspicuous object from September onwards to December. Unfortunately this species is not generally long-lived, especially when planted alone, but if used in the foreground of belt plantations or where it has some shelter from other trees, it will be found to thrive better and live longer. The American species, S. Americana, is, however, equally, if not more, effective and longer lived. This species will thrive under partial shade and prefers a rather moist soil. The species which does best of the genus as a single lawn tree and which does not object to dry soils, is one from Central Asia, S. ionscholanica; it has upright clusters of fruit seven inches across. In addition to its berries, the Oak-leaved Mountain Ash, S. hybrida, gives a very distinct foliage effect when a breeze shows up the silvery under surface of its leaves. The compound foliage of other species as well as its autumn color, especially the vivid crimson of Americana, render this genus additionally desirable.

The most extensive genus of berried plants is Crataegus, commonly known as Hawthorns. As the members of it vary in size and habit and every one is worth planting both for its flowers and fruit, one could almost plant an entire garden with Hawthorns alone. Professor Sargent has named upwards of five hundred of this genus, and I believe that the Arnold Arboretum contains some seven hundred kinds. Probably the largest fruited form is C. Arnoldiana, which grows into a small tree. It has great clusters of brick-red fruit, each more than an inch in diameter, which are profusely borne, giving intensely gorgeous effects up to December. One of the best known is the Cockspur Thorn, C. crus-galli, which has very dark, glossy-green foliage. There are also the Scarlet-fruited Thorn, C. coccinea, a conspicuous object in New England, and the Red-fruit Thorn, C. mollis, the differencing shades of their berries being set forth in their names. The fruit of both these drop after killing frosts. The best winter-fruit species is probably the Washington Thorn, C. cordata. Its berries are not large but they are abundantly borne and of a purple-red color, clinging tenaciously to the branches until February. In its earlier years this species has an upright growth up to about twenty feet, afterwards forming a round-headed tree. It is very effective planted along the edges of woodland. The English Hawthorn, C. oxyacantha, has been perhaps more extensively planted than the native sorts, but, while being very effective in flower, its dark purplish-red fruit is less showy than most of the native species.

While the Magnolias are principally planted for their floral effects, some of them should be equally appreciated for their fruit. The most conspicuous in the latter connection, the Cucumber Tree, M. acuminita, has no flowers worth speaking of as they are very small and of a green color, but its crimson fruit is shaped like small cucumbers, and from which, after frost, the glistening scarlet berries hang by yellow threads. The Umbrella Tree, M. tripetala, and the Great-leaved Magnolia, M. macrophylla, have fleshy cones of a rich pink color and coral-red berries. These two latter do best under conditions similar to their natural habitat, which is along the edges of woods, but acuminita makes a good lawn tree.

The Euonymus, or Spindle Trees, are mostly noted for the autumn color of their foliage, especially E. alatus, but they are equally desirable for the fruiting effects which follow the loss of their leaves. The fruit which persists for the longest period is that of E. bungeanus, a Chinese species, the bright green branches of which are loaded with long-stemmed, pendulous orange fruits and pink berries, which continue their showy effects until February. The European Spindle Tree, E. Europaeus, has orange capsules with deeper orange berries. A variety of this, E. E. fructo alba, has white capsules which by contrast show up its deep-orange berries. There is no species of Euonymus more showy than the native Burning Bush, E. atropurpureus, which has masses of large, hanging, deep-pink capsules and rich-orange berries, which become most conspicuous as the brilliant pink and red autumn foliage falls; the fruit remains on the branches until the end of December. For a ground cover under

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trees where grass will not grow or by the side of woodland walks *E. obovatus* is very useful. It seldom exceeds a foot in height and its branches in the fall are studded with orange fruits and darker orange berries.

Some of the Crabs have ornamental fruit, notably *Pyrus floribunda*, and *P. baccata*.

The native wild cherries and plums are valuable for late summer fruiting effects and those are most attractive to birds.

A very showy, conspicuous plant is the Sumac, *Rhus typhina*, its brilliant terminal clusters being retained all the winter; it is, however, more desirable for wild or out-of-the-way positions than close to a house. Most of the other species of this genus are worth planting.

For autumn and all winter effects no shrub is more valuable than Thunberg’s Japanese Barberry, *Berberis Thunbergii*, its brilliant crimson foliage in the fall and its no less brilliant fruit, which persists all the winter until the spring. The Japanese Barberry is a very well known. This is practically the best of our hedge plants, and being what it is, with its four distinct seasons of beauty, it is extraordinary that any one should allow the common-place, unbeautiful, Californian Privet to be planted upon their place for hedge or for any other purpose. What is known as the American Barberry, *B. vulgaris*, was an importation from England in Puritan times, and this, as well as the real native species, *B. canadensis*, have brilliant vermilion fruit. At the present time, however, there is a movement calling for the extermination of the two latter species on account of their both being an intermediary host for a species of rust fungus which causes in some seasons great damage to the wheat crop, and for this reason the planting of them should be avoided. This fungus does not use *B. Thunbergii* as a host plant, nor does it the Amoor River Barberry *B. amurensis*, which is the fastest and tallest growing member of the genus, with larger flowers and having all the brilliant fall and winter characteristics of the other above-mentioned species. It is also suitable for planting where an extra tall hedge is required. As one of the species of a different genus (*Mahonia*), the Ash-leaved Barberry, *B. aquifolia*, is one of the evergreen forms, but unfortunately only those who have seen it in its native habitat as an undergrowth of woods west of the Rockies, are familiar with its full beauty. The positions in which this plant is placed by the majority of those responsible for landscape effects is a woeful example of wretched treatment due to ignorance of a plant’s requirements. Treated with due regard to the conditions of its wild growth, it is a beautiful plant at all seasons. Its foliage is the richest, glossy-green all summer and autumn, taking on rich scarlet and copper colors through the winter, the latter colors being repeated in the young spring growth. The fruit is large masses of glaucous blue berries, which are not, however, very conspicuous at a distance. The fruit of all Barberries is edible and makes excellent conserve.

Many of the Roses give excellent zoned effects, the largest fruit being borne by *Rosa rugosa*, but there is an element of stiffness in connection with this species which to some extent detracts from its beauty in the berried stage. This drawback is found in connection with *R. lucida*. A different, crimson fruits on distinctly red stems commence to be conspicuous in September and retain their brilliancy long after February, giving a glow of color in mass planting which is fully as beautiful as the foliage and flower effect during summer. *R. multiflora*, a Japanese species, is also good, having bright yellow and deep orange fruit in late summer and autumn. The Alpine Rose, *R. alpina*, is a charming little thing with its soft green foliage and deep pink flowers borne early in the summer, followed by solitary, pendant, deep scarlet berries, clinging until December. Some of the hybrid climbing varieties, having single flowers, give some berried effect, but more in the latter connection can be obtained by using the wild species.

Many of the Dogwoods are well known, and *Cornus florida* needs no description or advocacy. Not so widely planted is *C. paniculata* with its profusion of ivory white berries in late summer, which last until October. Several other native species have white fruit, and some are valuable after the foliage has fallen for the bright red and yellow color of their branches. Two charming little things for growing under trees are the Bunch Berry, *C. canadensis* and *C. suecica*. These are quite dwarf in habit, sending underground stems beneath the forest mosses and leaves, and throwing up stalks about six inches tall crowned by a large white “flower” in the center of the upper tier of leaves, soon to be followed by a bunch of bright scarlet berries. *C. kousa*, a Japanese species requiring a shady position, is after the style of *florida*, which it rivals. *C. Baileyi* is a little known native species, but it is well worth a place in large shrubbery. It grows vigorously, has dark purplish winter bark, white flowers and pure white fruit.

The Arrow-woods, or Viburnums form an interesting genus, containing numerous native species. An excellent but little known one, suitable for the drier soils, is *V. cassinoides*, sometimes known as Appalachian Tea. It is a densely branched plant, with shining green foliage which assumes most brilliant autumn tints. Small white flowers are borne upon showy heads, followed by dense clusters of berries which are at first light pink, then turning to the deepest blue, several shades of these colors appearing at the same time on one bunch. The Black Hawk, *V. prunifolium*, grows into a small tree. Its pure white flowers are fragrant and are followed by clusters of blue-black fruit. The Sheep-berry, *V. lentago*, is native of the north, and very similar to the former. *V. cataroides*, American Wayfaring Trees, is scarcely ever seen at its best, except in its native haunts, and many object to it requiring a shady position; it does not do well in cultivation; this is because it is planted under unnatural conditions. Its natural home is in loose leaf-mould in the shade. Give it these conditions and a very different result will be apparent. Probably the best known is the High-bush Grandberry, *V. opulus*, which produces its scarlet fruit in August and lasting through the greater part of the winter. For shady places *V. accrifolium* is valuable, but more perhaps for the effectiveness of its autumn coloring than for its fruit which is thinly borne, but it is worth planting by reason of the fact that there are not many ornamental fruiting plants suitable for shade. Many of the exotic Viburnums are worthy of a place, but they do not excel our native kinds.

Among those shrubs producing ornamental fruit early in the season, the Bush Honeysuckles are noteworthy, the most familiar being *Lonicera Tartarica*. This is not, however, the best species, as it lacks the gracefulness of *L. Morrowii*, having both red and yellow fruited forms; *L. ruprechtiana* with its wealth of yellow and crimson berries, and *L. chrysantha*, with translucent orange-yellow fruit. Other species having blue, black and scarlet berries are worth growing, but the fruit is not borne in large quantities. *L. Morrouni*, having both red and yellow fruited forms; *L. Morrouni*, having both red and yellow fruited forms; *L. xanthocarpa*, with its wealth of yellow and crimson berries, and *L. chrysantha*, with translucent orange-yellow fruit. Other species having blue, black and scarlet berries are worth growing, but the fruit is not borne in large quantities.

While the Cotoneasters are comparatively seldom seen, they are gradually becoming better known. None of this genus is native, and those from the Himalayas and China are the most hardy; among these *C. Simonsii* and *C. horizontalis* are probably the best. They retain their dark green foliage well into the winter and their bright red berries are conspicuous from September until January. *C. microphylla* and *C. buxifolia* are evergreen forms also of America
from the Himalayas and are excellent for rockeries. They should have partial shade and protection during winter—the flowers well in localities.

It is scarcely necessary to mention the American Holly, *Ilex opaca*, but unfortunately many fruitless plants are to be found growing on places on account of the sexes being upon separate plants. The deciduous Hollies have to be found growing on places on account of the sexes, *Japanese Sweet Leaf, Symplocus crataegioides*. It bears, winter in the more severe localities.

There are very effective mixed with Rhododendron. The fruiting plants of both these are covered with coral-red berries in September, the latter species retaining them until March. They prefer a rather moist position, and are very effective mixed with Rhododendron. A very distinctive and remarkable berried shrub is the *Japanese Sweet Leaf, Symplocus crataegioides*. It bears; in June, spikes of white, fragrant, small flowers in great profusion. In August the graceful clusters of small berries begin to take on a blue shade, gradually becoming the most intense ultramarine blue, which creates a most wonderful effect.

Of the Oleasters, the *Japanese, Eleagnus longipes*, is the hardiest, producing large rich scarlet, edible fruit, beautifully studded with silver or golden dots.

The Buffalo Berry, *Shepherdia argentea*, is a well-known native, bearing a great profusion of edible yellow or red berries.

Shady places can be greatly brightened by the white fruit of the Snowberry, *Symphoricarpus racemosus*. This shrub was probably the first to be planted for its berried effects. With it, for the sake of contrast, should be planted the Indian Currant, *S. vulgaris*, which has deep coral-red fruit, later turning to purple.

Among berried climbing plants, the Bitter Sweets are the most attractive; the native *Celastrus scandens* being the most gorgeous, which is almost equalled by the Japanese *C. orbiculatus*.

While leaving unnoticed very many beautiful berried plants, we cannot pass by the little Partridge Berry, *Mitchella repens*, with its beautiful contrast of glossy, white marked, evergreen foliage and coral-red fruits; it is most suitable as border for shady walks.

Many plants classed as herbs also give an effective showing of berries which form interesting features for many months in the year. The climatic conditions covered by this article are those of the Northeastern States. In the more Southern and Western States there are many more kinds which give beautiful effects throughout the entire Winter.

**Flowering Plants for the Home**

Few persons have conservatories, but in the modern home there is generally a window at which the spring and summer of plant life may be fostered and maintained, even during the long winter months. The little cultural care required is a joy rather than otherwise—it is a delight to watch the progress of a plant toward the maturity of its bloom.

The air in a room in which plants are expected to flower should, if possible, be somewhat moist. Sufficient moisture is usually obtained through evaporation of water, obtained in some form, generally at or near to the source of heat supply. Ventilation, too, is important. It has been authoritatively stated that any room in which plants refuse to grow is unfit for human life. One's skin and the delicate membranes of the throat and lungs parch in a dry furnace heat just as do the leaves of plants under the same condition. Where precautions are taken to observe the rules essential for human health, any plant should thrive. Light and fresh air are most important.

Of all the flowering plants adapted to house culture, the Cyclamen is, beyond question, pre-eminent. There is no ordinary Winter-flowering subject of as much value for duration of bloom, variety of coloring, or range of color. The species known as Persicum, and used chiefly by florists, is best for the purpose, and varieties of it furnish flowers of all shades, from pure white to deep scarlet, deliciously fragrant. Plants remain in perfection of bloom for several weeks.

The Calla Lily—which, by the way, is not a Lily, but an Arum—flowers well in the home, and does not mind dry heat and gas lighting as much as many other plants; cold draughts and a temperature near the freezing point should be avoided. There is now to be had a yellow Calla, known as Elliottiana, which is very handsome, and just as adaptable. The blooming season is November to May.

The Chinese Primrose is an excellent window plant. The blooming season is from December to May, and it is such a vigorous bloomer that it often blooms itself to death. The single varieties are best for house use, and may be had in red, white, and intermediate shades. They are never troubled by insects, and do well in any atmosphere, if not too cold; avoid chills and frost.

The Cigar Plant, *Cuphea*, is a pretty little plant, of very easy culture, and practically always in bloom. The flowers resemble tiny lighted cigars, hence its common name. There are a few bulbous species of *Oxalis*, splendidly adapted to window use. These plants have neat, clover-like foliage, produce flowers freely, and are quite charming. The variety known as versicolor is well suited for use in hanging baskets, and produces flowers white inside, red outside, exceedingly pretty when half expanded.

All of the Fuchsias do well in the home. Most of them are Summer bloomers, but there are two varieties, serratifolia and speciosa, which flower freely in Winter. The shape of a plant is regulated by pinching out shoots.

Other plants for home culture are the Geraniums, Bouvardias, Abutilons, Chorizema and Maurandias, Heliotrope and the Cypripedium, or Lady's Slipper Orchid. The latter two were described in these columns quite recently. Of the annuals, Mignonette, Sweet Alyssum, Candytuft, and Lobelia will be found to give satisfaction. Roses, with one or two exceptions, do not thrive in pots. It is true that they are commonly potted and forced into flower, but even under greenhouse conditions and care, they resent this treatment for any length of time.

In choosing a window for plants, select, if possible, one facing south, as it receives the sun longest. Next choice would be one southeast or east; and the next, west. A northern aspect is least desirable of all.

Give a little fresh air every few days and all the sunlight attainable. Plants will suffer from a current of cold air, just as their owner would, but both are benefited by an invigorating breath of fresh air. This can be done by opening a window as far as from the plant as possible. Care should be taken, however, that no direct draft blows upon the tender plant.

The soil used in potting should be neither too sandy, as it will dry out too quickly, nor too heavy, for this holds the water too long, and is apt to become soggy. How and when to water must be learned by experience.

Water only when the soil becomes dry (except for plants like the Calla Lily and Umbrella plant, which must be kept constantly moist) and apply enough to wet the whole body of earth in the pot. Plants die more easily from drowning than from thirst.
Utility of Rhododendrons

Of all the flowering shrubs available for outdoor planting the rhododendron is, undoubtedly, the most handsome, even in its native form. Both in foliage and flower there is nothing which will bear comparison with it; and its evergreen character increases its value, for in winter the rich green foliage is very effective, and forms a pleasing contrast with the rather sombre hues of the conifers with which the plant is commonly associated.

Hitherto, or until the beginning of the war, we depended upon Holland and Belgium for the greater part of our new stock, but it is many a long day since an importation has arrived. Nor is there any likelihood of arrivals in the near future, for, irrespective of the fact that the Belgian nurseries were almost wholly destroyed, our own Federal Board of Agriculture has decided to prohibit altogether importations of plants having soil about their roots, to prevent the introduction of insect troubles, which the board believes would be disastrous to vegetation in this country. While there is considerable difference of opinion as to the wisdom or necessity of this course, there is little doubt that the embargo will be rigidly enforced.

Fortunately, there is a fairly good stock of rhododendrons in the hands of our home nurseryman, which will go a long way towards supplying the demand for a year or two, but the requirements of the future, if the embargo is not removed, must be met by plants raised in this country, efforts to this end being already made in California, and with success, the chief handicap being the excessive freight for long hauls.

Our native varieties, catawbiense and maximum, are hardy over a greater extent of our country than their hybrids, of which there are very many. Catawbiense, which is native from Virginia to Georgia, is found in profusion in the mountainous regions of those States, and is hardy throughout New England. Maximum, commonly known as the Great Laurel, is hardy even in Quebec, and the species has white, purple and rose varieties. Failures seldom result where these species are planted under proper conditions. As a specimen plant, catawbiense is more desirable than maximum, the growth being more spherical, and the foliage denser; the flowers, in conical trusses, are usually mauve in color, running to lavender, or lilac purple; the flowering period is in June.

Maximum is less regular in shape, and the flower trusses rather flat. It is used mostly for mass plantings, and has the advantage of late flowering, being practically the last of all rhododendrons to bloom, July being its regular period.

The rhododendron is a plant of great utility. It has a place in gardens, on lawns, in base plantings around dwellings, and in woodland plantings. Some varieties force splendidly for use as Easter plants. While the trusses are very ornamental, they are rarely cut for house use, owners of specimens not caring to mutilate them for this purpose, though they are practical for such use.

All species adaptable to our climate have a preference for shady positions; and they do better in winter when protected from the sun and sweeping winds. It is always best, wherever possible, to make plantings north and east of buildings, or of tree plantings, where the winter sun does not burn them, and successive freezings and thawings are reduced to the minimum.

Contrary to opinion far too general, rhododendrons are not really particular as to soil conditions required for their growth. Any ordinary loamy soil which is free from lime will serve their requirements; a good, fibrous loam is splendid, but if a small percentage of leaf mould could be added, conditions would be ideal. They must, however, have good drainage, and if the soil is clayey or hard, it must be lightened somewhat with sand, and deeper digging will be necessary. Manure is not necessary when making new plantings, but after a season's growth a good mulching is beneficial, the same affording at least some food and moisture, and rhododendrons love moisture.

Last winter was very severe on the hybrid rhododendrons; in some localities even the native varieties suffered severely, whole plantings losing their foliage, but breaking out afresh with a spring growth. Were it an object to name the three hardiest, or "iron clad" hybrids, we think the general selection would be the varieties delicatissimum, white with pink edge, a late one; kettledrum, purplish crimson, very late, and C. S. Sargent, bright crimson, early. To extend the list to other varieties of known hardiness in normal winter temperatures—and who would expect ever again to experience a winter such as the last?—the following may safely be selected: Album elegans, blush, changing to white; Atrosanguineum, in-
tense blood red, early; Caractacus, purple crimson; Eversetianum, rosy lilac, spotted with yellow; Charles Dickens, dark scarlet, early; Mrs. Charles S. Sargent, pink, with yellow blotches, fringed; Purpureum elegans, purple; Roseum elegans, deep rosy purple, and Lady Gray Egerton, silvery blush. These are considered absolutely hardy when their requirements are given consideration.

Plantings are best made in spring, and care should be taken to see that the root balls are moist; in fact, if they are at all dry they should be soaked in water. In planting, the top of a root ball should be level with the surface of the ground, and the soil firmly worked into every crevice. After planting, give a thorough watering, and mulch with a litter about a foot deep, which will conserve the moisture until the plant is established.

**DESIRABLE SHRUBS FOR WINTER EFFECT**

What beauty of form and color can be easily seen, if the eyes are trained to see, is so clear that it hardly needs mention. It is, however, not quite so certain that we give sufficient attention to that fact in our planning and planting.

It is possible, but perhaps inadvisable, to plant gardens only for autumn and winter effect, though where acreage is not limited, this is sometimes done. A garden, however, that attracts attention only for a brief period in summer, beautiful though it may be, does not possess half the charm of a real garden, a continuous source of surprise and beauty. The long dull days of winter would be more often pleasant and cheerful were it possible to see, if only through the windows, trees and shrubs that in form and color demand attention and compel admiration.

If the phrase “psychology and the day’s work” is more than a pretty sentiment, it distinctly has an application here. There is the grace of the birch and willows, the bold outline of the elm, the fine habit of the maple and poplar, the appearance of strength given by the oak. Each has its special significance, and as it stands out in detail against the sky, there is always some new attractions for the eyes wanting to see. In considering form, mention may be made of the large number of available evergreens, the chief attraction of these being the pyramidal habit peculiar to nearly all the varieties, though there is much to admire in their varying shades of green.

There are several varieties of shrubs with distinctly colored bark well worth planting for winter effect. Cornus in variety may always be used. Alba siberica is perhaps the brightest red-stemmed shrub in cultivation, and invariably presents a pleasing appearance. A good yellow bark variety is flaviramea, not planted so freely as it deserves, but well worth growing. Paniculata with its orange brown twigs, sanguinea, a brilliant green, and elegantissima, bright red, are each effective, especially when planted in a colony with other varieties. Eleagnus augustifolia, with its silvery appearance, and longipes, the bark of which is a reddish brown, are both suitable for a winter display. Kerria japonica, though green in color, has such a shining appearance that it quite deserves to be named in this list. Some of the euonymus may well be added, especially alatus with bark of a corky appearance, and quite distinct in character.

Cultural directions are scarcely necessary, but it may be pointed out that in planting for a specific purpose, general culture should be directed to—

*W. E. Groves in Canadian Horticulturist.*
Work for January in the Garden
JOHN JOHNSON

As we emerge from the stress and retrenchment of war time and delight in the cessation of hostilities and in the prospects of the year now dawning, the possibility for more and better gardens is highly apparent. Those who became interested in gardening merely as a war measure may now more fully enjoy with the "older hands" the real pleasure of good gardening, and with confidence plan things on a more lavish scale than circumstances would hitherto allow. With this thought in mind we hope 1919 will be a most successful year for all gardeners.

In planning for another year attention is directed to the preparation of the seed order. This is an important item of work and, although a job for a winter's evening, should be given early and careful attention. Always prepare the list with a view to getting the best. This does not necessarily mean the highest priced items in the catalog, which are generally listed under the title of novelties, but the best seeds procurable of standard varieties. It is a good plan to annually test out a few of the novelties listed to determine their merit but most unwise to rely on any new kind or variety for main supplies.

The earliest supplies of potatoes and peas, too, may be grown either in the bench of a cool house or else in pots. The earliest batches of these kinds are more easily handled in large pots, and for this reason we prefer pot culture. It must be borne in mind that these crops require no great amount of artificial heat at the commencement; indeed, it is a great deal safer to start them in a low temperature, say 40°, rather than unduly force them into growth. As time goes on, however, they readily respond to a rise in temperature consistent with the advancing growth. In this case, make the most important item is the selection, and proper care of the tubers prior to planting. Select tubers of an early maturing variety which have been stored in a cool place. Arrange them, "eyes" upward, in shallow trays or flats, and place them in a cool but light position to sprout. Exposure to all possible light is essential to encourage sturdy sprouts. The compost for this early start must be of a light porous texture; indeed, this advice holds good in the case of most young stock raised in the winter season. Good turfy loam and leaf-mould in equal parts, or well-rotted manure of a flaky nature may be substituted for the leaf mould, makes the ideal growing medium for potatoes at this time of the year. Drainage in the bottom of the pots, of course, is necessary. Then half-fill them with the compost and plant two "sets" previously disbudded to one strong "eye" each in each pot. By covering the "sets" to a depth of two inches or so, and by the
use of ten-inch pots, sufficient room will be allowed for top dressing later. In the early stages keep the soil moderately moist; if watered at the time of planting, further watering will not be needed during the following week or two. When growth has developed three or four inches apply the top dressing of light soil.

Peas may be grown under similar conditions. Plant about ten seeds to a pot and later thin to half a dozen plants. A compost similar to that advised for potatoes answers very well, with the addition, perhaps, of a little bone meal used at the rate of a 6-inch pot full to each bushel of the compost, but, then, bone meal is usually added at the time of making the compost pile, and is present in the soil in sufficient quantity to render further incorporation unnecessary. Grown in pots potatoes and peas may be stood under the bench of a cool house until growth is a few inches high, when they must then be given a position nearer the light.

Existing conditions demand as never before that this source of food supply be given urgent attention, and it behooves gardeners to exert every available means for increasing the supply of vegetable products that other foodstuffs may be released in greater quantity. The dire need of the hungry millions within the devastated area of Belgium and northern France is well known, and should alone suffice to warrant our every effort in this direction, no matter how great or how limited the facility at hand.

Those who practice the forcing of chicory, seakale, rhubarb and asparagus should aim to maintain a succession of these kinds by placing the roots in heat at regular intervals. If the roots were lifted and stored in sand in a cool cellar before frost closed the ground it will now be a simple matter to avoid a break in the supply.

Endive, lettuce and parsley wintering in cold frames will require ample protection from severe frosts. Admit air to the frames whenever weather permits and remove decaying foliage.

BULBS IN FIBRE

CHIEF among the errors which growers of bulbous plants in bowls of fibre commit, and which not infrequently bring failure in their train, are not unassociated with water, as often too much as not enough being given. If in gardening in this way there is need for fineness of judgment—that something which may not accurately be measured or defined in words—it is surely the watering of plants in bowls that, possessing no outlet, have no facilities for disposing of any surplus, should that be necessary. Hyacinths and Daffodils delight in free supplies of moisture; hence dryness is both abhorrent to them and fatal to success. This does not mean that constant saturation of the medium should be maintained; rather, that a middle course should be adopted which precludes any approach to dryness. Later, with growth in full swing, freer supplies may be given with advantage. Tulips require far less water at the root than the others. Grow all meanwhile in some cool, dark cupboard or like place, and thereby ensure a steady, more natural growth than conditions of an opposite nature invariably excite.

ERADICATING EUROPEAN BARBERRY

INVESTIGATIONS conducted during the past summer in Ohio as well as in Michigan, Wisconsin, Minnesota and Nebraska show that wheat rust in almost every instance was traceable to the European barberry. In Ohio much damage was done by this plant in the western part of the State.

The campaign for the eradication of the European barberry may be as profitably carried on this fall and winter as at any other time, says Professor W. G. Stover, plant pathologist of the College of Agriculture, Ohio.

The European variety is bushy or shrublike in appearance and grows from four to six feet and even higher. The stems are coarse. The red berries to be found on it in the fall and early winter grow in clusters. The spines are usually branched and are about three-fourths inch long. If leaves can still be found, they will be toothed along the margins.

The Japanese variety, which does not harbor the rust, is a low growing variety, has slender stems, and the spines are not branched. The edges of the leaves are smooth. The Japanese variety is not likely to be growing wild.

The rust fungus attacks the European barberry in the spring, on which millions of spores are produced. These are blown to nearby fields where wheat, oats, rye, barley and many grasses are attacked.

PHOENIX ROEBELENII

OF all the palms adapted to use in the home, the Phoenix Roebelenii will stand the lowest temperature. While, of course, it is a tropical plant, it suffers no harm if forced to endure a temperature of 36 degrees, or even lower. Besides its hardiness, it is to be recommended for its beauty. It is one of the most graceful of the Palm family, and greatly to be desired for room ornamentation.

It is not, perhaps, as common as it might be, for the reason that it is a very slow grower. The specimen shown in our picture is in a ten inch pot, as represents an excellent size for house use. The variety makes a strong growth even though slowly, and the narrow dark green pinnae of the gracefully recurving leaves give it an airiness hardly surpassed by Cocos Weddelliana. It requires no more care than is commonly given to any other house plant, and is rarely attacked by scale or other troubles of insect character.
The advent of another year is at hand, and the gardeners that have kept their glass houses filled with nature's dainty plants and flowers will now be enabled to enjoy the fruitage of their efforts.

Many small greenhouses and conservatories will be constructed the next few months, and it is for those who do not employ a professional gardener, and whose endeavor is to grow a considerable variety of plants, fruits and flowers for their own use, hobby or pleasant pastime, that these notes are written.

It is a little perplexing to such as have limited glass to try and accomplish in almost one atmosphere what most growers undertake in houses with several sections.

Cattleyas of endless variety can be grown with the greatest ease, especially Cattleya Missouri and Mendelii. They require a little shade on the glass the greater part of the year. All they require is to be potted in osmunda, sold by seedsmen, little water and sponging the leaves once monthly. A little shade on the glass the greater part of the year is desirable. Primulas, Cinerarias, Cyclamen, Calceolarias, all can be grown to furnish flowers and will succeed with the orchids during their respective season of growth.

For greens, grow asparagus Sprengeri in baskets. Sow a few seeds in sand and later transplant in pots just large enough to hold them, afterwards transferring them to wire baskets containing a mixture of moss and leaf mold and suspend from the roof of the house. They will furnish material for cutting and will be pleasing to the eye.

Grow the Maidenhair fern Adiantum Croweanaum. It is an easy grower and does not require coddling. Grow it in a sweet soil in small pots, placing it in the shady part of the house where lime can be sprinkled to keep down snails.

A few Spireas will be useful for Easter, and will grow in any soil. Put them firmly in suitable size pots according to the roots, 6 or 7-inch pots usually sufficient. Keep on the dry side after first potting and keep cool. When in full growth, give them plenty of water. Grow a few peach trees, nectarines or peaches. They can be grown successfully, and if ordered now and brought into a low temperature will give a few fruits from May to October. Order, of course, according to space available to accommodate them. Each plant requires a space about four feet square.

Cucumbers can be grown in a warm corner, and Telegraph is the best forcing variety. Sow a few seeds (about three plants are sufficient) in three-inch pots and keep warm, and when six inches high transplant into nine-inch pots, or boxes about a foot wide in ordinary compost and train on a wire trellis.
STANDARD ROSES

While standard, or tree, Roses are common objects in gardens in Europe, they have not been favored to a very large extent in this country. There is no reason, however, why they should not be more commonly used, as given the care they demand they will do well. It is quite true that they demand more care than the bush forms, but where the finest specimen flowers are wanted the standards will furnish them, and the finer flowers should be sufficient reward for the extra care.

THE DECIDUOUS HOLLY

The American Deciduous Holly, Ilex (Prinos) verticillata, is a conspicuous feature in the Holly collection at Kew. Now that the leaves have fallen it brings into marked prominence the quantities of shining scarlet berries. Seeing the large spreading bushes as grown here, 6 feet or 7 feet high, one is able to understand why so much praise is given to the “Winter-berry” in the American horticultural press, where for all phases of winter decoration it is in great demand.

WEEPING TREES

Trees having pendulous branches, generally known as “weeping” trees, are splendid subjects for ornamental plantings, provided they are used sparingly. Unless circumstances warrant the opposite, weeping trees should be planted out of sight of one another. That is, one specimen only is advisable in a vista. This rule, of course, does not apply to plantings on the banks of streams, where, sometimes, several specimens of the weeping willow, salix babylonica, may be suitably placed.

In open plantings a weeping tree will often relieve the severe lines of a planting of conifers to great advantage. Our illustration of a weeping spruce, a variety of the common Norway variety, but having larger foliage, planted in the midst of a group of the koster blue spruce, not only softens the otherwise stiff effect, but gives a weirdness to the planting which is most impressive. The contrast between the deep green of the weeper and the silvery blue of the kosters, with the marked reverse in form, approaching the romantic. A moonlight effect with this group might, indeed, be anything but soothing to the nerves of one timidly superstitious.

The list of weeping trees is quite extensive, and includes varieties of the birch, maple, beech, ash, plum, oak willow, linden and elm.

CHESTNUT BLIGHT

According to reports of the bureau of plant industry of the United States department of agriculture several American chestnut trees have been located which are apparently highly resistant to the chestnut blight. This gives a promise of a strain of American chestnuts which can be used for reforestation. Hitherto resistance has been found only in Oriental species, which, while suitable for nut production, are too small for timber.
Growing Vegetables for Exhibit and Utility

SAMUEL GOLDING

This is the first of a series of articles by Mr. Golding to appear in the Gardeners' Chronicle on the growing of high grade vegetables, such as are usually found on the exhibition tables, and which for utility surpass both in quality and flavor the ordinary grown vegetables. In future articles, planning, planting, rotation, and cultivation will be discussed.—Editor.

The history of last year's war gardens and what they accomplished, to the amount of hundreds of millions of dollars, is very inspiring. It augurs well for the future of amateur gardens in this country, and should add zeal to our efforts along these lines for the coming season.

Many people, actuated only by patriotic impulses, with the desire to do their bit in helping to solve the food situation, have realized they have accomplished two things; they have communed with Nature and increased their knowledge of Mother Earth, wringing from her sometimes seemingly grudging hands the treasures she is sure to yield to all who approach her with intelligence and industry. They have thereby gained a great deal of pleasure, profit and health: profit as they were furnishing with fresh vegetables during the growing season; also with their winter supply stored in the cool cellar; and the surplus peas, beans, tomatoes canned; while we have only a bowing acquaintance with the green grocer or canned goods merchant, which means not only the saving to us of dollars and cents, but the releasing of our quota of food to help feed the countries of Europe that are near the verge of famine. The need now seems quite urgent, so let us once again put our shoulder to the wheel and do our bit to drive the wolf of hunger from the land. This is an end worth striving for, and the home gardener will not fail to grasp the great opportunity before him.

Now that we have past successes to assure us as to our future accomplishments, and failures to spur us on, we are more determined than ever to have our garden a joy to ourselves, and all a garden should be. To many, January is too early to commence garden making—the last week of March seems more suitable—but to the real gardener it means the awakening of his planting and planning dreams that may have slumbered somewhat during the past festive season.

I remember seeing these lines somewhere: "God has given us memories that we can have roses in December." How happily this can be applied to the vegetable grower, whose thoughts during the dark days of winter go back to the past season. How in his mind's eye he visualizes his last harvest; with what pride he regarded the crop of the noble tuber, fine peas, beans. What wonders were the first beets and spinach, the Golden Bantam corn, with flavor undreamed of before, grown in our own garden, our luscious pumpkins more recently used at the festive board. What wonder then that January finds him busy scheming for greater triumphs during the coming season. With what eagerness he will see the seedsman's catalogs, being much tempted by the flowery descriptions of the novelties to try one and all; but he will in most cases take varieties that have stood the test of time and have proved their worth in his garden in the past. I have heard amateur friends speak somewhat disparagingly of the wonderful pictures of the vegetables displayed in most lists, probably thinking the artist had his examples under high powered magnifying lens. I would advise our doubting friends to visit some of the leading shows where vegetables are a feature. They will then see that in many cases the ideal has been realized, and if we all cannot realize our ideal, we can at least take comfort in the thought that some one can show us our ideal. If we have fallen short in the past, there is no reason why the future should not have great triumphs in store.

Now is the real time to begin garden making, with pencil and paper. It is a great help to plan for next year's cropping, where to plant peas to be followed by celery, lima beans, corn, string beans, potatoes, etc., arrange to obtain perfect succession of crops, and to obtain two crops at least from the ground; with plans of the garden it is easy to estimate the quantity of seed required. If seed is brought from a reputable house, the germinating quality is generally of high percentage. Therefore, if the initial outlay is a trifle more, the saving more than compensates because the seed can be sown more sparingly, which is a wise course, as it allows the seedlings room to develop and saves severe thinning and waste. Take a row of peas of fifty feet, for example, a pint is more than ample for that space; the same for string beans; lima beans, one pint for thirty hills (sow six to a hill, but three plants are ample to remain); onions, half oz.; beets, one oz.; carrots, half oz.; corn, half pint; cabbage, brussels sprouts, cauliflower, celery and the like are best sown in a seed bed and transplanted, and of course it depends on the size of garden as to quantity required. But if these plants are allowed an average of two feet apart, half ounce of seed goes a long way.

Always endeavor to have a rotation of crops each year; where peas and celery grew last season, plant root crops, string beans, tomatoes, egg plant, peppers, and so on through the garden. In many cases this is not always possible, and I have known potatoes grown with success on the same quarters for several successive years by changing seed and varying the fertilizer. We must also remember our failures; the why and wherefores, and be ready to combat, or better, to prevent their recurrence. The enemies of our gardens are legion. We must be prepared to wage perpetual warfare during the growing season, and the most effective weapon the gardener has in his whole armory is the spray pump; and if we always have it and the proper ammunition we can face the worst of them with complacency.

The question of fertilizers is also an item not to be overlooked. There are several standard sorts that are easily applied, which are offered in seedmen's lists. The directions generally can be followed with confidence, but to the beginner I would urge caution, especially with nitrate of soda, or the result is not always pleasing. I am old-fashioned enough to believe that good rotten farm yard manure is still the best, providing it is spaded deeply into the soil.

Deep cultivation is the mainspring of all success in the garden. The soil of course is the most important element; and the best is deep sandy loam, which is easily worked. Blessed is the man who has two feet depth of such soil. We hear of light, heavy, clay, sand, sour, hardpan, that to the embryo gardener must be somewhat confusing. But as a guide, if fine vegetables flourish in your locality, and the coming season is your first venture, you will make no mistake by going ahead.

(To be continued.)
The Essentials of Pruning

The need for pruning trees first arises at the time of transplanting. Since even with the greatest precautions it is impossible to dig up all the roots, it is necessary to cut back the top to maintain a balance. The amount of cutting depends upon the nature of the roots, the less fibrous requiring greater reduction at the top. Usually the removal of four-fifths of the previous year's growth is sufficient, a smooth cut being made just above an outward-pointing bud. The amount of top pruning also depends upon the ease with which the various species are transplanted. A more severe pruning is required for trees difficult to move, such as magnolias, sweet gums, and tulip trees, than for maples, sycamores, elms, poplars, ashes, etc. In general, however, it is better to prune too much rather than not enough, for the more severe the pruning the more compact is the top with an abundance of shoots close to the stem. The roots require no pruning except where bruised or broken.

In this first operation there is no difference in treatment between the lawn and street tree. In later treatment the lawn tree is allowed to grow at will and to assume its natural form, requiring but little attention except the careful removal of dying limbs. On the other hand, the street tree must be straight and symmetrical, with branches beginning at a height sufficient to permit free passage underneath. These essentials are secured through the medium of pruning. The lower branches should be allowed to remain until the trunk thickens enough to support the top, their removal then being accomplished in yearly intervals until a height of 10—12 feet is reached.

The training of the crown consists of the suppression of some branches and the encouragement of others to produce a compact and symmetrical outline. A single leader is desirable in order to eliminate the danger of the formation of crotches with their tendency to split. Strength may be thrown into the central stem either by the removal or shortening of coleaders. In cases where tops bend over and droop the leader may be tied with raffia to poles and thus forced to remain upright until checking of the wood has taken place. Coal tar and various asphalt preparations also make desirable dressings.

Heavy pruning should be done in the fall or winter while the trees are in a dormant condition. The shaping should be done during August or September when it is easier to discover the weak, imperfect or dead branches. Early spring or summer pruning is not advisable, as the rapid flow of sap leads to bleeding, stripping of the bark, and a check to the root system by removal of elaborated food material.

Ornamental Shrubs, Roses, and Vines.—The pruning of shrubs at the time of transplanting is similar in principle to that suggested for trees. A balance should be maintained between the root system and the top by cutting back the individual branches at least one-fourth, the severity depending upon the root system and the species planted. The general purpose of pruning shrubs is to aid the plant to assume its natural form and characteristic beauty, and therefore only diseased, interlacing, or misshapen growths should be removed. Occasionally the strips of formal gardens require shaping into artificial forms, but ordinarily such shearing results in mutilation and disfigurement. Trimming of shrubs is justified when increased vigor is sought, this being accomplished by gradual thinning of the old wood and, in exceptional cases, cutting back to the ground plants that lose their winter attractiveness as the stems grow old (Cornus, Kerria, etc.). Before any pruning of shrubs is attempted it is essential to recognize their flowering habits. The spring and early summer-blooming kinds produce flowers upon wood which is formed during the previous year, thus necessitating pruning shortly after the flowering season so that the new growths may develop buds for the next season. The late summer and fall-blooming plants produce flowers on the same season's wood and require pruning in the fall. In either case, the work should be done after flowering.

The following table indicates the more common shrubs and the groups to which they belong. Those marked with an asterisk are profited by annual pruning.
The matter of pruning hedges is of vital importance: The prime requisite of a hedge is a thick bottom, which is secured in most cases by a severe cutting back, sometimes to within 6 inches of the ground, at the time of planting. Most hedges require trimming several times a year, the last cutting being given early enough in the fall to allow thorough ripening of the wood and avoidance of winter killing. The best form for a hedge is rounded at top, permitting a more natural development. The privets, however, readily adapt themselves to the flat-top pruning.

Garden roses represent many species, differing in habit and requiring different treatments. Before pruning the hybrid teas one must decide what kind of a crop is meant: (1) large, well spaced on the trellis, and removing the old ones and baby ramblers usually require the removal of the old canes may be secured for the next season. The polyanthus, however, readily adapt themselves to the flat-top pruning.

Fruit Trees, Bush Fruits, and Grapes.—Fruit trees are pruned for the purpose of enabling them to produce a superior quality of fruit, the fundamental conception being to reduce the struggle for existence among branches so that the remainder may yield larger and finer products. Heavy pruning of the top during dormancy produces very vigorous growth, due to the same amount of root energy being concentrated into a smaller top. Conversely, heavy pruning of roots reduces wood growth, the top receiving less water supply from the diminished roots. Too vigorous a growth reduces fruitfulness and should be avoided. It is essential to know the fruiting habits of various fruits for intelligent pruning. The apple and the pear bear upon spurs, while the peach bears upon shoots of previous season's growth, indicating that similar methods cannot be employed in the two cases. The entire operation usually resolves itself into a systematic, yearly thinning-out of weak, interfering branches, whereby deflecting energy into the sound limbs and at the same time promoting healthfulness by admitting the sun to the innermost parts and permitting convenient spraying and picking.

In order to lay the fundamentals of a desirable head, young trees are pruned so as to leave 4-5 of the best side branches which are headed back to a few buds each. The leader is removed to make an open-headed tree, except in the case of the peach and plum, where it is left, and the side branches pruned to spurs of one bud each. Old, weak, and neglected trees may be considerably revived and renewed by severe pruning known as "dehorning." The severity of heading-in depends largely upon the vigor of the tree, each branch being cut back several feet.

The bearing habits of bush fruits differ widely, the various kinds requiring individual treatment. Blackberries, raspberries, and dewberries bear on canes of the preceding year. Their pruning consists in: (1) removing superfluous shoots from the base of the plant, leaving 5-6 canes; (2) heading back the shoots when they are 2½-3 feet high, causing them to become stocky and throw out laterals; (3) heading back these laterals to 12-20 inches in length early in the spring before growth starts; (4) cutting out the canes soon after harvesting the fruit.

The canes of currants and gooseberries bear several times, but the first two or three crops are the best. It is therefore desirable each year after the plants have come into bearing to cut one or more of the oldest canes to encourage new ones.

To understand grape pruning it is essential to know that: (1) the fruit is borne on wood of the present season; (2) a vine should bear only a limited number of clusters—30-80, depending upon the variety; (3) the bearing wood should be kept near the original trunk or head of the vine, otherwise the fruit will be borne further and further from the main trunk. The currant systems of pruning renew to a head or main trunk each year. The trunk is carried up to the top of the trellis and two canes are taken from the top each year, their length varying from 6 to 12 rods depending upon the variety. A renewal cane is grown each year near the head, so that the old canes may be cut out yearly, thus keeping the fruit always near the trunk. Grape pruning should be done during the winter or early spring before the flow of sap so as to prevent "bleeding."—Missouri Botanical Garden Bulletin.
A GOOD BOUQUET ANNUAL

The amateur gardener usually delights in having plantings from which he can cut for his friends nice bunches of flowers. An annual splendid for this purpose, yet rarely grown, is the Sweet Scabions, sometimes called Morning Bride, or Mournful Widow. Botanically it is known as *Scabiosa atropurpurea*. It has no special requirements in the way of soil, any good garden soil suit- ing it admirably. Like most annuals, it does best in a sunny location. Seeds should be sown as early in Spring as possible, and the resulting plants will furnish a succession of flowers from June until frost. The plants attain a height of about two feet, are branching in habit, and the composite-like flower heads are borne on long stems, making them very desirable for cutting. The Portuguese and Brazilians, who know the plant under the name Saudade, use the flowers largely for making funeral wreaths, and it is not unlikely that the common name, Mourning Bride, or Mournful Widow, is derived from this custom. The flowers are dark purple, rose, or white, and are very sweet-scented. *Candidissima* flore plens is a double flowered white form, and there are several other forms varying from that at the present, including striata, which has flowers spotted and streaked, and another variety purple margined with white. There are also tall-growing and dwarf forms, the latter often listed as Tom Thumb varieties.

Our illustration shows a bouquet of Scabions, with Fern fronds and Asparagus Sprengeri used to supplement the rather sparse foliage of the plant itself.

PROTECTING TENDER PLANTS OVER WINTER

There are many simple ways to protect tender plants during winter, some more effectivethan others, writes Henry J. Moore in Canadian Horticulturist. Whether they are in beds or borders, the treatment is just as possible, and the resulting plants will furnish a succession of flowers from June until frost. The plants attain a height of about two feet, are branching in habit, and the composite-like flower heads are borne on long stems, making them very desirable for cutting. The Portuguese and Brazilians, who know the plant under the name Saudade, use the flowers largely for making funeral wreaths, and it is not unlikely that the common name, Mourning Bride, or Mournful Widow, is derived from this custom. The flowers are dark purple, rose, or white, and are very sweet-scented. *Candidissima* flore plens is a double flowered white form, and there are several other forms varying from that at the present, including striata, which has flowers spotted and streaked, and another variety purple margined with white. There are also tall-growing and dwarf forms, the latter often listed as Tom Thumb varieties.

Our illustration shows a bouquet of Scabions, with Fern fronds and Asparagus Sprengeri used to supplement the rather sparse foliage of the plant itself.

THINGS AND THOUGHTS OF THE GARDEN

(Continued from page 5)

A striking feature of the old herbals is the extraordinary virtues ascribed to many plants in the healing of sickness and disease. Betony, for instance, was said to cure no fewer than forty-seven different ailments, and advice given to the sick was "Sell your coat and buy Betony." Agrimony was another wonderful plant, its virtues ranging from a cure for the bite of a serpent, cancers, and straightening out a "naughty liver." For the bite of mad dogs popular remedies were Angelica, cabbage, cucumber, black-currants and lichens. As a charm against rheumatism a small potato was carried in the vest pocket. I have seen some of these that could scarcely be distinguished from a pebble.

For the gout, horse-radish was recommended, while to ward off the ague tansy leaves were worn in the shoes.

For every ill to which the human flesh is heir the old herbalists had an antidote in the form of a plant.

*Things springing from earth's bowels safely shall
By love or hatred (as the stars dispose)
Each sickness cure, that in the body grows*
IN broaching the subject of the gardener and his recompense, I am not unmindful of the fact that I am venturing on troublesome waters and courting criticism from many directions, but if the effort proves successful in stirring up a discussion among those gardeners who are capable of taking an active interest in the welfare of their profession, but who appear to lack all interest in it, I shall be satisfied that it has not been in vain.

The question of recompense is of vital interest to most gardeners, but there has always seemed to be an aversion to refer to it when gardeners are in conference. Preachers, doctors, and lawyers do not avoid it when they confer for their mutual benefit, and no sound reason can be advanced why gardeners should refrain from discussing what should constitute a just compensation for the services they can render any more than those engaged in other vocations doing so.

Before we approach the subject further, however, let it be distinctly understood that this is not the introduction to a propaganda with an ultimate motive of unionizing the gardening profession, for I am already on record as strongly opposed to any such action, because it is unprofessional and impractical. I am simply endeavoring to bring to light some of the unfavorable conditions which are mainly responsible for the failure of the average country minister, lawyer or physician of a small community, though the latter have to devote considerable time and money in study before they can obtain a degree to practice. But, when it comes to country cottages and usual privileges, is as well compensated as the average country minister, lawyer or physician of a small community, though the latter have to devote considerable time and money in study before they can obtain a degree to practice. But, when it comes to country estates in which large amounts of money have been invested, the situation becomes an entirely different one.

Take, for instance, an up-to-date country estate, even of moderate size, where the gardener in charge, whether under the title of superintendent or merely gardener, has responsibilities that continually occupy his time and attention, and where any laxity on his part may be the cause of much damage, simply through the acts of the elements causing destruction to valuable plantings, while on more pretentious places, the responsibilities increase and frequently include the charge of modern farms with all the departments they comprise, as well as gardens and greenhouses. It is among this class of gardeners that the value of the services rendered is not as generally recognized as it should be.

To assume that a gardener, entrusted with property in which the expenditure of thousands, yes, in many cases hundreds of thousands of dollars, were involved in the development, with a greenhouse range housing valuable collections of plants, accumulated through many years of culture and care, that might be entirely destroyed by one night of neglect, and in some instances with the additional care of valuable cattle, not to mention the many other departments of a complete country estate, is properly paid at $150 a month or thereabouts, with no more invested in it than in a country estate such as has been described, and with responsibilities far less hazardous, receiving an equivalent salary.

It has been my experience in coming in contact with country estate owners, though there have been exceptions, when the matter is properly presented to them, that, through efficiency, economies in labor and in general expenditures result which will more than offset any difference between a poorly paid, incapable gardener, and a well paid, thoroughly reliable gardener, who through his efficiency obtains the greatest results at the least cost, that efficiency is preferred.

I have met gardeners who have occupied one position for years, giving entire satisfaction to their employers, but receiving the same amount of pay that they received when they first accepted the position. They were dissatisfied and complaining, but were venting their grievances on those wholly disinterested in them, while lacking courage to approach their employers, who in all probabilities felt that their gardeners were content with their lot. To such a gardener I offer the suggestion that he approach his employer in a businesslike manner, but not at a time when his financial horizon appears (Continued on page 24)
THE GARDENERS' NEW YEAR RESOLUTION

Let us resolve to make the year 1919, which will be momentous in world history, the most successful in the career of our national association—by establishing a greater unity within our profession—a broader fraternity among its followers.

GREETINGS FROM OUR PRESIDENT.

Dear Fellow Members:

We stand at the dawn of 1919. Our thoughts instinctively hark back to one of the most eventful years in the history of the world, 1918, the year of the ending of the Great War. Time alone will reveal to us the greatness of the year that is past, for today our view is too closely focused to see the remarkable changes that have taken place in true perspective. We are as yet groping out the darkness of war. We cannot understand the great silence after the noise and tumult of war. Our minds have thought war, our hands have wrought war, so much that we struggle to realize the fullness of the meaning of the great message that comes to us today with tenfold emphasis.

Peace on Earth.

Yet we enter upon the new year with a feeling of lightness of spirit, and of hope. We turn from war to peace, from destruction to construction. And it is the greatness of the task of reconstruction that lies before us that occupies our minds at this time.

We have seen that if we have the machine we can accomplish almost any mechanical task. That if we have the organization we can accomplish many things. We have an organization in the National Association of Gardeners of which we can be justly proud, one that can be of great help to us in our profession. Gardeners are too prone, very often, to stay at home, to become isolated, to become stale. That is not this always the gardener's fault. But if I am fully aware. But I am sure every employer, and every gardener would be much benefited if the gardener took an occasional holiday and visited his fellowmen to learn what his fellowcraftsmen were doing. If he is wise, he will always come back a better man.

Again, every gardener should become a member of his local society, attend every meeting possible and gain the additional stimulus of meeting his fellowmen. Supposing things do not go to your way of thinking. You cannot reasonably expect that it always will. Let the majority rule. It is the basis of all good government today. Strive to be a good loser, as well as a good winner. Most gardeners are.

The interest of every gardener will be needed in the Victory Loan Bond. A large quota of its younger men entered the country's service, but unfortunately the association was not able to keep a complete honor roll, as it could not obtain a full list of those members who joined the colors. It invested $1,000 of its surplus in a Third Liberty Loan Bond.

Successful conventions were held during the year in New York, Boston, (one in spring and one in fall), Minneapolis, St. Louis, Cleveland, in all of which much local interest was manifested. The executive committee voted to postpone the annual convention which was to be held in Cleveland in October last, until peace is declared, when it is to be held, as originally planned, in Cleveland, with a grand celebration of the great World Victory.

The Committee on Essays and Horticultural Instruction was not able to continue the distribution of essays for discussion at monthly meetings of local societies throughout the year through lack of support on the part of members, able to do so, to furnish suitable papers. It is making an effort to renew the distribution with the beginning of the year.

The report of the Committee on Bird Propagation and Preservation was printed in the October number of The Chronicle.

The Service Bureau was successful in placing some members in new positions, while it had the opportunity to discuss with estate owners, unwilling to compensate gardeners properly for their services, the fairness in doing so and the justification in asking it. In this way seed has been sown that may be slow in germinating, but in time will bear fruit, and the experience of this year has again demonstrated that the Service Bureau in normal times will become a valuable adjunct of the association.

A summary follows of the treasurer's and secretary's financial report which will be submitted in complete detail at the next annual meeting for approval by an auditing committee, as provided in the by-laws.

Yours fraternally,

ROBT. WEEKS.
SECRETARY’S FINANCIAL STATEMENT.

RECEIPTS.

Cash on hand, Dec. 1, 1917. $40.00
Received for 1913 Dues. $4.00
- 1914 - 4.00
- 1915 - 6.00
- 1916 - 2.00
- 1917 - 90.00
- 1918 - 2,012.00
two Life memberships. $50.00
six Sustaining memberships. $20.00

Total. $2,268.00

PAYMENTS.

Deposit vouchers to treasurer 146-163. $2,071.00
Deposit vouchers to treasurer 12-13. 50.00
Cash on hand. 146.50

Total. $2,268.00

Balance in bank, Dec. 1, 1917, Reserve Fund. 283.31
Balance in bank, Dec. 1, 1917, General Fund. $2,150.32
Interest, Third Liberty Bond. 14.90
Interest, General Fund, June 17–Dec. 18. 92.49
Interest, Third Liberty Bond. 14.90

Total. $4,675.15

Expeditures of the secretary’s office:
Postage. $140.25
Telegrams and telephone tolls. 45.68
Expressage. 2.93
Stationery. 32.08
Traveling expenses. 133.00
Appropriations for clerk hire. 410.00

Total. $709.54

MARTIN C. EBEL, Secretary.

TREASURER’S REPORT.

RECEIPTS.

Balance in bank, Dec. 1, 1917, General Fund. $2,150.32
Deposit in bank, Dec. 1, 1917 Reserve Fund. 283.31
Deposit vouchers, General Fund, Vouchers No. 146-163. 2,071.50
Deposit vouchers, Reserve Fund, Vouchers No. 12-13. $50.00
Interest, General Fund, June 17–Dec. 18. 92.49
Interest, Third Liberty Bond. 14.90

Total receipts. $4,675.15

Third Liberty Loan Bond. $1,000.00
Vouchers Nos. 160 to 207 as follows:
Chronicle Press, Inc., subscriptions ... $176.50
Chronicle Press, Inc., subscriptions ... 588.00 764.50
Chronicle Press, Inc., reprints for Essay Committee. 38.35
Madison Eagle Print, printing. 150.25
Digest & Glasgow, Dials. 24.50
Murray Hill Hotel, hall hire. 20.00
American Surety Co. bond. 62.50
Advertising (seven papers) service bureau. 165.66
M. C. Ebel, secretary. 764.50

Total disbursements. $2,969.05
Balance in bank, Dec. 15, 1918, General Fund. 1,260.12
Balance in bank, Dec. 15, 1918, Reserve Fund. 345.94 $4,075.15

INVESTMENTS.

Third Liberty Loan Bond. $1,000.00

Pittsburgh, Pa., Dec. 15, 1918.

ERNST GUTER, Treasurer.

GARDENERS’ CONFERENCE FOR PITTSBURGH.

A meeting of gardeners, representing Pittsburgh and Sewickley, Pa., was held in Pittsburgh recently to arrange for the holding of a gardeners’ conference of the members of the local branch of the national association. It was voted to hold the conference at the Hotel Chatham at 6 P. M., on January 30th. President Robert Weeks and secretary M. C. Ebel of the national association have signified their intention of being present.

NEW MEMBERS.

Among the new members who have been recently enrolled, are:

THE GARDENER AND HIS RECOMPENSE.

(Continued from page 22)

clouded; direct his attention to the fact that the cost of children’s shoes has more than doubled in price in the past four years, and other living expenses in proportion, and if he is a reasonable employer, he will recognize the force of the argument. If he is not, let the gardener abide his time, and when a better opportunity presents itself, accept it. Gardeners with “no encumbrances” must modify the argument, though no doubt even those so unfortunate as to occupy single men’s positions have felt the sting of the high cost of living.

The question often arises, what should be a suitable salary for a gardener? There can be no agreed scale on which to base an answer, for there are no two places with conditions just alike, and it remains a matter of negotiation between employer and employee. It can be reiterated in this connection, however, that on but few of the extensive country estates, the gardeners are receiving salaries that are anywhere nearly in proportion to salaries received by men in other occupations, whose positions entail no greater responsibilities than those of an estate superintendent.

Before concluding, I am going to refer to a subject that has recently been much agitated in elite garden circles. Just why gardeners and the horticultural business should be singled out in a crusade against a practice as old and as far reaching as trade itself, is not apparent, for the Federal Trade Commission states that investigation has revealed commercial bribery to be general throughout many industries.

There are black sheep in every profession and the gardening profession has never claimed immunity. There are unscrupulous lawyers; there are quack doctors; there are bad ministers; but their professions are not condemned for it, so it is just to attempt to discredit the gardening profession for the misdeeds of a few in it. I can conscientiously declare that in my wide experience with men in all stations of life that, taken as a whole, I have not found a more reputable or cleaner body of men than is to be found among the professional gardeners.

In this proposed campaign to abolish the paying of gratuities or commissions, many measures are outlined but no amount of new legislation, adoption of resolutions, or enactments of pledges will prove effective for there are already statutes on the books of most states to prohibit it, if they could be enforced. There is but one means to minimize the practice and that is to lift those in position to be recipients of gratuities above the temptation of accepting them by adequately paying them for the services they render.

It is regrettable that almost invariably the instigators of this discrimination, which Governor Edge of New Jersey in vetoing a bill this year, directed solely at the horticultural interests, termed class legislation, are those usually guilty themselves of unprofessional conduct in demanding rebates of firms on business they may direct their way. It would indicate that the motive is selfish rather than altruistic, and with the purpose of casting suspicion to further their own aims. I have found that what most professional gardeners may lack in the suavity of other professions, they possess in integrity and that their profession will bear as close scrutiny as any of the allied or other professions.

OF INTEREST TO COUNTRY ESTATE OWNERS.

The National Association of Gardeners takes this opportunity to introduce its service bureau to the owners of country estates and to place it at their disposal requiring thoroughly competent gardeners. To the expediency of superintendents, head gardeners, or assistant gardeners—professionals conduct in demanding rebates of firms on business they may direct their way. It would indicate that the motive is selfish rather than altruistic, and with the purpose of casting suspicion to further their own aims. I have found that what most professional gardeners may lack in the suavity of other professions, they possess in integrity and that their profession will bear as close scrutiny as any of the allied or other professions.
Massachusetts Hortic. Society.

The Massachusetts Horticultural Society which omitted practically all premiums at its 1918 exhibitions, will offer about $4,000 in premiums in 1919, about half of which will be offered to amateur cultivators or "victory gardeners." The bulk of the money will go for vegetable growing.

Gardeners' and Florists' Club of Boston.

The Gardeners' and Florists' Club of Boston has had over forty of its members in active service, three of them having paid the supreme sacrifice. The club will hold a Victory banquet on February 20th.

St. Louis Assn. of Gardeners.

The November meeting of the St. Louis Association of Gardeners was postponed owing to orders issued by the Board of Health forbidding all public gatherings. The "flu," however, is still prevalent in the city, the children at the present time being more susceptible, so much so that the schools are again closed.

Under these abnormal conditions the meeting was fairly well represented. The topic for the evening was "Growing Plants in Schools," by G. H. Pring and L. P. Jensen. An interesting discussion followed by Alex. Lurie on "Diseases," H. C. Irish on "Growing Plants in Winter," and A. Vanderbilt on "Private Gardens."

Officers of the club were nominated for the ensuing year. The outlook suggests a re-election of the same officers, which will take place at the January meeting.

The club's slogan is the N. A. G. annual meeting for St. Louis in 1920.

G. H. PRING, Corr. Sec.

Lenox (Mass.) Hort. Society.

The annual meeting was held in the Town Hall, Lenox, Wednesday evening, December 11. President Robt. Scott in the chair.

Mr. A. J. Loveless showed a splendid plant of fine Cypripedium Sanderae X Laura Kimball. This fine hybrid is a seedling of the exhibitor's own raising and is as yet unnamed.

The principal speakers of the evening were Arthur T. Boddington, Edwin Jenkins, Stanley G. Barnes, of the Pittsfield Flower Shop.

The society hopes to resume a pre-war program, and the prospect of holding the customary flower show next year was freely discussed.

The election of officers for the ensuing year resulted as follows: President, John Johnson; vice-president, Oliver Lines; treasurer, Alfred J. Loveless; secretary, Henry Heereman.

North Shore (Ill.) Hort. Society.

The above society held its regular monthly meeting Friday, December 6.

President Thomas Head opened the meeting, after the usual business, he introduced the speaker for the evening, Van Hoven, of Napierville, Ill., who gave a very interesting account of the work that had been done for the elimination of the common Barberry and its hybrids in the efforts being made to stamp out the black stem rust in the grain growing States.

He spoke of the efforts that are being made to bring about an interstate law to prevent the shipment of Berberis vulgaris and its allied species into grain-growing States. He also asked the cooperation of all gardeners to help combat the ravages of the San Jose scale by thorough spraying, and to cease planting such trees which serve as a breeding place for this pest, namely, the mountain ash, quinie, etc.

The monthly exhibits were: Six fine cyclamen, exhibited by T. W. Head, 95 points; one case of Narcissus Soleil'd'Or, exhibited by G. Wilson, 98 points, and six winter flowering begonias, exhibited by J. H. Francis, 98 points.

The judges for the evening were Messrs. E. Boulier, E. Bollinger and O. Pettersen.

The winning competitors in the monthly competitions for the year were: T. W. Head, gold medal, 1,030 points; George Wilson, silver medal, 986 points; J. H. Francis, bronze medal, 853 points.

The annual meeting of the above society was held in Pembroke Hall, Glen Cove, on Wednesday, December 11, with President Robert Jones in the chair. The judges appointed for the monthly exhibits were Thomas Twigg, Wm. Noonan and George Platt.

The following awards were made: The president's special for the best table decoration for assistant gardeners was won by Hening Michaelson, assistant to George Ferguson; second, John Gailens, assistant to Wm. Churchill.

Treasurer Ernest J. Brown presented a creditable annual report, showing the society had passed a successful season, both in point of membership and financially.

Sam. J. Trepee was called on to conduct the election of officers, which resulted in the following being elected for the ensuing year: Joseph Adler, president; Frank Watson, vice-president; Ernest J. Brown, re-elected treasurer; Ernest Westlake, re-elected secretary; Harry Goodband, re-elected corresponding secretary; Robert Jones, trustee for three years. Executive Committee: William Noonan, Thomas Henderson, Wm. Milstead, Wm. Churchill, W. G. Carter and Thomas Meech. There was a short discussion on "How to Grow Amaryllis and When to Rest Them."

A letter of condolence was ordered sent to the family of the late Mr. W. Hans, one of our members who has just recently died.

President-elect Joseph Adler thanked the society for the honor conferred on him.

After the meeting an enjoyable social entertainment and smoker was held. John W. Everitt, our popular toastmaster, handled it in his usual good style.

HARRY GOODBAND, Corr. Sec'y.

WESTCHESTER, CONN., AND FAIRFIELD, N. Y., HORT. SOCIETY.

The annual meeting was held in Hubbard's Hall, Greenwich, Conn., Friday evening, Dec. 13th, President P. W. Popp, presiding. The judges of the evening were William Cohetton, James Linane, and Tom Atchison. The awards were as follows: One very fine vase of Bouvardis from Wm. Graham, first prize and cultural certificate; a rose of roses from James Stuart, second prize; carnations from W. Smith, third prize; a group of begonias and two vases of roses from Robert Williamson were very highly commended. Cyripedium insignes from W. Smith and carnations from W. Morrow were also highly commended. Single seedling Mums from Alex Geddes received a certificate of merit. Collection of vegetables from James Stuart was very highly commended. Some very good ears of field corn from Thomas Ryan received a cultural certificate. William Graham explained his methods in growing Bouvardis. The National Association of Gardeners' silver medal was presented to him for the highest number of points of the past year. Robert Williamson read his annual report, which showed the society is advancing. The following were elected corresponding secretary, respectively: William Whitton, John Orr, James Tough, Alexander Smith, and John Forbes were appointed to the executive committee.

JOHN CONROY, Corr. Sec'y.
AMONG THE GARDENERS

Thomas J. Proctor, for many years superintendent of Blantyre Gardens, Lenox, Mass., recently accepted the position of superintendent of Planting Fields, the W. R. Cee estate, Oyster Bay, N. Y.

Samuel Stewart, superintendent of the Howard Taylor estate, Chatham, Conn., was elected to the general assembly of the Connecticut state legislature.

Edgar Osborne, recently resigned his position of head gardener to W. E. Hoyt, Williamstown, Mass., to accept a similar position on the Robert Cluett estate of the same place.

The many gardener friends of William Grantham will be grieved to learn of his death from wounds received in action in France. Mr. Grantham, who held positions at Ardsley and Tuxedo Park, joined the Canadian forces previous to which he was with Weeber & Don, New York.

Frederick Schults, for some years connected with the conservatories at Bronx Park, N. Y., has accepted the position of gardener in the greenhouses on the roof of the Bloomingdale Brothers building, New York.

John Bresnahem, for over eighteen years head gardener on the Bryce J. Allen estate, Beverly Cove, Mass., died on Dec. 17th after a brief illness.

William Downs, whose health is much improved, is back at Chestnut Hill, Mass., in charge of the old Demarest estate where he was located a number of years ago.

Robert Taylor has resigned his position as superintendent of the R. H. Boggs estate, Sewickley, Pa. George Shaw recently of Tuxedo Park, N. Y., succeeds him.

OF GENERAL INTEREST

The 100 per cent service flag is proudly displayed wherever such distinction can be claimed and in the house of Peter Henderson & Co. the advertising department holds that honor with Frank H. Cole, advertising manager, in the country's service as lst lieutenant in the Signal Corps, and Peter Henderson, assistant advertising manager, as 2d lieutenant in the Air Service.

William J. Collins of Boston received word on Dec. 20th of the death of his brother James, who had served in the Gordon Highlanders during the whole of the great war.

E. H. Wilson of the Arnold Arboretum, Boston, who has been on a collecting tour for about eighteen months in Korea and Formosa, is expected back early in January. He has discovered many good novelties in trees and shrubs, seeds of which are now being started in the Arnold Arboretum.

Samuel Redstone, who left this country two years ago to serve his native land, England, has been released from duty and will shortly return to the United States again. He is at present traveling among the nursery firms abroad in search of novelties for John I. Scheepers, Inc., New York, and visiting the private estates selling the American novelties of the firm he represents. On his return to this country Mr. Redstone will visit the American country estates in the interest of his firm.

THE AMERICAN HOME GARDEN SERVICE OF THE GARDENERS' CHRONICLE

The American Home Garden Service has been created for the purpose of co-operating, as far as it is within the scope of a gardening paper to co-operate, with all interested in perpetuating the gardening spirit that has been aroused through war gardening.

Victory Gardens attached to the homes should be planned with a view of permanency, to embody the beautiful in gardening as well as the practical, for vegetable growing alone soon becomes a monotonous task, but when combined with the growing of flowers, it develops into an endless joy.

Through co-operation and occasional competition, home gardening can be made the fascinating feature of any community and portrays refinement and civic pride.

A Home Garden Club will add to the enthusiasm of gardening as it offers opportunity for an interchange of experiences, discussions on planning and planting, rivalry in exhibits—and provides for a year-round interest in the home garden.

Why not organize a Home Garden Club in your vicinity? We shall assist in making it popular, acting in an advisory capacity, and where warranted in a more substantial way, to make gardening a predominating characteristic of your home town.

If you are interested in securing further particulars of our plan of co-operation, communicate with The American Home Garden Service, Gardeners' Chronicle, 286 Fifth Ave., New York.

In an article on AMERICAN HOME GARDENS by Arthur Herrington to be published in the February number of the Gardener's Chronicle, he asks—Why not preach the gospel of

A GARDEN WITH EVERY HOME
NEW MEMBERS.
(Continued from page 24)

THE LATE ANDREW MASSON
Andrew Masson, for seven years head gardener to Mrs. Louis Frothingham, North Easton, Mass., died on December 17th last, after a brief illness. Mr. Masson came to America from Scotland when quite young and worked on large private estates in Pomfret, Conn., and Brookline, Mass., before going to North Easton, to lay out and plant the new estate there which he had charge of. He was an excellent gardener, and much esteemed among his fellow gardeners and in the community where he resided. The deceased left a widow and young daughter to mourn his loss. He was 32 years of age. The funeral services were largely attended, and there were delegations present from the National Association of Gardeners and Gardeners' and Florists' Club of Boston, of which he was a member. There were many beautiful floral tributes.

SOURCE OF ORGANIC MATTER
When it is impossible to supply sufficient barnyard manure, and other forms of plant material to maintain the supply of humus in the soil, it may become necessary to grow a crop to plow under to supply organic matter. Crops used for this purpose are called green-manuring crops. There are two kinds of green-manuring crops (1) leguminous crops, including such crops as cow-peas, soy beans, clover, and sweet clover, and (2) non-leguminous crops, including such crops as rye, buckwheat and sorghum. When conditions are favorable for growing leguminous crops, they are preferable, since they add nitrogen as well as organic matter to the soil. When clover is grown it is often possible to harvest the first crop for hay and to plow under the second growth in the fall for green manure.

Sweet clover is one of the most valuable of the green-manuring crops. It makes a rapid, rank growth, and when plowed under adds large quantities of organic matter and nitrogen to the soil. It is a hardy, vigorous feeding crop, and can therefore be started successfully on soils so poor that other crops make an unsatisfactory growth. For this reason this crop is especially well adapted to growing for soil improvement or eroded hillsides and in fields in a very low state of fertility. Fields of this kind can often be improved to such an extent by a crop of sweet clover that other more valuable crops like alfalfa can in a short time be successful grown. A good plan is to seed sweet clover in late winter or early spring and use it during the latter part of second season for pasture. After the middle of July of the second year the clover should be allowed to grow in order to make a rank growth of organic matter to plow under before frost in the fall.—Seed World.

THE INSECTICIDE OF RECOGNIZED MERIT FOR THE GREENHOUSE AND THE GARDEN
For the Greenhouse—Applied at regular intervals (once each week, or ten days) APHINE will keep plants in the greenhouse and conservatory free of insect pests. It is excellent as a wash for decorative plants.

For the Garden—As a remedy against all sap sucking insects infesting flowers, fruits and vegetables APHINE is most effective.

APHINE is a concentrated material, which mixes readily in water—is efficient in its action—easily applied—and is free of the disagreeable features of most insecticides.

 Sold by dealers in various sizes

APHINE MANUFACTURING CO.
MANUFACTURERS OF AGRICULTURAL CHEMICALS
MADISON, N. J.
WHENEVER practicable, plant in hills—save the seed that would otherwise be wasted in crops which are widely thinned.

—avoid useless buying of high-priced seed, and conserve the Nation's supply by using the hill-dropping feature on the Iron Age Hill and Drill Seeder. This saves from a half to three-quarters of the seed used by drilling and very greatly reduces cost and the labor of thinning.

Last year we all gardened as a matter of patriotism. We learned what a fine thing it is to have our own fresh, succulent vegetables, and also that it pays! Now—the boys are coming home! New nations are in the making—new nations for us to lead and feed! More urgent than ever—is the need for

Bigger Better Gardens

HARD work—back-breaking stooping, brow-be-dewing hoeing and cultivating with old-fash-ioned tools—is inefficient, foolish.

Take a hint from the leading market gardeners in your neighborhood—the men who raise big, luscious things to eat in a sensible, farm-like way with Iron Age Combination Tools like that shown here. Your dealer can show you many sizes and kinds for use in small home gardens, flower gardens, poultry farms, seed farms, truck gardens, etc.

Descriptive folders sent on request

Bateman M't'g Co. | The Bateman-Wilkinson Co., Ltd.
721 Main Street | Toronto, Canada
Grenloch, N. J. | In business over 83 years. Makers of Riding and Walking Cultivators, Horse Hoes, Cultivators and Harrows, Sprayers, Hay Rakes, Sulkies, Potato Machinery, etc., etc.
The Christmas Tribute of John Davey to the boys in service

To Those Whom We Have Served:

MEMBERS of the Davey organization have ever been trained in service—the service of saving priceless trees to future generations.

And so, when the call to greater service came, they eagerly responded. And well they performed their part.

Now they are coming home to resume their places in the Davey organization. With hearts full of pride and gratitude we welcome them back—to the enlarged field of usefulness which lies ahead of us all.

We cannot refrain from this public testimonial to the boys in the nation's service. We feel that all whom we have served will join with us in this appreciation.

Sincere and cordial Christmas greetings, and best wishes for a happy and prosperous New Year, to all our friends everywhere. Sincerely,

JOHN DAVEY

DAVEY TREE SURGEONS

THE DAVEY TREE COMPANY, Inc.
312 Elm Street, Kent, Ohio


The Seeds You Plant

No matter how much care and attention you give to your garden or to your grounds, it is of little avail unless you have started right. One of the big reasons for the use of Henderson’s Seeds is their dependability. After you have planted them you know that the success of your garden is largely a matter of the time and care you give it.

Three generations of activity in the seed business over a period of seventy-two years has given us a fund of experience and knowledge that obviously must be of value to our customers, and it is our constant endeavor to give them the fullest benefit from it.

Our annual catalogue, “Everything for the Garden,” is in every way representative of our house. Its 184 pages, its color pages, its thousand or more half-tone illustrations make it one of most beautiful as well as complete seed catalogues ever issued. We should be glad to send a copy to any reader of the “Gardeners’ Chronicle” without charge if they will write us mentioning the Chronicle.

PETER HENDERSON & CO.
35 and 37 Cortlandt Street New York City, N. Y.
Scheepers’ Gold Medal Summer-flowering Begonias

Single Begonias  Basket Begonias  Frilled Begonias

Scheepers’ Gold Medal Winter-flowering Begonias

Repeatedly awarded Gold Medal and other High Honors at Important Flower Shows.

JOHN SCHEEPERS, Inc., Flowerbulb Specialists, 2 Stone Street, New York City
(See other side)
Our COLOR REPRODUCTION on previous page only faintly represents the WONDERFUL shades found in our TUBEROUS Winter- and Summer-flowering BEGONIAS.

It has been forbidden by our Government to import Begonias hereafter; this law goes into effect June first next so that this IS THE LAST CHANCE to secure these beautiful BEGONIAS; everybody is getting a several years' supply; it is therefore imperative to order AT ONCE.

**BLACKMORE & LANGDON'S Gold Medal**

Tuberous Summer-flowering Begonias.

<table>
<thead>
<tr>
<th>Hanging Basket Begonias.</th>
<th>SCHEEPERS' Gold Medal</th>
<th>Tuberous Winter-flowering Begonias.</th>
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<tbody>
<tr>
<td>ALICE MANNING, yellow—each</td>
<td>ALTRINCHAM PINK, double rose, each</td>
<td>$3.00</td>
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<tr>
<td>CARMINIA, carmine red</td>
<td>BOWDON BEAUTY, double rose pink</td>
<td>1.50</td>
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<tr>
<td>CORALINA, salmon pink</td>
<td>CLIBRANS PINK, double bright pink</td>
<td>3.00</td>
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<tr>
<td>EUNICE, light pink and salmon</td>
<td>ECLIPSE, salmon red, semi-double</td>
<td>3.00</td>
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<tr>
<td>FLEUR DE CHRYSANTHEME, salmon</td>
<td>ELATIOR, rosy carmine, semi-double</td>
<td>2.00</td>
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<tr>
<td>GLADYS, dark red</td>
<td>EMILY CLIBRAN, light salmon, double</td>
<td>2.50</td>
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<tr>
<td>GOLDEN SHOWER, golden apricot</td>
<td>EMITA, rich coppery orange, single</td>
<td>3.00</td>
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<tr>
<td>LENA, rosy crimson</td>
<td>FASCINATION, salmon orange, single</td>
<td>5.00</td>
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<tr>
<td>LETTIE, wonderful rosy pink</td>
<td>LUCY CLIBRAN, orange, semi-double</td>
<td>2.50</td>
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<tr>
<td>MARIE BOUCHET, deep red</td>
<td>MATCHLESS, salmon, double</td>
<td>5.00</td>
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<tr>
<td>MRS. BILKEY, salmon orange</td>
<td>OPTIMA, warm salmon, single</td>
<td>2.50</td>
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<tr>
<td>ROSE CACTUS, lovely rose pink</td>
<td>ORANGE KING, orange yellow, single</td>
<td>5.00</td>
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<tr>
<td>RUBY, carmine red, very fine</td>
<td>PICOTEE, salmon-orange, double</td>
<td>3.50</td>
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<tr>
<td>SIRIUS, glowing scarlet</td>
<td>PINK BEAUTY, brilliant pink, double</td>
<td>4.50</td>
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<tr>
<td>VENUS, pure white</td>
<td>PINK PERFECTION, blush pink, double</td>
<td>5.00</td>
</tr>
<tr>
<td>SEEDLING TUBERS, in shades of crimson, pink, red, rose, salmon; separate colors</td>
<td>PREMIER, salmon rose, double</td>
<td>2.50</td>
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<td></td>
<td>PROGRESS, salmon pink, double</td>
<td>1.50</td>
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<td></td>
<td>ROSE QUEEN, brilliant rose, semi-double</td>
<td>4.50</td>
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<tr>
<td></td>
<td>SALMON QUEEN, rich salmon, semi-double</td>
<td>4.50</td>
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<tr>
<td></td>
<td>SCARLET BEAUTY, vivid scarlet double</td>
<td>3.00</td>
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<td>SUNRISE, bright rosy red, double</td>
<td>3.50</td>
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**BLACKMORE & LANGDON’S FAMOUS NAMED AND UNNAMED Single and Double Summer-flowering Begonias.**

<table>
<thead>
<tr>
<th>Single Begonia Tubers</th>
<th>Double Begonia Tubers</th>
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</thead>
<tbody>
<tr>
<td>SUPERB SELECTED, exhibition, 8 colors Doz.</td>
<td>CLASS AX, exhibition, 9 colors,</td>
</tr>
<tr>
<td>CLASS A, extra choice, 8 colors...Dozen</td>
<td>CLASS A, fine selection, 9 colors...Dozen</td>
</tr>
<tr>
<td>CLASS B, choice, 8 colors...Dozen</td>
<td>CLASS B, very choice, 9 colors...Dozen</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Frilled Single Begonia Tubers</th>
<th>Collections of choice Named Double Begonias</th>
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</thead>
<tbody>
<tr>
<td>CLASS A, choicest selection, 6 colors...Dozen</td>
<td>COLLECTION A, 12 Extra Choice Sorts, distinct</td>
</tr>
<tr>
<td>CLASS B, very fine, 6 colors...Dozen</td>
<td>COLLECTION B, 12 Very Choice Sorts, distinct</td>
</tr>
</tbody>
</table>

| Crested Single Begonia Tubers | COLLECTION C, 12 Choice Sorts, distinct varieties | $22.50 |
|-------------------------------|----------------------------------------|
| CLASS A, choicest selection, 6 colors...Dozen | COLLECTION D, 12 Very Fine Sorts, distinct varieties | 3.95 | 15.50 |
| CLASS B, very fine, 6 colors...Dozen | COLLECTION E, 12 Good Sorts, distinct varieties | 3.95 | 12.00 |

Collections of Assorted Un-named Double, Single and Frilled Begonias.

<table>
<thead>
<tr>
<th>COLLECTION F</th>
<th>COLLECTION G</th>
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</thead>
<tbody>
<tr>
<td>12 Class A doubles, 12 Class A singles, 12 Class A frilled, all colors, 36 tubers $19.75</td>
<td>12 Class B doubles, 12 Class B singles, 12 Class B frilled, all colors, 36 tubers $11.50</td>
</tr>
</tbody>
</table>

Latest complete list of New Named Varieties will be sent upon request. Allow us to again urge the sending of earliest possible orders.

JOHN SCHEEPERS, Inc., *Flowerbulb Specialists*, 2 STONE STREET NEW YORK CITY
BURNETT BROS., 92 CHAMBERS STREET, NEW YORK

"THE HOUSE"
FAMOUS for
LAWN GRASS SEED

If you have not received our 1919 illustrated catalog and our annual Novelty List, describing the choicest and rarest novelties in Flower and Vegetable Seeds, write us.

Our Motto:
RELIABLE SEEDS and PROMPT SERVICE

Bobbink & Atkins
World's Choicest Nursery & Greenhouse Products Grown In America

To be sure of having the varieties needed in good strong, healthy bushes

You Must Order Your Roses Now
There is every indication of an early Spring. Do not wait until the last moment but reserve your plants now and be ready when planting begins. Think over these items.

EVERGREENS, TREES AND SHRUBS, HERBACEOUS PERENNIALS, RHODODENDRONS, FRUIT TREES, VINES
CATALOGS READY IN FEBRUARY
RUTHERFORD NEW JERSEY

Built for Major E. S. Moore, Lake Forest, Ill.

TWO HOUSES, each 18 ft. wide by 75 ft. long, with Service Building in center. Each house is divided into three compartments. Thus there is opportunity for the widest range of flowers and plants, because of the different temperatures possible.

In our new book, "THE GREENHOUSE BEAUTIFUL," we have featured Major Moore's houses, as well as various other lay-outs. We shall be pleased to send you a copy of this handsome edition, free, upon request.

DESIGNERS-BUILDERS
3200 W. Thirty-first St. Chicago, Ill.
Announcement

Our 1919 Catalogue will not be ready to mail until early March. This is the earliest delivery our publisher can promise. As usual, it will offer the better varieties of Greenhouse and Garden Plants.

PLEASE NOTE: That Manetti stock could not be procured in quantity this season, that there is an unusual demand for Grafted Roses, so, if you have not procured yours, just send in your planting list and let us quote you direct.

RE-STOCKING: Anticipating a large demand for Stove Plants, Palms and Greenhouse-Flowering Plants for re-stocking greenhouses, we have grown on some good material. If you can visit our establishment and look this stock over, we will be glad to have you do so. If not, write us.

AN FIERSON INC.
CROMWELL GARDENS
CROMWELL, CONN
DREER'S GARDEN BOOK for 1919

EIGHTY-FIRST ANNUAL EDITION

A dependable guide-book which tells when to plant, how to plant, and what to plant. It gives cultural articles, written by experts, which will be valuable to every gardener. It contains four beautiful colored plates and lists all the dependable tested standard varieties of Vegetables and Flowers, besides many important Novelties.

The newest Roses, the best Dahlias, and Dreer's Improved Hardy Perennials are given special prominence.

It features a number of noteworthy specialties in Vegetable and Flower Seeds, Plants, etc., and should be in the hands of every progressive Gardener.

It will be mailed free if you mention this publication.

HENRY A. DREER
714-716 Chestnut Street Philadelphia

A Distinct Novelty for Borders and Low Hedges

Box-Barberry is the most beautiful little plant imaginable. It does not grow tall and spreading, but dwarf and compact, and is especially useful in formal gardens and for low hedges.

Box-Barberry is perfectly hardy wherever Berberis Thunbergi grows. In summer the foliage is light green, but changes to brilliant red and yellow in autumn. It does not harbor wheat rust.

Box-Barberry is offered this year for the first time. Box-Barberry has been thoroughly tried over a period of fifteen years before sending out. It is no experiment.

1 year, frame-grown........... $2 per 100; $175 per 1,000
2 year, field-grown........... 30 per 100; 250 per 1,000
3 year, field-grown........... 40 per 100; 350 per 1,000

Available stock limited; Orders filled strictly in rotation received.

THE ELM CITY NURSERY CO. Woodmeat Nurseries, Inc.
Box 193, New Haven, Conn. (Near Yale Bowl)

Our Catalogue, now ready, lists a comprehensive assortment of choice Shade and Fruit-trees, Evergreens (including Taxus cuspidata type), Shrubs, Vines, Roses. Hardy plants. Catalogue mailed the day your request is received.

Greenhouse Roses

Grafted and Own Root

Manetti stock is very scarce this year; most houses have to be satisfied with 50% of their usual quota.

We are pleased to say we received our full order, in excellent shape, and can take care of your orders providing we know what you wish early enough in the season for us to graft for you. Make no mistake—

Roses will be scarce!

Write us regarding your wants.

CHARLES H. TOTTY CO.
MADISON, NEW JERSEY
Your Last Chance!

To import Holland Rhododendrons, Boxwood Bushes and Edging, Roses, Magnolias, Azaleas, Choice Evergreens, etc.

We are bringing from Holland about 1,400 cases of this stock on the “New Amsterdam,” which will arrive in New York about March 15. If you will be in the market, let us know, and we will advise you when the steamer arrives so that you can open the cases and inspect the goods on the dock. A list of this stock with prices will be gladly sent on request.

A recent Federal Law prevents importing after this season. You should stock up with such of these plants as you will need for the next few years.

Lewis & Valentine Company
LANDSCAPE CONTRACTORS
Roslyn, L. I., N. Y.

MARSHALL’S
Matchless Seeds and Bulbs
Our 1919 Catalogue is now ready and is especially compiled for Private Gardeners.

It contains 96 pages and includes the leading varieties and Novelties of Vegetable and Flower Seeds, Bulbs, Grasses, and a very complete list of Garden Sundries, Tools and Insecticides. If you have not received a copy a postal will bring it to you by return mail.

W. E. MARSHALL & CO., Inc.
SEEDSMEN
166 West 23rd Street
NEW YORK

COMPETENT GARDENERS

§ The comforts and products of a country home are increased by employing a competent gardener; if you want to engage one, write to us.
§ Please give particulars regarding place and say whether married or single man is wanted. We have been supplying them for years to the best people everywhere. No fee asked.

PETER HENDERSON & CO.
Seedsmen and Florists
35 and 37 Cortlandt St.
NEW YORK CITY

Just the Information We Need
WEBSTER’S NEW INTERNATIONAL
THE MERRIAM WEBSTER
Every day in your talk and reading, on the street car, in the office, shop, and school some new question is sure to come up. You seek quick, accurate, encyclopedic, up-to-date information.

This NEW CREATION will answer all your questions with total authority. 400,000 Words Defined. 2700 Pages. 6000 Illustrations. Cost $400.00. The only Dictionary with the new divided pages. “A Stroke of Genius.” Write for specimen pages, FREE.

G. & C. MERRIAM CO.
SPRINGFIELD, MASS.

Orchids

If you contemplate buying semi-established, established or imported Orchids, consult us first.

We carry in stock about 25,000 plants and from April to July we receive large consignments of imported Orchids.

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Protest Against the Horticultural Import Prohibition

You are, of course, familiar with the recent ruling of the Federal Horticultural Board which prohibits, after June 1, 1919, the importation of all plants and bulbs, excepting the following few items: Lily bulbs, Lily of the Valley, Hyacinths, Tulips, Narcissus and Crocus—absolutely nothing else in the line of bulbs can be imported from any foreign country.

In the line of plants you may bring in fruit-tree stocks, seedlings, cuttings and scions of fruit trees, and you may import Manetti, Multiflora and Rugosa Rose stocks for budding or grafting but absolutely nothing else in the way of plants.

Do you realize how radical and far-reaching this embargo is, and how seriously it will affect, not only every importer, but every individual who grows bulbs, plants or flowers; from the largest down to the smallest grower? There will be no Azaleas, Rhododendrons, Spireas, Araucarias, Dracaenas or Boxwoods. Orchids will only be a memory, and there will be missing in our gardens hundreds of other varieties of plants and cut flowers on which heretofore we have depended upon European sources.

Many of these subjects will never be produced in this country and such that, after years of preparation, may be developed here, will necessarily have to be sold at a price which will make them prohibitive to the average present purchaser of this class of stock.

One of the peculiar points in this ruling of the Federal Horticultural Board, which we are unable to harmonize with the Board’s effort to prevent the risk of importing dangerous pests, is the fact that they consider it safe to import Manetti, Multiflora and Rugosa Roses for budding and grafting purposes but do not consider it safe to let these same risk of importing dangerous pests, is the fact that larvae, Ophelia, Radiance or whatever the variety may be, or budded upon them. The root of the Manetti, the Multiflora and the Rugosa may become developed here, will necessarily have to be sold at a price which will make them prohibitive to the average present purchaser of this class of stock.

Finally: For more than four years our country has cheerfully assisted and helped to keep a great portion of the Belgian population from starving; this embraces the great plant growing districts around Ghent and Bruges, where, before the war, upward of one thousand nurseries were operated; a large part of whose products was exported to the United States. We have sent our kin and friends to bleed on the battlefields of devastated Belgium to help to return these people to freedom, and, now that this has been accomplished and they are preparing to take up their customary vocations in expectation of supporting themselves as they have always bountifully done before, and they come to us and offer us their horticultural specialties, as they did before the war (the majority of which we cannot procure elsewhere or which we cannot produce ourselves,) we will have to hold our hands up in horror and say:

"While we have cheerfully helped to feed and clothe you and while our soldiers have died on the battlefield to give you your freedom, we cannot buy your Azaleas, Bay Trees, Norfolk Island Pines, Rhododendrons, Palms, your Begonias, Gloxinias and other specialties (as badly as we need them) because there is a Federal Horticultural Board of five men in Washington who, while they have no record that you have in the past sent us any insect pests that have been dangerous to our country, fear that there may be such pests hidden away in your country and that these might, in leaf or soil, escape the rigid examination which your entomologists give them before you ship them, and that they might even escape the careful examination which our State and Federal Departments give them on their arrival here, and thus become a serious menace. While you continue to have our sympathy, we cannot think of purchasing your horticultural products!"

Think it over, and if you want to assist to place Horticulture in its proper position, write to your Congressman at once. He will stand by what is right if you submit the facts properly to him.

J. D. Eisele, Vice-Pres.
HENRY A. DREER.
PHILADELPHIA, PA.
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**Stumpp & Walter Co.’s Catalog**

Our 1919 Spring Catalog will be mailed to you on request, if you have not already received a copy.

Many New and Exhibition varieties of Flower and Vegetable Seeds are offered. Farm and Grass Seeds are also a feature. Cannas, Dahlias, and Gladioli—the best varieties to date.

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New York
Things and Thoughts of the Garden

THE ONLOOKER

What plants can adapt themselves to overcome difficulties which at first sight would seem to be totally against good growth and development is a well known fact, and we find this adaptability well illustrated by the group commonly known as Insectivorous, or Carnivorous plants. Botanists have determined about five hundred species in this group, which has long been of special interest to those who delight in a close study of plant life. As a matter of fact, most people have heard or read something about them, and many curious notions have been entertained concerning the flesh consuming capabilities of the plants in question. But the bare facts themselves are remarkable enough to endow these plants with more than ordinary interest. Here we have plants which have been shown to depend largely on the capture of insects and other small animals for their supply of nutriment. This phenomenon is explained by the fact of their growing in boggy and peaty places, where there is a lack of the nitrates so essential to the growth of nearly all plant life. By various remarkable adaptations of leaf and stem, these plants have supplied themselves with devices for capturing and digesting insects and other small animals, thereby gaining a notable triumph over the difficulty of trying to exist on the scanty supply of food provided by the medium in which they grow.

Perhaps the most interesting genus from a purely horticultural point of view is the Nepenthes, commonly known as Pitcher Plant, and of which there are numerous species widely distributed throughout the tropical parts of the world. They inhabit marshy places, where the atmosphere is usually more or less steamy, and some kinds have been pictured as climbing a considerable height by means of the mid-ribs of their leaves.

The "trap" is formed by the lengthened leaf-tip, which has developed into a pitcher of marvellous design for the fulfilment of its purpose. Every inducement is offered to attract insects, and once they yield to the allurement their end is pretty certain. Before the pitcher quite attains its full size, the lid, which has so far remained securely fastened, opens for once and all, and on its under side, and also on the corrugated rim around the mouth of the pitcher there is a sweet secretion which acts as the bait, the seductive power of which in many kinds is reinforced by bright coloring of the pitcher. Thus lured on, the unlucky victims fall into the pitcher, which contains a fluid having the power of dissolving their bodies and so setting free nitrogen for the use of the plant, which is absorbed by special cells at the base of the pitcher. The inner surface is smooth and slippery, and in some kinds the inner margin of the rim is armed with teeth pointing downward, so that once inside there seems to be no way for the insect to escape being drowned. The liquid, which can be seen in the pitcher before ever the lid opens, consists of water with an acid secretion, and has been compared to the gastric juice in the stomach of animals. As will be judged from their native habitats, their chief cultural requirements are abundant heat and moisture, and a few well grown specimens add quite a distinction to any collection of "store" plants.

The famous London firm of Veitch played a notable part in the introduction of Nepenthes as garden plants by sending out collectors to search for them in their tropical haunts. The first artificial hybrid was raised in their nursery by Dominy about sixty years ago, and sent out as Nepenthes Dominii, the first of several fine hybrid Nepenthes from the same firm. I well recollect the splendid culture and fine variety exhibited in their Nepenthes collection when privileged to visit that world-famous horticultural establishment some years ago. The appearance of N. Dominii aroused a new interest and other keen cultivators took up the work of hybridizing with great success. Several of the hybrids are noted for their rich markings and fine pitchers, some of which have been grown more than a foot in length.

For those who enjoy a botanizing trip, a peat bog is an interesting and fruitful place to explore, more especially so if we come across plants of the Sarracenia, a genus of insectivorous plants consisting of half a dozen species all indigenous to North America. These plants have been blessed with numerous suggestive common names, some of which are "Pitcher Plant," "Side-saddle Flowers," "Huntsman's Cup," "Trumpet Leaf" and "Devil's Boots." The most common and widely distributed species is Sarracenia purpurea, with a range extending from Canada to as far south as Florida, and of which plants are said to have been sent to Europe about three hundred years ago, where, as we may well believe, they were regarded with much curiosity. In this genus the leaves have taken on a funnel-like form, to which insects are attracted by a sweet secretion within the rim of the pitcher. This love for sweet things is most likely to lead them on to their destruction. Entering the pitcher to partake of the feast, they find themselves
slipping down inside the pitcher, on which are numerous hairs directed downward, and so preventing them from crawling up and out. In spite of struggles, they go to a watery grave in the liquid below, and the plant supposedly digests more than two insects. It may be interesting to note that the first recorded specimen of this plant in Europe was sent from here just one hundred and fifty years ago. Under ordinary greenhouse cultivation it is not likely to prove a very long lived plant, yet it can be successfully grown where the conditions are just right. A moderately cool, even temperature, and a humid atmosphere meet its chief requirements. For compost, peat and living sphagnum is the best medium, using a well drained pan in which to plant. Dryness at the root is fatal to their wellbeing, and this can be guarded against by keeping the pan standing in a saucer of water. Lumps of charcoal in the drainage would help to prevent sourness.

Another notorious insectivorous plant, not so conspicuous by its size but often found growing abundantly in marshy places, is the round-leaved Sunden, Drosera rotundifolia, a famous member of a beautiful genus of small plants numbering about a hundred species scattered throughout the five continents. This particular kind is found not only in North America but in England as well, and will be forever famous by reason of the painstaking and exhaustive series of experiments carried on with it by Darwin, and which are fully described in his classical work, "Insectivorous Plants." The small round leaves of this Sunden are prettily arranged in the form of an open rosette and covered with numerous glistening glands which are able to securely fasten any small insects coming in contact with them. Irritated by the struggles of the victim, the outer tentacles bend inward to fasten on the helpless creature and make the capture certain. The leaf then secretes a digestive fluid over its body while the tentacles retain their holding position until the juices of the insect have been absorbed, after which they expand again and are ready to welcome fresh prey. Darwin records that the glands were able to absorb matter out of seeds, fresh leaves, and pollen, and while the tentacles could be stirred into action by placing morgue substances on the leaf, in such cases of deception the action was decidedly temporary. On the other hand, their liking for bits of raw beef induced overfeeding to such a degree that in this experiment it could be said that the leaves succumbed to an acute attack of indigestion.

What is the most wonderful plant of our American flora? This should be an interesting question for discussion, which would doubtless result in a variety of plants being brought forward to claim this distinction. One which would be certain of strong support for the honor is Dionaea muscipula, familiarly known as Venus's Fly Trap, a native of North Carolina, and an object of never failing interest whenever seen in a northern greenhouse, even though in height it may be but an inch or two and of leaves have but a scant half-dozen. But no other plant has leaves such as those, which, it is no exaggeration to say are wonderful mechanical contrivances. The leaf is made up of two symmetrical lobes, which when mature are practically flat open, and are fringed with long stiff hairs. This constitutes the trap, all set and ready. In the center of each leaf lobe are two or three sensitive hairs, which if touched by an insect causes the leaf to suddenly close up, the marginal hairs folding together to resemble the teeth of a steel trap and so effectively holding the captive. With the capture of intravenous food, glands on the inner surface of the leaf secrete a digestive fluid, and after the meal has been digested the leaf opens up again. Careful observers have recorded that a single leaf can rarely capture and
digest more than two insects. It may be interesting to note that the first recorded specimen of this plant in Europe was sent from here just one hundred and fifty years ago. Under ordinary greenhouse cultivation it is not likely to prove a very long lived plant, yet it can be successfully grown where the conditions are just right. A moderately cool, even temperature, and a humid atmosphere meet its chief requirements. For compost, peat and living sphagnum is the best medium, using a well drained pan in which to plant. Dryness at the root is fatal to their wellbeing, and this can be guarded against by keeping the pan standing in a saucer of water. Lumps of charcoal in the drainage would help to prevent sourness.

*A different kind of trap is used by certain aquatic species of Utricularia, which are tiny floating plants commonly known as Bladderworts, from their stems bearing numerous tiny bladders. These bladders were at first regarded as just floats, but instead of that it was found they are cunningly devised traps for the capture of small aquatic animals. At one end of the bladder there is an aperture over which hange a valve which yields easily to pressure from the outside, but is so arranged that it cannot be opened from within. Tiny aquatic creatures, perhaps seeking a refuge from larger ones seeking to devour them, or maybe impelled only by feelings of curiosity, force their way in easily enough, only to find it is a prison from which there is no escape. Quite a number of prisoners may be swimming around in a single bladder at one time, but eventually they make insect broth for the benefit and nourishment of the plant. Several of these aquatic Bladderworts are to be found in different parts of North America floating in shallow water.*

Closely related to the Bladderworts is the Pinguecula or Butterwort, a genus of small herbs found growing in boggy places throughout the northern temperature regions. In this case the trapping is done by the sticky leaf surface, and in some species the margins of the leaves are said to roll over and assist in the capture. The digestive ferment is secreted by glands, said to number many thousands on each leaf. A curious property possessed by the leaves is that of being able to curl up milk in the same way as rennet, and they are stated to be much used for this purpose in Lapland. Some of the species have very attractive flowers. Pinguecula vulgaris, the Common Butterwort, is perhaps the best known, being found wild in Europe as well as in our Northern States and Canada. *P. caudata,* the Mexican Butterwort, is regarded as the most beautiful in flower, but rarely to be seen in cultivation outside a botanic garden.

The same restricted limit of cultivation is probably also true of another interesting pitcher plant, *Cephalotus follicularis,* a near relative of the Saxifragas, which is found growing in Australia. This plant produces two kinds of leaves, some flat and others which have taken on the form of odd shaped pitchers, lid and all, which cluster on the ground as though lying in wait specially for wingless creeping creatures, though there is nothing to warn off flying ones if they choose to go in. The pitchers contain a liquid, and once inside the insects are prevented from escaping by a formidable fringe of hooked spines. When well grown the pitchers take on quite a good coloring of reddish purple in combination with the green. A humid atmosphere is a very essential condition in regard to its successful cultivation, and may be best secured by growing it under a bell-glass placed in a cool greenhouse.
American Home Gardens

ARThUR HERRINGTON

For the past two years we have had so called war gardens and in view of the continuing world shortage of food products we are asked to continue our gardening efforts for another year, but to call them victory gardens instead.

There will doubtless be a ready response to this new plea for increased production and from these emergent efforts there should be resultant good of a lasting and permanent character. But why stop at War and Victory gardens? Why not preach the gospel of a garden with every home where practicable.

Undoubtedly there will be a greatly increased number of permanent home gardens as a result of this widespread gardening campaign, and to that extent the emergency which started many making gardens who had never done so before will have been a blessing in disguise.

However, above and beyond the present pressing food needs we can advocate and plead for an extended continuation of home gardening for strong and valid reasons. For example, the marked difference in freshness and table quality of the home garden grown vegetables as compared with the same article purchased in the average store is of itself sufficient to justify the effort and make the labor involved well worth while.

This is not a fanciful nor imaginary assertion, but a statement of fact that has been proved absolutely true, and the truth of it has entered into the minds of many in the last two years who had not given thought to the matter before. Comparisons are said to be odious, and they certainly are when made between home-grown and purchased vegetables. Some up-country folks have a saying, "The pot should be boiling before you pick your corn." This saying has a solid basis of fact, for sweet corn will lose 50 per cent of its sugar and consequent sweetness of taste in twenty-four hours after gathering. If you doubt this, just pull a dozen ears of corn at 11 o'clock, cook six for the noonday meal and let the other six lay on the cellar floor and cook the next day. The same in more or less degree applies to almost everything we grow.

Home gardening is often advocated as a pleasant pastime and a healthful recreation, but just as a sugar-coated pill remains a pill, so home gardening is a practical working operation, involving physical effort and bodily labor, but all the same it is abundantly worth while.

Another odious comparison is found in the home gardening of Americans as compared with that of the peoples so long in the throes of war. Living as we do in a great country of apparently limitless possibilities, we have become habituated to letting the other fellow do for us and paying him to do many things we should do for ourselves. Especially is this so in regard to the growing of salads and vegetables which should be on the meal table for many months of the year.

We have failed to appreciate and utilize the value of small areas of ground and the quantity of produce which may be obtained therefrom.

A very small plot of ground intensively cultivated, liberally fertilized and systematically successively cropped may be made to yield an abundant supply for the average family.

For the past four years on a plot of ground 100 feet long by thirty feet wide, I have produced for my family of four adults all the vegetables we need in variety and season, with a surplus of peas, beans, corn and tomatoes to can, with root vegetables to store for winter use, and a quantity given away besides. After the garden has been dug and the first plantings made, six hours of labor each week from May to October is all the labor involved in keeping my garden cultivated, crops coming for and successional plantings made. This garden provides everything we need except potatoes, of which I sometimes grow a few, but potatoes as a crop are more of an uncertainty than any other vegetable crop and, in my opinion, can generally be bought as cheaply as they can be grown at home. Moreover, they do not come into the category of fresh vegetables, and may be left out of consideration entirely in the small home garden.

A potent contributing factor to success of course is the knowing how, but there are ways and means of getting instruction by those who do not know how. The point I would emphasize is, you do not need a lot of ground, and also the tendency of the average person is to make too large plantings at one time. A small home garden intensively cultivated need never be a burden, but can be made a great source of joy to its possessor, and even the man who goes to the city every day need not hesitate to make and plant one. The expenditure of a little labor morning and evening will be found beneficial to health, and the pleasure at the table from products of the garden cannot be appraised in money values.

Flowers, too, should be grown in the home gardens, especially the annuals so easily raised from seed, such as asters, zinnias, calendulas, French and African marigolds, sweet scabious, nasturtiums, all so delightful when in flower, and so useful to cut and bring in the house. Reserve a narrow border besides the walk for flowers, and the seed may be sown where they are to grow during the month of May, either early or late, according to the season one wants them to bloom.

One fatal mistake is made by most home gardeners who sow these annual flowers, and that is in sowing the seed too thickly, and then neglecting to thin the plants after they have come up. Every plant should stand apart not less than nine inches from its nearest neighbors, and then you will have robust plants and a long flowering period.

In the zeal to respond to the national appeal to grow vegetables some gardens were attempted under conditions foredoomed to failure, such as for example trying to make the lawn into a vegetable garden in one year. There are thousands of suburban homes ample ground area to permit of the making of a small garden, and in such places the garden should be well and thoroughly made by deep digging and fertilizing. If the initial preparation is well done, operations in succeeding years is made so much the easier, whilst its fertility increases from continuous cultivation.

I read recently in a bulletin written by a professor that "it is good practice to find a new place for your entire garden occasionally if you have the room. Perhaps this may be so, but I know of vegetable gardens that have been in constant use for two hundred years, and still they produce perfect crops. Given a proper rotation of crops and regular fertilization of the soil, any garden will outlast its maker. When I read some of the advice I sometimes see in print I am forcibly reminded of the homely philosophy of "Josh Billings," who said, "It is wonderful what a lot of things some people know that ain't so."
WHAT kind of a road shall I build?" is the question that often confronts the owner or the manager of an estate. Until the advent of the automobile there was no question about it. Macadam was the universal road for parks and estates. The choice of macadam was based on its wearing qualities and its appearance. But today swift moving motors quickly ruin a waterbound macadam unless it is given a surface treatment with a bituminous material. When this is done the road is preserved from undue wear, and yet the pleasing appearance of macadam may be retained.

The most disagreeable feature about waterbound macadam is the dust nuisance. It is alike a source of annoyance to the motorist and the householder. It is a cause for complaint from gardeners: for the clouds of dust that settle on gardens, hedges and lawns are more than simply a nuisance.

Yet there is no other type of road that blends so well with landscape features as the macadam. It seems inseparably connected with beautiful scenery. How out of place a city pavement of brick, stone or wood walk, or sheet asphalt would look in a private estate or park! Concrete walks give a rigid appearance: they do not belong to the vista.

The question, then, seems to be how to build a road so that it will retain the appearance of macadam, and still eliminate its faults. That macadam will stand extremely heavy traffic was proved on the battle fronts of Europe, where it was the only kind of road that was built. The problem is to make it dustless and proof against wear.

If the location of the road has not been fixed, a careful examination should be made to determine whether or not the most pleasing, and at the same time the most practical location has been chosen. It is often possible to avoid costly work by a relocation of the road. For instance, if the road runs around a rocky hill the strata of which rocks dip toward the roadbed, it means that expensive drains will have to be built and maintained to carry the water under the road. A relocation around the other side of the hill may be better, since the ground water will then be carried by the rock away from the highway.

The location settled, the first item to look after is the drainage of the roadbed. See that all wet places are well underdrained, and lead the water away from the road. Do not attempt to dodge the drainage of soft spots by simply dumping more stones or gravel in them. Get the water out of the road and keep it away. It is time and money wasted not to give this matter your best attention. If the road is on a steep hill where erosion would be excessive it may be necessary to provide concrete or cobbles gutters.

The road best suited to private estates and park drives is undoubtedly tar-macadam. The characteristic appearance of macadam is retained while increased stability and resistance to wear is gained by the addition of tar binder. The method of construction is simple, and does not call for expert workmen. Upon a drained and compacted subgrade a 4-inch course of 3-inch stone is spread. This is the base course, and transmits the load to the earth subgrade. The voids in the base are thoroughly filled with stone screenings or sand, and the base rolled with a heavy roller. When well compacted, a layer of 2-inch stone is spread 3 inches thick and rolled to 2\(\frac{1}{2}\) inches. Over this is spread a gallon and seven-tenths of hot refined tar to the square yard. Three-quarter inch stone chips are applied over the tar in quantity sufficient to fill the voids, then a seal coat of tar is applied at the rate of 0.5 gallon to the square yard.

A cover of chips or pea gravel finishes the work, and after 24 hours the road is ready for traffic. It is rolled during construction to insure thorough compaction. The
cover determines the appearance of the road. Red granite chips give a pleasing tint, while limestone chips or trap rock give the usual macadam surface. If the roads are already built, and it is desired merely to treat them, several questions must be answered before it can be decided what material is the right one to use. What condition is the road in? Is the drainage good, or are there puddles that retain water long after a rain? Is the road material crushed stone, gravel, or just dirt? Has bituminous material ever been placed on the road before? Are there good ditches or gutters along the sides? Does the run off from the lawns during a heavy rain cross the road so as to scour it?

A dirt road can be made dustless for the time being with asphaltic oil. Tar should never be applied over dirt. It will not form a surface, but breaks up under traffic.

Some kinds of gravel are well adapted to treatments with light tar. It is best to get expert opinion on this matter, however, for there are many grades of gravel that do not give satisfaction when so treated.

If the old roads are macadam they should be scarified, if they are full of holes and ruts. Then they must be rolled to compact them, new material being added if necessary. When they are in good condition they may be given a light treatment of tar and chips. The macadam is thoroughly swept to remove all dust and dirt, for tar will not stick to dirty or wet surfaces. A half gallon of light tar is applied to the square yard, so that the entire surface is completely covered. After several hours, during which the tar penetrates the macadam, the road is covered with clean stone chips or pea gravel.

Such a treatment with light cold tar is the cheapest and simplest way of taking care of existing macadam roads. Such treatments with hot tar have given remarkably good results in many parks and estates. The method is similar to that outlined above, except that the tar is of a grade that is applied hot, and is immediately covered with chips or gravel. Sheridan Drive, Chicago, is an excellent example of what may be done with hot tar treatments. Care must be taken not to form too thick a mat, lest it become wavy under traffic.

Paths may be built of tar macadam or of a mixture of tar, sand and chips or gravel, as in the New England tar walks. The surface may be left with the chip or gravel cover, or a smooth finish is possible.

It must not be supposed once the roads are built or treated that nothing more is to be done. They, like everything else on the estate, require maintenance. There is no type of road that ever has been built that does not require upkeep. Roofs and roads alike require careful maintenance. A leak in either leads to disastrous consequences. The tar mat on the surface of the road is the roof of that road, and it must be kept intact. As soon as a small break or a crack is seen it should be mended. On a private estate there is no reason why maintenance of roads should not be perfect. An occasional few minutes spent on the drives with cold patching material and chips will keep them always in perfect condition.

(Illustrations by courtesy of Barrett Company.)

THE SPINDLE TREE

One of the most curious and interesting of ornamental shrubs is the Japanese spindle tree (Euonymus alatus). Its flowers are small and of no especial beauty, but its branches are winged with from two to four broad ribbons of cork that give it a most unique appearance in any collection of plants, especially during the season when most plants are leafless. In autumn its leaves become blood red and for a considerable time add much color to the shrubberies.—The American Botanist.

Bird's-eye View of Firestone Country Estate, Akron, Ohio, Showing Tarvia Roads Running through Property.

Private Drive to Residence of Mrs. Whitelaw Reid, Portchester, N. Y. Constructed of Tarvia.
ABOUT eight years ago I undertook to restore an old apple orchard in Fairfield Co., Connecticut. The owner went over the orchard with me, and at the end of the inspection asked my opinion. I told him to use the saw, and he answered he expected that I would tell him, as several others had told him, "to use the saw and axe." I told him he misunderstood me; what I meant was to use the small sized saw for the top of the tree, and not the large one for the trunk. This seemed to encourage him, and told me to go ahead according to my judgment, but, he added, "Don't forget I want results."

How the trees and grounds looked when I took hold of them is almost impossible to describe. It was the latter part of August. Brush, more brush, and here and there a dried up caterpillar tent; here and there a few apples, and in what a condition! Scabby, wormy; some blighty; some with the St. Johns spot. I tried to find some sound Baldwins, but nothing doing. The owner told me his man had sprayed! And here was another example what spraying means with some if you spray, do it thoroughly; if not thoroughly, don't do it at all. The trunks of the trees were covered with a green moss and a heavy bark. The trees were grown in sod. It did not take me long to find out that the soil was sour. There were about 200 to 300 trees altogether, mostly between 20 to 40 years old, while here and there a young tree had been planted. The distance of the trees averaged between 35 and 45 feet apart. The first thing I did was to have the orchard plowed from six to eight inches deep, while near the trunks of the trees I did not go deeper than four inches. I bought a regular orchard harness for the teams, and at first it looked as if it would not be satisfactory, but after a thorough trial it proved to be a good investment. With this harness the horses pull the plow by a chain, like a team of oxen, and there is no danger at all that the trees can be hurt. After the plowing I used the disc harrow, and the sod was well cut. Then I put on lime. I used two tons of ground limestone to the acre. I wish to avail myself of this opportunity while I mention lime, to draw your attention to the fact that lime is not a fertilizer. The other day I met a party who spoke to me as if a dealer in lime had given him to understand that lime is a fertilizer. I told him that so far as I know, and our agricultural research work shows, that the action of lime on soils makes hidden plant food available to plants. Lime will increase a crop even three years after its application. But when it is applied without fertilizer the crop decreases very rapidly. This lime was harrowed in with a spring-tooth harrow; this was followed with another spray as soon as the blossoms had fallen. I used same solution, and this spray again was followed with one containing same solution, but to this one I added black leaf 40.1 pint to 100 gallons of water. I found it necessary to do so, as the ends of the new growth seemed to be covered by a green or rather brownish aphis. One of our greatest enemies is the coddling moth. This is the pineish caterpillar, which causes a large proportion of wormy apples. The eggs are laid by the small moth on the leaves and the skin of the fruit. The catterpillar enters the apple at the blossom end. The caterpillars become full grown in July and August, leave the fruit, crawl down on the trunk and there most of them spin cocoons under the loose bark. There are two broods. During the June drop most of the attacked apples fall on the ground. The worm nest craps out, and weeds, leaves, etc., under the tree are comfortable resting places for their larvae, which covered afterward with a thin coat of soil, overwinters near their pasture, the trees, ready to start work as soon as the warmth of the sun brings them to life. If we would keep more sheep, etc. New England a very large proportion of this pest would be eliminated. I believe in keeping sheep. I have always kept them wherever allowed.

Now, my aim in pruning is to keep the top open, remove superfluous and interfering parts, to maintain a size and shape that admits of easy spraying, fruit gathering and other labor; to eliminate diseased and injured branches; to encourage the fruit bearing wood. Those results can only be accomplished by practice. Every tree, of course, required a more or less different treatment, but regardless of this, as long as one bears in mind to "keep the top open—let the sun be able to reach your trees from all sides"—this I find a principal factor in pruning. The wounds should be made close to the branch or trunk, and no stubs should be left. The larger wounds of two inches or more I painted for protection, after the wounds were well dried out. I made my own paint of white lead and raw linseed oil, and mixed some green paint with it. It should be well understood, that those cuts must be smooth. Several trees I headed way back. I know, of course, that by doing this I could not expect any fruit this next year, but the size of the trees necessitated my doing so.

After this was done I got the power spray pump ready, and as March was at hand, started to spray for scale. I did all the spraying myself, with the assistance of one of my most reliable men. I must say we made a thorough job of it; sprayed the trees from top to bottom. I used lime-sulphur 35 deg. Beaume, and used nine gallons of water to one gallon of lime-sulphur solution. Soon I noticed that the buds were swelling, and as soon as I got the least little glimpse of the color of the blossom, I had my outfit ready, and sprayed for scab, cankerworm, coddling moths, tent caterpillars, etc. I used a solution of lime-sulphur and arsenate of lead, at the rate of one and one-half pounds of lime-sulphur to fifty gallons of water plus one pound of powdered arsenate of lead.

In my experience I have found that when you apply this spray at the right time, and do it thoroughly, you may say you have done all of your spraying. I will not say, of course, that no other spray after this one is required, because we all know that the healthy tree just starts to make new wood with new leaves, and keeps this up until July. Those parts, of course, would be exposed to the attacks of insects in case we would not spray. But I regard this spray the most important. This spray, however, was followed with another spray as soon as the blossoms had fallen. I used same solution, and this spray again was followed with one containing same solution, but to this one I added black leaf 40.1 pint to 100 gallons of water. I found it necessary to do so, as the ends of the new growth seemed to be covered by a green or rather brownish aphis. One of our greatest enemies is the coddling moth. This is the pineish caterpillar, which causes a large proportion of wormy apples. The eggs are laid by the small moth on the leaves and the skin of the fruit. The catterpillar enters the apple at the blossom end. The caterpillars become full grown in July and August, leave the fruit, crawl down on the trunk and there most of them spin cocoons under the loose bark. There are two broods. During the June drop most of the attacked apples fall on the ground. The worm nest craps out, and weeds, leaves, etc., under the tree are comfortable resting places for their larvae, which covered afterward with a thin coat of soil, overwinters near their pasture, the trees, ready to start work as soon as the warmth of the sun brings them to life. If we would keep more sheep, etc. New England a very large proportion of this pest would be eliminated. I believe in keeping sheep. I have always kept them wherever allowed.

Now, I want to refer back to my orchard ground. The rye I plowed under, as soon as the ground allowed it, and kept the disc harrow going till August once every two weeks, and then seeded the orchard down with crimson clover, 18 pounds to the acre. This was a leguminous crop preceded by a non-leguminous one. As soon as I had the rye plowed under I added to this green manure.
a fertilizer carrying about thirty pounds of actual nitrogen, fifty pounds of actual phosphoric acid \((\text{P}_2\text{O}_5)\) and twenty to fifty pounds of actual potash \((\text{K}_2\text{O})\) to an acre.

To obtain this formula requires 30 pounds of nitrogen carried in 100 pounds nitrate and 150 pounds dried blood, or in 120 pounds ammonium sulphate. Phosphoric acid \((\text{P}_2\text{O}_5)\) 30 pounds carried in 350 pounds acid phosphate, or in 200 pounds bone meal or in 310 pounds basic slag \((\text{K}_2\text{O})\) 25 to 50 pounds carried in 50 to 100 pounds muriate, or in 100 to 200 pounds of low grade sulphate.

When August arrived I started to pick some fruit. Astrakans and Yellow Transparencies were my first apples. The crop was medium, but the fruit simply perfect in every respect. The following year the crop was immense and the fruit was awarded prizes.

I also planted some young trees, and wish to call your attention that most of those trees were protected from borers by the use of borowax. This borowax has given wonderful results, and I advise its use on young trees, apples or peach. Referring to peach trees, I once experimented in retarding growth by whitewashing. We all know that a light object does not absorb heat as well as a black one. Every year most of our blossoms were winter killed by late frosts, and this was the reason for my use of whitewash. The result was that of twenty whitewashed trees, sixteen bore profusely, while of the twenty that I did not whitewash only five bore fruit.

(Paper read before the Stamford, Conn., Horticultural Society.)

**FEEDING PLANTS IN POTS**

The judicious feeding with liquid manures and chemical fertilizers is of the highest importance during the whole of the growing period with all plants in pots. But it must be done in an intelligent way or considerably more harm than good will result. Never feed a newly-potted plant, or those that have not filled with roots, and, again, take care never to exceed the strength advised by the makers of artificial fertilizers; it is useless to overdo it, as it merely remains in the soil and causes it to become sticky and sour, the plants speedily lose foliage and fade.

Those subjects which flower all at once, so to speak, must not be fed after the color shows, but those which continue to throw up blooms in succession must be kept doing. Ferns and most foliage plants are best confined to soot water and nitrate of soda, quarter of an ounce to a gallon of water. But care must be taken not to use this oftener than once a week, and that none is spilled over the leaves. These work wonders with adiantums, especially resulting in luxuriant, dark green fronds in wonderful profusion. It is preferable to use all artificials in solution, rather than sprinkle the dry powder over the surface and water in; but either may be successful if care be taken, though the liquid is safest, especially with tender rooting plants.—*Canadian Florist.*

**THE BOX-BARBERRY**

The accompanying illustration of a garden showing a border of Box-Barberry is from a photo taken about three months after planting, and while the effect is already pleasing, another year will reasonably be given before expecting maximum results.

The summer effect of Box-Barberry is of a most pleasing light green, followed in the autumn by a transition to the most dazzling reds, scarlets and orange. The summer effect resembles the popular old-fashioned border box, but the autumnal tints offer entirely unique and hitherto unattainable color effects.

The absolute hardiness of Box-Barberry gives it a wide field of usefulness. As it is a pure seedling of the Japan Barberry, it will not carry the wheat rust. It not only is an ideal low border plant, but it makes a very attractive low hedge if allowed more freedom. It can be trained into almost any formal shape, and when planted in the foreground with taller growing shrubs, it is most effective. It appears to be one of the very occasional happenings in the horticultural world and seems to just fit in and supply a want that for many years has been manifest.

Garden Bordered With Box-Barberry Photographed Three Months After Planting. Plants Two Years Old Were Used and Set Four Inches Apart.
February is a short month and as the editor has asked me to confine my cultural notes to the many people who do not generally employ a gardener, or who have a limited knowledge of horticulture and who desire to know how to grow better plants, suitable for the amateur, that is the idea of this article.

With spring coming along soon, flowering plants are in order, and the list is a long one, but the cultivation of a few is only necessary. Take Gloxianias, a charming family whose culture is simple. Procure bulbs from the seed house, they are much better than raising them from seed, mix a light compost of leaf-mold, one half turfy loam, sphagnum moss, and sand. Place bulbs close together in flats, and merely press in the compost, and place in a temperature of 60°. Then when they have started, put into three inch pots, well drained, and give little water. When nicely rooted, place them in five inch pots, using care to keep the soil or dust from the foliage. As they grow, protect from the bright sunlight. If larger specimens are wanted, repot to seven inch pots, and place a third of drainage in the pots. The chief enemies are Thrips, and if the plants are kept growing steadily, they will be immune. Keep a moist atmosphere.

Cattleyas and the general line of orchids should be given a light shade by February 15th or much vitality will be lost. Less spraying will be necessary for the plants are better on the dry side.

Dendrobium Nobile and Thyrsiflorum, if desired for Easter, must be kept cool and in a light position until buds appear. Very little water is to be given, until due time, when the buds will show the need.

Calanthes are easily grown orchids and can be accommodated along with other plants. Last year's bulbs should be placed in peat dust and sand, and will start shoots at the base. When nicely rooted, mix compost of two parts of fibrous turf, with the fine portion left out, one part of peat, sand and well rotted cow manure. Place one bulb in a five inch pot with good drainage, and be sure the pots are clean. Press the compost fairly firm and place on a shelf where the temperature does not fall below 60°. Do not water until they really need it, or decay will set in. They only require care in watering during the hot weather, then syringing well, being careful to avoid over-watering. The chief enemy is the rot, which will not injure them if watering is properly attended to. Scale is the insect pest and can be kept at bay with the usual weekly spray of Aphine. All plants of this type must be sprayed with insecticides or insects will damage them.

Climbing plants are an especial favorite with many flower lovers and there is no plant of more decorative or useful value than the Gloriosa Superba or the improved variety, Culture. Gloriosas can be started in the pots they are to flower in, or in flats with a light compost. Moss, leaf mold, loam and well decayed cow manure suit them admirably. They commence to shoot out quickly, and the end of the bulb dies as the new part grows, so do not over-water. When the growth is about six inches long, place in a light position and train on wires similar to cucumber vines, tying them up carefully. They will grow in any ordinary house with other plants and do not require shading even in the hottest weather. They will bloom all summer. When they commence to die down, the matured bulbs can be taken up and kept in bags of dry sawdust until wanted again. The wealth of bloom they give is wonderful.

Chrysanthemums will soon need to be started and a clean bench of sand and a corner of a cool house will do nicely. Large varieties can be started now. Take a good clean cutting, three inches long, and insert in the sand. Shade from the bright sun and in three weeks they will be ready for two and one half inch pots. Good plain soil but no manure for the first potting. Start cool and with a firm soil, a firm short jointed plant will be developed that will later on give desired results.

Young carnation plants should be potted or boxed. If short of room carnation plants will succeed planted in flats of three-inch depth and then placed in the frames, just excluding frost.

Ferns that need repotting, should be attended to now before the young growths attain any length. Adiantums, Cuneatum, Croweanum, etc., will succeed in almost any soil but if long fronds are needed a good portion of flaky leaf-mold is essential. Boston ferns thrive best in fairly heavy loam and a sprinkle of sand with a little old mushroom bed manure. All ferns, however, need perfect drainage. The soil may be perfect, but imperfect drainage will undo all good work. Adiantum Farleyense succeeds best in subsoil,—no peat, no leafmold. Farleyense is a heat lover and will thrive in great heat and humidity.

Potted fruit trees will begin in a short time to unfold their buds. Spray these plants with scale remedies to keep them free from those pests; also on every bright day syringe the plants lightly all over to help to start the buds.

Caladiums are fine ornamental plants and those that did good work last year can be looked over and cleansed of old compost, and washed with warm water to ascertain if any dry rot or other fungoid disease has developed. If this is found to have taken place, cut away the diseased portions, and spray with sulphur. Then prepare compost of a light manure, moss, finely cut up, and sand, and place in flats in a warm corner. They will commence to grow in about three weeks. Take them up, and pot into similar soil, using no manure.

Schizanthus are very pretty blooming plants, resembling many types of beautiful orchids. Sow the best variety to be obtained; each seedsman has his own favorite. A pinch of seed in a four-inch pot, started cool, and then picked out into flats, and when nicely started into three inch pots, and larger pots as needed, will give excellent results.

Always maintain a clean, wholesome, growing atmosphere in any house and by a little arrangement, many varieties of plants can be grown to a degree of satisfaction to the owner, who does not aspire to be a large exhibitor.
Work for February in the Garden

JOHN JOHNSON

THE work of another season should now be entered upon in real earnest. Making hotbeds and the sowing of certain kinds of vegetable seeds and flower seeds are matters for consideration. Undertake everything that means an early start. Get abreast of things by all means, but exercise caution that nothing be attempted which cannot be brought to a successful issue. Determine first the particular requirement of the establishment, then see that there will be ample accommodation for all before commencing to sow. This is important. Avoid overcrowding and disappointment later by sowing now only the kinds for which safe housing room can be afforded. Greenhouses or heated pits are by far the most practical aid to an early start and growers possessing either facility will experience little difficulty.

Frames are the next best adjuncts, and when denied greenhouses no gardener should be without this latter facility. Have the frame sashes been overhauled for repairs as previously advised? If not, lose no time in having them put in good shape for the season. This is the last call also for getting in good repair all lawnmowers, seed drills and the contents of the tool house generally.

Hot Beds. The methods of making up hot beds must necessarily vary with local requirements, although the actual preparation of the heating material varies but little. A mixture of fairly fresh horse droppings and litter having sufficient moisture present to cause fermentation makes suitable material for a lasting hot bed. When horse manure is procurable only in limited quantity forest leaves may form part of the mixture to the amount of about one-third. Decomposing leaves are not only capable of generating a certain amount of heat, but when used in conjunction with the manure leaves regulate and conserve the heating propensity of the hot bed.

Turn the material on alternate days for a week or ten days, and if it shows signs of dryness or a tendency to "burn," lightly sprinkle with water during the process of turning. For ordinary purposes, and we now have in mind a hot bed merely for the raising of seedlings with a view to later transplanting, the heating material need not exceed fifteen inches in depth when well trodden in the frame. If seeds are sown in flats or seed pans, the bed needs only to be covered with a thin layer of soil to prevent too strong ammoniacal fumes rising, but when seeds must be sown on the surface of the bed, the soil should be six inches deep, particularly for carrots and other root crops. It is thus obvious that hotbeds serve two distinct purposes. They either answer the purpose of a seedbed upon which the cropping is done in the spring, or they are employed for a lasting hot bed, when used in conjunction with the manure leaves regulate and conserve the heating propensity of the hot bed.

Stock to be handled in this manner will include many annual flowering plants intended for bedding, as well as vegetable plants, like cabbage, cauliflower, lettuce, celery, egg plant, pepper, tomato, onion, leek and parsley; while such kinds as string beans, beets, horn carrots, radish, dwarf peas, and potatoes, may be planted permanently in the beds and brought to maturity weeks in advance of the outdoor crops.

It is hardly necessary to say the soil for these early crops should be fairly rich and contain a good proportion of sand and humus. Flower seeds to be sown at this time will include antirrhinum, begonia, pansy, lobspur, lobelia, trachelium (this latter one of the very best blue annuals), carnations, schizanthus, dahlias and sweet peas. The majority of annuals for bedding can be successfully raised from sowings next month, but now is the time to increase the stock of what are known as true bedders from cuttings. Heliotrope, alternanthera, coleus, geraniums, etc. The forcing of certain kinds of vegetables is now a simple matter, and as each batch of rhubarb, seakale, chicory and asparagus show signs of exhaustion, another batch should be turning in. A little forethought should make the supply equal to the demand.

If the supply of salading plants shows signs of depletion, a fairly large sowing of cos lettuce or the variety Grand Rapids made now will soon furnish good material for cutting in a small state. Mustard and cress may also be made to supply a certain want in cases of emergency. Indeed, the value of these particular salading plants is not yet as fully appreciated as might be.

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How to Propagate Bedding Plants by Cuttings

T. J. SHEWARD

Cuttings of many kinds of greenhouse plants can be rooted this month and if it is desirable to increase the stock of any particular variety cuttings should be taken and rooted.

To root cuttings successfully, bottom heat is desirable, but not essential, for all kinds. Geraniums, Petunias, Ice plants, Hydrangeas and Coleus will root freely on the bench in the greenhouse, but they will root much sooner and with more success if some bottom heat is supplied.

A small propagating frame is shown in Fig. 34. This is placed on the stage or bench in the greenhouse over the hot water pipes and 8 inches of clean silver sand put in, leveled and made firm with a flat brick, afterwards watered. Cuttings will root readily in this, but it is necessary to change the sand sometimes. In taking the cuttings use a sharp knife (Fig. 24) and cut below a joint or node. If a cutting is made and cut half way between two nodes the part below the node will decay, the roots starting from the node. Some cuttings root readily if cut in any part of the stem or internode, Coleus, Hydrangeas and Lobelia are examples of this. Fig. 1 shows a Geranium cutting taken at the node which is the correct way. Fig. 2 shows how to take the cutting from the parent plant which will branch out and make a strong plant for putting outside later. Fig. 3 shows how to insert the cutting in a small pot filled with sand. Several cuttings can be inserted in a larger pot if desired (Fig. 9). Fig. 4 shows the cutting rooted and ready for potting into a 3-inch pot. A cutting made as shown at Fig. 5 can be used, if needed, by making the wrong way to take the cutting, and Fig. 7 how it will root. Cuttings can be inserted in boxes of sand or sandy soil (Fig. 8). Were there a large quantity to root (Fig. 12). Cuttings of Ivy-leaf Geraniums can be taken in the same manner; Fig. 10 shows a good cutting which when rooted can be potted into a 3-inch pot (Fig. 13), and when well established should have the tip taken off to cause it to grow bushy. Leaves root readily (Fig. 11), but do not make desirable plants. Marguerites (Fig. 68) root easily from the young tips. Tradus-cantum cuttings taken as shown at Fig. 22 and several inserted in a 3-inch pot (Fig. 23) will be useful for hanging baskets and window boxes later. A wooden peg (Fig. 60) is used in planting the cuttings. A Fuchsia is shown at Fig. 16, the young growing tips root very easily now. Make the cuttings as shown at Fig. 14 and Fig. 15, rooting these in sand afterwards plant out in boxes or flats and nice plants (Fig. 17) will be ready for planting out in May. Hardwood cuttings can be rooted (Fig. 18) if required, but these do not root so readily as growing tips.

Lobelia cuttings will root freely in clean wet sand with some bottom heat. These take about nine days to root and should be taken from the sand when rooted and transplanted into flats 1 inch apart. Lobelia grows rapidly in a rich soil; one-third leaf-soil and one-third loam is good for transplanting. Fig. 25 shows a stock plant of Lobelia, also how to take cuttings. Fig. 26 is a desirable cutting. Fig. 27 shows the same cutting rooted and the tip taken off to prevent flowering and make the plant branch out. Fig. 29 shows cuttings taken with roots; these can be planted in boxes of soil without rooting in sand. Fig. 28 shows propagation by division where stock is plentiful. Leaves will root (Fig. 30). Also small pieces (Fig. 31). If the old stock plants are not cut back they will flower (Fig. 32) and not be any use for cuttings. Coleus will root very easily now, although generally hard to winter through. The old plants start growing in February and the young tips root at once. Fig. 35 shows a Coleus cutting, Fig. 38 the same cutting rooted. Leaves root easily (Fig. 39). Fig. 40 shows the same plant potted into a 2-inch pot, in rich peaty soil and Fig. 41 the same plant in a 3-inch pot throwing up a flower-spire which must be removed. Fig. 42 the plant in a 4-inch pot and the top taken off as a cutting which can be rooted in sand and potted. Chrysanthemums are propagated by the young suckers, which start around the base of old plants. Fig. 20 shows a desirable cutting, but Fig. 21, with the flower buds, would not be of any use for flowering this season, as it would make a lot of foliage and not flower. This could be taken if the stock is valuable and it is used as a stock plant. Dahlia tubers can be started in boxes filled with leaf mould if cuttings are required; Fig. 36 shows how to take a cutting which is best inserted separately in 2-inch pots, in sand. These root very easily. Ice plants root readily if taken as shown at Fig. 19. Hydrangeas can be increased by taking the young growing tips (Fig. 51) and rooted in sand. These are potted up in rich soil and, if a strong cutting is taken, will flower nicely in a 3-inch pot (Fig. 52). Rex Begonias can be increased by leaf cuttings. A whole leaf inserted in sand will root (Fig. 48), or a leaf cut or notched on the veins and placed on sand will make several small plants. Fig. 49 shows a Lobelia leaf; this is marked to show where the cuts can be made. Fig. 47 shows how the leaves are cut underneath the leaf and Fig. 50 the leaf pegged down on a box of sand with wire pins and young plants growing from the cuts. Fig. 43 shows a leaf cut up to make leaf cuttings. Fig. 46 a cutting made from the leaf. Fig. 44 the same rooted and a young plant growing from the base. Fig. 45 the same plant in a 3-inch pot. Gloxinias can be increased in the same manner. Fig. 35 shows a leaf cutting of Gloxinia.

Cyperus Alternifolius can be increased by taking cuttings, as shown at Fig. 53, Fig. 54 and Fig. 55. Dracaenas are increased by cutting up the roots into pieces 1 inch long and planting in a propagating frame with strong bottom heat (Fig. 66). Chipigas throw out long long stolons with young plants attached (Fig. 67) and these are potted up. A Ficus, or rubber plants, Araucarias and Crotons are rooted from cuttings also by top-laying. Cuttings root in strong bottom heat, in sand, or a mixture of sand and spagnum moss. Each cutting is inserted separately in a 2-inch pot and staked to keep it upright (Fig. 63).

Top-layering. By this means large pieces can be rooted without making cuttings. The way to do this is shown at Fig. 61. Two cuts are made on each side of the stem and a layering cup (Fig. 64) placed around the cut. This is filled with finely chopped spagnum moss which is kept moist. Roots soon form and the whole piece is taken off and potted. Fig. 59 shows how the pot is secured. A flower pot, 3-inch, if broken down the center (Fig. 62), can be used instead of a layering pot, or moss tied around the stem the plant will answer as well. Hardwood cuttings of roses and other plants can be rooted by tying moss around a bundle of prepared cuttings (Hard Fig. 56 and Fig. 57), and when rooted (Fig. 58) can be potted up singly. These do better if taken with a heel (Fig. 65). All cuttings need protection from strong sunshine, and should be syringed two or three times a day.
Growing Vegetables for Exhibit and Utility

SAMUEL GOLDMING

FEBRUARY with its lengthening days and stronger sunshine, reminds us that the days of hibernating are passed, our hotbeds and frames are calling for our attention, more especially to those who would have their vegetables adorning the exhibition tables at the local fairs and shows next fall, and the earlier we start when conditions are favorable, the more blue ribbons we may secure; so it behooves us to get busy and be prepared.

Our onions, leeks and celery should be sown this month if possible, but for general stuff no hard and fast rule can be laid down; that must be governed entirely by local conditions, climate, etc., and our individual ability, to keep our seedlings and plants growing until the final planting. The only sure road to success is to keep the plants moving from seed to maturity.

We often see plants in greenhouses or frames in a very starved and anemic condition, caused by being started too early, without forethought, as to housing room; being grown too thickly, often without transplanting. These plants suffer a great setback, and if often occurs that plants sown later are more robust and have a greater advantage when planted out. Every grower should use judgment as to the number of plants that can be accommodated; if your house room is limited it is wise to limit your sowings accordingly, for it is a great advantage to have good plants, when some of our less fortunate friends are sowing their seed.

Our aim is to prolong the season in which we can enjoy fresh vegetables from our own gardens. Therefore, if we have to depend on hotbeds, to gain this desirable end, we should begin at once to collect the materials.

After the bed is made a good old plan is to thrust a stick through the center of the manure withdrawing it after a few days and testing it with your hand; if too hot defer sowing until the conditions are favorable. Place two inches of soil over the manure to absorb the steam and ammonia arising from it and if we can maintain a temperature of 60 degrees the conditions are good.

I would recommend the early seeds to be sown in flats, as they are more easily handled; sow sparingly so that the need of pricking off, or transplanting is not so urgent. Should the climatic conditions be unfavorable, the frames must be handled with care during severe weather regarding opening and airing. Avoid opening from two sides of your frames as this creates a draught, and this is the greatest cause of mildew and other evils. If the seedlings are crowded damping is to be feared. In dull days keep on the dry side with the watering can, and see to it that good covering materials are always on hand.

If your seed order has not been placed, it should be done without delay, to avoid the spring rush and disappointment in not securing any novelty you plan to try this season.

In last month's notes, reference was made to the matter of succession of crops, and planning for this season, and it may not be out of place to enlarge somewhat on the subject this month.

To have a great success for 1919, it is most important that a perfect supply shall be maintained, not a glut at one time, and a shortage at another, and always to bear in mind our winter's supply when sowing throughout the season.

My plan is to divide the garden into four parts, the first for peas, and as soon as the ground is fit, sow first of all peas, in rows 3½ feet wide and between each row sow a row of spinach. Then with second early or main crop, and late peas, keeping up the sowings of spinach, which is ready and over just as the peas are fit to gather.

Sow the peas every ten days or two weeks. It is a good plan to favor those varieties that are generally grown in your locality. Allow the late and taller varieties more room than the earlies. When the first peas are removed prepare the ground for celery; dig trenches 1 foot deep and 15 inches wide, dig in some good rotten manure, plant 10 inches apart in a double row; if for exhibition give generous treatment and more room; if you allow 4 feet between the rows or trenches, a row of carrots or beets may be sown, as they are soon fit for use, or New Zealand spinach can be transplanted; follow this up as the peas are removed, or until all the celery is planted. Sow between the later rows anything that matures early, redishes, lettuce, endive, etc., so that all can be clear when the final earthing is given to the celery; if room is left from late peas, use it for string beans, late spinach, turnips. If leeks are grown, this is a good quarter; grow in a trench and earth similar to celery. This vegetable deserves more recognition than is generally afforded it, on account of its value as a winter vegetable.

Another part or quarter should be used for early and main crops of roots, early cabbage, cauliflower, string and dwarf limes. Sow as early as possible beets and carrots for early use in small quantities, repeating the sowings according to the wants of the household; reserving space for winter crops. For carrots and parsnips intended for exhibition, deep cultivation is necessary; the best way is to bore holes with a crowbar, and fill with light rich soil; sow a few seeds and thin later to one plant; for onions dig in plenty of good manure and bone meal. Have them where it will be easy to water, and feed during the period of growth. Onions are gross feeders and should never be allowed to dry out; as soon as any of the crops are removed, cultivate and plant or sow at once. Never allow the ground to be vacant until late in the fall. If you are doubtful as to the crop coming in before frost, it is good policy to sow and take a chance.

The next quarter will be taken up with tomatoes, egg plant, peppers, okra, pole limas, sweet corn. These crops require a longer season of growth, therefore, inter-cropping is not always possible, but with our early corn, pumpkins can be planted and these have the ground to themselves as soon as the corn is removed; late spinach also could be sown, following the pumpkins. Cucumbers can be grown around the outside row of lima beans, but the grower will be guided by the space at his disposal. New Zealand spinach is almost indispensable during the hot summer months, where this vegetable is in demand always.

The last, but not least, is the potato quarter. This is the most important crop of all with most gardeners. It is often classed as a field crop, but the person who lifts enough tubers for the family table the year around feels that he has accomplished something worth while. They should be planted as early as possible when the ground is fit. Then during the first weeks of July, sow between every other row Golden Bantam or any early sweet corn. These will maintain a supply until the first real killing frost and will stand a few degrees without impairing the flavor.
Flowers That Are Not Flowers

WILLARD N. CLUTE

A NY good gardener might be pardoned for getting excited if told that he did not know a flower when he saw one, but it is possible that one making such a statement might be able to prove his case. It would be no reflection on the intelligence of the plant lover if he should occasionally be mistaken, for Nature has had to endlessly vary the general plan of the flower in designing the 135,000 different kinds that are found in the world. Most of these, to be sure, are easily recognized, but here and there one comes upon specimens that have so far departed from the type as to puzzle botanist as well as botanizer. And they are not always rare specimens from distant lands, either. A good many may be found in the nearest garden; in fact, sunflowers, dandelions, thistles and calla lilies—to mention only a few—are not flowers and never will be, however much we may speak of them as such.

It may be possible to arrive at a better understanding of the matter by considering the case of the clover "blossom." In this, what we call a flower is really a bunch of flowers—a tiny nosegay gathered by Nature for the delectation of bees and butterflies. We call it a "head of clover" and thus half recognize its compound nature. One may easily distinguish the individual blossoms in a clover head—tiny flowers like diminutive sweet peas with a green calyx and a colored corolla surrounding the stamens and pistils. The white clover shows quite plainly the nature of the head by making a distinction between the flowers that have bloomed and those that are still blooming. As fast as the flowers fade they are turned down and form a dejected-looking circle about the base of the flower cluster.

The flowers of the great parsley tribe are arranged in much the same way as those of the clover, except that the individual flowers are borne on long and slender stalks that radiate from a common center like the ribs of an umbrella; indeed, the word umbel, which is used to designate flower clusters of this kind, is but another form of the word umbrella. It is not likely that many of these flower clusters are taken for single flowers, but when the stalks are short or wanting, as in the silver thistle and rattlesnake master, the possibility of making a mistake of this kind is not remote. The flowers of the allium or onion family are also borne in umbels, and some of them, as in chives, have a considerable resemblance to single flowers. The difference between an allium and an onion, it may be said in passing, is largely one of position and destination in life. If growing in the garden and intended to please the palate, we call it an onion; if in the flower bed and designed to please the eye, we dignify it by its Latin name and call it an allium.

The flower clusters of the asterworts—daisies, sunflowers and the like—are almost universally regarded as flowers. They are, however, comparable to clover heads, only in this case the end of the common flower-stalk flattens out into a disk-shaped object called a receptacle and on this, the real flowers, often to the number of a hundred or more are compactly assembled. If it were not for the fact that the flowers of the outer circle have the odd trick of becoming elongated, flattened and petal-like, it is probable that the true nature of the flower head would oftener be discovered; as it is, the likeness of the cluster to a single flower is so close as to usually mislead the casual observer who mistakes the outer green leaves or "bracts" for sepals, the strap-shaped ray-flowers for petals, and the tiny disk-flowers in the center for stamens and pistils.

The common sunflower of the gardens is an excellent illustration of this type of flower since all the parts are large enough to be easily seen. In many others, a magnifying glass will be needed to make out the structure, though the type is usually apparent to the unaided eye, once one has become familiar with it. Even the early botanists were a little in doubt as to how to regard such an inflorescence and called it a compound or composite flower. This name still clings to the group in the word "Composite," applied to the plant family to which all such flowers belong. The form seems to be a favorite one with Nature. More than ten thousand different forms of it have been found. Thistles, goldenrods, ragweeds, bonsets and many other familiar wildflowers belong to the group.

The dandelion and its allies used to be regarded as composites and their, but of all practical purposes, but the fact that they go a step further than the Composite and have all the flowers in the cluster like petals in form, has led to their being put into a class by themselves. The move seems justified by the additional fact that in this latter group all the plants have a milky juice or "latex" which distinguishes them from the true Composite. As in the poppy, which, however, belongs to a different category, being a real flower instead of a flower cluster, the juice often possesses narcotic properties. The garden lettuce has a reputation of this kind and is sometimes eaten to induce sleep. In cultivation the flowers of the Composite frequently take on the dandelion form; in fact, all the so-called double flowers of asters, sunflowers and the like are specimens in which the disk-flowers have taken on the form of the ray flowers and incidentally have become like dandelions.

It is a mere botanical difference, also, that separates the teaselworts from the composites for the flowers are borne essentially in the same way. The group is represented in the gardens by the cephalaria and the scabious or pin-cushion flower, both of which are quite aster-like in appearance. The plant which gives the name to the group is teasel, a thistle-like plant often seen nowadays in waste ground. It is a native of Europe and cousin to that curious plant the fuller’s teasel which is still better for raising a nap on cloth than anything man has been able to invent.

The small green bracts surrounding the flowers of the Composite, often mistaken for the calyx of a flower, may, in other plants, especially when they are of some color other than green, simulate the entire flower. A good many people go to the woods in spring to enjoy the dogwood blossoms, but were it not for the four large, white bracts which surround this interesting flower cluster, it is likely that dogwood blossoms would be pretty nearly unknown to anybody except the scientist. Not only are the bracts made to assume the appearance of a flower but in winter they are entrusted with the additional task of protecting the real flowers from injury. They may be found, even before the leaves fall, as fat little buds at the ends of the branches. There are many other dogwoods in the world, but all of our species lack the colored bracts and therefore fame as well—all except the little bunch-berry or dwarf cornel of our northern woods which is a very good, though reduced, pattern of its arborecent relative.
More than a thousand different plants make a single colored bract serve the purposes to which a corolla is put in other flowers and they are so frugal about it that the bract serves not for a single flower but for a flower cluster. This group is the arum family represented by the Jack-in-the-pulpit and skunk's cabbage among our wildflowers and by the calla lily among cultivated plants. The real flowers are almost microscopic and truly insignificant objects clustered sometimes at the base of a central stalk and sometimes all over it. The bract which enfolds the flower cluster, however, is usually conspicuous, either by reason of its color or its curious shape. Often it is quite lily like and the flower clusters are then called arum lilies. There is an interesting similarity between the flower clusters of the arums and those of the Composite though the two groups are widely separated as plant relationships go; in fact,.. .Do not even belong to the same grand division of the plant world, but because of this similarity they are sometimes spoken of as "the Composite of the monocotyledon group."

It is probable that the majority of people regard as petals the bright red bracts of the poinsettia, so frequently used in Christmas decorations, but it needs only a glance to see that these too, are bracts. The so-called flower is really a flower cluster somewhat on the dogwood plan. The individual flowers, however, are very different; in fact, few except the botanist would recognize them as flowers. In many cases they consist of only a single stamen or pistil, which is as far as any plant can go in the simplification of its flowers. Usually there is a cup-like structure surrounding the real flowers which those who are not misled by the bracts commonly take to be the flower. Many of our garden plants have flower clusters of this type, among them being the castor bean, and many spurge

An interpretation of the spurge's flower cluster will enable one to understand the flowers of the fig. Few people have ever seen them. At first glance the flower seems an anomaly among fruits in being produced without flowers; at least, the fig seems to be a fig from the beginning. On cutting a young specimen open, however, the mystery is revealed. The fig is really a hollow branch with the flowers, reduced to minute stamens and pistils, borne on the inside. Should the cup of the spurge thicken and grow up until it entirely surrounded the flowers, we should have a structure essentially like a fig.

Colored bracts seem to have been evolved by plants with inconspicuous flowers for the sole purpose of making the latter attractive to insects. That the arrangement and coloring happen to please our taste as well is so much our good fortune. The plants with this type of flower cluster would make a long list if all were named; it must suffice to indicate among the number the everlasting or straw flowers and the coxcombs of old gardens and the painted cup or prairie fire among wildlings.

Nature does not necessarily rely on either calyx, corolla or bracts to make flower clusters conspicuous. Often the end is achieved when the plant has only pistils and stamens by making these organs brightly colored and assembled in considerable groups. The willow and the chestnut tree are good examples. Other related species make an attempt at display and their flower clusters are often so inconspicuous that many people doubtless imagine that they never bear flowers. The oaks, birches, walnuts, alders, and possibly a majority of the trees in our northern forests, have flowers of this kind. Many of them have the added peculiarity of having two different kinds of flower clusters, one consisting entirely of stamens and the other of pistils. These may be on different plants, on different parts of the same plant, or if together, on different stalks. The cat-tail represents still another type of flower cluster in which the stamens and pistils are on different parts of the same stalk. The part we call the cat-tail consists entirely of pistillate flowers. Above these, at the proper season, a great number of stamens are borne.

A good many people also doubt that grasses, rushes and sedges have flowers. Certainly they seldom have structures that resemble the flowers with which we are most familiar, but all bear flowers of some kind. In attempting to point them out, the uninitiated are likely to mistake flower clusters for flowers for the true flowers are seldom more than stamens and pistils surrounded by bracts. Yet these will all answer to the botanist's definition of flower. Under the circumstances it will probably not be astonishing to learn that a young ear of corn is really a bouquet—at any rate it is a cluster of flowers!

The American Home Garden Service of the GARDENERS' CHRONICLE

The American Home Garden Service has been created for the purpose of co-operating, as far as it is within the scope of a gardening paper to co-operate, with all interested in perpetuating the gardening spirit that has been aroused through war gardening.

Victory Gardens attached to the homes should be planned with a view of permanency, to embody the beautiful in gardening as well as the practical; for vegetable growing alone soon becomes a monotonous task, but when combined with the growing of flowers, it develops into an endless joy.

Through co-operation and occasional competition, home gardening can be made the fascinating feature of any community and portrays refinement and civic pride.

A Home Garden Club will add to the enthusiasm of gardening as it offers opportunity for an interchange of experiences, discussions on planting, rivalry in exhibits—and provides for a year-round interest in the home garden.

If you are interested in securing further particulars of our plan of co-operation, communicate with THE AMERICAN HOME GARDEN SERVICE, Gardeners' Chronicle, 286 Fifth Avenue, New York.
Condemnation of Plant Import Prohibition

To the Editor, Gardeners' Chronicle:

The new plant “Quarantine” Regulation will become effective on June 1, 1919, less than five months hence.

It provides for only the following allowed bulb imports: Lily bulbs, Lily of the Valley, Narcissus, Hyacinths, Tulips, Crocus, and these only when packed free of other useful varieties of bulbs are prohibited. This means that although the intent of the act was to only protect against all pests and diseases that might be detrimental to the health and welfare of the horticultural interests of the United States, that in reality it means restriction against certain classes of bulbs, which are in no way more apt to carry any disease or pests than other varieties of bulbs, etc., that are allowed to come under the act. For instance if dry packed Narcissus, Tulips, and Hyacinths are recognized as being non-carriers of pests, why should Anemone, Begonias, Gladiolus, Iris or Scillas, etc., which can be similarly dry packed, be prohibited?

Again, where all future imports of Auracarias, Bay-trees, Boxwood, Evergreens, Fruit trees and Vines, Nursery stock, Rosebushes, Rhododendrons, etc., etc., are forbidden, “seedling Wild Roses and Fruit tree Stocks may be imported,” and these can carry disease and injurious insects as well as the thousands of varieties of trees, plants and vines that are excluded. We can no longer ignore the wonderful results of the great French hybridizers such as Dessert and LeMoine, the latter’s splendid novelties in Lilacs, Philadelphia, Duftzas, etc., must keep away from these shores.

Blackmore & Langdon’s fine Begonias, Wallace’s world-renowned Iris, the fine collections of British Montbretias, Dickson’s fine Roses and the wonderful things of other British producers, will not be tolerated here any longer; we must call back our own Wilson, he who suffered more than any other, we cannot import, we are forbidden to import by our Government through this recent act Belgium’s horticultural products for fear a bug might be hidden in them—a bug that escaped the rigid examination the Belgian entomologists gave all plants and might even escape the careful examination which our State and Federal Departments give them upon their arrival here. Yet, “We have permission to import millions of Lily of the Valley which practically all come from Germany,” so that while thereby favoring the enemy country and people, we mitigate against the interests of the country we are trying to help.

If Hyacinths, Narcissus, Tulips and Crocus are permitted in, then all other similarly dry bulbs which never were known to carry infectious or injurious pests should be allowed in as heretofore.

Where Rose stocks and Fruit tree stocks are allowed to enter other plants of surely as innocent a nature should be permitted subject to the known examination in the country of origin and at port of arrival as heretofore.

The professional gardeners can be of great service in this great cause by bringing the matter to the attention of their employers with request to use their influence in the right place; horticultural societies and garden clubs throughout the land should appoint committees to prepare briefs clearly setting forth the facts and circulate them amongst their members with requests to use their influence with members of Congress and the Senate, and at their meetings and in their reports this unAmerican act should be criticized until either the teeth are gradually taken out of the act by amendments or it dies its deserved death through Congressional action.

It becomes no man to muse despair
But in the teeth of clenched antagonism
To follow up the worthiest until he die.

ORNAMENTAL SHRUBS

One who would have his grounds as attractive as possible must exercise considerable discrimination in selecting his plants. Too often one yields to the temptation to plant shrubs that shall present an attractive appearance at flowering time only, whereas, if more thought were given to the matter, equally fine plants could be selected that would possess much beauty at other times. There are always sufficient flowers when the great burst of bloom is on in May, but often there is a conspicuous lack both earlier and later. By judicious planting one may, however, have flowers both early and late, and bright colors always. Early spring brings the golden bell, corylopsis and garland flower (Daphne) while some species of dogwood and willow vie with them in color. In late summer there are the rose-of-Sharon, blue sage (Caryopteris x wiscoanata), butterfly bush, pea tree, abelia, hercules club and various others. Even autumn is not without its blooming shrubs and the witch hazel often flowers in November. The brightest colors of this latter season, however, are given by leaves, berries and bark. The bright red of barberry, high bush cranberry, and hawthorn, the orange and red of bittersweet, and the clear yellow of snowberry, are more conspicuous after the leaves have fallen, but the most brilliant reds of autumn are due to the colors put on by the leaves of sumach, chokeberry, barberry, and young plants of the wild crab. If nurserymen were to give somewhat more emphasis to the good points that shrubs possess in addition to flowers, it is probable that a more extensive business would result.—The American Botanist.
**SOME PRACTICAL PLANTING COMBINATIONS**

A PLANTING of the Pink Silene, Armeria, commonly called Sweet William Catchfly, in combination with Eryngium Radians, is the subject of our illustration. This combination is very pleasing and shows excellent effect. The Silene is of great value for an early Summer display, as it may be brought in to flower earlier than its regular season, which is July to September, by sowing the seeds in early Autumn instead of Spring. The Eryngium has many advantages as an edging plant. It may be grown in the full sunlight, and is never troubled by red spider, as is the Box, and it is much harder than the English Ivy.

The Silenes might be followed later in the season, if one tired of them, or desired a change of color, with Heliotrope and the yellow Calla, Elliottiana, a glorious combination, the bright golden yellow flowers of the Calla showing to perfection above the Heliotrope, while its prettily spotted foliage is an additional attraction. Arrangements would, however, have to be made with a florist to have the plants available at the proper time.

The Callas would have to be taken up in late Autumn, and the bed then could be planted to Tulips. The combinations could be combined over a series of years with a little planning, the Silenes being planted between the Tulips in early Spring.

White Antirrhinums, or Snapdragons as they are popularly known, with the Blue Salvia, S. Patens, is an ideal combination in blue and white. If blue and yellow is preferable, use Yellow Snapdragons. Pink Snapdragons with an undercover of White Verbenas is a very pleasing combination. Or the arrangement may be reversed with equal satisfaction. Sweet Alyssum might be used in the place of the Verbenas with good effect.

Delphiniums, better known as Larkspurs, in either lilac, blue, or lavender varieties, with White Verbenas go well together. Instead of Verbenas White Phlox Drummondi might be used. Blue Verbenas and White Delphinium are also pleasing.

A dozen plants of blue Salvia in a bed of about fifty white Verbenas or Phlox Drummondi will add a little more height to a planting in blue and white.

For a narrow border in blue and white try Ayeratum and Antirrhinum Queen of the North.

Among the Dianthuses there are some splendid types and colors. A bed of the variety Salmon Queen with a few seeds of Gypsophila Elegans, known commonly as Baby’s Breath, sown among the plants will show the beauty and usefulness of the Dianthus in beds and borders. When planting the Dianthus, use a few pots of Gypsophila, the plants from the sown seeds will flower when the other plants have passed. The single white variety of Dianthus, Queen of Holland, is ideal to use with Nigella Utro Jekyll, a charming blue variety.

Ten-week Stocks make a nice foreground for Dahlias, and will flower until the latter come into bloom. Violas sown in February or March flower all Summer, and may be well associated with Salvia Patens on Antirrhinums. The blue Violas planted as an undercover to a first year bed of Anemone Japonica is glorious during the Fall months. Yellow Violas are very effective in front of Heliotrope.

To add height to a bed of Violas or Phlox Drummondi, try some Salpiglossis, which may be had in a variety of shades ranging from pale yellow through scarlet nearly to blue.

Candytuft and blue Cornflowers make an interesting combination.

While selection is, of course, largely a maker of environment, the above suggestions will give an idea of what may be done with Annuals to get fine effects.

**FRAGRANT WILDFLOWERS**

A NEW angle in the fragrant wildflower situation has been developed by a note from Dr. A. F. Blakeslee in *Science*. He found two forms of garden verbena, one of which was fragrant to him and one of which was not. Happening to call the attention of an assistant to the flowers, the latter reported the odorless one fragrant and the fragrant one without odor, so far as he was concerned. This led to further experiment with the result that out of a considerable number of people tested, some found one form fragrant and some the other. The subjects were tested blindfolded so that no color suggestion vitiated the results. If this condition is found to exist with regard to other flowers, we may have to have new tests to decide which flowers are fragrant and which are not. We have repeatedly suggested that all flowers may be fragrant to the insects that visit them and here, at least, we have evidence that even fragrant flowers may be odorless to noses that can distinguish fragrance in other forms. It is likely that the subjects who can smell at all would not disagree in the case of such strongly scented flowers as pink azalea, wild crab, wild grape and arbutus, but in flowers reputed to be only faintly fragrant, the question now arises, are they fragrant, or is our own nose at fault?—*American Botanist*.
Fertilization of the Soil
FRANKLIN NOBLE

NATURE provides a kind of plant to grow under every terrestrial condition, accordingly the gardener who grows flowers, vegetables and shrubbery in variety, has a problem to supply the approximate natural condition for producing favorable growths for each respective kind of plant that he has.

This explains why gardeners have learned to rely so much on natural fertilizers, as they are safe for obtaining reasonable success at least.

Such materials whether already in the soil or ready to be applied are as nature intends, gradually available only for plant use and without adverse after effects by contact with live growths or soil fertility; rather they benefit external conditions for plants as well as supply food.

It might be said that commercial fertilizers improve on nature too much, supplying a product of high availability for plant use and in strong chemical form, with resultant waste of value and deterioration of soil fertility, with frequent actual injury to crops.

Government crop statistics show that our states using commercial fertilizers most extensively, have only one-half the average acre yields of other states relying mostly on natural fertilizers.

No family would think of cooking at once all their food for several months and have it in a form to cause possible illness,— instead the food is cooked day by day and in a suitable way,— why not feed the plants on this plan and be in accord with nature?

While crop production is a complex problem because of the varied influences effecting results, yet there are some known basic principles, the facts regarding which should have more publicity since out-of-date education and business interests opposed, too frequently misrepresent them.

Among the facts established by recent scientific research are the following:

That natural lime in carbonate form, next after suitable moisture, is the most important factor in fertility, as it improves the physical, chemical and bacterial conditions of the soil for favorable plant development; as well as provides for a plant food want in varying degree according to species of plant. Cornell University bulletins show that lime is the greatest of all food requirements for fruit trees and that an excess over a sufficiency for good growth of legumes, can increase the protein (stock feeding value) content 25 per cent. Lime is also the element required to aid in conversion of starch into sugar within plants, therefore ample of it supplied means fruits and vegetables of better flavor. There are over a dozen agricultural services of lime, the most important probably being its improvement of the fertilizer value of organic nitrogen and conservation of the same, hence desirable for composting.
While there are many plants that flourish with neutral soil conditions and just a few requiring acidity, in general alkalinity is required for best plant development and all plants must have some lime. 

Nitrogen, the element influencing growth, can be supplied in organic manures or wastes for usual requirements, more economically so, with aid of bacteria obtaining it from the air direct.

Science now promises great things through inoculation with these bacteria living on both decomposing organic matter and live root growths, as well as the bacteria of decomposition,—probably it is the first mentioned ones that we may expect the most from,—the highest development to be attained when associated with lime—phosphate. Potash the element required for formation of stems, in connection with lime and to form starch, is found in our normal soils sufficient for almost indefinite crop production, if means are used to enable plants to avail of it,—these are ample lime and decomposing organic matter and ample phosphorus really delivered to the plants.

Phosphorus is the absolute essential for perfecting flowering and fruition, therefore is most needed at maturing period of growths. It also gives increased vitality to plants, enabling better resistance to adverse conditions,—cold, droughts, disease and insect attacks; apparently through this, also increasing the efficiency of nitrogen and potash within the plant, so that benefits may be obtained with less of these applied.

If supplied in alkaline form, a decided increased quantity of root growths can be obtained, and since each rootlet absorbs the food at the tip end only, more of such means increased feeding capacity with consequent beneficial entire plant development.

While the use of manures serves a good purpose for releasing phosphorus supplies, to have intensive culture of garden plants without excess of nitrogen, it may be necessary to use a high percentage phosphate, as bone or certain minerals formed by nature in a 3 of lime to 1 of phosphorus compound, therefore slowly available unless specially treated.

The commercial fertilizer idea is to treat these with sulphuric acid to combine with two of the parts of lime and leave a one of lime to one of phosphorus compound, (termed water soluble or available phosphoric acid,) in a form known as acid phosphate. This is correct in theory, but has disadvantages in practice, for this water soluble phosphoric acid must revert in the soil with lime or with iron and aluminum, (the latter soon becoming unavailable,) unless speedily absorbed by plants.

So that in applying 16 per cent acid phosphate, only a small part of that phosphorus may be delivered to the crop, especially so at the maturing period.

That benefits are obtained from such use, shows rather the value of a small amount than the special advantage of that form of phosphorus.

It is also well established that continued use of acid phosphate, leads to crop deterioration from cumulative adverse after effects; to avoid this and get better immediate benefits, it is good practice to mix lime carbonate, with the acid phosphate to re-vert it back to a lime-phosphate, as explained in Bulletin 220 of North Carolina Department of Agriculture at Raleigh.

As recommended by the Bureau of Soils United States Department of Agriculture and some experiment stations, the use of ground phosphate rock direct is rapidly increasing among farmers because of proven benefits; the requirement being to be finely ground, well distributed in the soil, preferably in presence of organic matter and with a time allowance of some months,—for quick growing plants this would mean applications in advance of planting. It is, however, of great interest to know that there are large deposits of what is called Florida soft phosphate, that is not and never was rock, being a natural precipitate and as known to science thereby of such atomic form as to be of special fertilizer value different from rock. It is so susceptible to the weak acids of the soil and those excreted by plant roots for the phosphorus to be initially and gradually available to benefit plants most advantageously throughout entire life period, without reverting loss, with less requirement of decomposing organic matter and benefiting instead of injuring soil fertility or seeds and live growths by contact.

It is a true alkaline form, coming in addition to the lime in combination with the phosphorus, an excess of precipitate lime carbonate, magnesia and soda, all of fertility value. Therefore as it contains 26 to 30 per cent equivalent phosphoric acid against the 16 of acid phosphate, it may be said to be of double the agricultural value of the latter, and can be sold for less money at place of production. Remarkable developments in our agricultural welfare are assured through more general use of these lime-phosphates as now understood, frequently giving better crop results alone, than the usual fertilizers at much greater cost,—for reasons already stated.

And still better benefits both in quality and quantity of crop obtainable, when used in connection with other fertilizer materials, the agricultural value of which are improved by the chemical actions from such mixture.

The adaptability of such service and extent of benefits possible, to be ascertained by experimentation for each user for his respective crop, soil and climatic conditions; with these it is a safe proposition to prove what is best to use;—establishing the fact, contrary to general belief, but which every gardener knows to be true as regards manure, that laboratory analysis can not properly show the agricultural value of any fertilizer material,—only indicate the same.

All of which concerns very much the gardeners desiring to obtain the best possible results in plant culture with the greatest certainty and least cost and effort essential, favorable to both future and the immediate crop or growths.

Florists wanting quick and forced plant growths will find it desirable to experiment with varying amounts and different methods of applications of phosphates in comparative tests, and among the flowers particularly benefitted are roses and carnations in better and more prolonged blooming even under adverse conditions.

Lime-phosphate fertilization can also produce good lawns in situations, where otherwise much effort and fertilization may result in continued failure,—approximately the same has also been shown for large tree growths.

For practical experimentation in this fertilization the following may be considered in preferential order: Florida soft phosphate, guaranteed 26 to 30 per cent phosphoric acid and not exceeding 5 per cent moisture.

Sixteen to 18 per cent acid phosphate mixed with double quantity of lime carbonate to revert it to lime-phosphate. Tennessee brown rock or Florida pebble phosphate, guaranteed 90 per cent to pass a 100 mesh screen.

Some statements herein will appear quite different from much of our agricultural literature, but the writer can say that they are based on extensive investigations and crop observations in pursuance of his occupation as agricultural advisor for very large crop producing interests and in co-operating with Government authorities. Some of the known favorable crop results were so astonishing as to be incredible to those not in the ordinary things in agriculture.

December 5, 1918.
The Value of a Scientific Education

ARTHUR SMITH

The prejudice against science which is to be found among many practical farmers is doubtless invariably due to a misconception of what science really is. As the word itself means, science is true knowledge and any knowledge of the principles of his profession a man may have acquired, whether through his own observations during his practical experience, at college, or by the means of text books studied at the Fireside University, so far as that knowledge is true, it is scientific. Theory has nothing, necessarily, to do with science at all. For example, some people have a theory that the ground hog has a greater knowledge of weather than any one else; others tell you that if seeds are sown at certain phases of the moon greater success will be obtained than if sown at other phases; and so on. Those who believe in theories of these kinds brand themselves as being entirely destitute of scientific knowledge.

It is true that purely scientific men sometimes give expression to theories based upon laboratory experiments which it is not possible to carry out in practice. But these theories are not put forward as scientific facts, but merely as opinions, or suggestions, for practical men to consider and carry out. A scientific fact is one thing, but an opinion even when based upon scientific fact may be totally wrong when considered in connection with other facts equally as scientific. The confusing of theory with science is a potent cause of prejudice against the latter.

While the purely practical man, on the one hand, frequently refuses to admit that science has any value to him, the scientist (especially the college graduate) very often puts forward greater claims for his branch of knowledge than he has any right to. There is no such thing as a Science of Agriculture, and there never will be. The practical work connected with all branches of agriculture is based upon, and capable of being explained by, scientific principles, and therefore, the ideal professional man is one who combines science with practice.

That ninety-nine per cent of college graduates, possessing only the knowledge they gained at college, have proven failures when attempting to manage a country estate, is a well known fact, but the failures have not been caused by their scientific knowledge, but in spite of it; and the principal reason for their want of success is because they consider their education finished when they graduate. As a matter of fact college graduates are the only persons willing to accept the phrase, "He has finished his education," as truth. Sir Isaac Newton, who was one of the wisest men of his day, likened himself to a child picking up shells and pebbles on the shore of the illimitable ocean of knowledge. The education of the late Henry Adams, as described in his own recently published autobiography, went on until he was well in the sixties. The "finished education" of the university man is one of books and is really merely preparatory to the education that only practical acquaintance with the actual work of a profession can impart—an education which is never complete. In comparison with what a real practical man learns from day to day, and from year to year, a university training is like exercises with colored blocks in a kindergarten. We do not for a moment wish to be understood as belittling book knowledge of itself, the majority of gardeners do not read half enough; but the trouble is that men with book knowledge, and nothing else, consider themselves superior to others in the same profession with twenty years' successful practical experience.

One of the great advantages of science is that it teaches the "why" of practice. A man may be skilful in doing things, but unless he knows the why and wherefore of his doings he is little better than a machine, inasmuch as his work lacks intelligence. On the other hand, while a college graduate may know more or less of why a certain thing should be done, he is invariably absolutely incapable of doing it himself and is therefore incompetent to direct others.

By itself, college education is useless because it does not teach the "how" of doing things. A man, especially if he has the gift of memorizing, may know a quantity of facts concerning the scientific principles of agriculture, but unless he can apply them practically they are to a great extent useless; except that all knowledge is worth obtaining even for its own sake.

A few years ago I ventured to suggest to a professor of horticulture at one of our colleges that they should teach the "how" as well as the "why." While not disputing the correctness of the idea, he said it was not possible to carry it out. The writer does not for a moment admit the impossibility of carrying on simultaneously scientific and practical education in agriculture and horticulture at college because it has been successfully done for many years in Europe; but the reasons for the professor's opinion are obvious. It must, however, be admitted that this weak point in college education is becoming recognized by college principals and more attention is being given to practical work, although unfortunately it is at present more in the greenhouse branch than in other more important ones.

The purely practical man today faces the competition of the incompetent and of the college graduate. Apparently some estate owners prefer the incompetent men; this fact is seen in many connections, principally by the conditions frequently attached to the gardener's position, quite outside any question of pay, and many of them are also quite incapable of appreciating the qualifications of a first class man if they get one.

As regards the college man, we can be sure that scientific efficiency has come to stay in all branches of industry, and the competition from this source will steadily increase as college men make their deficiencies in the way of practical knowledge. The manner in which the purely practical man can make good his deficiencies in scientific knowledge and thereby meet this source of competition, is by making it his business to know at least as much of the scientific principles of his profession as the college graduate. To do this it is not necessary to go to college because he can easily acquire this knowledge in his own home through the medium of the text books which are procurable. His practical experience would enable him to more easily assimilate the contents of books so far as they apply to his work, and his knowledge of scientific facts would be something more than the merely parrotlike acquaintance with it, which is too frequently seen in the purely college man. At the same time, there are some things outside actual science which are not found in books and which a man can learn perhaps better at college than elsewhere.

For the young single man especially, a college course has advantages, the more so if he has had previously a few years' practical work in a garden. But after all, if he has ordinary intelligence and common sense, he can
do himself as much good so far as professional knowledge is concerned, by studying scientific principles after working hours. The study of science and practice side by side is the only satisfactory way of obtaining a real professional education, and if this is not done a man will certainly derive much greater benefit from his college studies if he has had a few years of experience first.

Unfortunately, in the long run, for themselves, many young men in these days, having little or no practical education, consider they are fitted to take charge of a place after only a year or two’s work as an assistant—a period which is often only spent in a greenhouse—thereby lowering the standard of, and cheapening, their profession; for they will frequently take a position at considerably less pay than they can get as an assistant and underbid the more competent men who have many years of experience at their backs.

It may be argued that if a man takes the trouble to gain a working knowledge of the scientific principles of his profession he is not likely to get any more pay or greater appreciation from the average estate owner. Quite apart from any question of money it is worth while to obtain scientific knowledge for its own sake, and we believe that there are a steadily increasing number of employers who desire men combining science with practice, and that they would gladly employ more college graduates if the latter were thoroughly practical.

A much more important point is that while the college graduate has his parchment to show he has taken the college course, the practical man who makes himself by his own studies at least as equal of the college man in the scientific principles of his profession, has at present nothing but his word to prove it. To counteract this serious obstacle to incentive in this direction there should be some means of sitting for an examination and a diploma granted to those passing.

In Britain, where the standard of horticulture is higher than here, a movement was started about seven years ago to enable gardeners who had had no opportunity of attending a college, to obtain a certificate of efficiency in their profession. The movement was initiated by the Royal Horticultural Society, and the reason given for it was because of the existence of many incompetent men calling themselves gardeners, and it was desired to have some reliable means of enabling employers to distinguish between gardeners and others. It is worthy of note that the idea practically emanated from the employers themselves as ninety-five per cent of the members of that society belong to that class. The movement has naturally had the full support of the British Association of Gardeners, and men of all ages have obtained diplomas.

A point worth mentioning is that men with a considerable number of years’ practical experience without any college education have made a better average showing at the examinations than those younger men who have taken a college course, but whose practical experience has been of a short duration, although no one can get the diploma without having had practical experience. While the latter war has, of course, reduced the number of men sitting for the diploma, it has never been necessary for the examinations to fall into abeyance. In Britain, the gardening branch of horticulture has always been distinct from farming and general estate management; the latter have for upwards of twenty years, upon all the best estates, been in hands of men who hold diplomas in connection with that work, which is a special profession. There is distinct evidence that this new departure is already inducing better class men to take up the work of gardening.

To obtain this diploma in horticulture a man has to pass two examinations, preliminary and final. He can take the preliminary when he has reached the age of eighteen. The examination is divided into three parts, written, vivâ voce and actual garden work. For the latter, owners grant the use of their gardens and candidates have to carry out any work both in the garden and in the potting shed which the examiner may require.

Before a man can take the final he must have worked for six years in a garden. This does not mean that there has to be six years between the two examinations. For instance, if a young man started to work at the age of fifteen, he could take the preliminary at the age of eighteen and the final at twenty-one. In the case of older men they could take the final the next year after the other, or perhaps the same year. The final examination is divided into three divisions like the preliminary, and the important underlying principle of both is a thorough and complete combination of science with practice; and I venture to think that few, if any, professors of horticulture in this country could gain off hand this Royal Horticultural Society’s Diploma. In making this statement no reflection upon the attainments of college professors is intended. They devote their lives to a work of great value to the country for comparatively small pay. All branches of agriculture have been advanced in thousands of ways by their efforts and experimental work, and if those engaged in the practice of the art had had a scientific education and would make full use of the knowledge placed at their disposal by experimental scientists, the production of the land under cultivation could easily be doubled without any more capital being brought into use.

The advantages to the real gardener in being able to show, in the form of a diploma, actual proof of his professional knowledge, are many. By it a man would be at once put in his proper position; its possession would show he had the right to be classed as a gardener, and those without any professional training calling themselves such would be placed in the class to which they belong; it would increase the status of the profession and entirely do away with the competition of the incompetent. Not that the latter would cease to exist, but the employer would know without any shadow of doubt whether he was engaging a gardener or not a gardener; the latter would find employment with those who do not care to have a first class man on their place. Not only would the standard of efficiency be raised all round, but the profession as a whole would receive a tremendous uplift.

The only organization existing in this country capable of carrying out the details necessary for the formation of an Examining Board to this end, is the National Association of Gardeners, and in taking the matter up it would only be carrying out one of its objects, as set forth in its constitution, “to uplift the profession of gardening by endeavoring to improve conditions within it.”

Further, the Association should adopt the principle which is connected with other professions, including, I believe, that of park superintendents, by demanding some evidence of professional standing by those seeking membership. The power for the good of the group which the association can wield does not depend so much upon its numerical strength, as upon membership of it being primâ facie evidence of professional equalizations.

The time is coming when no employer worthy while will consider the application of a man for the position of head gardener or superintendent unless he is a member of the N. A. C. and holds its diploma. The sooner this is brought about, the sooner will the profession occupy its rightful place.
GARDENERS’ CONFERENCE AT PITTSBURGH

A gardeners’ conference will be held under the auspices of the Pittsburgh district members of the National Association of Gardeners at the Hotel Chatham, Pittsburgh, on Thursday evening, January 30th.

Following a reception from 6 P. M. to 6:30 P. M. David Fraser, a director of the National Association will introduce the speakers of the evening who will include Robert Weeks, of Cleveland, president of the National Association of Gardeners; H. C. Ebel of Madison, N. J., secretary; William Falconer and Neil McCallum of Pittsburgh. A general discussion of the problem confronting the gardener and his profession will follow the speakers. Gardeners and all interested in the profession of gardening will be welcomed.

A supper will be served at the conclusion of the business session. David Fraser of Pittsburgh is chairman and John Barnet of Sewickley, Pa., is secretary of the conference committee.

GARDENERS’ CONFERENCE AT MINNEAPOLIS

A conference of gardeners, members of the national association of Minneapolis and vicinity, was held in that city on January 16. The report of the meeting was not received in time for publication in these notes. It will appear in the next issue.

THE PLANT IMPORT PROHIBITION ACT

The attention of our members is directed to the protest against and the condemnation of the Plant Import Prohibition Act which appears in other parts of this paper. While opinion is not unanimous, there is no question, however, that the measure is not only an unwise drastic one but inexcusable. The interests of ornamental horticulture for the next few years, in the opinion of the writer, will be best served by the repeal of this measure. American horticulture should be given a fair chance to prepare before such an act, unreasonable in many respects, is enforced. Members should present this matter to their employers and urge them to use what influence they can bring to bear on the Department of Agriculture and Congress, to impress these officials that the whims of a few theorists should not be permitted to upset an entire industry.

OUR SUSTAINING MEMBERSHIP

With the demands made by the war lessening, the time seems opportune to interest employers in the national association. Sustaining membership is restricted to country estate owners who regularly employ gardeners. Dues are $10 a year. Interest your employer in the association by inviting him to become a sustaining member. The benefit derived therefrom will accrue to employer, association, and the profession as a whole.

A WORD TO THE WISE

The Service Bureau has been receiving an exceptionally large number of applications from gardeners now holding positions who contemplate making a change in the Spring with the view of securing positions here or abroad. It is in this connection that the Bureau would advise applicants to hold on to their positions until a better opportunity presents itself. The outlook is decidedly encouraging for the future, but the readjustment is not going to come about quite as fast as some anticipated and inquiries for gardeners are not yet many; while, on the other hand, gardeners released from the service and from war work who are seeking positions are increasing. This should not, however, deter ambitious men from keeping alert to opportunity when it does knock.

If mail addressed to the secretary’s office does not bring an immediate response, remember it is due to an accumulation of letters.

THE OFFICIAL ORGAN

From time to time criticism has arisen that gardeners themselves have had no opportunity to become financially interested in their official organ of their national organization. For the past several years the outlook has been so uncertain, however, the owners of the publication did not feel they could honorably heed the criticism. With conditions changed and the outlook for the future reassuring, the owners are now willing that the gardener shall participate in a share of the ownership of the paper which represents his profession. If a member is interested to obtain further particulars, he can do so by addressing the secretary.

"BACK TO THE LAND"

The big guns have been silenced on the western front, and we sincerely hope that concrete peace will be real; that wars and rumors of war will be a thing of the past, and that the cry "back to the land" is in earnest. Napoleon said "an army travels on its stomach." It has been well demonstrated with our allies this past four years of war that food was the chief asset for maintaining the armies. Great Britain now grows 80 per cent. of her food, an addition of 60 per cent. of her normal supply. It clearly shows what can be done; the land is there, and it is far better producing food than keeping up extensive and luxurious deer fields which are only ornamental to a few. If an enemy attacked New England today and cut off her food supply, the people would starve in less than a month, and yet she has enough land and more to meet the demand. Many benefits from their war gardens; let them follow up with victory gardens and for many years to come. Not only are they reaping from their war gardens; let them follow up with victory gardens and for many years to come. Not only are they reaping many benefits from their war gardens; let them follow up with victory gardens and for many years to come. Not only are they reaped with abundant products for the table with fresh supplies of vegetables, fruit and flowers, but the outdoor exercise for many, who never experienced this before, all tend to make the garden producer a healthier, happier and more contented citizen. If you sow good seed on land well cultivated and cared for, you will reap a well-deserved harvest, and it is well worth trial in the pleasure it gives the mind and body.

In future years of "sweet peace" we hope the farm and the garden will be the concrete foundation for the people of all nations. Uncle Sam is opening up fields of land for returning soldiers, or anybody who cares to participate in this plan for a home or a farm of their own. This alone will boom agriculture, likewise horticulture and forestry, and open up country districts unheard of before.

The National Association of Gardeners, through its service bureau, is doing much in bringing together the owners of estates and gardeners to supervise them, which in time will prove the best medium for both parties, because as soon as general confidence is gained by estate owners, our profession will be more respected and better paid. If gardeners could only apply for positions and not compete, the result would be higher salaries with a demand for more efficiency.

Evolution will go on, victory gardens will follow war gardens, and more and more private estates will be opened up and more and more private gardeners will be employed. It is in view of this development that gardeners should be on the alert to see what opportunities present themselves and to be ready to take advantage of them. This is true both in this country and abroad. Farming and gardening will be done in a more gigantic manner, and we will be rolling “back to the land” in realization.

JAMES M. DONALD.

### LOCAL SOCIETIES

#### NEW YORK SPRING SHOW

A Spring Flower Show will be held March 28, 29 and 30 at the American Museum of Natural History under the auspices of the Horticultural Society of New York. In order that this exhibition may be a success it will be necessary for all to put their shoulder to the wheel and do their bit. Co-operation is now the spirit of the age, and let horticulturists prove their alive to this spirit by making this show a big success by individual effort and co-operation. All, whether members of the society or not, are invited to exhibit. Schedules are now ready for distribution, and may be had by addressing the secretary, George V. Nash, New York Botanical Garden, Bronx Park, New York City. The schedule follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>Non-commercial Growers</th>
<th>First. Second.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group of Spring Flowering Plants, 100 square feet, arranged for effect</td>
<td>$100.00 $50.00</td>
</tr>
<tr>
<td>2</td>
<td>Group of Foliage Plants, 100 square feet, arranged for effect</td>
<td>100.00 50.00</td>
</tr>
<tr>
<td>3</td>
<td>Group of Orchid Plants, 50 square feet, arranged for effect</td>
<td>Decorative plants permissible 50.00 25.00</td>
</tr>
<tr>
<td>4</td>
<td>Acacia, three plants</td>
<td>12.00 6.00</td>
</tr>
<tr>
<td>5</td>
<td>Acacia, specimen</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>6</td>
<td>Amaryllis, six plants</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>7</td>
<td>Cineraria, six plants</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>8</td>
<td>Cyclamen, twelve plants</td>
<td>8.00 4.00</td>
</tr>
<tr>
<td>9</td>
<td>Hydrangea, specimen</td>
<td>8.00 4.00</td>
</tr>
<tr>
<td>10</td>
<td>Marguerite, specimen</td>
<td>3.00 2.00</td>
</tr>
<tr>
<td>11</td>
<td>Primula malachoides, twelve plants</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>12</td>
<td>Primula obconica, twelve plants</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>13</td>
<td>Schizanthus, six plants, not over 8 inch pots</td>
<td>6.00 3.00</td>
</tr>
<tr>
<td>14</td>
<td>Schizanthus, specimen</td>
<td>3.00 2.00</td>
</tr>
<tr>
<td>15</td>
<td>Group of Spring flowering plants, 150 square feet, arranged for effect</td>
<td>100.00 50.00</td>
</tr>
<tr>
<td>16</td>
<td>Group of Orchid plants, 100 square feet, arranged for effect</td>
<td>Decorative plants permissible 100.00 50.00</td>
</tr>
</tbody>
</table>

#### BULBOUS PLANTS

<table>
<thead>
<tr>
<th>Class</th>
<th>Non-commercial Growers</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Early Flowering Tulips, six pans, six varieties</td>
</tr>
<tr>
<td>18</td>
<td>Darwin, Breeder, or May-Flowering Tulips, six pans, six varieties</td>
</tr>
<tr>
<td>19</td>
<td>Narcissus, six varieties</td>
</tr>
<tr>
<td>20</td>
<td>Lilies, six pots</td>
</tr>
</tbody>
</table>

#### CUT FLOWERS

<table>
<thead>
<tr>
<th>Class</th>
<th>Non-commercial Growers</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Roses, 18 Ophelia or any Ophelia sport</td>
</tr>
<tr>
<td>22</td>
<td>Roses, 18 crimson</td>
</tr>
<tr>
<td>23</td>
<td>Roses, 18 red</td>
</tr>
<tr>
<td>24</td>
<td>Roses, 18 yellow</td>
</tr>
<tr>
<td>25</td>
<td>Roses, 18 white</td>
</tr>
<tr>
<td>26</td>
<td>Carnations, twelve</td>
</tr>
<tr>
<td>27</td>
<td>Carnations, 25 Flesh pink</td>
</tr>
<tr>
<td>28</td>
<td>Carnations, 25 light pink</td>
</tr>
<tr>
<td>29</td>
<td>Carnations, 25 dark pink</td>
</tr>
<tr>
<td>30</td>
<td>Carnations, 25 scarlet</td>
</tr>
<tr>
<td>31</td>
<td>Carnations, 25 crimson</td>
</tr>
<tr>
<td>32</td>
<td>Carnations, 25 variegated</td>
</tr>
<tr>
<td>33</td>
<td>Antirrhinum, 18 spikes</td>
</tr>
<tr>
<td>34</td>
<td>Mignonette, 12 spikes</td>
</tr>
<tr>
<td>35</td>
<td>Sweet Peas, 100 styles</td>
</tr>
</tbody>
</table>

#### PLANTS

<table>
<thead>
<tr>
<th>Class</th>
<th>Commercial Growers</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>Roses, 25 white</td>
</tr>
<tr>
<td>37</td>
<td>Roses, 25 light pink</td>
</tr>
<tr>
<td>38</td>
<td>Roses, 25 dark pink</td>
</tr>
<tr>
<td>39</td>
<td>Roses, 25 red</td>
</tr>
<tr>
<td>40</td>
<td>Roses, 25 yellow</td>
</tr>
<tr>
<td>41</td>
<td>Roses, 25 Ophelia or any Ophelia sport</td>
</tr>
<tr>
<td>42</td>
<td>Roses, 2 American Beauty</td>
</tr>
<tr>
<td>43</td>
<td>Carnations, 50 white</td>
</tr>
<tr>
<td>44</td>
<td>Carnations, 50 flesh pink</td>
</tr>
<tr>
<td>45</td>
<td>Carnations, 50 light pink</td>
</tr>
<tr>
<td>46</td>
<td>Carnations, 50 dark pink</td>
</tr>
<tr>
<td>47</td>
<td>Carnations, 50 scarlet</td>
</tr>
<tr>
<td>48</td>
<td>Carnations, 50 crimson</td>
</tr>
<tr>
<td>49</td>
<td>Carnations, 50 Variegated</td>
</tr>
</tbody>
</table>

### BOSTON FLOWER SHOW

The Gardeners' & Florists' Club of Boston will hold a flower show at Horticultural Hall, Boston, on February 18. Carnations will be made a feature, but all other seasonable plants and flowers will be shown. Cash and special premiums will be offered to both private gardeners and commercial growers.

### NASSAU COUNTY HORT. SOCIETY

The regular monthly meeting of the above society was held in Pembrooke Hall, Glen Cove, on Wednesday, January 8, at 2 P.M. There was a good attendance, with President Joseph Adler in the chair. The judges appointed for the monthly exhibits were Thomas Henderson, W. J. Carter and Thomas Twigge. The following awards were made: Competition. six ears of corn, first, William Milstead. Exhibition, six ears of corn, thanks of society to William Milstead. A beautiful vase of carnation Laddie, exhibited by John F. Johnston, was awarded to Robert Marshall, who just recently lost his wife. A letter of sympathy was also ordered sent the widow of our late honorary member, Theodore Roosevelt. All present stood silently at attention in token of our respect and esteem. This society was honored in having such a great man as one of its honorary members. Words fail the writer in expressing the loss we feel in parting with this interested member of the craft.

President Joseph Adler presented the National Association of Gardeners' medal for the most meritorious exhibit at the Hall show to Robert Marshall, who suitably responded. An extremely interesting essay was ably read by Ernest Westlake, entitled, "The Gardener and His Recompense," written by M. C. Ebel. A short discussion followed and a vote of thanks was ordered sent the author.

Several of our members in the service were heard from and all were looking forward to the time when they rejoin us. Next monthly meeting to be held on Wednesday, February 12, at 7 P. M.

**Thorburn's Seeds**

will help you produce the maximum crop of which your land is capable; full sized vegetables of splendid shape and color, delicious in flavor and richness—that is the kind that always command the highest market prices.

Our Garden Seeds have maintained for over a century the highest reputation for large yields, superior excellence and all-around reliability.

Send for our 1919 catalogue which covers also Grass, Flower, Fruit and Shade tree seeds.

J. M. Thorburn & Co.

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Through to 54 Park Place

NEW YORK

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Although the war is over the world is still short of food

America must continue to help out our Allies and many of the neutral nations.
ST. LOUIS ASSN. OF GARDENERS.

The regular monthly meeting of the St. Louis Association of Gardeners was held at the Forest Park Greenhouses on Wednesday, January 8, at 8 p.m., with forty members present.

The following officers were elected for 1919: L. P. Jensen, president; Hugo M. Schaff, secretary; Ernest Streile, treasurer; John Moritz, first vice-president; George H. Pring, second vice-president; S. M. Beer, third vice-president; A. Van deveem, fourth vice-president.

The feature of the evening was an illustrated talk by Alexander Lurie, horticulturist of the Mo. Bot. Garden, on "Hearticulturist." The subject and illustrations were original, characterizing the Hammock Vine, Bundle Weed, Check Weed, Gossip Vine, etc.

The subject of pruning was opened by Mr. Meyer, of the City Foresters' Department. Various other members participated in the discussion. After the meeting lunch was served.

G. H. Pring. Cor. Sec.

THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY.

The regular monthly meeting of the above society was held in Hubbard's Hall, Greenwich, Conn., Friday evening, January 10. Retiring President P. W. Popp installed the officers for 1919. Mr. Popp in a short humorous speech thanked the members for their support during his administration. In taking over the chair William Graham promised to further the interests of the society to the utmost of his ability. Treasurer Robert Williamson thanked the members and assured them that he would take good care of the funds for the coming year. James Stuart has done herculean work in the past year, with ex-President P. W. Popp. These gentlemen have brought the society to its present state of efficiency. The judges for the evening were John Whyte, Alex Smith and John Forbes. Their awards were as follows: A very fine vase of carnation Laddie from William Graham, first prize and cultural certificate. Vase of Euphorbia jacquiniflora from James Stuart, second prize. Vase of carnations from Thom Atchinson, 75 points. In the vegetable section Robert Williamson was first with a nice collection. Fred Lagerstrom received a silver medal and John D. Wilson a bronze medal for their exhibits at the November meeting. Both medals were from Max Schling, Inc.

After a good deal of discussion it was decided to advance the dues 50 cents per year, beginning January, 1919. A committee was appointed to make arrangements for a concert and ball. After the business of the meeting had been concluded a very interesting paper entitled "The Gardening Profession," was read by Maurice Fuld. Mr. Fuld said that the complete gardener, the man that has served his apprenticeship and is capable of taking charge of a moderate sized estate, his wages should be from 150 to 200 dollars a month, with a house and all necessary extras. But the question is how can he get that wage. This is a subject that should be thrashed out by local horticultural societies.

A committee for the entertainment of members with their families was elected. The Red Cross Chapter of Stamford expressed their thanks for the $150 sent to them by the society, this being the net proceeds of the hall show.

The following exhibits were awarded prizes by the judges: Strelitzia regina and seedling carnation, white, honorable mention; Enchantress Supreme, cultural certificate, Gardener Alexander Geddes. A personal attention, which has so much to do with satisfactory buying.

The month of February am going to spend in Europe picking up such fine specimens as Uncle Sam will allow us to bring in.

I'll tell you about it in the next message from The Sign of the Tree.

Julius Roehrs Co
At the Sign of the Tree
Box 20 Rutherford N.J.

A Personal Message from the Sign of the Tree

FROM now on, I am going to give my personal attention to anything you may want from our nurseries. By personal, I mean just that.

With a nursery the size of ours, devoted largely to a collection of choice things, it's possible for me to give it the personal attention, which has so much to do with satisfactory buying.

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TUXEDO HORT. SOCIETY.

The annual meeting of the Tuxedo (N. Y.) Horticultural Society was held on January 8, President McGregor in the chair. After minutes of previous meeting and annual reports were read and approved and usual routine business transacted, the election of officers for the ensuing year was proceeded with results as follows:

President, Thomas Lyons; vice-president, Edward Wilson; treasurer, Charles Davidson; secretary, James Davidson; executive committee, Duncan MacGregor, David MacIntosh, Thomas Wilson, Joseph Tansy and William Muir.

At adjournment the members and invited guests tried their skill on the bowling alleys with varying results. Bountiful refreshments were served by the committee in charge; also pertinent remarks and vocal entertainment by local talent.

The gathering separated at an early hour, all satisfied that a most profitable and enjoyable evening was spent.— James Davidson, Secretary.

NEW LONDON HORT. SOCIETY.

Meeting held January 9th. President Hatton presiding. This being the night for annual election of officers the following were elected to serve for the year: President, W. J. Schoonman; first vice-president, John Silva; second vice-president, Robert Cato; secretary, Stanley Jordan; financial secretary, W. J. Morgan; treasurer, S. L. Ewald; executive committee, John Maloney, Gustav Newman, James Eckford, H. C. Fuller, Mrs. J. Beebe and Mrs. H. Allen.

President Hatton thanked the members for their support during the past year and a rising vote of thanks was given Mr. Hatton. After suggestive remarks by the new president and others the meeting was adjourned until February 15th.—Stanley Jordan, Secretary.

HOLYOKE AND NORTHAMPTON FLORISTS' AND GARDENERS' CLUB.

The monthly meeting of the Northampton and Holyoke Florists' and Gardeners' Club was held on Tuesday, January 7, at Butler & Ulman's greenhouses, Northampton, with a good attendance.

The club decided to offer a prize for the best exhibit at each meeting for the coming year, to stimulate more interest in bringing out exhibits.

Being carnation night, we had a fine exhibit of twenty-three vases of carnations from four growers of the vicinity.

Butler & Ulman won the first prize with a vase of Laddie; were also awarded a Certificate of Merit for the extensive decorations at their greenhouses for the occasion.—A. Haeseler, Sec'y.

SEWICKLEY, PA., HORT. SOCIETY.

The regular meeting of Sewickley Horticultural Society was held on Tuesday, January 14. The new officers were elected and a Certificate of Merit for the extensive exhibit of twenty-three vases of carnations from four growers of the vicinity.

Butler & Ulman won the first prize with a vase of Laddie; were also awarded a Certificate of Merit for the extensive decorations at their greenhouses for the occasion.—A. Haeseler, Sec'y.

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W. ATLEE BURPEE CO.

Seed Growers Philadelphia
The executive committee drew up a schedule for competitive exhibits, calling for specific subjects at each meeting.

Freeseas, Primulas, and Tomatoes were called for at this meeting with the following results:

Freeseas: John Carman, 8 points and Certificate of Culture.

William Thomson, Jr., 4 points.

Primula Malacoides, John Carman, 4 points.

Primula Sinensis, John Carman, 4 points.

Wm. Thomson, Jr., was awarded a vote of thanks for nemesia and Wm. Thomson, Sr., the same for Cyclamen.

JOHN CARMAN, Secy.

NORTH SHORE, ILL., HORT. SOCIETY

The regular monthly meeting of the above society was held Friday, Jan. 3, at the residence of J. H. Francis, North Easton, Mass.

The following exhibits were staged: 12 Spokes Oncidiums, 95 points, shown by Thos. Head; Primula Malacoides, 90 points, shown by J. H. Francis; 1 pot Lilium Melpomene, 90 points, shown by J. Kiley.

Mr. Kiley also exhibited some fine Freeseas and Narcissus for which he was awarded a Certificate of Culture. The judges for the evening were Messrs. Wilson, Claussens and Bollinger.

The members later enjoyed some refreshments provided for by the new president, W. E. Fisher.

Two new members were admitted to the Society bringing the active membership up to 70 members.

J. H. FRANCIS.


AMONG THE GARDENERS

Paul Wenzel, recently of Somerville, N. J., has accepted the position of superintendent of the W. M. Ritter Farm, Manchester, Vt.

James Watt, for some years head gardener to Mrs. W. S. Weld, Newport, R. I., has been appointed to succeed the late Andrew Masson as head gardener to Mrs. Louis Frothingham, North Easton, Mass.

Arthur Smith, recently superintendent of the Ottley estate, Glen Cove, N. Y., has accepted the position of superintendent of Roschill Farm, Belmar, N. J.

John Peschier, assistant gardener under Stanley Jorden, superintendent of the Harkness estate, Waterford, Conn., when he joined the U. S. Navy, has returned from the service to engage again in his profession.

A. J. Wise, who enlisted in the British Army from the Twombly estate, Madison, N. J., in 1915, but expects his discharge soon and will return to the States to seek a gardeners’ position.

John Willis writes from France that after being in Argonne “where the American army won imperishable glory,” he hopes soon to resume his “noble profession” in the States. Mr. Willis, previous to his joining the forces, was at Hempstead House, Port Washington, N. Y.

MRS. THOMAS PAGE.

The many friends throughout the United States of Mr. and Mrs. Thomas Page, of Great Barrington, Mass., will be shocked to learn of the sudden death of Mrs. Page on Saturday, January 4, 1919, following an operation. Mrs. Page is survived by her husband and three young children. She was a charming and accomplished Edwardian woman and will be gratefully remembered for her whole-souled hospitality and kindness to visiting horticulturists at “Brookside.” She had been active in Red Cross and other women’s war work since 1914. Her death is a severe loss to Great Barrington and to her multitude of friends everywhere.

JOHN MAURICE HUNT.

It is with extreme regret that we have to report the death of Maurice Hunt, at Huntington, L. I., on Jan. 16, 1919.

Mr. Hunt was born in County Kent, England, 30 years ago, where his father, John Hunt, was engaged in the nursery business. Later his family moved to the north of England where his father secured a position as head gardener at Newby Hall, Yorks. Here the deceased received his early training under his father.

Coming to America in 1911 he worked for some time on the Guthrie estate at Locust Valley, L. I., later going to the W. B. Dinsmore estate under the late Thomas Emerson of Staatsburg, N. Y. Leaving here he was for two years with Frank H. Main of Landesboro, Mass., as gardener. For the past two and one-half years he has been gardener for Mrs. Theodore Douglas Robinson, Jr., of Mahaqua Farm, Mohawk, N. Y.

Having been rejected by the examining surgeons as unfit for active service in the army, Mr. Hunt decided and could do his bit to help win the war by going to the shipyards.
shipyards. He accordingly resigned his position and went to Hog Island Yards at Philadelphia. When hostilities ceased he returned to his own profession.

He had no relatives in this country, but leaves four sisters in England to mourn his loss, together with Miss E. M. Cadwell of Jordansville, N. Y. to whom he was to have been married in the spring.

OF GENERAL INTEREST

William J. Stewart, editor of Horticulture, who has been confined to the hospital, has so far recovered his health that he is able to give attention to business again. Mr. Stewart has many fast friends among the gardening fraternity who will be glad to hear of his recovery.

Maurice Fuld has distributed an interesting pamphlet among his clients on "The Underpaid Gardener" in which he values the services of the gardener at far more than is generally rated by those who cater direct to the country estate owner. Selfish motives cannot indefinitely be concealed and Mr. Fuld’s article will at least arouse some interest among those who have received it, and we hope will do some good.

The Barrett Company, 17 Battery Place, New York, has issued an interesting bulletin on "Driveways for Private Estates." It is well illustrated, containing a collection of views of some of the famous country estates of the East and West. Its text will prove of interest to those in charge of the development and maintenance of country places.

YOU Can GROW Better Fruit Than You Buy at the Market

Fruits are food, and right in your own garden you can raise most of the fruit you need for the table and for preserving; and it will be better and cheaper than what you buy at the market.

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We have inquiries for assistant gardeners, qualified for general greenhouse and outdoor work. Also specialists in orchids, decorative plants and fruit growing under glass. Also several foreman gardeners.

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Grenloch, N. J.
How mechanical bracing restores strength to decayed trees

The internal woody tissue of the tree has the same function as the bones in the human body—structural support. When this has been destroyed by decay, Nature is helpless to restore it and the tree, if neglected, will soon succumb to the force of the winds. And no treatment can permanently save it unless that treatment supplies scientifically the strength that has been lost.

Merely to fill the cavity with cement will not answer. The violent swaying of trees by the winds makes correct mechanical bracing of decay-weakened cavities absolutely imperative.

Correct mechanical bracing involves something more than just fixing bars and bolts in the cavity.

Every tree is different, and therefore the bracing of each tree must differ from the bracing used in all other trees, at least to some extent.

The tree in photograph No. 1, for example, required a combination of bolts and lock-nuts, reinforcing rods, and cross-bolts with lock-nuts above the crotch.

The tree in photograph No. 2 needed a backbone and rib arrangement of iron straps, plus torsion rods and anchors.

The tree in photograph No. 3 required a combination of bolts and cross-cross bolts with lock-nuts, torsion rods and chains. The tree in photograph No. 4 was so weak that it required a complicated and complete system of internal bracing, including cross-bolts, cross-cross bolts, iron straps, anchors, torsion rods, iron backbone and ribs, lock-nuts, bolts above the crotch, plus chains and lag-hooks higher up.

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Every gardener and amateur grower who has tried our Tomatoes praises them very enthusiastically. Considering the fact that they were tried last Summer in many climates, from Coast to Coast, from Canada to Florida, and not one complaint entered, we feel justified in advertising Stamford Beauty Tomato for sale as the greatest Tomato ever produced.

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MISS BLANCHE HARVEY, winner of Championship for canned vegetables in the state of Connecticut, whose exhibit is at the permanent Canning exhibition at Washington, D. C., uses Stamford Beauty Tomatoes in this exhibit. She says: "For canning, they are superior to all others. In color, solidity and keeping qualities." WILLIAM MOORE, gardener for Mrs. H. O. Haweiner, says: "I shall certainly grow more Stamford Beauties next year. I had the best of success this year with the few plants that I put in. It is a wonderful Tomato." MR. HENRY WILD, of Greenwich, Conn., well known throughout the country as an expert horticulturist, says: "Stamford Beauty Tomato was the pride of my vegetable garden this Summer. I never had such a crop of Tomatoes. I will grow no others next year."

Quality Seed Store, Stamford, Connecticut

Stamford Beauty

The finest outdoor Tomato the world has ever seen. Awarded highest honors wherever exhibited. Winner of five Certificates of Merit from Horticultural and Agricultural Societies.

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Stumpp & Walter Co.'s Catalog

Our 1919 Spring Catalog will be mailed to you on request, if you have not already received a copy.

Many New and Exhibition varieties of Flower and Vegetable Seeds are offered. Farm and Grass Seeds are also a feature. Cannas, Dahlias, and Gladioli—the best varieties to date.
AT the beginning of another planting season it will be in order to direct attention to some of the desirable plants for the flower garden which are seemingly not as well known as they deserve to be. Where space is limited one is naturally restricted in regard to variety, else the general effect is somewhat of a hodgepodge. As far as the temporary plants are concerned, this question may be solved by following a fresh planting scheme each year; in this way one gets first hand acquaintance with a greater variety of plants which of itself constitutes one of the joys of having a garden. To begin with annuals, as most flower growers do, only a few of the many available are at all generally grown, and while of course all are not of equal merit, more of them are deserving of wider recognition. Like longer loved plants, annuals are appreciative of a properly spaded piece of ground that contains some readily available plant food, preferably in the form of well decayed manure. Also they like ample room for individual development, but decidedly object to a struggle for existence, either with their near relatives or the more formidable tree and shrub. Give them good treatment in a sunny location and there will be little chance for complaint about the results.

In naming some kinds which it seems to me should be much better known, there is no intention of making a list of best annuals, but only to record some which in my own garden have proved to be quite as satisfactory as the popular favorites. One which never fails to please is *Nemesia strumosa* Suttonii, a low growing bushy plant with charming flowers of bright and varied colors. My plan with this is to set out plants a foot apart the third week in May that were raised under glass in March. Two or three weeks later seeds are sown in the space between each plant, eventually thinning to one seedling. By this means a bright display is maintained from the middle of June through September, the first planting being usually finished by the end of August and pulled up.

One of the daintiest little plants, excellent for edging purposes, is *Torenia Fournieri*, with flowers an attractive combination of light blue, royal purple and golden yellow. These are best raised under glass in March, as they are very tiny and of slow growth in the early stages. Another plant which it is best to raise in the same way is *Alonsoa Warscewiczii* which for freedom of bloom from July till frost can scarcely be beaten. It makes a bushy plant of slender habit, bearing orange scarlet flowers. *Browallia speciosa* major bears violet blue flowers and can be recommended for continuous blooming. It has a rather loose habit of growth and will succeed in poorer soil than most annuals. This plant is a good companion for *Gaura Lindheimeri*, a plant of such grace and charm that one wonders it is not better known. The white butterfly-like flowers are borne on long slender stems, and while only a few are open at one time, the blossoming is continuous from July till frost. *Hunnemannia fumariaefolia* should rank as one of the very best, for the reason that it is always a good looking plant with its feathery glaneous foliage and is one of the last to yield to Jack Frost. Its lovely, clear, yellow tulip-like flowers make splendid cutting material. It transplants nicely from small pots or may be sown where intended to flower. A near relative, *Argemone grandiflora*, is a strong growing showy plant with white poppy-like flowers, also useful for cutting. Once grown it appears in abundance year after year from self-sown seedlings.

One of the best of the numerous African Daisies is *Arctotis grandis*, a distinctive looking plant bearing long stemmed white flowers shaded pale violet, most useful for cutting in late summer. For a real gorgeous display the *Salpiglossis* takes the lead. The large funnel-shaped, richly colored flowers are beautifully veined and very adaptable for cutting purposes. Best results are only obtained when grown in rich moist soil, and it is usually more satisfactory to sow the seed under glass. *Lavatera splendens* is a robust branching plant which makes a very showy effect in the garden and also gives a wealth of good material for table decoration. It is to be had in both pink and white varieties, the variety called Sunset being especially pleasing with its bright, rose pink flowers and rather more compact habit. It is one of those plants which does not take kindly to being transplanted, so should be sown where intended to flower, finally allowing a space of about two feet from each plant. A few plants of *Nicotiana affinis* should be tucked in some corner of the garden for the sake of its delightful fragrance. The flowers are closed in the daytime but in the evening it is the most attractive plant in the garden. I prefer the pure white flowers of the type to the colored varieties. Sometimes it may be desirable to use a temporary plant for filling a gap in the shrubbery and *Cleome pungens* is an annual well adapted for the purpose. It is a vigorous grower and has very curious spiderly-looking pink flowers; once grown it is likely to perpetuate itself by self-sown seed. Last, but not least, in this short list is *Salvia uliginosa*, a comparatively new plant, introduced as a perennial, but in a rigorous climate reduced to the annual class. A whole bed of it is wonderfully effective in late
summer, its slender stems rising from four to five feet and laden with flowers of an exquisite blue. Seeds sown under glass in March will yield excellent plants for September blooming, a time of year when blue is most welcome as an offset to the preponderance of yellow in most gardens at that season.

While annuals have their rightful place in our affections, it is to the hardy perennials we turn for more lasting satisfaction. Garden makers of late have taken a keener interest in these so-called old fashioned flowers, which may be regarded as a progressive sign, for to know them intimately is to love them and be possessed of a share of this desire to devote more space to a large variety. From amongst their number we can pick those adaptable to any situation where plants may be expected to thrive, from a dry situation amongst the rocks to the shaded moist soil of the brookside. Let us consider some of those which by reason of their dwarf and often trailing habit are of value for edging beds or borders as well as for massing in the rockery. For white flowers we must have the old time *Arabis albo-* ever welcome for its early bloom. The double flowered variety is good for picking. Next comes *Phlox subulata alba*, not new but indispensable, forming a dense carpet. At the end of May *Iberis sempervirens* is most attractive and is an excellent plant for a dry situation, as is also *Stellaria holostea* which flowers at the same time. The foliage is not so attractive but it is one of the few plants which thrives on a dry bank. In June we get *Cerastium tomentosum*, conspicuous for its silvery foliage besides the wealth of flower, and a little later the trailing *Gypsophila repens* with its myriads of tiny bluish white flowers. This is an elegant little plant, best suited in a fairly dry soil.

For patches of yellow we have *Alyssum saxatile compactum* flowering in May and *Eustoma missouriensis*, a beautiful trailing Evening Primrose with very large, bright yellow flowers from June on. Both these prefer a rather light soil, but for a very dry place *Sedum sex-angulare* will thrive very well and produce an abundance of bright starry flowers at midsummer.

Of dwarf plants which can be classed as blue flowering if we are not too critical, *Viola cornuta* takes the lead for continuous blooming, as it starts in April and continues right through the season, and is seemingly as well at home either in partial shade or an open position. *Nepeta moccissini*, a bushy plant of compact habit, gives an abundance of pale blue flowers from May throughout the season. *Aster alpinus*, flowering in June, is the first of that genus to flower, and is desirable in every way. Given a rich soil and rather cool situation, there is nothing better than *Campanula carpatica*, which comes into flower about the end of June and is good for some weeks. The var. *turbinate* has somewhat larger flowers and a more compact habit of growth. *Veronica incana* is a good looking plant, especially attractive at mid-summer with its spikes of deep blue flowers in marked contrast with the silvery foliage. When well suited, *Plumbago Carpenta*, a plant of tufted habit, is very pleasing in late summer when covered with bright blue flowers.

There are several good dwarf plants available with flowers ranging from light pink to deep rose. Of the several varieties of *Phlox subulata*, one that I am very fond of is *frodoza*, which makes a charming carpet of rose pink in May. A plant not herbaceous, but which may well be used along the front of the perennial border and certainly should be planted in every rockery, is *Daphne ecorum*, a choice little evergreen trailing shrub which gives two crops of fragrant pink blossoms in a season, the first in May and again in September. It responds well to liberal treatment in a light, well drained soil. *Aubretia deltoides Leichtlinii* is a pretty creeping plant with small grayish leaves and a wealth of deep rose flowers in May. It is one of the plants that will thrive nicely in a thin soil. Where a straight continuous edging is desired there is nothing to beat *Armeria maritima Laecheana*, a trim growing plant with rosy pink flowers on good stems beginning to open the end of May and continuing for several weeks. *Saponaria ocyoides*, a plant of loose trailing habit, is very pretty in early summer with its abundance of bright pink flowers.

Pinks are suggestive of an old time garden, and *Dianthus plumarius* and varieties are beloved for their sweet fragrance in early June. *D. deltoides* makes a fine showing a little later in the season, producing such a mass of small deep pink flowers as to almost hide the foliage. Unlike some of the other choice members of this family, it thrives well in any ordinary soil. *Tunica saxifraga* is a charming plant with small leaves, producing a quantity of tiny pale pink flowers from July to September. For carpeting a sunny, dry situation *Sedum stoloniferum* is most satisfactory. It keeps in good condition for a number of years; the small pinkish flowers are produced in clusters in July and August.

For a brilliant showing of red *Heuchera sanguinea* is easily the best and is one of the plants well worth growing in every garden. It is of tufted habit, but the graceful flower stems rise a foot or more above the foliage, the flowers beginning to open early in June and continuing for several weeks. The variety *Flamebeau* is a vigorous grower with flame red flowers, a fine acquisition. *Lychnis viscaria splendens* is another plant of brilliant showing late in May and June.

All these dwarf plants mentioned can be classed as good doers if given just ordinary care, so beginners need have no fear that any extra special requirements are necessary for their successful culture. Location is perhaps the most important detail in their management. Some have been specially mentioned as preferring a dry situation, and to a certain degree that is true of all of them. On retentive soil there is danger of winter-killing, but light soil does not necessarily mean poor soil. *Sedums* are happy in that, but most of the others appreciate good culture. Then, too, several of them retain their foliage through the winter, which calls for special protection. A covering of light material sufficient to break the sun's rays but not to exclude plenty of air is the correct treatment to give. Most of them are readily raised from seeds which will be found listed in many of the leading catalogues, and of the remainder plants can be purchased from firms which specialize in hardy plants. Seeds may be sown in March if a greenhouse or hot-bed is available or outdoors in May or June in a prepared seed bed. The earlier they are raised the better, as it is quite an advantage to have good strong plants before winter. Like most other herbaceous perennials they will begin to deteriorate after two or three or more years (some earlier than others and depending somewhat on local conditions) but it is not difficult to renew the stock as necessary. Some can be lifted and divided and thus started on a new lease of life and beauty, while others are easily rooted from cuttings taken in early summer, inserted in a sandy compost and placed in a greenhouse or close frame until rooted. A study of the habit of growth will suggest the readiest means of propagation, and whatever the method used select only the very best plants for this purpose.
EVERY real gardener and garden lover thoroughly appreciates the effects produced by the various classes of plants in their seasons, but at no season of the year do we see anything that is more in harmony with its surroundings than are the various shades of yellow, bronze, and crimson of Chrysanthemums.

The Border Chrysanthemum is no new type of the flower, though it has been improved almost out of knowledge both as regards the date of flowering and in the number and beauty of the varieties.

Though the Pompon was the original, we now have three distinct types, Pompons, Japanese, and Singles, all of which are useful, and when we consider that by their aid we can prolong by a month or two the displays of bright flowers in our beds and borders, and also secure large quantities of cut flowers for the decoration of the home up to the end of October, such plants deserve more than ordinary consideration.

The several ways in which these Border Chrysanthemums can be utilized are well worth a word or two. They will grow in any kind of garden soil and in almost any position, and if this is not too moist will live through the winter and go on blooming after year, but such treatment I do not recommend, as it is not conducive to the best results. Planted in fairly large clumps in the herbaceous border they are quite at home, and, providing due consideration is given to the selection of varieties, they add greatly to the charm of the border during the late summer and autumn.

Planted in beds of fair size—either one variety or two or three selected for their height and color—if the beds are on a fairly expansive lawn they make a brave show, and under such conditions are perhaps seen at their best. It is not necessary to grow them in such beds all the summer, but they may be removed thence just previous to flowering.

In or around the edges of open or newly-planted shrubberies they can be utilized with much effect, and it is in such positions that the stools may be left a year or two.

For cutting purposes they are best cultivated in a border or in beds in the kitchen garden, where their wants can be properly attended to, and, though without any protection whatever, good results are obtained. A little provision for protecting the flowers in case of early frost or prolonged moisture during the opening stages is amply repaid.

In dealing with the cultivation of a plant it is usual to commence with the propagation, but before doing so I should make it quite clear that Border Chrysanthemums under fair conditions will live and flower well for quite a number of years, practically without any attention, and the fact of their being left to themselves tends to make the plants hardier. The soil which they are in naturally becomes poor and the growth less rampant each succeeding year, and so the stools get harder and the young growths in the spring less vigorous and consequently more likely to come through the spring safely than young plants put out in well-prepared ground the previous spring. The latter often throw up very vigorous growth from the base during November and December, and it is this class of shoot that very quickly succumbs to frost.

Those who are desirous of cultivating the plants on these lines would be well advised not to cut back the plants too hard after flowering, but rather to let them die back naturally after the flowering shoots have been cut. If cut down, say, to within six inches of the ground while the roots are still active, they are apt to bleed and the constitution of such plants is ruined, so when planting to establish Chrysanthemums permanently—that is without propagating each spring—it would be best to plant in soil not too rich, and in selecting the position let it be one that does not lie too wet during the winter.

A very simple method of propagation, and one best suited to the amateur and owners of small gardens without glass accommodation, is to lift the plants that have flowered the previous autumn some time during April, pull off the young growths, which by this time are throwing up well from the base and are usually well rooted, and plant them in the borders. They will make good plants by the autumn: five to nine such shoots planted about a foot apart make really effective clumps. Any quantity of plants may be raised in this way, and for an ordinary display in the borders any other form of propagation is really unnecessary.

Where, however, a specialty is made of Border Chrysanthemums or where they are required in quantity for cutting purposes, it is usual to propagate them under glass, the date of propagation varying from the end of January to March, and except in the case of particular varieties there is little to be gained by early propagation. Cuttings inserted the first or second week in March make good plants by the end of April, which even in a very favorable district is quite early enough for planting. May
is the best time for planting in most districts, and so the
date of propagation must be governed somewhat by the
proposed date of planting, and of course by the class of
plant desired at planting time.

To ensure good cuttings the care of the stock plant is
important, and where possible these should be lifted in
the autumn before the advent of severe frost, and placed
in a cool house or frame where frost can be excluded,
lightly covering the roots with fine soil. Very little or no
water will be necessary during the winter months, but
plenty of ventilation should be given. Many shoots will
be thrown up during January and early February, and
usually they are pretty strong. They should be removed
with a knife at or just beneath the surface of the soil
and thrown away, and the next lot of cuttings, though not so
strong, will be better and likely to root more evenly than
the first, the lengthening days and stronger light keeping
them harder. A moderately hard cutting not only roots
quickly but emits many more roots than a large sappy
one and the growth of every plant is governed by the
amount of serviceable roots it has.

A light sandy compost should be used for propagating,
but whether this is made up in the form of a bed in a
moderately cool house or frame or in boxes is quite im-
material, either method having its advantages; but it is
essential for the cuttings to be made quite firm in the
compost and well watered in, afterwards keeping them close
till roots are emitted, when the young plants should be
gradually hardened off by giving more air day by day.

Chrysanthemums will not give the best results from an
impoverished soil. A well-worked soil not too rich, but
nutritious and manure, which will give good steady growth
from the outset, is far the best, and it is much easier and
less wasteful to add or give manure later in the season
than to try to check the growth of plants which are
making far too much soft wood through a superabundance
of manure at the outset.

Firm planting is essential, and it is detrimental to plant
when the soil is in a wet condition, the plants getting away
much quicker when it is nice and friable.

The distance they should be planted apart will depend
somewhat on the varieties. Pompons may only require
from eighteen to twenty-four inches each way, and in
light soil even less, but the stronger-growing Japanese
type should be from two to three feet apart, a good plan
being to plant in double rows two feet apart and two feet
from plant to plant in the rows, and a distance of three
feet between each pair of rows. This saves space some-
what and yet gives plenty of room for working between
the plants during the growing season.

Some time during the season the plants will require
staking, and probably the best and quickest plan is to put
the stakes in before planting out; if this is done the young
plants may be tied as soon as they require it, and the
rows or beds will be much more tidy in appearance than
when the stakes are put in at a later date.

After planting, the ground should be frequently hoed.
This operation serves the treble purpose of keeping down
weeds, promoting healthy growth, and during dry
weather checking the loss of moisture. If it is systematically
done very little watering should be required, and
especially none till near the flowering period.

When the flower-buds are showing, the treatment
should be more liberal, and both feeding and watering
must be regularly attended to. It is difficult to say how
much water and manure should be given, this being
governed by a variety of circumstances. Heavy soils
may require very little, whilst on light porous soils a feed
and good soaking of water every week or ten days would
not be too much. It is astonishing what difference proper
attention in this respect makes to the color and general
quality of the flowers.

Disbudded plants for cutting, I find, like even more
generous treatment than those grown for sprays or for
a border display, and a severe drought after disbudding
not only prolongs the time they are opening but robs
them of color and size.

Plants for ordinary garden decoration are best allowed
to grow quite naturally. The introduction of any system
of stopping involves a greater amount of tying, which
gets a stiffer appearance, and in the borders is
should be ovibated as far as possible and varieties selected
that require little or no staking.

When growing for cut flowers, whether for sprays or
disbudded blooms, it is sometimes advisable to take out
the points of the plants at or about the time of the first
natural break; this conduces to a more even set of
shoots, and where it is desired to retard the flowering
period of a variety that may be stopped again, afterwards
restricting the shoots to the number required on each
plant.—Extracts from an article by Thomas Stevenson,
F. R. H. S., in the Journal of the Royal Horticultural
Society (London).

THE NEW HYDRANGEAS

WITHIN the last fifteen years our list of Hydrangeas
in the Hortensia class has been largely added to,
through the introduction of what are generally referred to
as the new French Hydrangeas. The newcomers are
noted for the immensity of their flower trusses, the
individual florets in which are sometimes as large as a sil-
ver dollar. The color is white or pink, with the pink vary-
ing in intensity according to a particular variety.

Some of the varieties are forced for Easter blooming,
and are to be found among the florists' offerings at that
season. Quite likely they will be seen in great quantity
next Easter, and at many others, as they are expected
to take the place, in large degree, of Azaleas, which,
under the embargo, shortly to go into effect, against the
importation of plants having soil around their roots, will
no longer be imported, and cannot be grown in this coun-
try to commercial advantage.

They are very suitable for use as tubbed specimens on
lawns, piazzas, and elsewhere, and are treated, as to cul-
ture and care, exactly as Hortensia Otaka, the best
known of this particular section of the Hydrangea family.
Our illustration is of the variety Avalanche, a beautiful
white.
Designing the American Home Garden

L. P. Jensen

If we are to adopt, and successfully carry out the slogan "A Garden for Every American Home," we must first of all get away from the usual disregard for design in the development of our gardens. We generally give considerable thought to properly plan and arrange our buildings in such a way that they combine comfort with utility, as well as a pleasing arrangement of interior and exterior. We furnish our rooms in such a manner as to form harmonious combinations, but few persons consider it essential that similar considerations should be bestowed on the surroundings out of doors.

I will confine these remarks to that part of the garden which gives us the proper frame for our home picture and the outward evidence of our taste and refinement which should be of a character fitted to our varied conditions of climate, soil and situation.

There is no reason why we should not be able to introduce plant material and create some sort of a garden to every home, no matter how limited the extent of the grounds may be. It is always possible to relieve the monotony of bare walls by the planting of vines at their base, or, if facing a paved street, by plant-filled boxes at the windows. But assuming that we have a somewhat more extensive space of ground to handle, may it be a small city lot or the larger grounds of the suburban or country home, in each case it is absolutely essential that we carefully plan for our work to establish pleasing and harmonious combinations in our home picture.

To do this it will be necessary to know and apply certain fundamental principles which may be adapted to suit most conditions, and which, if followed, will help to remedy the usual lack of design of the average American home garden which mostly is either almost void of vegetation or overcrowded with perhaps well selected but thoughtlessly grouped planting material.

The lawn should be as spacious as possible to give extent to the place and should have boundaries of closely planted trees and shrubs in irregular masses, the foreground of which may be planted, here and there, with masses of herbaceous and annual flowering plants carefully arranged so as not to cause a spotted effect and also for succession of bloom. Trees should be selected which at maturity will not become out of proportion to the place. Large growing trees for the large place, the smaller growing ones for the city lot.

Plant about the base of buildings to connect them with the lawn and to soften their stiff regular lines. This planting should consist of hardy material which will be effective even in winter.

Porches and parts of buildings should be screened by hardy vines for the purpose of both privacy and comfort.

Outbuildings should be partially screened by plantations so as to show only those parts which will add to the beauty of the composition; this applies equally to other surrounding objects.

Avoid the common fault of scattering plants all over the grounds without reason or thought.

In the arrangements of plantations be careful to study the natural growth of the plants, such as height, form, rapid or slow growth, texture, form and color of the foliage and season of bloom. While most plants have green leaves there is a great difference in the shade of green, which difference must be carefully considered.
considered for the sake of harmony of composition. Such plants as the blue spruce, purple beach, plum and birch, golden elder and all plants with highly colored leaves, should be used very carefully, as should also plants like the weeping mulberry and the Kilmarnock weeping willow.

**Natural Water Gardens Are Most Attractive Features to Any Home Grounds.**

Take advantage of beautiful and interesting points in the surrounding landscape by opening of vistas which will bring them into your garden picture.

When planting groups and masses do not indiscriminately mix the plants. Plant several of each kind or variety together, and where more than one kind are used in a group let them mix slightly to avoid the formation of stiff regular lines.

Drives and walks should be as direct to the point as possible and planned for convenience as well as beauty. Except on very small places a slightly curving road or walk is generally more pleasing than a straight one. Every road or walk should have a distinct aim, such as buildings, pleasing viewpoints, etc. Large bends will only be justified by natural obstacles, such as rocks, water or groups of trees. Curves should be easy and gracefully follow the natural contours of the ground. If possible do not permit roads and walks to run through the center of an open lawn or meadow, but keep them to one side and plant trees and shrubs irregularly along their sides in such a manner as to prevent long stretches of them to be seen from any one point of view.

The entrance to a place should be as simple as possible and in keeping with the general design of the place.

Water is one of the most effective features in the landscape and should be introduced whenever possible. The planting of the margins of streams and lakes gives an opportunity for introducing many plants which could not otherwise be grown. The making of artificial ponds and lakes and the planting of them to fit natural surround-

**Plantations Along Walks and Drives Add Materially to the General Scenery.**

ings is much more difficult than the arrangements of ordinary ground surfaces, and the best way to learn how to do this well is to study nature's arrangements, noting carefully how she goes about forming her outlines. One may thus gain much valuable information regarding the planting of the water features of our garden.

All accessory structures, such as bridges, pergolas, garden houses and seats, should be carefully designed to harmonize with the surroundings. If the design is simple and harmonious such structures may add materially to the interest and usefulness of the garden, but if not properly designed or placed without apparent reason for its position it had better be left out.

In planning our home garden we should mainly rely on plants of undoubted hardiness and those particularly suited to our particular soil or situation. For this reason the native plants of the region in which we reside are particularly adapted for our purpose. Get acquainted with this native material first of all and learn how to use it to suit your purpose, then add to this such plants (whether native of your particular region, elsewhere in this country or exotic), which observation and experience has taught you to be dependable and your success is assured.

If you have sufficient space by all means have a utility garden sufficient for your needs, supplying fruit and vegetables for your table and cut-flowers for your home and friends, and perhaps room for experimentation in the growing of unusual and freakish plants, but keep this as a separate compartment from the one making your home a picture of beauty and harmony.
DECORATIVE PERENNIALS FOR CONTINUOUS BLOOM

THE most desirable type of flower border is one which will yield cut blooms from early spring until late autumn. Consequently, when the gardener starts out to make such a border, his aim is to arrange the various and many varieties of flowers, so that this object is attained.

It is a comparatively easy matter to obtain a list of perennial flowers with their blossoming seasons, the relative heights of the plants, and their colors, writes F. E. Buck in Canadian Florist. With this information used as the basis for selection, it might be thought an easy matter to arrange the border to give continuous bloom. Such, however, is not always the case. The problem of continuity of bloom is one which can be successfully solved, only by a certain amount of experimenting. It is partly a matter of experience and individual skill for the reason that an extra early spring, a dry summer, or an intense hot period for a week or so will entirely change the results that one might otherwise expect. A certain list of flowers, therefore, might give splendid results in one district, while in another part of the country there might be periods when very little bloom could be found in the border.

The first of the early blooming spring flowers is the Christmas rose. The Christmas rose (helleborus niger) frequently forms under the snow and is always in bloom at the time the snow disappears. A well-established plant will give as many as a hundred blooms. In addition, there are several other little flowers of spring, such as crocuses and squills, but the really worth-while flowers that belong to the “spring” group are the tulips and narcissi. The tulips have been called the “radiant flowers of spring,” and the beautiful and gorgeous Darwin tulips of recent introduction certainly deserve that description. The early tulips, Darwin tulips and narcissi continue in bloom for about five or six weeks. Then the irises follow and continue their blooming season for at least another month. The irises are particularly decorative, and because of their many rainbow colors, are sometimes said to belong to the “Ardent” group of flowers.

Paeony time is, perhaps, the most wonderful time of the floral year. Various varieties of paeonies are obtainable to enable one to have paeonies for about five or six weeks. As soon as the paeonies are at their prime, the roses begin to come into bloom. The paeony season is also the season for many other beautiful flowers. The dazzling and magnificent oriental poppies and the tall spire-like fox-tail lilies are most effective border plants.

The month of June includes some of the finest flowers, and it will depend on the locality or the type of season whether many of these will finish their blooming season in this month or continue well on into July. With the coming of July the “showy” group of flowers begins to make its appearance. This group consists of such flowers as the perennial phloxes, shasta daisies, blanket flowers and some of the hardiest lilies. Such flowers with their contemporaries continue their blooming season through July and well into August.

The last great flower group is known as the “prevailing” group, due to the fact that in spite of the early autumn frosts many of its members continue in bloom well on into October. The most noted flowers in this group, perhaps, are the sunflowers, the starworts, asters and the Japanese anemones.

As was indicated at the beginning of this article, the successful grower of perennials for continuous bloom, is the one who through several years of patient observation and practice, finds out the plants which best fit the local conditions and the type of season which generally prevail.
March is a very busy month and the increasing sunshine demands more vigilance and care.

See that the orchids, palms, cinerarias, and ferns are sufficiently shaded or their value will be impaired.

Now is the time to re-pot ferns. Many people have an old favorite that they have grown for years and hate to disturb it, but it is an advantage to the future health of the plant to change the soil and re-pot. Cut away old dead fronds, and turn out of the pot carefully, removing old crocks or drainage materials. Place in a new or clean pot. Ferns are not very fastidious regarding soil but are impatient with sourness in the soil, so see to it that the drainage is perfect. Oyster shells are best and contain a little food that the roots ramble amongst. Good fibrous soil, old mushroom bed manure, and coarse leaf mold, is all they require. Peat is often advocated but is unnecessary. I have seen them growing finely in a clay soil with perfect drainage. Place after re-potting in a shady position.

The Peaches and Nectarines will now present a lovely sight in bloom. Encourage a good set by every item of fresh air and sunshine to be had, as well as a cool and drier atmosphere. Watering is to be carefully attended to. Any excess of dryness or waterlogged condition will cause failure. Do not close down the house at night, but maintain a sweet, airy atmosphere at all times.

The Primulas, Cinerarias, and any plants in the cool house should be placed in the north side or have a slight shade given. Keep dead leaves off the plants; also keep insects away. Mice are fond of the bark of fruit trees and must be destroyed. Any orchids resting here, and we have a great variety suitable for this house, should be given water only when necessary. Dendrobium, thyrsiflorum, densiflorum, suavissimum, tortile, roseum and nobile, are all good varieties for Easter. They should be resting and ripening and if the grower has not tried these beautiful aristocrats of the floral kingdom, now is the time to begin. Rest is necessary to produce flowers in these otherwise useless looking, dried sticks, but their glorious beauty is brought out to be forever admired. So keep them on the dry side, exposed to the sun, until the nubbins appear and then give more water.

Cattleyas with their fleshy leaves must be shaded. Cattleya Trianae which blossomed and rested several weeks ago, should be re-potted and started again. Caladiums that have advanced nicely can be re-potted. Carnations and roses most people understand, and all that is necessary now is increased water supply and air, as the sun sends the temperature higher. The rose fancier may be looking for new varieties, but for the smaller places the latest novelty is best left alone for a couple of years and hold fast to the good old friends.

Chrysanthemums are growing nicely and it is not too late to propagate the small varieties. Take for instance the bush varieties. The Cap family and Singles, if rooted this month and grown along into seven inch pots, will give a charming display in November when dull weather is present. The larger varieties can also be easily grown, even in six inch pots.

I know a man with a small structure whose house is always alive with a wealth of bloom. He roots his mums April first annually and never grows a single mum plant in more than six inch pot, and last year his William Turners were enormous, twenty-four inches in circumference, not as large as an expert who grows one thousand in order to get thirty-six first class blooms for a certain exhibition. But the persons who will content themselves with less and grow them with ordinary care will derive great pleasure with little expense.

Lilium Speciosum for summer blooming should be procured now and put in 6 or 7 inch pots and grow cool. They will bloom charmingly in July and August and are almost indispensable for brightening the conservatory, arranged among Boston Ferns or any plants contained in this structure.

Regarding insects, last year was a bad one especially for white fly. In-doors it breeds on tomato plants. I have found the only reliable effective remedy is hydrocyanic acid gas. It is simple to use—for a house 25’x25’ one ounce of Cyanide of Potassium, one pint of Sulphuric Acid, one pint of water. First put the water into a stone jar, add the sulphuric acid and when the house is closed for the night after dark, drop in the Cyanide. Walk out quickly, locking all doors. The house and plants should be fairly dry before the fumigating takes place. It can remain closed all night with this quantity with safety. I have described this method here in the Chronicle as I have had letters of inquiry from several people who own greenhouses.

Conservatories attached to the house cannot be fumigated in this manner and the next remedy is to dip the plants overhead in a large tub with an Aphine solution.

Sow a pinch of the lovely Schizanthus retusus. It is an improved variety of this charming species of annuals, requiring cool treatment. It can be grown with ease and sown in a cool temperature and transplanted into boxes for two weeks; then transferred into 2½ inch pots and moved on into whatever size, the grower needs. All it requires is light, rich soil and good drainage. Pinch all flower buds off until it is required to bloom.

Clarkias are another beautiful annual easily grown, and many people prefer them to Fuchsias. Sow a pinch of seed and grow on until six inch pots are reached. No pinching is necessary. They will grow in many beautiful colors and shapes. Pick off dead blossoms and you will have a succession of bloom all summer with easy cultivation.
Sowing Seed for Next Year

T. J. SHEWARD

WHERE plants are desired for flowering in the greenhouse next winter and spring, the time is at hand to sow the seed. Primulas in variety, Calceolarias, Cinerarias, and Cyclamen are the most important of this class of plant. Begonias and Glorianias should also be sown now, although they flower later in the season. Cyclamen: To sow these seeds a box is filled with soil well sifted through a 3/4-inch sieve, the rough material being placed in the bottom of the box for drainage. When the box is filled and leveled the seeds are sown and a sheet of glass placed over the box to assist germination. Lay a piece of paper over the glass (Fig. 1). When the seedlings are the size of Fig. 2 they should be transplanted into other boxes 2 inches apart (Fig. 3), and when about the size of Fig. 4 potted into 3-inch pots. A good mixture for potting would be 1/4 loam and 1/4 leaf mould, with enough sand to keep the soil open. Pot up later into 4-inch pots (Fig. 5), and grow on in a temperature of 55° to 60°, keeping plants well syringed. When large enough pot into 5-inch and 6-inch pots for flowering (Fig. 6). Fig. 7 shows the depth to plant a cyclamen bulb in potting. Cinerarias: Sow the seed in boxes, water, and cover with a sheet of glass and paper (Fig. 1). Transplant P. Sensisis when about the size of Fig. 11, two inches apart into boxes or directly in 3-inch pots (Fig. 13). The soil best suited for Primulas is 2/3 loam, 1/3 leaf mould, 1/6 sand. Later pot into 4-inch pots for flowering (Fig. 14). Primula Obconica is sown in the same manner but is often a long time germinating, so should be transplanted as they appear about the size of Fig. 15 and potted up into 3-inch pots when about the size of Fig. 16, and afterwards into 5-inch pots for flowering.

Begonias: Begonia seed is very fine and should be sown carefully and not covered. Water the box before sowing the seed and permit to drain for two hours. When the seed is sown cover with a sheet of glass and paper (Fig. 1). Transplant when the first rough leaf forms, one inch apart in boxes (Fig. 17) and later two inches apart into other boxes (Fig. 18). When these are large enough pot into 3-inch and later 4-inch pots for flowering (Fig. 19). These plants will flower best the following year. The soil for potting should be 2/3 loam, 1/3 peat or leaf mould and 1/6 sand.
GARDENERS’ CHRONICLE

ALTHOUGH the culture of the garden dates back to a very respectable antiquity, recent years have seen an especial amount of interest and enthusiasm devoted to it. Old gardens have a particular charm of their own, and it is not easy for the makers of new ones to match them, in certain respects: in the old turf, for instance, which has been rolled and cut and carefully attended to for a matter of some hundreds of years, or in the great clipped hedges, running sometimes 20 feet high, or thereabouts, and of an impenetrable thickness, or in the mellow coloring of old brick and old stone walls. A study of old gardens is a useful preliminary to the making of new ones, and it is on some adaptation of the old gardens that most of the new are based; so far, at any rate, as the formal ones are concerned.

France and Italy can, perhaps, show the formal garden developed to its farthest point; for the grounds of Herrenhausen, to take a well-known instance, are a reflection of the intricacies of Versailles, while the old Italian villa gardens have a character peculiar to themselves and to their country. Flowers do not, perhaps, play so prominent a part in them as they do in some English gardens, although, in the matter of roses, Italian gardens can carry off the palm for quantity, if not always for quality. For what can be put beside the cascades of blossom which Italian rose trees fling over every wall and arch near them in the springtime? There is a charm about those old Italian gardens, with their cypresses, their marble seats and their beautiful vistas, which can hardly be matched elsewhere.

It is certainly well to become acquainted with old gardens, but to make an exact copy of them stands on a par with the making of copies of any other work of art; for a good garden may certainly be called a work of art. Those who wish for reproductions, either in gardens or in the furniture of their houses, can have them, and those who prefer original work, in either instance, can indulge their taste for it. However original any one wishes to be in the matter of the laying out of his garden, it will only be of benefit to him to know something of what has been done in this way by others before him; and, for this, it is not indispensable that he should actually visit the gardens in question, for he may gain plenty of knowledge on the subject from the innumerable books, with copious illustrations, which have been published of late years on the subject of gardening in all its branches.

A garden may be just as individual as a house; indeed, the two should, if possible, be planned in relation to each other. In making a new garden, it is as well to give careful consideration to all the natural features of the site, as well as to any peculiarities it may possess; thus, a disused quarry, if such a thing should be available, may make an ideal rock garden; a bog may be turned into a beautiful water garden, while there are endless possibilities about a stream of running water. Tree felling should be given careful thought, and due regard should be paid to the distant views which may be opened up in this way.

In a country where stone is available, it goes without saying that paving of all kinds, always a most effective feature, may be carried out on a much larger scale, with a great deal less trouble than in districts where this is not the case, and the garden planner will make his schemes accordingly. An entirely flat surface is, possibly, the most difficult to deal with, for it makes the raising of slopes or terraces rather a difficult problem, whereas rising ground may be made effective use of in many ways. It is highly desirable to think out the plan for a new garden carefully, beforehand, and to picture it in the imagination in all its aspects, for alterations are tiresome things.

Once the main features have been decided upon and carried out, it is an attractive method, for those who have a taste for such things, to let the garden go through a gradual process of development. In this way, a new border may be added in the springtime, a rock garden, perhaps in the autumn, a new pergola six months later, and so on, as the ideas for improvements come.—Christian Science Monitor.

SUBTROPICAL EFFECTS IN BEDDING

QUITE a variety of plants in common use are available for planting where a subtropical effect is required. Perhaps the commonest is the Canna, whose flowers and foliage make it desirable in practically all such plantings. The beautiful hybrid Cannas now on the market are glorious with their tremendous flowers, give a decided subtropical effect when used alone. The same might be said of Caladium Esculentum, which we know better as a central plant for a subtropical bed, if the bed is sheltered from strong winds; in exposed situations the winds are likely to split the large leaves.

In combination beds some of the ornamental grasses are very appropriate, particularly the Arundo, Eulalia, and Pennisetum Longistzlum. Our illustration shows a well-designed bed in which a Banana plant is used as the centerpiece. Next is a circle of Ricimis, then Eulalia and Cannas, Elephant’s Ears, and, at the base, Pennisetum Longistzlum.
for MARCH, 1919

Work for March in the Garden

JOHN JOHNSON

THE advantages of intensive cultivation and the value of systematized work were well expounded in the chapter on American Home Gardens in last month's issue, and we would suggest that now more than at any other time of the year, work must be intelligently planned and executed. Put the season's operations on a sound, practical basis at the outset. First of all, give prompt attention to all arrears of work and then make good any earlier sowings which have failed. Don't lose time bemoaning such losses, but make a direct effort to locate the trouble if possible and take steps to apply the remedy; sow again. Indeed, it may now be advisable in many cases to supplement the sowings of last month irrespective of failure in order to maintain succession; and we must now urge upon those who have not yet started their hotbed to do so at the earliest opportunity. Stock raised from sowings this month may be, with few exceptions, transplanted to cold frames in a month's time. With lengthened days and brighter sunshine the task of raising seedlings becomes less hazardous perhaps, but on the other hand, the frames will require closer care. Do not attempt to unduly force anything sown last month; a too rapid growth means a weak and less productive plant. Admit ample light by uncovering the frames early whenever weather permits and put on a chink of air on the leeward side equally early in the day. Ventilation should be gradually increased as the temperature rises to promote a healthy, sturdy growth, and yet cold draughts or extreme fluctuations of temperature must be avoided to prevent an injurious check. Full exposure to bright sun in the middle of the day might inflict untold injury to many seedlings, and for this reason it is safer to apply a thin shade to break the sun's rays during the noon hours.

Seedlings should be picked off as soon as they can be nicely handled, and a good guide for the novice is to begin transplanting his seedlings when the "rough," or in other words, the true leaves show and these appear immediately after the cotyledons or seed leaves. If, however, the seeds have been thinly sown, as we always advise they should be, a few days' delay in transplanting will not have any ill-effect, but when seeds are thickly sown there is every likelihood of considerable loss from "damping off," a fungoid disease almost incombattable when seed has been sown too thickly. Should damping occur the best remedy is to give more ventilation, less water and proceed immediately to transplant. Almost any fairly rich porous compost containing a fair proportion of sharp sand makes a suitable rooting medium in the early stages, but the soil enrichment should take the form of flaky leaf mold or well-decayed manure; certainly not artificial fertilizer. Good culture is based on careful observation and involves the exercise of much common sense and is not altogether surrounded by hidden mysteries, as pre-supposed by many novices. Needless to say the zenith of perfection is chiefly attained by those who have had years' experience and who, from personal contact and observation, have determined precisely the requirement of the various plants they cultivate. In our advice to the amateur we feel bound to observe that the inexperienced striving for best results are apt to err in the matter of overdoing things. They either coddle and overfeed their plants or otherwise subject them to extremes of heat and cold, drought or over-abundant moisture. There is a happy medium and that happy medium must be sought and found by adopting rational methods. No person would dream of feeding a month old child raw eggs or beef tea, both of which are high-grade stimulants for the grown person. Neither should the gardener, in preparing a compost for young plants, incorporate high-grade fertilizers. It is a good practice to keep the structure into which newly transplanted stock is placed somewhat close and shaded for a few days. No matter how carefully the work of transplanting is done the roots are subject to a certain amount of injury. During the process of transpiration, which is most active in bright sunlight, moisture is given off by the leaves in excess of that absorbed by the injured roots and in such cases it is useless to saturate the soil, unless bone dry, to prevent wilting. The thing to do then is to arrest the too rapid transpiration by conserving atmospheric moisture and by shading the plants. Herein also lies the value of overhead sprinkling without attempting to water the roots. As soon as the plants are re-established they must be gradually inured to more light and air.

Such vegetable plants as Tomato, Pepper and Eggplant require a temperature not lower than 60° to keep them in a healthy growing condition, but many others may be given cooler treatment from now on until about the end of the month, when cold frames will supply what subsequent protection might be necessary.

The same remarks apply to many of the plants required for bedding purposes. The more tender kinds as Begonia, Celosia, Coleus, Canna, Heliotrope, Vinca, Impatiens, Torenia, etc., require a temperature from 55° to 60°, while the hardy and half-hardy annuals may be gradually hardened off.

Repeat the sowing of vegetables advised in last month's notes and add to the list Beet, Brussels Sprouts, Globe Artichoke, and toward the end of the month a few pots of Sweet Corn may be sown with a view to later transplanting in the open.

Brussels Sprouts are often poorly grown because they are sown too late. These plants require a long season of growth, and for the best possible results must be sown this month. Sow the seed in gentle heat and grow the young plants steadily along in a cool temperature until final transplanting.

A full list of annuals intended for bedding and cutting purposes should be sown this month. In the case of Stocks and Asters, however, very early sowings are not usually as productive as sowings made at the end of March of between then and April 15. In exceptional cases where early flowers are required for cutting and the plants can be kept growing steadily Aster Queen of Market and Ten-Week Stocks may be sown forthwith, but for mid-season supplies and for the very finest displays the sowing had better be deferred a month. When sowing these as with most other seeds sown inside it is always advisable to cover the seed vessel with a sheet of glass or stiff paper to prevent rapid evaporation. Water should only be given when the soil becomes dry, and then it is better to immerse the vessel than to apply water on the surface. Many amateurs pride themselves in growing asters well, and to grow these plants to perfection involves considerable care. They require liberal treatment
from start to finish and particularly in the early stages of growth must be given a well balanced temperature, for asters cannot withstand extremes of heat and cold. On account of the almost endless diversity of form and color, there are dwarf, medium and tall growing varieties, asters are worthy of all the care good culture involves.

See that seedling perennials wintered in cold frames are given access to light and air on fine days and remove weeds and decaying foliage. These plants may be transferred to permanent quarters when frost is out of the ground.

**Shrubbery.** Hydrangeas and other shrubs which flower on wood made during the current season may now be cut hard back. The closer these are pruned the finer will be the flower heads next August. On the other hand, spring flowering shrubs should require little if any pruning. If these latter were not given attention after flowering last year they may now be thinned out if necessary, but remember that which is cut away now means so much loss of flower. Don't shear them as is too often done, but to avoid overcrowding it is a safe practice to thin out straggling and interfering branches. If shrubs infested with scale have not yet been sprayed attend to the matter at the earliest possible moment, and also spray evergreens which are likely to be infested with red spider, cedars, retinosporas and blue spruce are among the kinds susceptible to this pest.

Cut a few shoots of Forsythia and Pussy Willow. In the warmth of a greenhouse or dwelling they soon blossom and are very attractive. After the necessary spraying and pruning has been done clear away all rubbish and burn it and lightly spade the surface soil of the shrubbery, incorporating dead leaves, manure or fertilizer required to stimulate healthy growth.

Grape vines and ornamental climbers will require some attention now. Grape vines, although better pruned in the early winter are often neglected until this season. Prune them now, cutting all lateral growths close in and leaving only such of last year's wood required for extension. Ornamental climbers on buildings, as ivy and ampelopsis, should be kept within bounds, either cut back or trained away from the windows and secure any growths which might have loosened during the winter months.

**ANNUALS FOR BEDS AND BORDERS**

Many beautiful combinations for beds and borders may be arranged from Annuals, either alone or in connection with Perennials.

Annuals are not given as much prominence in the garden as they deserve, possibly for the reason that seeds are cheap, or that the transplanting of many varieties is hard of accomplishment. However, if one does not care to plant from seed, it is usually possible to obtain, from any enterprising plant grower, potted plants all ready to bed out, and the collection available is sometimes quite surprising.

If often happens that, in suburban districts, a home is leased for the summer season, middle of May to middle of September, perhaps; consequently a few beds of flowers are wanted to give the most satisfaction within that time. In such a case recourse may be had to the Annuals, and if the varieties are well chosen, the resulting effect is beautiful indeed.

The preparation of the soil is a simple matter. In these days when manure is scarce, sheep manure in the ordinary commercial form, obtainable from any seedsman or dealer in horticultural supplies, is excellent for mixing with the soil, which, preferably, should be a sandy loam.

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**THE NEW ROSE PREMIER**

Lovers of very fine garden roses will welcome this new addition with open arms. Tried out in a limited way last summer, it developed into one of the very finest outdoor pink roses, as on some half dozen plants there was hardly a day one could not pick several buds from them, even until late in October.

Premier is an American-raised variety and therefore may be said to be acclimated at the start. Its parents were Ophelia and Russell. From the latter it gets its color, since its color more resembles Russell than any other rose; while from Ophelia it gets its quick-growing habit and wonderful freedom, as well as its superb foliage.

The color in the summer when grown outdoors is lighter than the splendid deep pink which this rose presents when grown under glass. This predisposition to come lighter in the heat of summer is common to all pink roses, due to the shading of pink roses being so delicate.

The New Rose Premier Promises to Become One of Our Garden Favorites.

Another year will unquestionably find Premier at the head of forcing roses, since the demand for this variety has never been approached in the history of American horticulture.

**DESTROYING WOOLLY APHIS ON ROOTS**

Carbon disulphide, in solution at the rate of one-half ounce to four gallons of water and applied at the rate of three-fourths gallon per square foot of soil, will control the root form of the woolly apple aphid and without injury to the trees under suitable conditions, says the U. S. Department of Agriculture, in Bulletin 730, recently published. The solution is prepared by pouring the carbon disulphide into the water and agitating the mixture vigorously. When applied on the soil around a tree the liquid penetrates into the ground and the poison gas given off by the chemical kills the pest. Every square foot of infested soil should be subjected to the action of the solution in order to insure complete control. This may be accomplished by pouring the liquid in a shallow basin made in the soil around the tree.
The Practical Value of Home Gardens

HENRY R. FRANCIS

LONG before the world war emphasized its intense practical value men and women found pleasure and profit in gardening. In not a few cases the pleasant aspect received the larger consideration; but always the practical value was evident, even when it was secondary. While gardening will always be a pleasing diversion there is every reason to believe that it will stand along for all time on the merits of its practical value.

It is well worth while to take account of the important part played by the war gardens in assuring and hastening victory. Every soldier, and many a civilian, knows that next to getting men and munitions to the front there is nothing in importance that surpasses the supply of food. A soldier can go for weeks, if necessary, with makeshift shelter and clothing, but he has a thoroughly galling experience in going without food for many hours. In fact, this subject of food became so serious that one of the national slogans was “Food Will Win the War.” The immense possibilities in increasing food production through the crops from the home vegetable gardens were at once realized throughout the country and war gardens sprang up in every nook and corner where there were hands to work them. The result was that in 1918 the food production in this country was increased through these innumerable small areas by the estimated value of 525 million dollars.

The great practical value of this increased food production through home gardening may be briefly summarized in a few words. There were released for overseas shipment thousands of tons of wheat and meat that would otherwise have been absolutely necessary for the sustenance of our people here. Railroads, already overburdened by commerce, were relieved of the transportation of food from the large producing centers to the large consuming districts. Leisure time that might not otherwise have been profitably spent was devoted to food production of inestimable value. In other words, the practical worth of home gardens was the growing of crops for home consumption with spare time that would not otherwise have been profitably employed.

Now, after the home gardens have so admirably done their share in the war program, we can pause to take a breath and see what their practical value will be in peace times. There are innumerable new gardeners that have been turned out by the war machine. These are fairly well experienced and they know the kinds of crops that are most profitable for growing in the backyard. With their present experience and knowledge to begin with they are going to become more skilled in their practice so that their results will more and more be worth while.

A home garden census was recently taken in Massachusetts. It was found that 284,000 gardens comprising 24,000 acres were developed in 1918. The estimated food value from these gardens is $6,000,000. It is probable that in other States this record was decidedly beaten. Massachusetts has a big urban population, a large part of which is so situated that it cannot have home gardens.

Now that we have considered the food value of home gardening in the nation as a whole and in one State in particular, let us see what can be done by some typical families. We can take for our first example the family living in the city with a small backyard, say 20 by 40 feet, is available garden size. On this area, by intensive methods, and none but these should be used, it is not at all difficult to raise crops that will amount to a value of $20. I know of a garden thirty feet square that yielded, on what was formerly an ash heap, $30 worth of products. In a garden of this size the vegetables requiring the minimum of space for development are planted. The most important crops for the smallest areas are lettuce, chard, kale, radishes, beets, onions, bush beans, and a few tomato plants each trained on a pole.

Up until the last five or ten years it was the practice of land surveyors to plot city lots as near as possible to the size of 50 by 100 feet. In this type of city lot it is very often found that the available space for the vegetable garden is 30 by 50 feet. In this area a few more crops can be added to the kinds selected for the smaller gardens. Some peas can be planted. This is not a profitable crop compared with tomatoes or kale. It is a very gratifying vegetable, however, coming into early maturity and giving encouragement to the gardener. The space which peas occupy can be planted later with late beets or lettuce which will help to compensate the low value producing characteristic. Spinach and turnips will find an appropriate place in this type of garden. The gardener who is somewhat experienced and has favorable soil will probably desire to grow a row of celery in his 30 by 50 feet garden.

In the suburban districts and in the newer developments within the city boundary it will be possible for the home garden to be quite extensive. A size equal to 40 by 60 feet is common. This is a favorable shape and, if properly planned, vegetables for a family of five can be raised. Sufficient quantities can be grown in this area to supply the family with fresh vegetables throughout the summer and afford a surplus to can. A good beginning on the winter supply of beets, turnips, cabbage, parsnips, and carrots can be produced in addition to a supply of potatoes that will carry the family through the early season when these are at the highest prices in the market. The value of products from a garden of this size may easily reach $40. It can be properly managed with an average of one hour per day for about sixty days. This is real practical use of spare time.

Out in the country the areas most frequently devoted to the home vegetable garden is one-eighth acre. The size and shape is usually 50 by 100 feet. This is a commendable plan for the farm vegetable garden and works out in practice very satisfactorily. All of the vegetables excepting potatoes desired for home use throughout the year can be grown on a garden of this size. The potatoes usually are raised in a patch by themselves. It is not uncommon to find a ½-acre home garden raising vegetables that are worth from $90 to $100 to the family. Of course, this value is attained only when the plan of the garden is well thought out, the management is of the best and the gardener is highly efficient.

There are other home gardens larger than those mentioned that are thoroughly practical and have a high value. When there are more than five members in the household, or when it is desirable to grow vegetables in sufficient quantities to sell the surplus over home consumption, a garden may well be increased in area from one-eighth acre up to a quarter, or even up to a half acre. When these larger sizes are developed the gardener is getting beyond the amateur stage and the garden is more than a home garden; it is a commercial market garden in its infancy.

Thus far we have considered the food value returns from home vegetable gardening. These are sufficient inducements to the ordinary mind. But we should not overlook some of the other practical excellences that are incidental to the food value of gardens. These may be summarized on the basis of improved health, increased interest and better citizenship.

Health is secured through wholesome open-air exercise in the garden and by the use of more fresh vegetables in the diet. Interest is created by an intimate association with growing plants during their entire development. Better citizenship is fostered by the privilege of carrying out with valuable returns a project of common family interest. The vegetable garden is a logical part of the proper home surroundings. When it is suitably co-ordinated with the other phases of the modern home grounds it will lend its great value to the making of a fuller and better home life. In these days of unsettled conditions a good home for everyone is the dependable defense of the nation.

Knowing a Plant’s Natural Needs

The name of an ancient host has become proverbial in legendary history from his simple manner of making his guests comfortable in bed. He kept only one size of bedstead; if his guest was too short, he stretched him; if too tall, he lopped him to fit. It has often struck me that the ways of many gardeners are similarly Procrustean. They fit plants forcibly into a ready-made, cast-iron system, instead of adapting their system to a plant's natural needs. A plant may advertise its needs hourly under their eyes and meet with no intelligent response. What is commoner, for instance, than a strawberry's increase by "runners" or cultivation in an annual, and, where the acreage is enough to afford the old plantshad reason in it, though it was too untidy. It is my belief, and I venture to assert it," declared the lecturer, raising his voice, "there isn't a man in this audience who has ever done anything to prevent the destruction of our vast forests."

A rather timid-looking man quietly arose in the rear of the hall and said: "I've shot woodpeckers." —Life.
Vegetables for Exhibition and Utility
S. Golding

March is the month of anticipation, when all gardeners are feeling the touch of spring fever. They will feel the edge of their trusty spade, longing for the days when they can once again be turning over the mellow earth.

But whatever the climatic conditions prevailing in the early days of the month, and before it has run its usually blistering course, we have perfect assurance that very soon we can enter upon the season's campaign on the open ground.

Let us hope that even more will hear, and heed, the siren call of Victory gardens during the coming season, and make the cry of "back to the land" a great reality.

A word on digging.—The war has been conducive to many people, taking to various exercises, the manual of arms. Other setting up exercises had become popular, but probably now that the warlike spirit has somewhat subsided, these may be looking for other fields in which they can keep fit; gardening can supply this field. For in digging we have probably the finest exercise known, as nearly every muscle is vigorously used in the process. There is the weight and thrust of the spade, lifting the soil with the skilful turning and leveling, and good digging calls for some mental labor as well, as it needs thought—and it is often well, or badly done, according to the measure of thought put into it. An old gardener aptly observed that good digging is to the garden what the merchant's skill and forethought are to his profits.

Before commencing, measure off 9 inches to 1 foot wide, and dig out your trench 1 foot deep. Remove the soil to where you will finish and use this for filling up the last trench. This is a good average width and allows for proper spacing under or mixing of manure. Maintain this distance throughout. We often hear the phrase of one spit deep, which means more or less according to the measure or standard of the work. The correct trench should have a perpendicular line the full depth of the spade, not the wide sloping line which often means half a spade's depth that only half buried the manure, causing much trouble when seeding time is here. Digging is, however, no exception to the rule where an age. Many exhibitors and growers of large bulbs use manure, causing much trouble when seeding time is here. Grown ones may experience. Before planting outside, see that the plants are properly hardened off to withstand cold snaps. This is accomplished by gradually admitting more air and exposure to the plants. Should one be fortunate enough, near the end of the month, to have ground in a fit condition for planting, sow early peas and spinach. Plant some onion sets; shallots or bunch onions are worthy of a trial, as they are ready for use earlier than other varieties and are generally much favored for soups and pickling for winter use.

When planting, endeavor to have straight rows, as they enhance the general appearance of the garden, conserve space, and make for easier cultivation. To do this a good garden line and measuring rod is indispensable. Cover rhubarb with boxes or barrels and place fermenting materials around them; this ensures rapid growth.

The same methods can be applied to seaweed, which is more appreciated in Europe, where it is extensively grown and is a very valuable winter vegetable. In many gardens it has permanent quarters, and is forced by being covered with large pots made for that purpose, these being covered by prepared hotbed manure. With good cultivation it makes good crowds in one season. These are lifted late in the fall, and stored in sand in a cool cellar or root store, and brought in for forcing as required. A mushroom house is an ideal place to grow it, but any warm place where light is excluded will do. The same conditions will suit it as are used to force chickory.

If rutabaga is brought into heat under the same conditions, it makes a good substitute for seaweed. This is much appreciated by many people, who consider it a delicacy, and the blanched leaves make a dish by no means to be despised.

In the next issue we shall discuss the outdoor sowing and planting of the garden.

Potatoes Hungry for Potash

Careful observations in the largest potato growing sections have disclosed the fact that the 1918 crop suffered severely from the lack of potash in fertilizer. Specialists in the Department of Agriculture say that the so-called Phoma Stem Blight, a disease which was prevalent in many of the Eastern States this summer, is purely a disease of malnutrition. They affirm that the trouble will disappear with the use of potash in the potato fertilizer, and recommend a fertilizer containing 2 to 3 per cent for next year.

Fortunately the development of American potash resources has been so rapid that fertilizer manufacturers are able to offer their customers grades carrying as high as 5 per cent potash for 1918. Naturally, because it has cost a great deal to develop these new sources of potash, this fertilizer is not cheap, but potatoes are not either, and at the present relative cost of each the use of potash will turn a good profit besides adding to our much needed food supply.
Planting Fruit Trees in the Garden
ARTHUR SMITH

DOUBTLESS a very large number of householders throughout the country have come to the conclusion that until they started a war garden they had never really known the real taste of fresh vegetables and they will therefore have no desire to discontinue this branch of gardening. On the contrary, they will be anxious to extend it as far as possible, apart from the fact that they are in a position to profit from past experience. A great many will probably have a desire to include fruit in their home products, but are under the impression that a comparatively large area of land is necessary for the production of this health-giving luxury.

Like everything else connected with gardening, the first thing to do before planting anything is to properly prepare the soil. The question is sometimes asked, "How large a hole should be made for planting a fruit tree?" To this there is only one answer whatever the extent of ground to be devoted to fruit, the hole should be as large as the area to be planted; that is, the soil between the trees should all be as deeply broken up as the actual hole itself. It is impossible for any tree, useful or ornamental, to do its best if the far too prevailing practice is adopted of making a hole barely sufficient for the roots, with the surrounding soil left in such a condition that the roots cannot spread or at least with difficulty. Breaking up the subsoil by explosives is, under some conditions, a paying operation, but in any case trenching it a couple of feet deep should be the first operation, especially where the limited area at the planter's disposal renders close planting with dwarf trees necessary. This foundation work only requires doing once and its effect lasts as long as the life of the tree.

Trenching is one of those good old-fashioned garden operations which has in recent years fallen into disuse; in fact, it is doubtful if many of the younger generation of gardeners in this country have ever seen it done, or who would know how to do it. Like many other good things which may be used in such a manner that they become an evil, it is possible to carry out trenching in a way that results in more harm than good. Properly carried out, trenching results in the soil being thoroughly broken up to a depth of two, three or more feet, with the surface soil remaining on the top.

Four or five years ago a writer in a paper devoted to the subject of fruit growing uttered a vehement declaration against trenching. He declared that those who advise it are
guilty of conduct little short of madness, and related
many instances in which the top spit and turf had been
buried three feet and the subsoil brought to the surface,
with the result that years of expensive manuring would
be necessary to bring the soil back to a reasonable con-
dition of fertility.

Naturally, when people are guilty of the madness
of burying the top-soil two or three feet below the sur-
face they have no right to blame the system of soil
cultivation known as trenching, for the simple reason
that they have not correctly carried out the rules of
trenching and the only thing they should blame is their
own stupidity.

There are doubtless many readers who have known
the time when trenching was part of the ordinary
routine in British gardens and it was frequently
done four feet deep; for our present purpose,
however, we can limit it to two feet, which in
those days was called bastard trenching, and the
latter operation is not as laborious as it sounds.
As there may be some readers unacquainted with
the method in which it is carried out, it may not
be out of place to describe the operation.

First dig a trench eighteen inches wide and
one foot deep across one end of the plot to be
trenched, placing the soil on the side away from
the plot. Then thoroughly break up the bottom
of the trench to the depth of another foot. If
the subsoil is of a clay nature, something to keep
it open should be mixed with it, such as leaves,
or other vegetable refuse, sifted coal ashes, wood
ashes, lime, or a mixture of all. It is of little use
merely to turn this material under, it should be
thoroughly incorporated with the subsoil and the
latter broken into small pieces. If the subsoil
is sandy, the above material will benefit by help-
ing it to hold moisture. When the subsoil at the
bottom of the first trench has been thus treated,
another space eighteen inches wide should be
dug alongside of it and the surface foot placed on the
top of the subsoil in the first trench; then similarly
treat the subsoil in the second trench, and so on until
the plot has been gone over. At the end, the top soil
from the first trench is used to place on the subsoil of
the last. The operation will raise the soil several inches.
It is not advisable to dig into the subsoil a quantity of
rank stable manure, as it has the tendency to cause tree
roots to descend and also to cause an excessive growth
of unfruitful wood. The object to be aimed at is to
have the subsoil in an open, friable condition, so as to
assist drainage and also to cause moisture to ascend in
times of drought. It is not necessary, in fact undesirable,
to make the subsoil for fruit trees excessively rich, the
feeding being better done from the surface.

When the trenching has been completed, a dressing
of a ton to the acre of lime, either hydrated or ground
limestone, should be applied over the entire surface.
Trenching may be done at any season of the year; on
soil of a clay nature it is not advisable to perform the
work when the ground is in a saturated condition, unless
there is a practical certainty of severe frost afterwards.
As with everything else in the way of planting, get-
ting the ground into good mechanical condition is of the
first importance and time will be saved by waiting a
season rather than plant fruit trees in hard, unprepared
soil.

Having by the above method laid the foundation for
success, the next thing is to decide the style of tree to
plant. There are three styles to choose from: cordons,
espaliers and fan-shaped trained trees, bush or pyramids
and standards. The latter, as before mentioned, may
be eliminated from consideration and should only be
planted when one has plenty of room and intends mak-
ing an orchard, as they require to be thirty feet apart
and take from five to ten years to come into a bearing
condition.

Bush or pyramids may be planted eight feet apart,
or even a little less, and will produce fruit three years
from year of grafting or budding. These are the best
even for large private gardens, as everything connected
with them can be done without the use of ladders, and
fifteen trees require no more room than one standard,
and there is no difficulty in keeping them within bounds
and in a fruiting condition.

Where the area is very limited, like that of an ordi-

A Dwarf Apple Tree Trained Pyramid Shape.
branches. This style takes up only two feet of space as regards width, the length can be as great as desired.

Cordons are of two kinds, upright and horizontal. These are practically pruned to a single stem upon which fruit hangs like a rope of onions, hence the name from the French word cordon, a string or bell-ropes. Upright cordons can be planted 12 feet apart and are actually divided into a large number of varieties of apples or pears are desired on a small space. Espaliers have an upright center stem from which branches are trained a foot apart, these should have ten feet between them which will allow for five feet spread on each side. These two styles are principally applicable to apples and pears.

For plums, cherries and peaches, the fan-shaped method of training is better, as these latter fruits require more room, although the branches can be closer than apples and pears, five or six inches. Gooseberries and currants can also be grown in this latter manner and tied to wires, and of course this is the usual way with raspberries and blackberries.

In the case of gooseberries trained to wires, it will be found that when gathering time comes the fruit can be picked rapidly and comfortably without scratching the hands, also pruning and thinning the branches is easier done and better quality fruit will result; whereas when these are practically allowed to run wild in a bush form in the usual way, a large quantity of very small fruit and much lacerating of hands is produced.

The main advantage of trained fruit trees is that they take up little room as regards width, and vegetables or flowers may be grown up to eighteen inches from the trees, and by running them alongside a walk, the work on one side can be carried out without stepping on to the garden.

Whether bush, pyramid or trained fruit trees are decided upon, they should be three years old, grafted upon dwarfing stocks, purchased from a reliable nursery, not necessarily the lowest priced one.

For the above styles of fruit trees the dwarfing stocks mentioned are of great importance, so that the trees will produce the minimum amount of wood. For this purpose apples are worked on paradise stocks; pears on quince; mahaleb for cherries, and plums on myrobalan or St. Julien. For sandy ground the plum should be worked on the peach, and on clay the peach is best on the plum. There is no real dwarfing stock for the peach.

The actual planting is usually done in the spring, especially with imported trained trees, although some nurseries are beginning; not before it is time, to grow trained trees themselves, and in the latter case fall planting should be equally successful and trees of any sort planted at the latter season will, all other things being equal, make considerably more growth the following summer than if planted in the spring. After planting, and care should be taken not to plant deeper than the trees stood in the nursery, a thick mulch of good stable manure should be applied to the surface of the soil all around the trees two feet from the stems; this mulch should be allowed to remain for an entire season, and if the trees are planted in ordinarily good top soil, it will afford all the food they require the first season. Afterwards the mulch should be lightly forked in and the entire ground around the trees kept cultivated three inches deep, where a weed at all times, weeds are great robbers and will consume three hundred times their own weight in water alone during a single season.

Each spring before the first cultivation a dressing of equal parts by weight of pure ground bones and sheep manure should be applied at the rate of half a pound per square yard. After the last cultivation in the autumn a quarter of a pound of either ground limestone, hydrated lime, or sulphate of lime (land plaster) should be sprinkled over each square yard.

The above suggested system of annual feeding will be found sufficient for poor soil. It is important to avoid rank growth of wood, and this is to some extent checked by surface feeding so that the roots are discouraged from penetrating deeply into the subsoil. Soils vary in richness and if it is found that any tree is making too much wood then feeding should be withheld.

The necessity for watering, especially the first season after planting, should not be forgotten. At the same time, while many newly planted trees are allowed to die of thirst, it is quite possible upon land of a clay nature to kill them by too much water.

As regards the best varieties of the different species, some do better than others in different localities and on different soils; the main point to be considered in the private garden is to secure as long a season of fruit as possible, not a large quantity ready for use at one time and none at another.

The annual pruning of dwarf and trained fruit trees is of more importance than it is in connection with orchard standards, but this matter must be left for a future article.

There is one other point in connection with planting fruit trees which is perhaps worth mentioning, especially in relation to the small garden.

In planting the surroundings of a country home provision for shade is generally made. Too often the common-place Norway or Silver Maple is the only thing used for this purpose; these produce shade, it is true, but nothing else. Why not plant fruit trees for shade purposes where the ground is limited? A fruit tree in flower is certainly not an unbeautiful sight, and equally pleasing are the rosy-cheeked apples among the foliage in the autumn and the trees at the same time give all the shade required. For this purpose standards would of course be used, and good, healthy trees properly planted and attended to will grow as quickly as maples.

It is obvious that by using fruit trees in the place of the ordinary shade trees, three things are produced on the ground ordinarily occupied in producing one.

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Have You Protested?

If you have not yet written to Hon. D. F. Houston, Secretary of the Department of Agriculture and to your Senator and Congressmen, protesting against the unjustifiable plant import prohibition act, which is to take effect June first, next, do so at once.

There are surely scientists in the employ of the government, who possess sufficient American ingenuity to devise ways and means to control plant insects and diseases without shutting our doors to the beautiful European flowering plants, which have long been coming to our country, helping to make our gardens attractive and our conservatories interesting, without introducing any of the pests that the authors of the plant exclusion act fear.

There are practical men within the profession of gardening who would face the situation differently if given the opportunity, and who would not admit in this enlightened age that they had met their Waterloo at the hands of such a bugbear as a plant insect.
The Opening of Flowers

WILLARD N. CLUTE

THERE is probably no more interesting chapter in botany than that which concerns the opening of flowers. The casual observer noting the general resumption of activity by the world at large as the day breaks is likely to jump to the conclusion that flowers follow the general custom of opening with the advent of day and closing as night approaches. It is true that many plants have this habit, but it is far from the rule among plants. In fact, the phenomena of the opening and closing of flowers, or anthesis, as it is called, are extremely complicated and call for the best efforts of the botanist to explain. Just as the form, color and odor of flowers have been modified or even developed with reference to pollinating insects, so the time at which flowers open and the length of time they remain in this condition is determined by many extraneous agencies, many of which may possibly not be known at present.

Not only is there much variation in the time at which flowers open and close, but the greatest diversity exists as regards the length of time the individual flowers remain open. Certain orchids, if unpollinated, may remain open for six weeks or more and in general the absence of pollination tends to lengthen the life of the flower. Tulips, Easter lilies and the like may be made to remain open for some time longer than they naturally would if pollination is prevented. Contrasted with these examples is a little weed, common in cultivated grounds which is known as "flower-of-an-hour" because its blossoms do not remain expanded much longer than the period indicated in the common name. The blossom of the wild grape is still more remarkable, for just as the bud expands and the flower seems about to open, the whole corolla falls off and thus the flower, though exposing stamens and pistils, can in a certain sense be said not to open at all. The garden plant called okra, though it ordinarily opens its flowers, may, on occasion, follow the example of the grape, and it is but a step from these to cleistogamous flowers like the summer flowers of some violets which entirely lack petals, and though perfecting much seed, always remain bud-like.

In ordinary flowers some days usually elapse between the time the petals first unfold and the date at which they wither and fall from the plant. The corolla, in the least interesting forms, remains continuously open until anthesis is past, but in others the flowers may close temporarily several times in response to moisture, lowered temperature, darkness or possibly other things.

The opening of our early spring flowers, such as crocus and dog-tooth violet, is frequently determined solely by temperature. If the temperature of the air and soil rise above a certain point they seem obliged to open. In fact, the same phenomena seem to govern the very production of such flowers and it has been found possible, in many cases, to ascertain the exact number of heat units necessary to produce a given blossom. It is a matter of common knowledge that the first flowers of any kind do not appear just anywhere. We must seek the earliest in the sunny and sheltered nooks where the required number of heat units are first received.

Temperature, however, may cause the closing of flowers, as we see in the case of the waterlily, which though it opens its flowers as soon as day breaks, closes by mid-day. The same is true of morning glories, and possibly of other flowers that open late in the day and last until the next morning. That it is really temperature that causes the flowers of morning glory, four o'clock and the like to close seems proven by the fact that late in the year, when the temperature has lessened, these flowers remain open all day and the morning glories become all-day glories.

The effects of light upon the opening of some flowers are very marked. Waterlilies, picked in the early morning before they have opened and kept in the dark will open whenever brought to the light. Thus one may decorate the house with full-blown waterlilies at evening. The dandelion, also, is very sensitive to the light and refuses to open unless the day is sunny. Often a few hours of cloudy weather in the middle of the day will cause the flowers to close. Sir John Lubbock, experimenting with these plants, found that if a blooming dandelion in a pot was exposed to bright lamp-light it would remain open all night.

Darkness also apparently has an effect upon the opening of flowers, as in the night blooming cereus and various other cacti which commonly do not unfold their petals until well along toward midnight. There are a host of other blossoms whose main period of bloom is during the hours of darkness. Many of these have common names that indicate the fact, as four o'clock, evening primrose, night flowering catchfly, pretty-by-night, and the like. Flowers of this kind commonly remain open until the sun is well up and seldom open a second time.

That darkness, like temperature, may have opposite effects upon different flowers is seen in the fact that it is usual for many blossoms to close as night approaches. This is so common a phenomenon that its very commonness gains it little attention. It will probably be difficult for one to name off-hand a flower that does close at night. Of this class, however, is the day lily, and so is the daisy, whose name, literally the day's eye, is truly significant.

The amount of moisture in the air is also at times sufficient to influence the opening of flowers. The scarlet pimpernel, a common weed with tiny red blossoms, is known in some sections as "poor man's weather glass." Its flowers are so sensitive to moisture that they invariably close with the rise in humidity that betokens a storm and some hours in advance of it. The chickweed, common in cultivated grounds everywhere, is said to have the same habit. Many other flowers close in time to escape an actual wetting by the rain, while still others, though they do not close, are able to assume positions that keep the raindrop out of the flowers. The wild geranium turns its blossoms upside down.

It is doubtless a fact that many of the phenomena of anthesis attributed to temperature, light and the like may, in the last analysis, turn out to be in response to the visits of insects. For instance, many of the flowers that open at dusk do so because they are pollinated by crepuscular insects. Further support is given this theory by the fact that many of these give out a fragrance at dusk and at dawn only, when such insects are abroad. It is hard, however, to reconcile the behavior of the oyster plant and goat's beard with any theory of adjustment to insects, for they close at exact hours with insect visitors are most abundant. The goat's beard, in fact, has received the common name of John-go-to-bed-at-night because the flowers close so promptly at mid-day that one could almost set his watch by them.

It is a noticeable fact that flowers most affected by the agencies mentioned are all of the kind known as entomophilous, that is, insect pollinated flowers, since they open for the express purpose of receiving insect visits.
It is likely that all the responses they make to temperature, light and the like are really made with pollination as the ultimate end in view. Finding, however, that these phenomena are so intimately related to the flight of insects that they can be used as guides they have apparently been adopted. If an insect, for instance, does not emerge from its cocoon until a certain degree of heat is received and does not roam abroad unless the day is fair, the flower that is adjusted to the same amounts of heat and light is certain to be in condition to be pollinated when the insect is flying. It may be possible to trace similar adjustments through all the variations in anthesis throughout the world of plants.

STRAWBERRIES FOR CHRISTMAS
Robert Marshall

THE plants shown in accompanying illustration were secured in 2½-inch pots about July 1 grown along in 4-inch pots and shifted into 5-inch, in which they were fruited.

These plants were grown in good, rich soil such as is used for roses: three-fourths soddy loam and one-fourth well rotted cow manure with a sprinkling of bone meal, about 4½-inch potful to the bushel of soil. The plants were grown along rapidly, the object being to get good, strong crowns and good root action, as it is important to have the pots well filled with roots by the middle of August.

Then they were ripened off by gradually withholding water for about a month, when they were cleaned and about one-half inch of the surface soil removed and given a top dressing of fresh soil same as they were potted in.

Then they were set into a cold frame for about two weeks, when they were moved into the carnation house on a sunny shelf, where they got plenty of air and a night temperature of about 52 with day temperature 10 or 12 degrees higher.

When the plants showed flower they were moved to a shelf in another house about 8 degrees warmer, where they are now fruiting, carrying from 4 to 10 berries to a plant and measuring from ¾ to 1½ inch in diameter. Manure water was given as soon as fruit started to swell.

Missionary is the variety shown which was secured from Burnett Bros., with Nick Ohmer following closely and a little larger, Marshall coming along next but not as prolific.

Pollinization was done by hand with a camel’s hair brush on bright days. Syringing was done every bright day except when the plants were in flower.

FRAGRANT PEONIES

It may be a matter of general interest to all to know that of the large number of named varieties of Peonies, only a comparatively few of them have a sweet scent or agreeable odor, as is that of the Rose, the Lilac or the Pond Lily. This matter of fragrance of the Peony is of special interest at this time, since it is the one feature of that flower which was last to be developed, and is, therefore, found chiefly in the newer high grade varieties. It is true, of course, that a few of the older varieties are sweetly scented.

A long blooming period is just as easily obtained by a proper selection of fragrant varieties as by those that are not fragrant. Probably the earliest Peony to bloom is the single Peony, which is catalogued under various names, Albaflora, The Bride and Fiancee, all of which, it is believed, are substantially identical. Following this in time of blooming and among the well known varieties is Madame De Verneville and Festiva Maxima, then Mons. Dupont, Couronne de Or and Marie Lemoine. Of course, there are many other varieties among which are noticeable, Elizabeth Barrett Browning, Le Cygne, Emile Lemoine, Alice de Juleacourt, Aurora, Alsace Lorraine, Francis Willard and Florence Nightingale.

Of the shell pink varieties, among the commoner and well known fragrant sorts is Umbellata Rosa, as the first and earliest to bloom, Grandiflora Carnea Plena, followed by Albert Crousse, Bernard de Falossy and Eugene Verdier. Of the more expensive varieties of this color, which bloom in the order named are the followings: Judge Berry, Mons. Jules Elle, Therese, Martha Bulloch, Henry Avery and Ella Wheeler Wilcox. This list of shell pinks does not include the so-called tri-colored varieties, which show three or more colors in the same blossom, and which are very striking and much admired. Probably the three best known fragrant varieties of this classification are Jeanne de Arc, an early variety, Philomele, a mid-season variety, and Chestine, a late variety.

The first of the fragrant, deep pink varieties is Edulus Superba and Malene Henry. They are followed in the order named by Modiste Guerin, Duke of Devonshire, Augustine de Hour and Humei Carnea.

Of the reds, the earliest fragrant red to bloom is Rubra Officinalis followed by Richard Carel, E. G. Hill, Madame Bucquet, Ben Franklin and Felix Crousse. Of course it is impractical to name in this article the many different varieties that are in bloom at the same time. The purpose has been to choose different varieties as representatives of their particular period of bloom, merely to show that a continuous period of six weeks more of fragrant blossoms of every color may be had by careful and proper selection.—W. F. Christman in Minnesota Horticulturist.

WHEN HE COMES HOME

We know not when he's comin',
But when his steps draw nigh
He'll know the Love that let him go
Grew greater since “Good-by!”

For we kept a place of Light for him
Beneath a darkened sky.

We know not how we'll greet him—
(The Heart we can't command!)
How speak the mighty love of home!
But he will understand.

When home goes out to meet him
And takes him by the hand.

—Atlanta Constitution.
From Here, There and Everywhere

Editor of Gardeners' Chronicle:

Never Too Early for a Hobby

The time to cultivate a hobby is when you are young and full of enthusiasm. Many think there will be time enough to have hobbies for that after the competence we are all hustling after is made. That is a mistake. Most people are past with inaction. In fact, as one can see in countless cases, the retired, without a hobby, in very few years dries up and blows away. "Business first" is, of course, a paramount motto to hold everlasting to the front; but at the same time don't forget to cultivate the hobby which has nothing to do with business. And, of all hobbies, one that is for the uplifting of mankind—that is the best.

The thought here expressed has been inspired by listening to a talk by James Boyd, a retired rubber merchant, on the subject of "Flowers as a Hobby." The iris, peony, rose and several other of the delightful families of the floral world have been his hobby since boyhood, and he has been an inspiration to countless thousands. Recently he told how delightful it was the plant he brought home from the Pennsylvania Horticultural Society, of which he is president; and it certainly was inspiring to listen to him. And so, Mr. Young Business Man or Woman, start your hobby now!

Which reminds me of Dr. Harris, an old-time Philadelphia who traveled in Persia and the Near East some 40 or 50 years ago. His hobby was collecting the curculitea, which includes our sumacs, cantholouges, watermelons, and so forth. He brought home with him hundreds of samples of good things—many of them having since got into commerce through live business wires like the late W. Atlee Burpee, who found there his Burpee Gem muskemelon, which has since become still more famous as the Rocky Ford cantaloupe. That sounds rather remarkable, doesn't it? That the melon that has made the State of Colorado famous should have been gathered in Persia 50 years ago, by a Philadelphia with a hobby, and was given to the world by an enterprising Philadelphia business man who was an enthusiast and a hobbyist, besides being a business man—and Colorado had little to do with it except having a good climate for melons! Almost like a romance, really.

Philadelphia.

George C. Watson.

The following extract from a letter to U. S. Senator Joseph S. Frelinghuysen is self-explanatory:

"I have just received from the U. S. Department of Agriculture a copy of Notice of Quarantine No. 37 with regulations, and write you to express my most emphatic protest against the drastic and discriminatory character of the same.

"The order as it stands today, and which becomes operative on and after June 1 next, abounds in glaring inequalities. I might almost say that it was drawn by the Department of Agriculture, and that it is self-explanatory. It is a matter of fact that the conditions therein expressed are concerned. For example, the admitting of stocks and wild species of roses to be used in this country for grafting and some other species than those raised in Europe, and of which new and improved varieties are continually being raised, are denied to the country.

"There is an old moss grown joke about the man who killed his dog to cure him of fleas, and the action of the Federal Horticultural Board regarding roses is about as sensible. Imagine, too, the total exclusion of crchids. They are denizens of tropical countries, and under cultivation must always be kept in greenhouses. I wonder what terrible calamity the members of the Federal Horticultural Board would experience of them when they excluded these choicest and rarest of 'Flora's creations.'

"Lilly of the valley is one of the permitted introductions under the new quarantine order. The roots of this flower are immemorial in millions by florists for forcing purposes, and the true and actual source of all of this special forcing lily of the valley is Canada. Continual concessions have been made by the Federal Horticultural Board has treated poor devastated Belgium. For years and years before the war Belgium sent us bay trees, azaleas, palms, rhododendrons, Norfolk Island pines and other products in quantity and of better quality than any other country in the world. These are highly-developed specialties of the Belgian trade. We cannot produce them here, so it is not a question of protecting home industries; yet, just before Belgium is ready to supply us with things we have not had, and have sadly missed in the past four years, the Federal Horticultural Board says they shall not be permitted entry to the country under any conditions."

Arthur Herrington.

Why Roses Sometimes Die

More roses are lost from not being cut back to two or three buds when newly planted than from any other cause. The rose commences its growth at a very low temperature and is affected by heat more than anything else in the garden line. Rose shoots have a pitly centre, the sap in which evaporates. As it dries it draws on the main plant for more, and the newly planted bud has to throw out or make new roots to get fresh sustenance it follows that if the top growth is cut back hard when planted this evaporation is stopped and the sap stays in the main plant, keeping it alive till the new roots renew the supply. It should be deeply planted to preserve the sap till new roots are formed.

These are the main points to observe in rose planting. It is safe to say that fully 50 per cent of the roses planted by the average public die every spring mainly through not being cut back to a stump. The reason fall planting is more successful is because the sap is retained in the plant right along from the cold top air of November, taking the warmth in the soil not being exhausted.

Canadian Horticulture.

To Bacon, gardening was the "Purest of Humane pleasures." "It is," he says, "the Greatest Refreshment to the Spirits of Man; Without which, Buildings and Pallaces are but Grosse Handworks. And a Man shall ever see, that when Ages grow to Civility and Elegance, Men come to Country State, sooner than to Garden Finely: As if Gardening were the Greater Perfection.

I do hold it, in the Royall Ordering of Gardens, there ought to be Gardens, for all the Moneths in the Yeare: In which, sev- erall, Things are Green; as in Summer: and in Summer, Things of Beautie, may be then in Season."

Let us see how many of his autumn flowers and fruits are in our gardens. For the month of September he gives us "Grapes; Apples; Poppies of all colours; Peaches; Melo-Cotones; Nec
tarines; Cornelians; Wardens; Quinces. In October, and the beginning of November, come Services: Medlars; Bullies; Roses Cut or Removed to come late; Hollykox, and such like."

"For December, and January, and the Latter Part of November, you must take such Things as are Greene all Winter; Holly; Ivy; Bayes; Juniper; Ciprese Trees; Eugh; Pine-Apple-Trees; Pirre-Trees; Rose-Mary; Lavender; Periwinkle, the White, the Purple, and the Blewe; Germander, Flages; Orange-Trees; Limon-Trees; and Mirties. If they be stoved; and Sweet Mar
joram warme set. There followeth for the latter Part of Janu
ary and February, the Mezeron Tree, which then blossoms; Crocus Versus, both the Yellow, and the Gray; Prime-Roses; Anemones: The Early Tulipa; Hiacynthus Orientals; Cha
mairs; Frettellaria." And so on through all the spring and summer flowers, to the "Plummes," and "Filberds" and "Muske
Melon" of August. These particular, he tells us, "are for the Climate of London; but my reasoning is Percieved, that you may have Ver Perpetuum, as the Place affords."

Topiary Work or Clipped Bushes

The fashion for cutting and clipping evergreen bushes into all sorts of fantastic shapes has, we think happily, almost passed away, yet there are certain occasions and positions where moderate shaping of trees may add considerably to the effect, for instance, where shrubs have been planted in positions where...
natural growth is not permissible on account of lack of room. If the surroundings be of a somewhat formal type under these conditions the clipping of a tree into a simple design may be excusable, but this could scarcely be called Topiary work. Topiary work as it was and is even known today, consists of clipping trees to represent birds or animals standing in rows of various shapes, or to represent a cork-screw-like appearance, etc., etc. In the execution of all sorts of weird designs a certain kind of art is displayed in the clipping of trees in this way will not appeal to anyone who takes a delight in seeing trees growing naturally, yet it may appeal to some who have bushes in positions mentioned. To add the to the monotony of straight turreted hedges, a very similar form of topiary work may be adopted with advantage in some instances. We have seen hedges of both Cupressus and Australian Myrtle treated in this way, but to be effective there should be nothing elaborate about the designs used. One of the most effective pieces of work of this kind we have ever seen consisted of a round ball on top of a few yards of flat hedge, which at equal distance from the center of the ball on either side swept down in a flat, half-moon shape, and up on the other side to a similar flat piece with an exactly similar ball surmounted in the centre of it. The circumstances under which Topiary work may be used will vary; it is often used with beds or banded potato. The most effectiveredemal when the plants are fairly well filled in, but with white arsenic have been found effective as a poisoned bate. In mushroom houses the most effective remedy is to surround the beds with a border about two inches wide, using lime, salt or road dust, which prevents the slugs from passing. Cleaning up the hiding places of the slugs and sprinkling lime, which is the standard remedy for slugs, about infested areas is the best treatment in gardens and greenhouses.

The Landscape of Life

The first appearance of a place is never overcome. When we see grounds, large or small, that are well laid out and kept in neat order, the impression on one who sees them is never quite forgotten. The opposite is also true. A shiftless, tumble-down place has a scar on the memory that is not easily effaced.

The picture is still vivid of that old home in western New York where the youth of the writer was so pleasantly spent. Lilacs, in gardens and greenhouses. Bait poisoned with arsenic, clean culture in garden and greenhouse, and the use of lime and powders, such as finely powdered salt and road dust, are recommended as means of destroying the spotted garden slug and other injurious garden slugs. In Farm Bulletin 999, recently published by the United States Department of Agriculture. The spotted garden slug, which frequently becomes a menace to gardeners and mushroom growers, is somewhat worm-like in appearance, ranges in length from one-half inch to nearly four inches and varies in color from a yellowish gray, or brown, mottled with black, to nearly black. It thrives in damp, dark locations, and is particularly fond of lettuce, turnips, peas, beans and other vegetables when grown either under glass or in the open. It remains under cover until nightfall, when it comes out to feed, and returns to the same place before morning, leaving a trail of sticky mucus.

Owing to its habits of feeding by night and concealing itself during the day, the slug is very difficult to control. Spraying with arsenicals is impractical, because slugs avoid most poisoned substances.eredal potatoes sprinkled with white arsenic have been found effective as a poisoned bate. In mushroom houses the most effective remedy is to surround the beds with a border about two inches wide, using lime, salt or road dust, which prevents the slugs from passing. Cleaning up the hiding places of the slugs and sprinkling lime, which is the standard remedy for slugs, about infested areas is the best treatment in gardens and greenhouses.

Don't Prune Lilacs in Winter

Lilacs form flower buds from midsummer to late autumn. Therefore the bushes should be pruned as soon as the blooming season is over, and before the new buds form for next year's flowers. If pruned in autumn, winter or early spring many or all of the flower buds may be destroyed.

Decaying blossoms should be removed immediately after lilacs are through blooming. and both inside and outside, should be thinned out freely. When lilacs are twelve to sixteen years old they often become "leggy." In such cases they may be cut down all the way to the ground. They will immediately throw up strong shoots, and if these shoots are "topped" they will throw out laterals, and the bushes will soon again become shapely and compact.

Lilacs may be transplanted at any time from autumn until spring, if the ground is not frozen. To fertilize them put round each bush in the autumn a heavy mulch of stable manure, and dig it in, not very deeply, in early spring. A moderate spread of bone meal may be worked in slightly once or twice during the summer, right after the blooming season. It is a habit that children should learn early.—New York Sun.

Equipping an Agricultrist

"How is your boy Josh doing?"

"Well." replied Farmer Cornstessel, "Josh is a smart boy and mighty willin', but I'm goin' to have to send him to school some more before I can depend on him for help on the farm."

"Why, is he a well educated young man?"

"Yes, but he's got to specialize. I'm goin' to keep him studyin' geology until he kin recognize a rock before he hits it with a plough."—Washington Star.
WANTED—A Gardener

ROBERT WEEKS

When do you want a gardener? Now. In the springtime, in the year 1919, now that the great war has ended. I have been so busy helping my country win this war, and now that we have won, I am going to turn to one of the arts of peace. Gardening. For, as one writer has said, "Gardening is a living art. A beautiful garden is as much a work of imagination, feeling and technical skill as a great painting; and it is equally worthy of respect and admiration."

What do you want a gardener to do? Oh! I have just purchased a beautifully wooded estate, situated upon the banks of a river. I have built a beautiful home there, and from its windows, I can look out and see the sun rise, and light up in all its morning glory those grand old mountains. And I have secured the services of one of the best landscape architects in the country and I am going to have one of the most beautiful gardens in the United States. There is a range of greenhouses and I plan to grow in those greenhouses some of those lucious grapes, Muscats of Alexandria, I think they call them. And, of course, we shall grow peaches and nectarines. And we are going to grow some of those beautiful butterfly orchids. What do you call them? Oncidiums. Yes, that's it.

Then I shall have lots of beautiful fresh roses, in fact all kinds of flowers and fruit, and vegetables. Then you see I propose laying out the grounds and planting trees, and shrubs, and flowers, to the value of several hundred thousand dollars.

I want a gardener to care for all this, to give his undivided attention to my place, three hundred and sixty-five days of the year. To produce those things that I wish, to keep things in vigor and health, to guard them against disease and insect trouble, and the ravages of climate.

You will need a thoroughly qualified and capable man for such a place.

Yes; absolutely. Do you think I can afford to have any other than a thoroughly qualified gardener, when you consider the value of my place? Do you think I would place a novice in charge of my steel plant? Do you not realize that I have more money invested right here? Besides, it relieves me of a lot of care and adds greatly to the pleasure and interest to be derived from my place to have the thoroughly capable and efficient man to care for it. In fact I feel that this is of such importance that I am going to give you an analysis of the kind of gardener that I want.

He must be practical.

I will put this qualification first as this, it seems to me, is the first essential quality of a good gardener. It takes twelve months to grow a squash, and a quarter of a century to grow an oak. There are gardeners of one year's practical experience, and gardeners of twenty-five years' practical experience. I do not want the pumpkin type of gardener for my place. I want the one with the rich experience of the oak. You see he must be able to grow those grapes, and peaches, and melons, and cucumbers. And he must be able to grow those orchids, the oncidiums, calanthes, and odontoglossums, and the roses, and a large number of other beautiful floral subjects in my greenhouse. Then he must understand and care for my trees, which I value very much. He must know also how to care for all the plantings of shrubbery, and perennials. He must understand vegetables and their production. You can readily understand that when it is required of a gardener to know, and understand so many things, that it takes time to make a practical gardener; he simply has to grow up beside his work. Even with the most intensive training it cannot be learned in a year or two. The real progressive gardener is always a learner. His education is never done.

He must be scientific.

What science in a garden? Yes. Science, as has been ably explained, teaches the practical man the "why" of doing things. And I might also add why he should not do certain things. I have known practical men to fall into the gravest errors, because the thing that they did was entirely contrary to scientific facts and principles.

Science not only tells us why we should do certain things, but why we should avoid doing certain things. Scientific and Practical may be likened unto two men; one called Scientific, and the other Practical, walking on a dark night, upon an almost unknown roadway. Scientific carries a lantern in order that he might avoid the pitfalls of the way, and also to point out to Practical the best way. How necessary science is to practice. The gardener of to-day meets with problems and difficulties almost daily. He has no time for experiment. Therefore, he has to refer to the scientist. Science might be described as proved systemized knowledge.

There are cases where the practical man has been unable to prove the scientist's conclusions, but this is often the result of a too hasty, or incomplete conclusion on the scientist's part. But on the whole science can, and has, rendered valuable aid to the practical gardener. To be efficient the modern gardener must be scientific, but to be practical and scientific does not make a complete gardener.

He must be enthusiastic.

The old-fashioned gardener has been accused of many failings. But he has never been condemned for the want of enthusiasm. He has been condemned for having too much enthusiasm, for being over zealous. It has been said of him that entering the garden as he often did, without much education, with an untrained mind, he quickly became obsessed with what has been called plant-love. That, just naturally, this lad as he grew up learned to handle plants, to propagate them, to pot them, and to prune them, with the result that he became absorbed in them. This love, this enthusiasm, grows upon him. It makes him patient over the most minute details and requirements of his plants. Mr. Wright says of this quality: "The gardener is sustained by plant-love. It is a passion which forbids him to slacken pace, loving his plants for their sake, he cannot permit himself to see them suffer from want of proper and timely attention. At the cost of his own comfort and repose the plants must be kept healthy. Their requirements must be met regularly even if they entail loss of sleep, deprivation of holidays, increasing and unremitting care in foul weather as in fair."

Every true gardener will admit that there is the right ring in these words.
Perhaps the old gardener has been over enthusiastic, and this has led him into pitfalls that has almost proved his undoing. Enthusiasm is a requirement of every modern business, and the gardener with enthusiasm should be pardoned for being over enthusiastic, rather would it be better for employers to encourage enthusiasm in their gardeners.

I do not know of any class of men that are giving a larger measure of devotion to their work than gardeners. Their heart, and soul is in their work, in their plants, in the garden of which they have charge. Their lives are given to this, their life work.

Can such devotion, such service, be paid for in dollars and cents? I think not.

What these men deserve is the respect, the kindly consideration, and appreciation of their employers. Mr. Wright says in "The New Gardening," "The day should be past when a gardener is regarded as on the same plane as a field laborer, to be paid a bare living wage, given no holidays and treated without consideration. Now that gardening is becoming a fine art, the status of professional gardeners should rise. Gardeners should be reasonably educated men, of good appearance, manners, and address.

"They should not be looked upon as menials. There is nothing servile in the work of a gardener.

"The professional gardener of the future will be the respected companion of those who employ him." Then and only then, when employer and gardener understand each other, will the employer realize that in that over enthusiastic gardener of his he has had all the while a genuine diamond in the rough.

But the gardener must have other qualifications.

He must be artistic.

In other words he must be an artist. He must paint pictures. His colors are living plants and flowers. Here again the modern gardener differs from that of the old school. Those of the old school were more or less cubists, with their contrasts of geraniums and lobelias, their ribbon borders, and their carpet bedding. These are things of the past. It is just the opposite in the informal gardening of today. And the gardener will do well to remember that he does not paint to please himself but to please his employer. Almost every lady has her own ideas as to what is artistic, (and gardeners have to deal with the ladies, generally speaking, in this matter) therefore it behooves him to find out what his particular lady likes or dislikes in this respect.

Then when he has found out what is considered artistic, he should work always in sympathy with his employer's ideal, regardless of what his own ideal might be. Of course I am not advocating the stifling of initiative, or originality, but any attempt along these lines should be thoroughly in sympathy with that of his employer.

The garden will only interest the employer, when it is made interesting by himself, or his gardener. Do you ever wonder why some employers never take an interest in their gardens?

It will do the gardener good sometimes to get over the other side of the fence. And look at the garden from the employer's point of view, I venture to say it will be a revelation to some. If gardeners were to put more order and method into their work it would be much better for themselves, and their employers very often.

I know the gardener has to do the best he can under difficult circumstances very often. And not what he would like to do. There is always something to be done around a garden. The gardener is always chasing his ideal. Many gardeners feel like apologizing for the condition of their charges today, after four years of war, with its consequent shortage of efficient help, and many other causes. And no man can render a just verdict until he knows the circumstances of the case. Nevertheless the main thing is to look at it sometimes from the employer's point of view. Put business methods into your business, the same as your employer puts into his business. To do this—

The gardener must have executive ability.

The gardener is the manager of the garden. The pleasure, the production and the appearance of the garden will depend largely upon his successful management. What are the requisites for a successful gardener-manager? Knowledge of his work, ability not only to do the work, but to teach others how it is done. He must have that other quality that we spoke of—enthusiasm, kindness, ambition, will power, he must be able to think, and lead, and know how to handle men. There is one quality he should not have, that is egotism. This is very closely allied with bigheadedness, and the manager with the bighead soon gets the bounce. Some people have an idea that a manager should assume a spirit of importance, this is a very mistaken idea. Rather be a man among your men. You lead your men because of your superior knowledge and ability which they do not possess. You are an elder brother to your men, rather than a slave driver, who attempts to force men to work. I believe that with few exceptions men will, so to speak, get the top brick of the chimney for you, if you treat them right. But you must be businesslike, honest, and fair, with every man.

Of Interest to Country Estate Owners

The National Association of Gardeners takes this opportunity to place its Service Bureau at the disposal of owners of country estates when requiring thoroughly competent gardeners—in the capacities of superintendents, head gardeners or assistant gardeners—thoroughly qualified in every particular to assume the responsibilities the positions call for.

The Association seeks the cooperation of country estate owners in its endeavor to establish a reliable source to which they can apply with every confidence to secure the services of gardeners truly efficient in their profession.

The Bureau is maintained entirely at the expense of the association and makes no charge to the employer it may serve, or to the member it may benefit.

Those desiring to avail themselves of the services of this Bureau should apply to—

M. C. EBEL, Secretary
National Association of Gardeners,
MADISON, N. J.
National Association of Gardeners

OUR SUSTAINING MEMBERS.

M. B. Mellon of Pittsburgh, Ernest Guter, superintendent, and Mrs. J. D. Lyon, of Sewickley, Pa., John Barnet, superintendent, have become sustaining members of the association during the last month.

NEW MEMBERS.


GARDENERS’ MINNEAPOLIS CONFERENCE.

The members of the National Association of Gardeners of Minneapolis and vicinity held a very interesting conference on Thursday, January 16, 1919, at the residence office of Theodore Wirth, which was well attended.

Mr. Wirth was elected chairman and George H. Instone, of Lake Minnetonka, secretary. The program for the day was outlined by the chairman, who briefly referred to the several subjects to come up for discussion.

The first matter discussed was the impending embargo on importation of trees, shrubs, bulbs, etc., from foreign countries. The opinion prevailed that this action was unwarranted, especially at a time when the Far Eastern Botanic Pak was exceeding its power, conferred by Congress. All present pledged themselves to send a personal letter of protest to their respective senators and representatives in Washington, D. C.

Mr. Wirth read a letter from the Minneapolis members of Congress in the name of the Board of Park Commissioners. The secretary was instructed to write a letter to the secreatry of the national association, suggesting that he write a letter to every member of the association, to interest himself in a similar way in this matter.

The chairman was instructed to present this question before the Minnesota Horticultural Society, at their annual meeting to be held in Minneapolis, January 25-29.

The work of the war gardens, as conducted in this part of the country, was brought to the attention of the conference. After luncheon at Mr. Wirth’s residence, the conference took the question of forming a Gardeners’ Club of Lake Minnetonka. It was the opinion of all present, that there were enough gardeners in that locality to warrant the forming of such an organization, in the belief that the interests of the gardeners and their employees would be served through such a club. Mr. Klapotz was appointed chairman of a committee to take the matter in hand, with the privilege to select his own fellow members. He agreed to get busy and intimated that he would make arrangements for the organization of such a club in the near future.

The fact that many estate owners in our section of the country do not give year-around employment to their gardeners and that they do not know what the real qualifications of a good gardener are, was made the subject of a long discussion. It was the opinion of all present that the gardener, himself, is greatly to blame for such conditions and underestimation and lack of recognition of his profession and its value. One of the first topics to be taken up by the club to be formed will be the question of how to educate the estate owner along those lines and how to establish better control relations between the employees and employers in this field of work.

The consideration of exhibitions and field meetings was also given careful consideration and it was predicted that such shows and gatherings would be of great help toward the solution of many and many other questions of general progress and mutual benefits.

The conference voted a hearty vote to thanks to Mr. and Mrs. Wirth for their hospitality and adjourned after a very profitable and enjoyable all day meeting.

GEORGE H. INSTONE, Secretary.

GARDENERS’ PITTSBURGH CONFERENCE.

The Pittsburgh conference of gardeners, held under the auspices of the local members of the National Association of Gardeners at the Hotel Chatam of that city, on January 30, brought together a representative gathering of the profession from Western Pennsylvania.

A reception from 6—6:30 P. M. preceded the conference at which David Fraser, chairman of the conference committee, introduced the visitors. Following the reception, Mr. Fraser introduced Robert Weeks of Cleveland, president of the national association, as the first speaker. Mr. Weeks spoke on “The Gardener’s Relation to his Employer,” in which he urged the development of a more friendly feeling and confidential relation between the gardener and the employer. To inspire this, he said, the gardener should do his level best in the management of his charge and in the interest of his employer.

Adolph Kruhm addressed the conference on the inconsistencies of the plant import exclusion act and presented some incontrovertible facts on the absurdities of the measure, which were embodied in some correspondence that passed between the Federal authorities and himself. Mr. Kruhm left no doubt in the minds of his hearers on the injustice and unreasonable nature of the act and at the conclusion of his remarks, a general discussion ensued which resulted in the passing of a resolution, instructing the secretary of the national association to wire a strong protest to Secretary Houston of the Department of Agriculture.

William Falconer, that venerable gardener of Pittsburgh, was next introduced and presented a paper on “The Gardener and His Profession,” (to be published in full in the next issue of the Gardeners’ Chronicle). Mr. Falconer advised closer unity among the gardeners, local as well as national, suggesting that they make a point of attending their club meetings and their national convention, and suggested that employers of gardeners, if shown the benefits their gardeners would derive from attending these meetings, which would be an advantage to them in their own charge at home, doubtless would encourage their attendance by paying their expenses. Mr. Falconer named a number of men holding high positions in the public service and commercial fields with pronounced success, showing that the profession of horticulture presents opportunities to satisfy the inclinations and taste of all ambitious gardeners.

M. C. Ebel, secretary of the national association, was next introduced and spoke on his work as chairman of the organization and its general purposes, his remarks eliciting a general discussion which drew out many interesting and profitable ideas.

A general discussion from the floor followed on the many problems confronting the gardener and on the importance of the gardeners interesting themselves in their local societies, and through their societies in civic activities. The benefits of the园艺家们合作经营与一个另一方面 throughout the country and with the gardeners’ national association was dwelled on at length.

At the conclusion of the business session a buffet supper was served after which, what a most successful conference came to an adjournment.

ROBERT WEEKS, President, Cleveland, Ohio.

ERNEST GUTER, Treasurer, Pittsburgh, Pa.

P. W. POPP, Vice-President, Mamaroneck, N. Y.

MARTIN C. EBEL, Secretary, Madison, N. J.

Trustees for 1918

Peter Duff, Orange, N. J.; Robert Tyson, Madison, N. J.; Anthony Bauer, Deal, N. J.; Theodore Wirth, Minneapolis, Minn.; Arthur Jackson, Detroit, Mich.
LENEXO, MASS., HORT. SOCIETY.

The regular monthly meeting of this society was held in the Town Hall, Lenox, February 12. The meeting was called to order with President John Johnson in the chair.

Resolutions were read and unanimously adopted disapproving the recent action of plant exclusion by the Federal Horticultural Board, and a copy ordered sent to Representative Tracadway of this State.

Following routine business a recess was declared, and one of the members' wives and many visiting friends.

The society was organized a quarter of a century ago, and in view of the significance of this, the 25th anniversary, an excellent program was arranged by the committee in charge for the presentation of the society's diploma to its past presidents. Edw. T. Jenkins, chairman of the committee, presided during the rest of the evening, and announced the program.

A recitation by Miss Anna Jenkins, “The Wlopenny Whistle of Sandy McGraw,” received much applause, and to which Miss Jenkins responded with “Back to Blighty,” specially composed and equally well received. At the conclusion of the entertainment, vocal and instrumental, and very enjoyable throughout, the chairman called upon Mr. Arthur T. Boddington, New York, one of the oldest members of our society, to make the formal presentation.

Mr. Boddington in well-chosen words outlined briefly the progress of the society since its reception. He was personally acquainted with each of the recipients of the diploma and said at the outset that it was a most remarkable fact that as yet not a single death had been recorded of a past president of the Lenox Horticultural Society. Another fact worthy of note was that, with the exception of three persons, all were present to receive the diploma.

Letters had been previously read from John T. Huss, Walter Jack and George Jenkins, respondents to this toast. The various members of the Association took great interest in the “Home Gardens” movement during the past year, about fifteen thousand tomato plants and fifty thousand cabbage plants being grown and distributed throughout the county, seed for this purpose being furnished by the State Council of Defense.

F. W. Sparks, Sec'y.

TUXEDO, N. Y., HORT. SOCIETY.

The regular monthly meeting of the Tuxedo (N. Y.) Horticultural Society was held Wednesday evening, February 3, Mr. Thomas Lyons presiding.

A protest was presented against the plant exclusion by the Federal Horticultural Board and signed by all the members present and ordered sent to the Congressman representing this district, also to the Secretary of Agriculture.

The following were elected to active membership: Messrs. B. Powers, K. Gronbeck, B. Rand, F. Lawrence, R. Ferretti.

A very instructive lecture was given by Mr. L. D. Green, manager of the Orange County Farm Bureau, on insect pests on fruit trees and spraying to control same, also illustrating by lantern slides the work the bureau is doing in the way of livestock improvement and general farming conditions throughout the country.

James Davidson, Sec'y.

ST. LOUIS ASSN'N OF GARDENERS.

The regular monthly meeting of the St. Louis Association of Gardeners was held in Forest Park greenhouses on Wednesday, February 12, at 8 p. m., with forty-five members present.

President L. P. Jensen called the meeting to order. The paper of the evening was presented by Anton Lindahl on “Lawn Mowing in Missouri.” The discussion was taken up by many members, the subjects of the argument being preparation of...
ground fertilizers, seed mixtures, eradication of weeds by chemicals versus hand-pulling, and the control of annual grasses.

G. H. Paing, Cor. Secy.

MONMOUTH COUNTY, N. J., HORT. SOCIETY.

The regular meeting of the Monmouth County Horticultural Society was held on Feb. 13th in Red Men’s Hall, Rumson, N. J., with President Bonner in the chair. Business was attended to briskly. It was decided to have monthly exhibits during the season with competitions for points, and our third vice president, Chas. D. E. Wild, generously donated a cup to be presented the end of the season to the exhibitor scoring the highest number of points, which was accepted by the members with acclamation. Three new members were elected.

Mr. W. H. Waite gave us a treat by delivering an excellent essay on Gardeners and Gardening Profession, which was highly appreciated by all present, also a lively discussion followed same, in fact the meeting was full of interest from beginning to end, which is certainly interesting after a lapse of inactivity. Twenty-five members present.

W. M. Turner.

SEWICKLEY, PA., HORT. SOCIETY.

The regular meeting of the above Society was held on Feb. 11th. There was a large attendance and 15 new members were proposed.

The committee appointed to draw up a resolution protesting against the edict recently passed by the Federal Horticultural Board reported that copies of the resolution were sent to the local Congressmen, Senator P. Knox and Representative Stephen Porter and to Secretary of Agriculture Houston.

Replies from these gentlemen were read, the one from Representative Porter being the most encouraging.

The schedule for exhibits called for onions, celery, cyclamen, carnations and forced bulbs.

A. H. Etherington, gardener for E. A. Woods, Esq., read a paper on onion growing and storing. It was thoroughly practical, and a lively debate followed.

J. CARMAN, Secy.

THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY.

The regular monthly meeting of the above society was held in Hubbard’s Hall, Greenwich, Conn., Friday evening, Feb. 14. There was a good attendance with President William Graham in the chair. One new member was enrolled and two proposals for membership received. Interesting letters were read from Privates Joe Stobo and Fred Fremd, both gave a vivid description of their march into Germany. Letters were read from several nursery firms wanting to know what action we were going to take in connection with the recent ruling of the Federal Horticultural Board. This subject came in for quite a lot of criticism. After a good deal of discussion the secretary was instructed to write to the Congressmen representing Fairfield and Westchester Counties protesting against the plant exclusion. The executive committee demanded a sum of money from the treasurer to defray the expense of an entertainment for the members and their friends. Mr. Williamson protested against using the funds of the society, claiming that such funds were for horticultural purposes only. He was strongly supported by Mr. Stuart and James Linane. After a good deal of nagging it was decided that each member contribute one dollar towards the entertainment fund. After the business of the meeting had been concluded, M. C. Ebel, secretary of the National Association of Gardeners, opened up a discussion about the gardener and his recompense. This subject brought out some very interesting information.

Mr. Ebel described the good work that the service bureau was doing, and he strongly urged the gardeners to co-operate with each other. Mr. Strange had some lively tils with the members on various subjects. Our next meeting will be Friday evening, March 14. We expect to have a few prominent speakers with us.

JACK CONROY, Corr. Sec.

NASSAU COUNTY, N. Y., HORT. SOCIETY.

The regular monthly meeting of the Nassau County Horticultural Society was held in Pembroke Hall on Wednesday evening, February 12. There was a large attendance, with President Joseph Adler in the chair. Phillip Lucking of Oyster Bay, and Peter Stroyen of Brookville, were elected to active membership.

Some Choice Old Bays
At The Sign of the Tree

AMONG our showing of Bay Trees here in our Bay Tree house, are two wonderful old fellows, that for 15 years were among P. A. B. Widener’s collection. They were the show pieces on his grounds at Ogontz, Pa. A turn in the wheel of fortune brings them to us. They are 15 feet high, and measure 6 feet in diameter at the bottom.

Their foliage is thick and glossy, showing the perfection of health.

Frankly, I don’t know of their equal for sale in this country. The embargo, going into effect in June on all importations, will make bays both rare and costly, which fact suggests the necessity of prompt action to secure these exceptional specimens.

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Julius Roehears Co
At The Sign of The Tree
Box 20 Rutherford N.J.
It was unanimously agreed that this society go on record as "protesting against the. It was unanimously agreed that this society go on record as "protesting against the cultural import prohibition" and a letter of protest was ordered sent to Congressmen Hicks and Senator Calder, representing Nassau County.

An extremely interesting essay entitled "The Value of a Scientific Education," written by Arthur Smith, one of our members, was ably read by John F. Johnston. A letter of thanks was ordered sent to the author.

R. H. Lickman, president, Wm. McCallum, secretary, and Arthur Knight, a member of the Islip Horticultural Society, were present and each spoke briefly on the various horticultural subjects.

Harry Goodband, Cor. Sec.

HORT. SOCIETY OF WESTERN PENNSYLVANIA.

The regular meeting of The Horticultural Society of Western Pennsylvania was held on Tuesday, February 18. The following officers were elected for the ensuing year: President, Ernest Guter; vice pres., Frank Luden; secy and treas., A. A. Leach; executive committee, David Fraser, James Wiseman, Robert Smith. President-elect Guter outlined a policy to help the "Victory Gardeners" the coming year by establishing an information bureau; also to take an interest in the school gardens and to offer prizes for the best products from the same.

The executive committee will draw up a schedule for competitive exhibits, calling for specific exhibits at each meeting, which will be presented at the next regular meeting, March 18.

D. G. Reid, representing "Carter's Tested Seed Co.," and R. R. White, representing "The Skinner Irrigation Co." attended the meeting.

A. A. Leach, Secy. and Treas.

IN MEMORIAM

To Mrs. Alexander Mackenzie, wife of Alexander Mackenzie, who died in Oyster Bay, N. Y., on December 19, 1918.

Thou art gone, fond wife and mother,
Fond and cherished, and a deathless name,
The sunshine of our home's departed;
Our hearts with grief and sorrow bow.

Thou art gone, fond wife and mother,
Fond and cherished, and a deathless name,
The sunshine of our home's departed;
Our hearts with grief and sorrow bow.

The world has fought its last great battle;
And right has won, as God did plan.
Millions gave their lives for freedom;
That this world might be safe for man.

In life you loved to study nature,
Learn to sense her wondrous powers;
And although now beyond the ether,
Today, when the world's songs abound;
Through all the seasons of the year,
And through the lonely years to come,
With us thy memory shall remain;
Until at last God calls us home.

Yes! We'll tend thy favorite plants,
And watch with care their flowers appear;
In bloom when nature's songs abound;
Throughout all the seasons of the year,
And through the lonely years to come,
With us thy memory shall remain;
Until at last God calls us home.

Where all His own shall meet again.

H. GOODBAND, Cor. Sec.

BURPEE'S SEEDS GROW

BEDDING plants and flowers to beautify the American home gardens.

Bedding plants of every variety are going to be scarce. There are, however, a great many varieties that can be easily grown from seed sown now, and this will help to make up the shortage of Geraniums and other popular bedding plants.

The most suitable varieties to grow from seeds and those which always do well are: Agersatum, Alyssum, Asters, Begonias, Celosia, Centaureas, Coleus, Petunia, Salvia, Verbena, Vinca and Zinnia.

The House of Burpee is famous for its superior strains of flower seeds. The stock of some of the varieties mentioned are short. Consequently, we advise ordering early.

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ALYSSUM

Little Gem, Lilac Queen, Sweet Alyssum.

ASTERS

All the best new and standard varieties. See catalog.

BEGONIAS


CALENDULA

Burpee's Improved Strains are unexcelled. The flowers all fully double and of great size. Lemon Queen. The best lemon. Orange King. The best orange.

CELOSIA


PETUNIA


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The Madagascar Periwinkle is excellent for pots or bedding. Rosea. Rosea Alba and Alba Pura.

CHRYSANTHEMUM

Burpee's Fordhook Strain of Early-flowering Single Perennial varieties. Sown during spring the plants will bloom from August until frost. Excellent for cutting.

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W. Atlee Burpee Co.

Seed Growers Philadelphia.
Harrington was appointed manager of the secretary of the combined committees. Arthur company, at the Union League Club, Phila
gardener to G. L. Hoyt, Staatsburg, N. Y., C. Bougy, assistant treasurer of the W. dent, and W. Atlee Burpee, Jr., of the premium, with C. H. Totty as chairman position as superintendent of the Ritter es
$15,000 was voted for Sunday, March 21st. An attractive calendar of much histori
to resign his position owing to unsatisfac
the place.
sympathy of his many friends in the loss
A dinner was recently tendered William
A.MONG THE GARDENERS
James Neil, for a number of years past gardener to G. L. Hoyt, Staatsburg, N. Y., has resigned his position to accept that of superintendent on the J. L. Thompson es
tate, Toledo, Ohio.
George Hewitt, formerly of Branford Farms, Groton, Conn., has accepted the position of foreman on Wyndhurst Gar
dens, Lenox, Mass., under Alfred Loveless, superintendent.
Paul Wenzel, who recently accepted the position as superintendent of the Ritter es
tate, Manchester, VT., has been compelled to resign his position owing to unsatisfactory existing conditions in connection with the place.
A. Bauer, superintendent of the W. C. Durant estate, Deal Beach, N. J., has the sympathy of his many friends in the loss of his nephew, William Woessner, who died on Feb. 8th, while employed by him as assistant gardener, a position he held for nearly six years.

OF GENERAL INTEREST
The Flower Show Committees of the Horticultural Society of New York and of the New York Florists' Club, at a meeting held in New York City on Feb. 17th, unanimously voted to hold a spring show. Held in New York City on Feb. 17th, 1914, when hostilities were first declared by Germany until the signing of the armis
tice, November 11, 1918, is being distrib
ted by Weebler and Don, 114 Chambers St., New York City. Four separate maps show the battle line of the war during different times.

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STANDARD SEED COMPANY, Racine, Wis.

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Manufacturer of
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Lath Roller Blinds
MAMARONECK, N. Y.

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grown, budded stock of Hybrid Teas, Hybrid Perpetuals, Teas, etc., in all the choicest varieties, and Walsh's world-famed Climbers. Catalogue on application.

Xavier F. Walsh
Rose Specialist
WOODES HOLE MASS.

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PHILADELPHIA, PA.

[Parker'sforcingcucumber]

Cut Flower Boxes
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So. Zanesville, Ohio

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MAHANASY, N. Y.

HARRY BALDWIN
Manufacturer of
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MAMARONECK, N. Y.

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grown, budded stock of Hybrid Teas, Hybrid Perpetuals, Teas, etc., in all the choicest varieties, and Walsh's world-famed Climbers. Catalogue on application.

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Rose Specialist
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Rose Specialist
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In closing, I would say that I was highly pleased with the courteousness and gentlemanly bearing of every one of the experts. It is a great relief to superintendents and gardeners to have such men around who can be trusted to be live wires at all times.

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Crataegus Crus-Gulli, 5 ft.
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Ilex Opaca, 2-3 ft.
Phormium Colensoi, 7" pots.
Phormium Tenax, 6-7" pots.
Yucca variegata, 8" pots.

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For 1919

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Now that garden making is in order, possibly it can assist you in working out
your planting plans for the season. Don't forget that we specialize in Hardy
Roses and Perennials for cut-flower purposes. Send for a copy if you haven't
received yours.
The Contents for April, 1919

Things and Thoughts of the Garden

Out-Door Culture of the Sweet Pea

Garden Roses: Their Culture

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Vegetables for Exhibition and Utility

The Science of Flower Gathering

A Water System That Runs Itself

How to Determine If Soil Is Sour

From Here, There, and Everywhere

National Association of Gardeners

Local Societies' Notes

Among the Gardeners

Of General Interest

Published monthly, the 20th of each month.

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Hardy Liliums

For summer or autumn delivery $5.00 per 100 increase over the foregoing prices.
THE question of the day from the horticultural point of view is not whether the League of Nations will hasten the coming of the millennium, nor what shall be done with the German Fleet, but—will the Plant Exclusion Act, officially known as Quarantine No. 37, be put into operation as it now stands? Nothing we remember has created such a stir in the world of horticulture and practically everything that has appeared in print concerning it has been in hearty condemnation of the proposal. That the horticultural industry in this and several European countries will receive a serious set-back if the stringent regulations go into effect on June 1st next is very evident, but what the ultimate result will be as far as American horticulture is concerned it is difficult to foretell. Will it stimulate in our own country the production of the plants which are to be excluded or shall we see them only in memories of the past? The members of the Federal Horticultural Board are inclined to believe that all the excluded plants can be very promptly produced in this country. Let these gentlemen exercise the courage of their convictions and demonstrate that it can be done, and at a cost that will ensure a profit at a reasonable selling price. No doubt suitable climatic conditions for the different kinds of plants are to be found within the confines of this broad land of ours, and there certainly is no lack of brains capable of directing such undertaking, but the whole question hangs almost entirely on a plentiful supply of the right kind of help. Solve that problem and there would be no lack of enterprising men willing to establish the industry of supplying American gardens with American grown plants. Granting all conditions were favorable it would still take some years before many of the plants in question could be produced here, as these plants cannot be raised on the three-shift system. Ostensibly introduced as a protective measure against additions to our already far too numerous plant diseases and insect pests, it would seem to fall short of its purpose unless everything in the plant line is cut off. If some subjects are allowed entry then why not others for which there is a big demand and which practical men believe to be no more dangerous. With a rigorous inspection by competent men at regular intervals during the growing season there would seem to be little likelihood of introducing any new pests through this channel.

As an example of a plant that has been vastly improved by selection and cross-fertilization the Chinese Primrose, Primula sinensis is one of the most noteworthy. It was first grown in English gardens just about one hundred years ago, and it is in the latter half of that time that the biggest advancement has been made. The varieties of today show a wonderful improvement in size, form and range of color, and few plants surpass them in decorative value during the winter months. Besides the highly popular single forms there are good doubles in various colors; a very fine double white variety used to be a great favorite with English florists for design work, and a grower’s ability was often judged by his degree of success with this somewhat tricky variety. The stellata form is indispensable for conservatory decoration, giving a rich profusion of smaller flowers in various hues.

Not less remarkable is the improvement which has taken place with Primula obovata, also a Chinese primrose, but of a much later introduction. Those who remember the earliest cultivated plants will recall a rather weedy looking plant with flowers of a lilac shade, altogether not particularly attractive. Today we see it grown in robust fashion with flowers very much increased in size and of improved form, in colors ranging from pure white to crimson. Some of the pink and rose forms are especially pleasing and deservedly popular for their high decorative value. Those who are subject to irritation of the skin after handling this plant can escape the annoyance by wearing gloves when working among them. * * *

Primula Kewensis is one which deserves to be more widely known and grown. Its origin is interesting, as it was found in one of the greenhouses at Kew Botanic Gardens about twenty years ago, and suspected to be a hybrid between P. floribunda and P. verticillata which was later proved to be correct. For several years it was propagated only by division, as no seeds were now formed in abundance from self-pollination. In habit it is intermediate between its parents and superior to either as a decorative plant. The clear yellow flowers are freely produced in whorls for a long season, and there is a strain which has a good deal of the mealiness of P. verticillata on the foliage and flower stems which adds to the attractiveness. Some growers have expressed a dislike for it on account of coarseness in foliage, which is brought about by sowing the seed too early. Seed sown in July will produce plants that are admirable in every respect six months later. * * *

Any one with space in a cool greenhouse for a climbing plant would surely be proud to own a good flowering specimen of Rosa laevigata, more commonly known as the Cherokee Rose. In some houses it could be planted
in one corner and trained along overhead wires without fear of providing harmful shade for plants on the benches; in other cases it could be used to good advantage for covering a back wall or even one end of the house. I know of one or two veteran specimens that are a perfect delight in the late winter months when laden with their wonderfully large single flowers of snow-white purity. Although its home is in China, it has established itself in some of the southern states, but it is an alien that can be looked upon with favor and its naturalization encouraged. Friends of mine who have seen it in the South in all its luxuriant beauty sing its praises so loudly that one regrets it is not hardy in our northern gardens.

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Happily there are plenty of good roses that can withstand severe winters, and amongst recent additions there is one in particular which promises to be a remarkably fine acquisition. This is *Rosa Hugonis*, net yet generally listed in the catalogues but likely to be in the near future. It has proved to be quite hardy in the Arnold Arboretum and those who have seen it speak most enthusiastically of its merits. In habit it takes the form of a good sized bush with arching branches which in May are profusely laden with single flowers of a soft yellow color. To see it then in its fullest height of beauty is but the first step toward possession. We may have it even if something else has to be discarded. The delicate looking foliage has decorative qualities of its own, making it a good looking plant all through the season.

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Those who have not already grown one or more of the very popular varieties of *Buddleia davidii*, such as magnifica, superba, Veitchiana and Wilsonii, would do well to include a few plants in their planting plans for this season. These vigorous growing plants of bushy habit make a nice display in late summer with their showy fragrant flowers of bright mauve or rosy purple, which are borne in more or less drooping panicles of one foot and upwards in length. They can be used to good effect in association with other shrubs but are perhaps most pleasing when given a bed to themselves, and if planted in good deep soil make a fine garden feature during August and September. While the tops are withered in the northern states this is of no consequence, because with a little protection at the base with leaves or litter, strong shoots will grow up again in the spring, often six feet or more and terminating in a fine panicle of bloom. One little detail is important, the cutting back should be deferred until spring, for if done in the fall there is danger of the plant dying out entirely. To take away the bare appearance of a bed of Buddleias after the tops have been cut down in spring, a liberal planting of Daffodils or some other early flowering bulb could be used to fine advantage.

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Where space will allow it is a good plan to set aside a strip of ground for use as a reserve flower garden. This might very well be away from the flower garden proper, where the plants could be grown in rows so as to simplify the details of culture and where no particular pains would be necessary to observe the niceties of color harmony, etc. Just a place where an armful of flowers may be gathered with no fear of spoiling some special show feature of the garden. Such a reserve garden is just the thing in case of any unexpected vacancies or disasters occurring in a more prominent place, for many plants can be successfully transplanted when in full growth where the change would take but a few minutes, as it would in such a case. All the pains necessary is to lift with a good ball of soil which can be ensured by a thorough soaking a few hours in advance. Plant late in the day, or better still, on a rainy day, and the plants will hardly show a sign of the move. Here are a dozen hardy perennials which can be well recommended for variety, quantity and quality of flowers suitable for cutting. *Achillea* Perry’s white, *Chrysanthemum maximum* and *Gypsophila paniculata* for white flowers. *Corokia grandiflora* and *Heliospermum Pitcheriana* for yellow. *Delphinium belladonna* and *Centaura montana* for light and dark blue. Light rosy purple, *Physostegia virginica*. Pale pink, *Boltonia latiflora*. Combination of red and yellow, *Gaillardia grandiflora*. *Pyrethrum hederifolium* may be had in both single and double forms of white, pink and crimson colors, while the long-spurred hybrids of *Aquilegia* give charming combinations in shades of blue, red, pink, yellow and white.

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At this time many people are giving thought to some form of community or individual memorial in commoration of the heroes of the war. Amongst the many suggestions so far made, that of planting trees has been favorably received in some sections, and there is no doubt that many “Victory Trees” will be planted during the coming season. Some one has said:

“Plant beautiful trees in honor of those Whose memory you revere.”

and what more fitting monument could any one wish for than a magnificent living tree.

An dignified community memorial might well take the form of a grove of trees or a fine imposing avenue planting, either wholly or as a part of the local scheme. Such a plan would need careful consideration before being adopted, for so many well-intentioned people have the idea that once a tree is planted but very little attention is needed to ensure success. We see the result of this attitude in the neglected trees of some of our cities where the powers that be fail to appropriate the relatively small amount of money annually, which under proper management would keep the trees in good condition. A neglected tree is a sorry looking object, and wherever the scheme of memorial planting is adopted provision should be made to guard against such a contingency by setting aside a fund for its proper maintenance, so that the memorial may be a worthy representation, increasing in beauty and value as the years go by. Amongst the good qualities looked for in trees selected for such a purpose that of longevity should have first consideration, even at the expense of immediate effect. Some of the best trees to select would be the American Elm, Sugar Maple, White Oak, Red Oak, Tin Oak, Linden, White Ash, Tulip Tree and Black Walnut.

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Many people will no doubt be planting just a single “Victory Tree” on their home property and where there is ample space either of the kinds already mentioned would develop into an imposing specimen. But in the smaller gardens these big fellows would be out of place, so preference should be given to small and medium sized trees. The Tartarian Maple, Paper Birch, Red Birch, Sweet Gum, Maidenhair Tree, Varnish Tree and *Cercidiphyllum japonicum* all have their desirable qualities for the small place. Red-bud, Yellow-wood and Magnolia are attractive flowering trees, as are also the Scarlet Thorn and Siberian Crab with the additional decorative feature of a brilliant fruit display. To plant a tree is a worthy act, whereby we can do our part towards beautifying our surroundings, not for ourselves alone but for the passers-by and those who will come after us.
Out-door Culture of the Sweet Pea

ERNEST WILD

In writing of the culture of Sweet Peas, we are writing of one of the most popular and charming of all the annuals grown. You will find Sweet Peas grown almost wherever you find a garden, whether it be the gardens of the large estates or the humble cottage. There are not many flowers that, when grown well, will give the all-round satisfaction that the Sweet Pea does. What is prettier than a vase, bowl or centre-piece of Sweet Peas arranged with, say Gypsophila Elegans? Everybody admires it. When we are thinking of the Sweet Peas we are going to grow the coming Summer, we look up our lists of varieties. We have always a number of favorite varieties that we have grown before, but there are always the new varieties which we read of in the various catalogues, all worthy of a trial, quite a number of which are raised in Europe. The descriptions of these varieties are sometimes misleading, for if the seedsman gives us the introduced description, which is made from observations of the varieties growing in the European climate, it sometimes falls very short of what we find them when we grow them here in our climate. In making our selection of varieties to grow, the Spencer type is of course the best. I don't think it necessary to grow too many varieties, for there are so many that are so near alike. About all of the Spencer varieties are good, and each one must be guided by his own taste for colors and the places and situations he has to decorate with his cut flowers. I never advise growing mixtures. Get the colors you want and grow them separately. They can then be used as you want them. By all means in making your selection include some of the Early Flowering Spencers. I have picked flowers from some of these varieties the latter part of May. To get good Sweet Peas the earlier we can get them into flower the better, for they do not like our very hot weather. Any one that has the place to do it will find it best to start our peas the latter end of January. We put about 5 or 6 peas in a 4-inch pot and grow them as cool as possible. This plan could be carried out in the cold frames with protection from the severe weather, and you will get earlier and better flowers. The preparation of the ground we intend to grow our Sweet Peas in should start in the Fall. If we are going to grow good Sweet Peas, or any peas in fact, we must trench our ground. We usually dig out a trench about 18 inches wide and 18 inches deep, take out all the soil. If you haven't got 18 inches of good soil, take the poor soil out, and take it away. When this is done, go along the bottom of your trench and loosen the soil, then get some well rotted manure, cow manure preferably, and mix thoroughly with your good soil that you have taken out. Mix some soot in with it, too, about ¼ of a pail to a 75-foot trench, fill your trench with this and let it lay all Winter. In the Spring this will have settled some. If you are not fortunate enough to have plants started to plant out, then sow your seed just as early as possible, as soon as the ground is dry enough. It is important that there should be good, deep root action before the hot weather comes. Don't sow your seed too sparingly, for you can always thin them out. Cover the seed with about one inch of soil; have each variety properly labeled. When the seedlings have made a good start, thin out to about 5 inches apart, if you have plants in pots. We usually plant ours out early in April. We plant them about a foot apart and leave 3 or 4 peas to the pot. Get the brush they are to grow on in early; get proper straight brush if possible, and always put it in as neat as possible; go over it when through with the pruning shears and cut off all the straggling ends, it adds so much to the appearance of your row. Water your peas thoroughly when needed and keep the soil manure well watered; it helps hold the moisture around them and induces deep root action. Never pull in any more soil around them, after planting; as the hot weather comes, it is beneficial to give them a mulch of something light, it helps keep the soil cool and moist. We have never been bothered with pests attacking our peas. Sometimes we get a few cutworms. They always do their work at night, and hide just under the soil during the day and can usually be caught quite easily. Keep the flowers picked as fast as they develop. It's one thing to grow good sweet Peas and another to arrange them in their vases. It's very discouraging to the grower to raise good Sweet Peas, then go into the house and find all your pets jammed into vases as tight and thick as they can go. Not many flowers have the beauty of the Sweet Pea and when properly arranged they make it feel worth while for the labor spent in producing them.
SUCCESS in growing roses, as with everything else, depends practically entirely upon what we do and how we do it before the plants are set out. The rose, more than anything else requires a rich soil deeply cultivated. The expression "deeply cultivated" will doubtless convey a different meaning to different people. In preparing the ground for roses, whether you are intending to plant one or a thousand, three feet should be considered the minimum; if you like to go deeper, so much the better for the roses. It is absolutely necessary that the work be thoroughly done. It is of no use to dig a trench, throw some manure into the bottom, cover it with the soil in chunks and let it go at that. In planting a rose we are planting something which can last our lifetime and longer, provided the work of preparation is properly carried out and the entire three feet or more of soil is thoroughly broken to pieces and plenty of rich manure intimately mixed with it.

The importance of this preparatory work must be my excuse for dealing with it somewhat in detail. Roses, if we wish for the best they are capable of, do not lend themselves to being mixed with other things and are therefore invariably grown in a border by themselves, and by a series of borders a rose garden can be made. The individual border should not be too wide, five feet being the maximum width, so that any necessary work connected with the roses can, after they are planted, be performed without standing on the border. This width is suitable for two rows of plants. If there is only room for a border containing one row of roses then the minimum width should be three feet; of course it may be of any length.

Roses are of course plants for the sun rather than the shade, but at the same time a little shade from the hottest sun is, all others things being equal, beneficial. Perhaps the ideal aspect is one where the roses can get all the sun

Columbia.—A fine new rose, easy grower, of true pink color, gives great promise as a garden favorite.

Ulrich Brunner.—An old garden favorite. Large rose, fine form, cherry red in color.

T. F. Crozier.—An Irish beauty which is to be debarred from our shores after June 1, by the ruling of the Federal Horticultural Board. A beautiful rose, clear canary yellow, fine form and vigorous grower. A valuable garden rose.
The Killarney Rose—One of the most popular of the garden varieties, a prolific bloomer and perfectly hardy.

up to about eleven or twelve in the forenoon and be in the shade for the rest of the day. The worst aspect is where they have no sun at all up to noon and all the sun for the rest of the day. It is important that the position should be one where there is a free circulation of air, but if there planting is successful the bed should be prepared several months beforehand.

If the ground is now covered with sod this should be pared off and put on one side ready for mixing with the subsoil. The remainder of the top soil to the total depth of one foot should be removed and placed along the sides of the site of the bed, leaving two feet of subsoil to deal with.

In working up ground to any depth and adding manure to it, it will be found to occupy more space than it did before, and in this particular example the surface of the bed when finished would be at least a foot above the level of the surrounding ground. This is not a desirable condition, as it would cause rains, or water added artificially, to run off instead of down to the roots. When the bed is finished the surface should be about level with the ground.

Lady Hillingdon. Deep apricot yellow in color, full flowering rose, good grower and is excellent for cut flowers.

is an evergreen windbreak a little distance away on the north so much the better. It sometimes happens, however, that we have to make the best of such conditions as exist and cannot always find a position that is ideal in every respect. Having decided upon a situation for our rose border which is the best under such circumstances as over which we have no control, we then commence to make it fitted for the reception of the plants. This should be done in the autumn if possible so as to be ready for spring planting, while in those places where autumn
Mrs. Belmont Tiffany—a new Yellow Garden Rose—a glorified sunburst, which is becoming a garden favorite.

around it, which would bring it after it has sunk, two or three inches below the undisturbed ground, which would enable water to be confined to the actual bed and afford room for the addition of enrichment from time to time. To enable this to be brought about six inches of the subsoil should be entirely removed, leaving eighteen inches. To this eighteen inches of subsoil six inches of good half rotted manure should be added, thoroughly breaking up the soil and mixing the manure with it as the work proceeds. The work is facilitated if a trench is first dug across the bed and the soil from it taken to the spot where the bed is to finish, then the soil can be worked forward in strips; the sod taken from the surface should at the same time be broken up and mixed with the subsoil, which if very clayey is benefited by the addition of some good light compost. Having completed the working up of the subsoil, a coating of air-slaked lime should be spread over it, just sufficient to whiten the surface, and then the top-soil may be replaced and have manure worked in with it with the addition of two pounds of pure bone meal to the square yard. The bed is now ready for the reception of the plants.

In this section (New York) April is a good month to plant; the distance apart for hybrid perpetuals should be two feet and for hybrid teas eighteen inches. Some difference of opinion exists as to whether it is better to use budded plants or those on their own roots. While much can be said in favor of the latter, the former will invariably give the best results, all other things being equal, provided they are planted at a sufficient depth. Innumerable failures with roses have been brought about by want of attention to the latter point. A budded rose should be placed in the ground at a depth sufficient to cause the point on the stock at which the rose was budded to be six inches below the surface. At this depth the rose itself will generally throw out roots above the stock and the tendency of the stock to produce suckers will be to a great extent prevented; also, what is of the greatest importance, should an exceptionally severe winter kill the rose to the ground, it will, when planted at this depth throw up shoots from below. The best plants to buy are two years old dormant plants that have been potted up in the autumn; these are generally sent out sufficiently pruned. Care should be taken that the soil is well firmed around the roots.

After planting, the ground should have a coating of air-slaked lime; this dressing of lime should be repeated every year. During the growing season the ground
should be kept cultivated so that there is always three inches of loose soil all over. If watering is necessary it must be done thoroughly. It is astonishing how many there are who water their plants without giving them any water. To be of any value the water must be sufficient to reach below the roots. It is very rarely, however, that properly prepared ground kept continually loose on the surface requires watering.

In addition to the before mentioned continual cultivation, summer care consists in removing the flowers, either for decorative purposes or those that have dropped their petals, with as long stalks as possible, the object being to encourage the growth of strong young wood throughout the season. The first year of a newly prepared border feeding will not be required, but each subsequent year a rose border should be fed with liquid manure when the soil is moist during July, or sheep manure and bone meal can be worked in.

After the flowering season is over roses may be cut back to about eighteen inches from the ground, which will facilitate the application of the winter mulch; this remarks have been principally in connection with hybrid perpetuals and hybrid teas.

As regards other classes, the climbing varieties only require the dead and old wood removed each year; this is best done soon after their blooming season is over.

The best place for the Rugosa roses is as part of the shrubbery. The only pruning required is the removal of wood over two years old; they throw up young wood from the roots each year. The fruit of this species is very ornamental for a long time after the blooming period has passed.

The Wichuraiana roses are very valuable for covering sunny banks where grass does not thrive. The bank should be thoroughly cleaned from weeds and enriched; as the roses trail over it they should be pegged down and roots will form; in a very short time the bank will be covered and will be a thing of beauty instead of an eyesore, more especially as this species of rose is almost—and in mild sheltered spots quite—evergreen. This kind of rose is also useful for planting at the back of a retaining wall, for which purpose the climbing varieties are also valuable.

The Baby Ramblers or Polyantha class, are not made as much use of as they deserve to be. If one has only room for a few roses, these will be found to give more in the way of flowers than any other kind, as the bushes are from the earliest to the latest times covered with bloom in the form of sprays. The only pruning they require is the cutting out of the branches that have produced flowers.

The wild roses, too, should be used more frequently. Enough use is not made of our native wild flowers, and there are many places amongst shrubs and in semi-wild spots that can be beautified by our wild roses, all of which will show improvement in quantity and quality of bloom when subjected to the better soil which should be provided for them.

*Rose Time in Southern California is approaching, when the Rose Gold of Ophir hangs over lattices—a veritable curtain of pink and yellow.*
Work for April in the Garden

JOHN JOHNSON

With the winter season ended and frost out of the ground the gardener finds ample employment in every department. Under this pressure of work he must exercise much forethought and arrange his work with sound judgment.

In the flower garden, winter covering must be removed and the beds and borders put in order. Beds which are soon to be planted will require to be dug over and manured if necessary, grass edges trimmed and the walks cleaned and given a fresh coating of gravel. As soon as the ground can be had in a fairly dry and friable condition do any necessary planting. Pansy, Myosotis and Bellis carried through the winter in cold frames should be planted at the first opportunity to make room within the frames for "hardening" young stock raised from February and March sowings. Any alteration to the perennial border should be done forthwith, and while we consider this job better done in the fall months, the work can also be successfully carried out at this season. Divide large clumps of desirable kinds to increase the stock and others which are growing out of bounds should be chopped around to reduce their size. Remember that most of the occupants of the hardy border are gross feeders and that it is always advisable to incorporate a dressing of some complete fertilizer when digging the border in the spring. Canterbury Bells, Foxgloves, Columbines and plants of this class raised from sowings last summer and wintered in frames should now be planted in permanent quarters. We do not assume that these plants require frame protection to bring them through the winter, but if for convenience they were planted in frames, as often is done, they must now be transplanted and the frames used to better advantage. The crowded condition of the greenhouse and hotbeds is sufficient to warrant this being done at the earliest possible moment. Move the harder bedding stock and vegetable plants to the frames first. Phlox Drummondii, Antirrhinum, Larkspur, Pentstemon, Verbena, Nemesis and Sweet Pea are among the so-called annuals to be given cooler treatment and the cold frame will now meet the requirement of vegetable plants of the cabbage family, lettuce, beet, onions, celery, etc. In fact these latter kinds should be in their permanent quarters before the end of the month. However, this must be said regarding the management of hotbeds and frames; increased sunshine during the month of April calls for greater vigilance on the part of the grower. Days might be bright and warm but the nights are often treacherous, and young stock placed in cold frames to undergo process of hardening will require very careful watching. A sudden change in the weather might inflict considerable injury to stock upon which much time and care has been expended earlier in the year. Therefore, cover the sash each night at quitting time until it is felt the inmates will not suffer from light frost. There are still many seeds to be sown for the purpose of continuity and replenishment. The very best stocks and asters may be raised from sowings made this month, and all such annuals which do not readily transplant may now be sown where they are to flower, such as Mignonette, Alyssum, Poppy, Lavatera rosea, L. tinus and Didiscus coeruleus. This last named is an annual not widely known and produces, as the specific name denotes, blue flowers, or rather flowers of pale lavender. It has attractive foliage as well and is very valuable for cutting.

Grass and hardy bedding stock already done, remove the water covering from roses, spring bulbs, raspberry canes and strawberry plants and take down windscreens that were placed about ornamental trees and shrubs.

Outdoor roses will require pruning. From the hybrid perpetuals cut away all weak growth entirely and shorten the strong canes to within a foot. The less vigorous kinds as teas and hybrid teas will require less trimming. Remove all puny superfluous growths and cut stronger shoots back to a good "eye" on well matured wood. Rambler roses should be tied in position before growth commences and as far as possible retain only the most promising canes of last season's growth. Cut out thin springing shoots and check it not required for filling in. Allow a space of not less than six inches between the growths, and still greater freedom should be allowed the more vigorous canes. After pruning clear away all rubbish, manure the beds and lightly work it into the surface soil. Avoid injury to the roots by too deep digging near the base of the plants.

Driveways suffer more or less during the period of thaws, clear the gutters of sand and refuse and empty catch basins to ensure perfect drainage of surface water.

Lawn making is one of the possibilities of the spring months. The sooner the necessary preparation and seeding can be done the better. Take advantage of every opportunity for making the ground ready and when the soil crumbles nicely sow the seed. Choose a calm day for the seeding operation. The finer grass seeds are extremely light and readily blown to a distance by high wind. Although the mechanical seeders now at our command distribute seed very evenly, we prefer sowing by two operations rather than one, the second sowing crossing the first at right angles. After seeding the plot should be lightly raked over and then finished with a roller. Here again we advise the double operation, as in the case of seeding.

Established lawns now require attention. Settle the surface as evenly as possible by rolling with a heavy roller. When slight depressions are allowed to remain without correction, trouble often follows. During the thaws of late winter water is apt to collect and freeze solid, killing the grass in spots and a patchy appearance is the result. In such cases it is always better to make good imperfections by the use of good sound turf, rather than seeding.

Push the work of transplanting deciduous trees and shrubs. Any that were moved last fall or during winter should be given attention now. The ground about the roots is apt to settle unevenly, level or grade as may be needed and sow grass seed. Evergreens may be transplanted during the next two months. Dig holes to receive them and make ready the soil if poor by mixing with it humus or well-rotted manure. Where at all convenient, newly transplanted evergreens should be given an overhead spray on bright days. This not only helps them to recovery from shifting, but does much to prevent an attack of red spider. Look over the finer leaf evergreens for red spider and apply the remedy if affected, or better still, spray early as a preventive.
Small Fruits for the Home Garden

W. J. GREEN

SOIL requirements are much the same for strawberies, raspberries and blackberries, but blackberries will thrive fairly well on a thin soil, where the other two would prove unsatisfactory. A friable clay loam, well drained, is better than a stiff clay or light sand. A soil that retains moisture but is not wet is desirable for these fruits.

A site for a strawberry bed should be selected where the soil has been under clean culture for several years and at least where a moderate amount of manure has been used and well incorporated into the soil, or where some leguminous crop has been grown recently. This is for the purpose of increasing the water-holding capacity of the soil quite as much as to improve its fertility. The necessity of using soil that has been under clean cultivation is due to the fact that white grubs are less numerous in such soil than in that which has recently been in sod. The white grub is a serious enemy to strawberry plants, and in no other way can it be so surely combated as by choosing soil which has but few if any white grubs in it.

The best manner of preparation of soil for a strawberry bed is to plow the ground late in the fall or very early in the spring. Fall-plowed ground should be worked with a disk harrow as early in the spring as it is in proper condition. It should be stirred frequently with a harrow before the plants are set. Spring-plowed soil should be treated in the same manner, in order to put it in a friable condition and to save moisture.

If berries of unusually large size are desired, the plants are set 1 foot apart in the rows and the rows 2½ feet apart. The runners are cut off close to the plants as fast as they appear. This is called the hill system, but is seldom followed except by amateurs because of the labor required to give best results.

Nothing short of clean culture will answer for the first season of a strawberry bed. Weeds must be kept from growing and the soil stirred frequently in order to conserve moisture.

As soon as freezing weather begins the strawberry bed should be mulched. Almost any kind of covering in the form of a litter will serve as a mulch. Straw is more often used than anything else and is as good as any other kind of material. The covering should be 3 or 4 inches thick before settling.

It is not to be disturbed in the spring except the part just above the rows, from which enough is taken to allow the plants to get through. Any weeds springing up should be pulled as it is not a good plan to disturb the mulch between the rows. If the best leaves are used they should be spread between the rows and covered with straw to prevent them from being blown away. Leaves without straw do not form a serviceable mulch, but leaves and straw together are better than straw alone.

Mulching is practiced not only to prevent the soil freezing, but to keep it from thawing and consequent heaving of plants when the soil freezes again. The mulch does, however, retard freezing of the soil.

A strawberry bed may be kept one year or more. The first crop borne by a bed consists of larger and more beautiful berries than that from an old bed. The usual custom is to fruit a bed but once, but there are exceptions to this rule and often with excellent reasons. Rarely is a bed retained for a longer period than 2 years. A bed in good condition will yield more berries the second than the first season, but usually they are of a reduced size. It usually requires more labor to clean and put an old bed in order than to plant and care for a new one.

Early spring is the best time to set raspberry plants, but on sandy soil they may be planted in the fall. The canes of the black and the purple varieties start into growth very early in the spring, hence early planting is advisable. It is possible, however, to transplant them as late as the middle of May in favorable weather. This is done when the young canes are a few inches in height. At this time the shoots are tough and are not broken as easily as when they are young and tender. The same is true regarding the advisability of early planting of the red sorts, and they may also be set late in damp weather. On heavy clay soil fall planting of black varieties is unsafe because the young tender sprouts are unable to break through the stiff crust of soil. The red sorts may be planted on heavy soil in the fall, but should be set quite deep so that they will not be thrown out by the frost.

It is best to set the black and the purple varieties 6 to 8 inches deep, but to cover at first with only 2 or 3 inches of soil. More soil can be added as soon as the canes appear above ground. Black raspberry plants are set 2½ to 3 feet apart in the rows. The space between the rows depends somewhat upon the variety and soil but 7 to 8 feet are usual distances.

Red raspberry plants require about the same space except a few of the half-dwarf sorts. The space between plants in the rows does not matter greatly as the young suckers will fill the spaces after the first year. If, however, the plants are given less space the first crop will be larger than would otherwise be the case.

Usually black varieties are given no pruning nor training the first season. If the growth is normal some of the canes may attain several feet in length. The first spring after planting the canes of the previous season's growth...
are cut back to within 12 to 18 inches of the main stem, because it is better to sacrifice somewhat in quantity of fruit for the sake of increased growth of plants. Aside from this cutting back there is no pruning to be done the first season after planting except to nip off the ends of the shoots when they have reached about 18 or 20 ins. in height. This checks the upward growth and causes a thickening of the stems, making them more sturdy and self-supporting. Side shoots need not be cut back. The season following the new canes are nipped off in the same manner. This is all the summer pruning that need be done at any time.

The regular spring pruning consists in removing a portion of the previous season's growth. Usually the canes are cut off to within 18 to 24 inches of the main stem, but much depends upon the vigor of the plants and the number of shoots, or fruiting stems. The object in removing a portion of the fruiting wood is to reduce the number of berries, thus increasing the size of those which remain. The tax upon the bushes is somewhat lessened also.

Some growers use no supports for raspberry canes, depending altogether upon the nipping off of the ends of the young canes to make self-supporting plants. Others set stakes and stretch wires along the rows to which the canes are tied, or in some cases simply allow the young shoots to lop over the wires. Staking and fastening the canes to wires prevents much loss of fruit by getting down into the dirt or by the rain splashing the soil over the berries. It also allows more complete cultivation than can be done if the bushes are not staked. In most cases staking is a profitable operation in black-raspberry culture.

If straw or leaves are easily obtained black raspberry plants can be mulched profitably. In a small way this is a satisfactory method not only because of crop increase by mulching but also for the reason that the soil is greatly improved. The plan is particularly advisable upon dry knolls or upon any soils easily affected by drouth. Mulching red raspberry and blackberry plants is less practicable than in the case of black raspberries.

Red raspberry plants are usually grown in hedge rows and tied to wires stretched along the rows. If the plants are grown in hills a stake is set to each hill and the rows cultivated both ways. In this case no wires are used.

The pruning of red raspberry plants is the same as in the case of black cap so far as the removal of old canes is concerned, but summer pinching, or nipping, off the ends of the canes is not usually practiced. In the spring the canes of the previous season's growth are cut back about a foot, except with half-dwarf sorts, which are not shortened.

Red raspberry suckers which are found outside the prescribed limits are to be treated as weeds. It is usual to leave the hedge row 8 or 10 inches wide and to destroy with cultivator and hoe all the plants beyond that distance.

Blackberry plants are given a little more distance between rows than red raspberries, but the treatment is the same. On dry soils fall planting is advisable for blackberry plants, but early spring planting is satisfactory also. Before planting the canes should be cut off about a foot from the ground.

Good cultivation must also be practiced for raspberries and blackberries. It is true that many plantations are neglected by allowing weeds and grass to rob the plants of both food and moisture, but satisfactory results are not secured when such neglect is allowed. Under these conditions a plantation lasts only 2 or 3 years. With good care it might last much longer, although usually black-cap raspberry fields are not kept longer than 4 years.

Ordinary weeds are not hard to subdue and frequent cultivation will hold the sprouts in subjection; but in a black-raspberry plantation especially, grass is very troublesome and must be taken in time. The regular spring work may be done with a disk harrow and subsequently a common harrow cultivator will answer.—Extracts from Ohio Agricultural Experiment Station Bulletin.

CONSTRUCTING A ROCK GARDEN

The construction of a rock garden is not a thing to be lightly undertaken; far more is needed to the making of a successful rock garden than most people are in the least aware. The inexperienced amateur, who proposes to set about the matter, had best study the writings of experts on the subject and do nothing rashly. A few general hints may be given as to the main considerations to be observed, but the subject is too vast a one to deal with briefly with any thoroughness.

There is a great charm about good rock gardens, but, all the same, a liking for them is often an acquired taste. The little Alpines are so small and the attractions of the masses of color in the perennial bed are so obvious, but, once the taste is acquired, the gentians and the Alpine phloxes, with their brilliant coloring, and the fairy-like little saxifrages will come to have a charm of their own surpassed by nothing else in the whole garden.

In choosing the site for a rock garden, any natural feature should be taken advantage of, in the shape of a depression or a bank. The shapeless mounds, dumped down in the middle of the lawns in some gardens, cannot be too carefully avoided. Mr. Raymond E. Negus, in his contribution to rock gardening literature, in "Gardens for Small Country Houses," classes the various forms of rock gardens under the headings of "the dell, the ravine, the miniature cliff and the knoll." The list need not stop there. Very excellent effects can be obtained, as the writer knows from personal experience, from an almost flat rock garden; and, in May and June, its appearance in the hot sun is very effective. So, if you think that the beauty of a garden must lie in a certain definite scheme, the beauty of a rock garden is "literary" beauty. In the choice of your rock garden, think of the beauty of a garden, not the beauty of a book.

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April's balmy days are bringing plant life to greater activity, calling for more zeal on the part of the grower. More air is necessary for all plants, and coal will be saved by reducing the heat that was required a short time ago.

Easter plants are looked forward to with great enthusiasm this year, for the message of good will and the great promise to mankind has been fulfilled again, that while the earth remaineth, cold and heat, summer and winter, day and night, shall not cease.

Azaleas must be kept cool, and if any are commencing to open, they must be retarded by being shaded and kept a little cooler, but care must be exercised not to cool off too suddenly or they will fail to expand, and in some cases it is better to develop and then place in cool quarters. Give the Azaleas a little soot-water each week.

Lilium Harrisii or Formosa are coming along nicely and must not be checked. Look out for green fly in the buds and as a preventative, spray with Aphiine.

Chrysanthemums are now growing well and must be repotted as needed. If nice plants are wanted in six inch pots, they will quickly develop.

Egg plants, peppers and tomatoes are all the better for being raised and grown in a greenhouse in the spring and make more satisfactory plants for the garden than those started in hot beds.

Palm's must be thoroughly shaded now. Any streaks of sunlight through the roof will cause burnt leaves and permanent disfigurement. Palms should now be syringed afternoons, when closing the house, with a liquid made from soot and clear, fresh cow manure.

Planters such as Crotons and Dracaena must be sprayed and kept clean and shaded from strong sunlight. Give them a feed of Sulfate of Potash to harden up the growth, preparatory to their going into the halls or passages or out-doors in a few weeks' time.

Primulas and Cyclamen will continue their blooming period if dead blooms are picked off daily and the plants kept shaded.

Every person possessing a glass house who does not grow orchids should visit the leading florists' nurseries in order to learn the varieties and see what beautiful exotic ones can be obtained of easy culture and at a low price. It is a wrong idea to think price is prohibitive, because they are cheaper than most plants when value of bloom is considered, and their lasting qualities are taken into account. There are many firms who have such varieties as Dendrobium nobile, Dendrobium thyrsiflorum, suavissimum and many Cattleyas at one dollar per plant, that will give several dollars worth of bloom the first year and develop into magnificent specimens as the years advance. In the summer time, when their growth is completed, they will do well outdoors under trees.

Celias should be started for growing in the conservatory this summer. Celosia Castle Gould is the finest type and should be sown in light soil and grown in similar compost until 6 or 7-inch pots are reached, and then kept as cool as summer conditions permit.

More syringing of roses and other plants is now necessary, but do not allow them to be too wet at night or fungus diseases will develop easily, checking your precious good work.

Carnations should be well fed with liquid sheep or cow manure twice weekly and must be kept as cool as possible, never exceeding 50° at night. Spray well each week and keep a fairly moist growing atmosphere to drive away red spider.

Asparagus Sprengeri that is intended for cutting in the fall at the same time as the carnations, etc., begin to bloom, is best grown in wire baskets suspended from the roof of a house. It will grow either hot or cool and dislikes being in the ordinary bench, but suspended, it grows freely. Put moss at the bottom of the basket and fill it with any good soil: a general compost will do nicely: water freely.

Hydrangeas for furnishing the lawn; steps and porches should be well fed, and if the foliage shows a pale tendency, give a top dressing of bone meal and water with soot water.

Caladiums to furnish the conservatory can be well grown in pots and pans. Their beautiful colors are invaluable in summer, and we need a few bright spots to cheer the world up a little. Ferns can be grown with these plants. Both are sensitive to draughts from an open door or careless ventilation, but they will thrive with ordinary care.
The Moderate Sized Greenhouse—Its Practicability—Its Uses
W. C. McCollum

It is not so many years ago that the greenhouse was considered a millionaire's hobby, but today, fortunately, the case is different, and there are numbers of very modest little greenhouses being erected on very small places, showing that there is a tendency toward the appreciation and value of a greenhouse, even among people of very moderate means.

How any country estate can get along without a greenhouse is more than I can explain, yet there are a number of very fine places that have no greenhouses. This may be due to several reasons: the owners may not fully appreciate the important fact the greenhouse plays in raising the standard of their places, or they may have formed wrong impressions in regard to their cost and maintenance.

There are various phases that confront the prospective owner when trying to solve the greenhouse problem, and one of the first points to consider is location. The greenhouse should relate to the conditions that exist on a place such as service roads, location of gardens and other fixed points. Soil and coal along with other requisites must be brought to the greenhouse, and spent soil and ashes must be removed.

Your greenhouse should be placed on a well drained ground, as low damp locations are sometimes the cause of serious trouble with the plants, besides causing useless annoyance with wet cellars.

Absolute sunshine is essential, for you can always shade artificially if there is any need of it. Locate outside the shade line of buildings and get far enough away from any young trees that figure in a planting scheme, so that they may develop, and if any further planting out is desired there are numerous dwarf trees and shrubs which can be used for the purpose.

Compass points are not a very serious factor as modern construction causes so little shade that it is immaterial which way the house faces. A few years ago the houses were always given a southern exposure because the rafters and supports were so heavy that if the house did not run north and south the house was almost totally shaded when the sun was low in mid-winter. It is important, however, if the house is run north and south, that the workroom should be on the north end and if run east and west, that the workroom be on the west end.

The workroom, or service building, should receive due consideration. It should correspond architecturally and structurally with any nearby buildings, and the interior should be planned with some forethought. A soil bin should be provided for the storage of soil; this is very necessary in winter; pot racks should be built sufficient in size to assure the proper storage of pots; also potting benches for the potting and boxing of plants, and if you feel so inclined, a small packing table, a locker for the tools used around the greenhouse and a properly installed seed closet.

The cellar should be at least the full size of the workroom; sufficient space should be partitioned off for the boiler and the proper stoking of the same while the balance of the space can be used for coal storage. A floor drain, though not necessary, is a fine thing to have.

The accepted type of house of today is the even span house, unless grades are such as to make a three-quarter span more economical or practical. Such location would be a rather steep grade with a southern or southeasterly exposure.

The curved eave house is without doubt superior to any other style of construction. The reasons are that you get the maximum amount of light and the house frees itself better of any ice or snow that might accumu-
late on the roof; it is superior to any other architecturally, and is better constructively because of the absence of any fittings at the eave line which detract considerably from its appearance.

Do not build your greenhouse too narrow. An eight-foot house which provides a three-bench arrangement is the narrowest practical width when standing by itself. Connected to other houses in a range, narrower houses may be used and are useful for a number of purposes, but they are so easily influenced by outside conditions that the temperature rises or falls very rapidly. But when used in connection with a range of houses, smaller than this they are usually like ovens and lose their efficiency.

Galvanized supports with tile bottoms and slate sides is the ideal benching, as it eliminates all repairing. This can be varied by having cypress sides or even cypress bottoms, but do not make the error of building all wood. (Continued on page 122)
How Varieties of Fruit and Flowers Are Originated

T. SHEWARD

New varieties are produced by cross-fertilization and selection. Cross-fertilizing is done by placing the pollen of one variety on the stigma of another. Figs. 1 and 2 show cross-sections through a Primula flower, showing stigma, pollen and ovary. Fig. 4 shows sectional view of an apple flower, “S” is the stigma and “P” the pollen. Fig. 10 a sectional view of a cherry blossom with pollen (“P”) and stigma (“S”). Fig. 12 shows a blackberry flower. Fig. 23 a potato flower. Fig. 20 the flower of a gooseberry. Fig. 21 a strawberry flower; the pollen is shown at “P,” stigma at “S.” To make a cross the plant’s own pollen is first removed as in Fig. 5, and pollen from another variety placed on the stigma.

In crossing apples and other fruit trees the seedlings resulting from the cross are grafted onto older trees when two years old. This causes them to bear fruit much sooner than if grown on their own roots. Fig. 9 shows how this is done. Fig. 8 shows how to make a cleft-graft. Fig. 7 a scion. Fig. 16 shows a fuchsia; Fig. 17, the same, with pollen removed and ready for crossing. Fig. 18 shows the ripe fruit, and Fig. 19 a section showing the seed. Fig. 14 shows a blackberry fruit; Fig. 13 a sectional view showing the seed. Fig. 6 section through apple showing seed. Fig. 22 the seed of a strawberry. Fig. 24 a potato ball which joins after the flowers have been crossed successfully. Fig. 11 the cherry stone, which is sown to produce the new variety after crossing the flowers.

All plants that are raised from seed vary in some manner, perhaps not enough to be noticed without very careful observation, but it is safe to say that two plants exactly alike are very rare from seed. If all seeds came true to type there would be no change, therefore no new varieties. If the potato had been grown for the flowers and not the tubers, these would not have changed, but the color and form of the flowers would be as varied as the dahlia. This would have been accomplished by selection. If a plant breeder wished to raise a potato with red flowers, seeds would be sown from plants that bore flowers nearest to red. By sowing the seed nearest to the color desired and selecting only perhaps one or two from thousands of plants raised from the seed, crossing these and sowing the seed resulting from the cross, a red flower would be produced. Fig. 28 shows an early form of petunia. Fig. 29 a double fringed flower, the result of years of careful selection. By crossing this (Fig. 30 with Fig. 28), the result would be great variation in the seedlings as shown at Fig. 32 to Fig. 41. Fig. 39 is not a flower but green sepals. By crossing Fig. 40 to Fig. 41 the variation in the seedlings would not be so great and by discarding all those not true to type, a new strain would be produced in a few years. Fig. 31 petunia seed. In double flowers the anthers change to petals; Fig. 42 and 43 show this. In crossing these single or semi-double flowers are used for seed parents. Fig. 25 shows a coleus bearing leaves one-half of which vary in color. Fig. 26 shows how by stopping the plant and sending the shoots “A” and “B” in opposite directions and removing “B,” a new variety is secured (Fig. 27). It is sometimes necessary to stop the plant several times before the whole leaf changes.
Absurdities of Act Prohibiting Plant Importations
W. N. CRAIG

THERE is no need to state that Quarantine Bill No. 37 is full of inconsistencies, and the members of the Federal Horticultural Board, none of whom by the way are practical horticulturists at all, although we are told that "they are thoroughly qualified to perform the duties imposed by law upon that board and that they have investigated problems pertaining to plant culture, plant diseases, and plant insects," which qualifications, however, fall very far from making them practical men, are showing decided signs of uneasiness. They made claims that all the leading horticultural interests, propagators, nursemen, etc., were with them, but although repeatedly importuned to publish the names of the societies, firms, and individuals, in order to substantiate their assertions, they have so far failed to do so.

We all are well aware that a few propagators and nursery interests are supporting this Quarantine, not because they look to it as a means for excluding pests or diseases, but for a far more selfish reason, viz., the hope of eliminating foreign competition in plants, trees and shrubs, in order to secure much higher prices for stock, usually of a decidedly inferior quality, produced at home.

The Federal Horticultural Board knows perfectly well that this Quarantine, if placed in force on June 1, will not protect us from foreign pests and diseases. They are very chary about admitting that any of our most serious foes have not come in on nursery stock at all; for instance, in their "memorandums" and other literature they fail to tell us that we are under obligations to a studious entomologist at Medford, Mass., for the turning loose of the Gypsy Moth, New England's most destructive pest, which has caused that section of America, many millions of dollars; that the Corn Root Borer arrived at Charlestown, Mass., on jute or hemp (which commodities by the way are not barred); that the Cotton Boll Weevil migrated from wild cotton across the border of Mexico into Texas; that the Hessian Fly did not come in on nursery stock; that the Chestnut bark disease which has desecrated our eastern woodlands, according to the best authorities, was introduced on the hoofs of wild animals to the New York Zoo, and that the White Pine Blisters, Rust and Citrus Canker are far diseases for which stock, we are indebted to the United States Government itself. These are a few of the serious pests and diseases for which horticulturists are not responsible and any careful thinker must admit that as long as we have commerce with the rest of the world, our gardens, farms, orchards and forests will be exposed to dangers in about the same ratio as other countries, which, however, take a broader view of the situation than our Federal Horticultural Board.

To quote an editorial from a leading British horticultural journal in its issue of February 15, "The United Kingdom has suffered much from introduced American plant pests, but it is probable, nay certain, that the advantage that this country has gained by the introduction of the plants which bore these pests is many hundred times greater than the disadvantages. Decisions arrived at by a State have to be respected, even though they press heavily on other communities; but it may be said without fear of contradiction that if this particular decision is based upon a desire to exclude pests it is a wrong decision, and one which will press at least as heavily on the horticulturists of the United States as on those of Europe."

The decision of the powers, that temporarily be, to exclude all orchids, has raised a storm of hostile criticism and is so utterly senseless and uncalled for that it is a wonder that any body of supposedly intelligent men could have the effrontery to even suggest such a quarantine.

The writer has had some correspondence with the Department of Agriculture regarding orchid exclusion, and asked it to give reasons for debarring them, and to give the names of pests and diseases which have come in on these plants and have become established in America. Answering this letter, the Department replied that "it had received a letter within the last ten days from a large orchid importer and producer to the effect that several species of the wild orchids had been gathered so persistently and in such immense quantities that they are becoming unavailable for commercial importations. He reports that several of the largest and most prominent orchid collectors in the East have decided to discontinue growing forest species and to devote themselves to growing hybrids as is done in England. The letter goes on to say that the writer is through with forest species and their pests, and will from now on grow hybrids."

I have been unable to secure from the board the names of these prominent concerns and personal investigation has failed to locate them. Possibly there may be some commercial grower who has written the board as it states someone who is short-sighted, narrow, and selfish to the limit, who probably has some seedlings, and thinks he will realize better on them with the forest species debarred, willing to deal a veritable death blow to the whole orchid industry in order to bolster up his miserable little individual enterprise. Has this man courage enough to come out into the limelight and make himself known?

While it is true that one in ten varieties of Cattleyas has been more difficult to collect of late, yet there is no evidence that "they are becoming unavailable for commercial importation." Furthermore, both commercial and private growers handle hybrids on a very small scale compared to forest species, and on the cut flower markets hybrids here, as well as abroad, cut a very insignificant figure.

In private collections, hybrids which are more expensive than forest collected plants, appear in moderate numbers, but commercial growers touch them very sparingly and there is no proof that they will be willing to try them, were forest plants excluded.

There is a very limited field here for the raising of orchids from seed; it is practically confined to Cattleyas and Cypripediums, although several other species may be raised, but we cannot raise the beautiful Odontoglossums and other varieties at all. Anyone knowing what the raising of seedling orchids mean would hesitate upon embarking on so precarious an enterprise. For years there would be absolutely no financial returns, and after plants had reached the flowering stage, would orchid fanciers be willing to pay a price which would make them a paying proposition to the hybridizer? I think not, and, furthermore, if we are to believe the claims of the Federal Horticultural Board and their lone orchid seedling supporter, is it not strange that no one ever has before thought of dropping the purchase of forest species and striving to have produced seedlings? If any of the members of the board had ever tried their hands at producing orchids from seeds, they could not be buncombed by such assurances of any "large orchid importer and producer."

Answering the query of what destructive pests had...
come in on orchids, the writer received a list of ninety-seven varieties, which had been "identified," and of these sixteen were "established" in the United States. The principal of these latter introductions are *meeley bug*, here long before any imported orchids; *ivy scale*, an unimportant pest; *Diaphris boisdvalii*, another scale and peculiar to orchids; *Cattleya fly*, confined practically to Cattleya; *orchid midge*, attacks orchids only and not at all serious, and *hemispherical scale*. The balance of established pests are even less important than the foregoing, not a solitary pest which does damage to farm and garden crops, or woodlands, and of diseases none were named at all.

The arguments of the Federal Horticultural Board are surely childish, even pitiful, in regard to orchids, and they are not one whit stronger in the case of other plants. It is willing practically to destroy an industry which painstaking, hard-working and intelligent men have spent virtually their whole lives to create. Their chief "adviser" tells us in a public meeting that orchids are mere bagatelles and that this Quarantine "will go into force on June 1 and will stay there forever." Methinks this impertinent expert will discover ere long that he has been "inebriated with the exuberance of his own verbosity" and that orchid growers and the horticultural interests generally will not rest satisfied until more practical, thoughtful and intelligent men will compose the Federal Horticultural Board at Washington.

(EDITOR'S NOTE)

While some people may be disposed to side with the member of the U. S. Department of Agriculture who referred to orchids "as a mere bagatelle," what about the many other choice plants that are being debarred from our shores, that come nearer to the heart of those plant lovers who have not the means to possess and enjoy the orchid. Many of the finer sort of plants have already disappeared from the catalogs, owing to the war, and it would be a difficult task at this time to secure real choice plants in this country of the various varieties of Anthuriums, Aralias, Clematis indivisa, Clivias, Diefenbachias, Eucharis Amazonica, Euryas, Ixoras, Nepenthes, Medinellas, Metrisodieris, Philodendrons, Phylloleumums, Pothos, and collection palms. While it is true that there is but a limited demand for these plants, though the interest in them will increase as the interest in American Home Gardens increases, is there any grower in this country who will consider the demand large enough to make it worth his while to grow these stocks? We think not. Heretofore we have depended on the imported plants, and if the embargo is enforced we must hereafter do without these choice plant favorites.

Let me urge, if you have so far failed to do so, not to hesitate any longer in addressing your protest to Hon. David F. Houston, Secretary, Department of Agriculture, Washington, D. C, expressing to him how you feel regarding this unreasonable and unwarranted ruling, not only unjustifiable, but most autocratic in its nature. And do not stop there, but get in touch with your U. S. Senator and Congressmen and advise them what a setback the enforcement of this act will be to American gardening.

The fight is on—the best interests identified with horticulture in America are practically unanimous in their opposition to the ruling of the Federal Horticultural Board and are thoroughly aroused. Congress will be appealed to to repeal the act if the Secretary of Agriculture does not rescind it, and, if necessary, its validity will be tested in the U. S. courts.

Now, dear reader, will you not do your part to halt those who are attempting to prohibit us from securing those shrubs and flowers which are so essential to the beautification of our gardens, by registering your protest against it with those who have the power to prevent the enforcement of this presumptuous ruling.

GAILLARDIA OR "BLANKET FLOWER"

G AILLARDIAS, whether of the annual or perennial class, are among the most popular of garden flowers, ranking high in the estimation of those who favor the more showy subjects; and in particular, such as are valuable for cutting, and which provide an unbroken succession during many weeks. In these combinations those of the perennial set are without equal in the whole range of herbaceous plants. Established beds or groups of them, starting their flowering in July, continue to yield, often enough, an almost unbroken succession of flower-heads till the arrival of frosts; hence their great value to the amateur or professional grader. Gorgeously apparelled in crimson and gold and orange—the color shades which presumably gave birth to the popular name of "Blanket Flower"—of easy culture, and producing in the best named varieties flower-heads 3 inches to 5 inches in diameter, their increasing popularity is readily explained. These perennial sorts owe their origin largely, if not entirely, to G. aristata, a species introduced a century or more ago from the United States. From this, G. grandiflora—the adopted catalogue name of the race—descended. Many others followed quickly in its train.

By far the simplest way is to raise them from seeds. These not only vegetate freely and readily, but, given a good soil, are practically certain to yield many varieties of high merit. Moreover, the seedlings invariably are endowed with a vigor of their own, and, making growth in proportion, provide a rich harvest of bloom in due season. But while seedling-raising is simple in the extreme, it will have to be resorted to intelligently if the best results are to follow. For example, it would be of little use sowing seeds in August or later and expect a representative flowering in the following July. The seedlings from such a sowing would have no time to make growth, and, by reason of youth, might fall a prey to slugs during the ensuing winter. By far the best way is to make sowings of the seeds in March. These, preferably, should be sown in boxes or pans and given the protection of a frame or quite cool greenhouse. By potting the seedlings, when ready, in pots 2½ inches in diameter, the young plants should be large enough to transfer to beds or borders in May, thus allowing a good season ahead for growth. Some of the more precocious ones may, indeed, attempt to flower the same autumn, though it were better early discouraged in order to ensure a fuller growth and a greater display the following summer.

The Gaillardia is not fastidious, and, while rarely seen to perfection in tenacious or water-holding soils, may be grown with much success in all other classes of soils that are well cultivated. In very sandy soils, where these are dressed with cow-manure, they yield excellent results. In this connection, too, it may be stated that when established they are good dry-weather plants. Owing to their prodigality of blossoming and consequent exhaustion, a periodical renewal of stock by one or other of the means referred to is suggested. The annual kinds may be sown in the open in March, or earlier under glass, and replanted.—E. H. Jenkins in *The Garden*.
Lilium Giganteum As a Garden Favorite

ARTHUR HARRINGTON

The noblest Lily known to man is Lilium Giganteum, yet how few people have seen it in all its majestic beauty, and fewer still have attempted to grow it, although there must be hundreds of American gardens where the right conditions obtain so that it could be grown to perfection.

It is not a new and untried Lily that we have to study, and find out its peculiarities before it will deign to gladden our hearts with its glorious flowers. We know all about it, where it comes from, how it grows. It is a native of India, where it is found growing on the Himalaya mountains high up in mountain valleys at elevations of from 6000 to 10,000 feet and in these high, cool solitudes it is said to flower abundantly during the rainy season from May to July.

It was introduced to cultivation in European gardens as far back as 1852. I have enjoyed an intimate acquaintance with it for 35 years, yet in all that period I have not seen it in more than a dozen gardens. The most striking flower feature I ever saw and one whose superb beauty is indelibly fixed in my memory consisted of three great groups of this Lily growing in an open woodland grade I was visiting a garden in Sussex in the south of England and the gardener, saying nothing of what he was going to show me conducted me to the spot and brought me suddenly upon three great plantings of this Lily. I stood spellbound and astonished before scores of this Lily where flower spikes towered above our heads in varying heights of from eight to nearly fourteen feet. It is no exaggeration to call this Lily the noblest and most beautiful hardy flowering plant. Its long cylindrical pendent flowers varying in numbers from twelve to twenty on a spike are white, flushed and stained with purple in their interiors, and borne aloft above the line of vision one looks up at and into them seeing and appreciating their striking beauty as something to be remembered forever after.

In the gardens of the Royal Horticultural Society at Wisley, Surrey, England, there are extreme and successful plantings of this Lily as shown by the illustrations here presented from photographs taken in those gardens. The picture here portrayed suggests the conditions under which it should be planted in order to grow it to the greatest perfection, that is beside woodland walks with the accompanying shelter and partial shade of trees. It should be provided with a well prepared bed of deep, free well drained soil in which an abundance of leaf mould, or other well decayed vegetable matter has been incorporated.

Unlike most Lilies it is an attractive plant all through the growing season even when not in flower. Its great green leaves on long stalks are a foot or more in length and more than half as much in width. They form a wide spreading mass, shading and protecting the bulb, in fact it might in this stage be likened to a magnified Skunk Cabbage.

The flower spikes as they develop are well clothed with similar leaves, diminishing gradually in size as the spike attains height, and ceasing only at the point where the flowers develop. A flowering bulb is al-

“Consider the lilies of the field; they toil not, neither do they spin, yet——”
most as large as a cocoanut. The bulbs, contrary to the necessary practice with most Lilies, should not be deeply planted, the apex of the bulb being just covered in the soil.

The flowering ordeal destroys the bulb. Do not, however, be discouraged by this statement, for if you have established this Lily under congenial conditions, although the bulb that has flowered will flower no more it will form several small bulbs at the base of the stem and on or about the mass of fleshy roots. It will take two or three years for these infant bulbs to attain flowering size and strength. These grow on the following years till they are strong enough to flower. They may be left in the ground undisturbed or if one desires to extend the planting may be dug up detached from their point of origin and replanted elsewhere.

Having once established this Lily there is little danger of losing it, in fact in the course of years a large stock of it can be obtained. One successful cultivator of it made it a practice to plant a new group each year of young bulbs of about the same size so that eventually he always had one planting in full flowering perfection.

It may also be raised from seed, as it ripens after flowering and the seed germinates readily, but flowering bulbs from seed will require four or five years. I have grown and flowered this Lily in New Jersey, planting it in the open sunny flower border with other plants, but it only attained a height of about six feet and did not look happy or quite at home. It is worth while to seek a spot best suited to its well being even if such a spot has to be outside the zone of regular gardening operations.

Lilium Giganteum is a most appropriate name for this Lily, it being the giant of its family. It is unfortunate and tends to confusion that a tall growing and popular type of Lilium longiflorum is now commonly called Giganteum which is a misnomer and may lead to mistakes.

I observe a tendency to distinguish the true Giganteum by adding the name Himalaicum. Its original specific name should be retained and the application of the word to characterize a mere type of another distinct species of Lily be discontinued.

THE GREENHOUSE—ITS PRACTICABILITY—ITS USES

(Continued from page 117)

benches, as they soon rot out. A small propagating bed should be provided with extra coils to facilitate the rooting of cuttings.

The heating of a greenhouse is very important; the houses should always be supplied with sufficient pipes to give the desired temperature without pushing the boiler even during the severest weather; competent greenhouse builders usually safeguard their reputation by putting in sufficient heat.

All greenhouses should certainly have double ridge ventilation regardless of exposure. As to side ventilation the newer method is to ventilate by means of wall vents; these are metal panels built in the masonry walls below the sill, so that air admitted does not strike the plants directly. This method is structurally better than any other because the ventilation above the benches necessitates a number of fittings which detract considerably from the appearance of a house and also weakens it somewhat because of the necessary fittings at that point.

The small greenhouse attached to the garage is coming much in favor where ground space is limited. It eliminates the necessity of the service building, which can be provided for by having the workroom at the end of the garage. The heating arrangements where the greenhouse is attached to a garage serves the double purpose of heating both structures.

The idea of attaching the greenhouse to the dwelling house has been elaborated on to such an extent that conservatories of a very pretentious effect are now being built. Here again the heating apparatus can serve both dwelling house and conservatory.

Just picture in your mind what a small greenhouse means as an auxiliary to the home garden. Besides furnishing fresh vegetables and fruits during the winter you may have flowers at all seasons of the year. Attractively constructed with its typical little workroom and with cold frames attached to the outside of the greenhouse to supply violets and other cool plants, with a gravel walk leading to it, this small glass garden gives a charm to the general garden that cannot be otherwise obtained.

In the next number we will discuss the contributing factors to, and management of, the small greenhouse.
ONE of the results of the great increase in the use of chemical fertilizers in recent years is that their variety has grown with the demand, and the question of their comparative values and composition has become one of some complexity, and at the same time of great importance to all interested in crop production.

With the increase of mechanical transport, both for pleasure and commercial purposes, the horse is fast disappearing from our streets. While this is a fact upon which the general public may undoubtedly congratulate itself, giving as it does, among other things, clearer and healthier streets, yet to agriculture, especially to the truck farmer and gardener, the change has become a serious matter. This is particularly so in districts surrounding large towns where for generations stable manure was the only fertilizer used and which at one time could be obtained for little more than the cost of hauling. The grower is now faced with the necessity of finding some other means of enriching his soil in order that he may maintain the standard of his production.

In deciding what are the best substitutes for stable manure, one of the principal points to be considered is the question of the respective values of these two classes of plant foods, Inorganic and Organic.

Considerable assistance in arriving at a decision as to what chemical fertilizers to use for the purpose in view will be derived from a consideration of their respective action in the soil and on the plant.

The question has long been the subject of controversy among scientists, but it has received little practical attention at the hands of scientific investigators or of those in charge of our Experimental Stations, and, it is believed, we may obtain from the latter is, therefore, necessarily indirect or circumstantial.

It will be perhaps first advisable to see what is meant by organic and inorganic manures. The former are those having an organic or living origin; that is, they are obtained from some living thing, either animal or vegetable. Under this heading, therefore, we have stable, stockyard, and poultry manures, and such small amounts of such substances as bones, blood, guano, tankage, etc., from an animal source; and cotton seed, and other seed and nut meals, and green manures and seaweed from the vegetable kingdom.

Inorganic fertilizers are those having an inanimate or mineral origin, such as, mineral phosphates in various forms, basic slag, nitrate of soda, sulphate of ammonia, and mineral potash salts.

Our object is to discuss the relative merits of these two classes of fertilizers, and to try and account for the superiority of one over the other for certain purposes in order that the user may judge for himself as to which will give him the results at which he is aiming.

Perhaps the first thing that strikes one in considering this question is that a considerably higher price is obtained per unit of constituents for organic than for inorganic manures. Most agricultural chemists claim that the value of these manural units is the same, whatever their source, the sole determining factor being their solubility. But organic manures are less soluble than inorganic, especially in the case of nitrogen, and should according to this argument be cheaper instead of dearer.

It is, therefore, obvious that there is more in the respective merits of these two classes of manures than the holders of the mineral theory, as it is called, would have us believe.

A. D. Hall, one of the greatest of the present day European authorities on the subject of manuring, says, "The farmer has a strong preference, to which credit must be given as being founded upon experience, for the organic sources of nitrogen."

Apart from the opinions of practical men, the Rothamsted Experiments, which are the most valuable in the world because they have been carried on scientifically for a great number of years, prove inconsistently that organic manures, used side by side with inorganic containing the same quantities of nitrogen, phosphate and potash, are greatly superior. Then again, as a source of phosphate alone, the organic bone always gives better results than the mineral phosphate rock. The experiments of the Highland Agricultural Society have also shown without a shadow of doubt that bone meal is more successful in soils than any other phosphatic manure, coupled with the same amount of nitrogen that is contained in the bone.

A study of the details of these experiments through a number of years clearly shows that organics more than hold their own against the corresponding mineral unit. Further the former are not all exhausted in one season, but leave behind valuable residues for future years. This has been proved at Rothamstead. Both the Rothamsted and Woodburn experiments show that mineral ammonical manures are practically exhausted in one season.

It is clear, therefore, that we cannot decide the question on solubility alone, for organic manures even applied in a raw state not only give better results the first year but leave the ground richer instead of poorer, and this is especially the case on soil of a sandy nature, that is, on sandy soils inorganic manures do not last out even one season, to say nothing of any succeeding ones.

This conclusion, of course, will not surprise practical men. We all know the value of stable manure, bones, etc., and that we cannot get good crops by the use of minerals alone, nor put heart into a soil by the application of acid phosphate and mineral ammonia. The point is, Why cannot we? Wherein lies the undoubted superiority of organic manures for this purpose?

Perhaps we can arrive at an answer to these questions by considering the action in the soil of these two classes of fertilizers from three sides, namely, the mechanical, chemical and biological.

Considering first their effect on the mechanical or physical condition of the soil, we know that all organic substances contain humus in a greater or less degree; that is, they leave behind, after they have decayed in the soil, that valuable residue that we have learned to associate with stable manure, leaf-mold and other vegetable matter; and this humus, which more than any other ingredient is always tending to oxidize and diminish in the soil, has a very marked effect upon its working.

Humus opens a clay soil by loosely binding together the finer particles to which its plastic nature is due. These particles are so fine as to assume in a raw state not only give better results the first year but leave the ground richer instead of poorer, and this is especially the case on soil of a sandy nature, that is, on sandy soils inorganic manures do not last out even one season, to say nothing of any succeeding ones.

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he can mould it at will, and upon which the brickmaker relies when he puddles his brick-earth before moulding his bricks.

All practical men are painfully aware of this characteristic of a heavy soil when they try to work it after rain before it is sufficiently dry, and their aim in cultivation is to counteract it as far as possible and so to manage their heavy soils that they may crumble down into a fine and workable condition.

Humus greatly assists in this endeavor by collecting together, or "flocculating" those fine particles; perhaps the simplest instance of this action of humus is that afforded when a piece of old grass land naturally rich in humus is plowed up, especially if the soil be heavy. After the winter it will crumble readily so as to harrow down to a mellow seed bed, while on a neighboring piece of the same soil that has been under the plow for some years, a number of large unyielding clods will probably be noticed.

Again, on a light soil, humus, by acting in a contrary direction, has an equally beneficial effect; in this case it loosely binds together the coarser particles, imparting to this kind of soil more of a spongy or retentive nature.

These mechanical effects of humus lead to the following advantages in soils well supplied with this important ingredient:

- The land retains much heat otherwise lost, and, being warmer, the crops consequently are earlier.
- The lands dries more quickly, yet retains moisture better in drought.
- The superfluous moisture from storms and heavy rains is held as by a sponge and passes downwards gradually, thus all wash is avoided and the surface does not "bake" so readily. The water-retaining power of a soil well supplied with humus is at least twenty per cent greater than that possessed by a mineralized soil.
- In dry hot weather the land cools sooner and more dew is precipitated. The air passing over humus-fed soil is cooler and moister than the air passing over a mineralized soil; the rainfall will therefore be greater.
- The soil being more open, is better aerated, and consequently more plant food is set free.

Much plant food which would otherwise leach away is retained. The plants are healthier; a soil deficient in humus is always more likely to support disease. The latter fact the Indian coffee planters are well aware; as long as their soils were well stored with the vegetable matter of the primeval forests which previously occupied the site of their plantations, there was very little disease among the plants; as soon as the humus became exhausted diseases increased, but have again been reduced by adding top soil from the neighboring forest lands.

The importance of a good tilth and a good seed bed cannot be overestimated; in fact, if the weather conditions are adverse to the start of a crop, the eventual yield will often depend more on the physical condition of the seed-bed than upon any other factor. No better proof of this fact could be given than that shown by the Rothamstead experiments where some plots are continually manured with organic fertilizers and others with inorganic, containing the same amount of plant-food. The former always produce a full stand of plants giving a superior yield; while the physical condition of the latter where only minerals are used has become so bad that only in exceptionally favorable seasons is a good stand of plants obtained and upon several occasions there has been a complete failure. Against these many advantages of organic manures we have to place the distinctly bad effect that most mineral manures are known to have on the physical condition of the soil.

Probably nitrate of soda is the worst, owing to the fact that the residue it leaves behind in the soil—caustic soda—deflocculates the clay, which consequently becomes puddled.

Sulphate of ammonia and acid phosphate leave an acid residue which is harmful to plant life, and still more so to bacterial activity.

It is true that those minerals which leave lime as a residue in the soil, such as basic slag and the new artificial source of nitrogen, nitrolin, are not subject in the same way to this objection, but it is undoubtedly true to say that one of the great advantages of organics over inorganics is that the former materially improve the texture of the soil and thus enable a good seed-bed to be obtained and a good tilth maintained, whereas the latter, generally speaking, have an opposite effect.

Under the head of chemical we have to consider the form in which the plant-food materials exist in the two classes of fertilizers, and to see how this affects the feeding and consequent growth of the plant.

The main feature of organics from a chemical point of view is that the food materials they contain are not all present in one form, but exist in a more or less large number of different and complicated chemical compounds; and it follows that these compounds, being differently constituted, vary greatly in their availability as plant-food, and therefore come into use (chiefly by the aid of bacteria as will be pointed out later) gradually and continuously.

On the other hand, the minerals are mostly definite chemical salts of known and comparatively simple composition; it follows, therefore, that the conditions—of temperature, moisture, etc.—that render one of their food units available for the plant will have the same effect upon the rest, so that the whole becomes available for the plant at the same time. This not only means that while this process is taking place the plant has too much food, but, being unable to take it all, the remainder is washed out of the soil and lost, and is not there when the plant is ready to take in further supplies. This objection, of course, particularly applies to the highly soluble nitrogenous manures, nitrate of soda, and sulphate of ammonia.

It has been abundantly proved that, for good quality in the product manures that come steadily into use throughout the season are required, rather than the very active ones that induce a sudden rush of growth.

Further, the gradual availability of organics builds up a reserve of plant food materials in the soil, so that eventually the land becomes stored with manurial residues, in other words made richer.

It must be remembered that the soil is more rapidly exhausted of ammonia and nitrates than of phosphate or potash, so it is particularly necessary that the nitrogen element be obtained from an organic source.

Hall states in one of his works: "It is only a lasting manure which accumulates in the soil that will build up 'high condition,' the state of affairs which prevails when reserves of manure in the soil are steadily and continuously passing into an available condition in sufficient amount for the need of the crop, this results in healthy growth of good quality."

It is evident, therefore, that the slow and gradual solubility and lasting nature of organic fertilizers is of the utmost importance, and is another reason for their superiority over inorganic which, as stated, does not possess these valuable qualities.

(To be continued in May.)
The Lure of the Gladiolus

While the Gladiolus has for several decades been one of our most popular flowering plants, its popularity has increased a thousandfold during the last ten years, and it is now recognized as one of our most useful Summer flowers.

The prominent position it occupies today is undoubtedly due to the work of the hybridizers, who have in the last ten years or so produced varieties with larger flowers and of better form than the older types. Among the newer introductions are many beautiful varieties. While selection in point of merit is not the purpose of this article, amateur growers will make no mistake in planting the following varieties, which are procurable at reasonable prices and represent the most advanced types: Peace, a beautiful white with blush throat, one of the grandest of all Gladioli; America, an ideal flesh pink, with large flowers and all well-placed; Niagara, a delightful cream, the two lower inside petals or segments of the flowers blending to canary yellow, the throats splashed with carmine; Panama is a fine new pink; Blue Jay is a handsome blue, relieved by white shading; Princeps is a rich crimson, with broad, white blotches across the lower petals; Mrs. Francis King is a light scarlet of pleasing shade and form.

An early planting may be made as soon as the ground is workable, and successive plantings may be made until July opens. With plantings made fifteen days apart a continual display of flowers may be had from July until well into October; but in planting, consideration must be given to early and late blooming qualities which characterize some varieties.

If only one bed is available for planting, room may be left between bulbs at the start, to be filled with bulbs for succession, so that blooms may be cut constantly. Gladioli make a wonderful growth, and are not affected by blight, grubs, or insect pests, consequently the appearance of a bed is pleasing both before and after flowering.

Blooms cut from the plants last a long time in the home, longer, perhaps, than the majority of flowers. With proper care and frequent change of water practically every bud on a spike will open, and the lower buds may be removed as they wither, without detriment to the appearance of the others.

Gladioli do well in almost any soil, and generally under what would be considered adverse conditions for other flowers, but they respond better to a reasonable amount of care and attention. Preference should be given to a rather rich soil, light loam, or moist, sandy soil.

The proper depth to plant the bulbs is four to five inches from the surface of the soil to the top of the bulb. A bed should be kept free from weeds, and frequently cultivated, to conserve moisture.
Vegetables for Exhibition and Utility

S. GOLDING

The month of April ushers in the real busy season for the vegetable grower and however desirable it may be to commence our operations earlier, we are often delayed by climatic conditions. So it may be that the middle of the month is with us before we can finally settle into our stride. Quality of soil, site and conditions of drainage play an important part in relation to our early or late start. Not every gardener has the privilege of choosing his lot or garden plot; and the usual formula does not always apply, to choose your garden on the gentle slope, facing south, with soil of deep, sandy loam, to sow early seed on the driest and sunniest spot, etc.

The foregoing is very excellent advice, but some of us must perchance wrestle with other situations, from heavy clayey loams, to dry, light, sandy soils, which require different methods of culture. As a producer of early crops, the light soil has the advantage, but when the hot days of July and August are here, the soils of the heavy type, with persistent cultivation, are much to the fore, especially if artificial watering is out of the question.

But whatever conditions we are up against, it always pays to have thorough preparation and right conditions, before sowing or planting. To insure this, see that the soil can be easily broken down with the rake, and when rolled or trod, to make it firm, that it does not pack or become a stiff clayey mass, which it will do if the soil is too wet.

Before sowing or planting, the soil should be made firm. This is often overlooked and is the cause of some failures. It is more satisfying to do a small plot well, than to half cultivate a much larger piece. If we expect our seeds to germinate, and flourish, certain conditions must be met. Assuming then, that we have carefully prepared our seedbed—this I consider one of the most important points in gardening. The depth of sowing is sometimes a stumbling block; there again we must consider the "lay of the land," so to speak; in early sowing, on heavy soils, the seeds can be sown quite shallow; just cover the seeders of the smaller type of plants. This is owing to the heavy soils being of a more retentive nature, and consequently colder, germination is necessarily slow and if we sow deeper at this early stage, and are visited by a spell of cold rains, the result might be disastrous. On very light, sandy soils the normal depth can be allowed of about half an inch, as it follows that this land is better drained and therefore warmer.

As summer advances, and the heat is more intense, it is more satisfactory to sow a little deeper because of more rapid evaporation. Some judgment must be used by each individual, as the larger the seed the more power it has to force its way to the surface; that, and the season of sowing must be taken into consideration. We must also consider when sowing, the thickness of seeding, whether our seedlings are for immediate transplanting, or to be grown to maturity on the seed bed; if the latter is the case, and we know our seed to be of high germinating quality, sow with care, or sparingly; it is our duty to conserve and not waste seed by too thick sowing, and consequent drastic thinnings. Where spring onions are in demand it is permissible to sow more thickly as these are used as thinned.

Sow early peas at the first opportunity; the round or smooth varieties should be sown, as they are more reliable for early crops, and will germinate under conditions where the Marrowfats would rot; but as the season advances, plant Marrowfats for succession. Sow spinach at the same time between the rows; this will be ready for use early and can be removed when the peas are fit for the table. Plant now, onion sets, horse radish cuttings, kohlrabi, and rhubarb. Sow onions, parsnips, carrots, beets, turnips, saffron, lettuce, cabbage, cauliflower, Brussels sprouts, Swiss chard, kohlrabi. Celery seed sown outside now will make good plants in time for using, when following the early pea crop. Sow in cold frame, squash, pumpkin, cucumbers, lima beans and sweet corn, for planting outside when danger of frost is past.

Plant out early cabbage and cauliflower from frames. The asparagus bed needs early attention; fork in with care good rotten manure; avoid damage to the roots. This is the season to start a new plantation, and the best plan is to secure two-year-old plants and set them out in rows two feet apart, and from three to four feet between the rows. These should be eight inches deep. Spread out the roots carefully and cover with two inches of soil and gradually fill to the level. Small early crops can be grown between rows; keep well cultivated during the growing season. While it takes two or three years to give any returns, if one has the space to devote to it, asparagus is one of the most prized vegetables, coming in as it does in early spring, and is on hand until the first peas take its place.

Those who intend to exhibit their products next Fall must now be engaged in laying the foundations of success, because at this season much depends on the future well-being of the finished specimen. Seedlings sown at an early date will demand close attention. During this month they will reach the stage of transition, from frames and flats to their final quarters. Onions should be placed in a light airy position to keep them growing and stocky; allow plenty of room, otherwise they may become spindley or drawn, and this condition would be fatal to their chances on the exhibition table. Gradually hardened off, they should never be allowed to suffer from lack of moisture at any time, and near the end of the month, if conditions are favorable, should be transplanted outside. Great care should be exercised in this operation to prevent injury to the roots. Use a good long trowel and get the roots down as deep as possible making the soil very firm around them.

The question of watering at once must be left to the judgment of the individual grower, varying soils altering conditions. Leeks demand much the same methods of culture as onions: they are gross feeders and respond to generous treatment. There are several methods adopted for growing large leeks, but the one that finds the most favor is to grow in a trench similar to the methods employed for celery. Prepare the trench by digging in good rotten manure, cow manure preferred, as it gives more lasting results, and as the plants grow, bank the soil around them, the idea being to get long and finely blanched stems. They are essentially a cool season crop, but will withstand the heat providing they are well provided with moisture.

The celery that was first sown and pricked off last month will be growing space and should be kept as sturdy as possible. The trenches should be prepared early, as it gives the manure time to mellow in the soil. Do not attempt to force the plants or much bolting or running to seed may result, a bad habit of very early celery under some conditions.
MOST people fancy that they know as much about gathering flowers as anybody else, but the results they obtain often fail to justify the assumption. There is a great deal more to flower-gathering than is apparent in the mere picking of the blossoms. Much depends upon a proper selection of the flowers. It is best to avoid those that are fully spread and to select the newly opened blossoms or even the buds that are about to open. A careful selection will often make a difference of several days in the length of time a bouquet will remain fresh. In the case of plants like the gladiolus and iris, which continue to produce flowers when carried into the house, one should also select his specimens with an eye to the number of unopened buds in the spike.

Occasionally it may be difficult to distinguish fresh flowers from older ones, but they may generally be picked out by a slightly deeper color, and by parts not of many different kinds of insects.

The flowers that remain open for longer periods are the stamens and pistils—will often be of value. If the anthers at the top of the stamens have opened and shed their pollen, or if the pistils have begun to swell, it is usually a sign that the flower is on the decline for the flower exists solely to ensure pollination and when this is accomplished it soon fades. If pollination is hindered or prevented, the life of the blossom may often be prolonged. In some cases, snipping out the pistils with a sharp pair of scissors as soon as the flower expands, is sufficient to accomplish this.

There is an immense difference in the time that different species remain open. A large number open their flowers for a single day, or night, and some for a still shorter time. Many of the rock roses (Helianthemum) open their flowers in the early morning and by noon the petals are found strewing the ground. Such evanescent flowers often be prolonged. In some cases, snipping out the pistils with a sharp pair of scissors as soon as the flower expands, is sufficient to accomplish this.

Frequently, in order to ensure cross-pollination, the stamens and pistils ripen at different times—often several days. The flowers of the orchids seem to be the limit in this respect, some specimens remaining in good condition for six weeks or more if the right pollinating insect does not happen to visit them. In one great group of plants, containing the asters, sunflowers, rudbeckias and the like, what are commonly called “flowers,” are really flower-clusters, as anybody may discover for himself if he will examine the centers of such flowers with a simple lens. In these the outer or ray flowers remain spread until all the central or disk flowers have bloomed. In gathering such flowers one should notice how far the zone of blossoming has progressed across the disk and select his plants accordingly.

Having gathered the flowers, the more important question of how to keep them fresh comes up. In the beginning it may be said that the substances one is often advised to put in the water are without beneficial effects and are often worse than useless. Charcoal in the water in which flowers are standing will absorb any odors of decay that may be given off, but it will not prolong the life of the blossoms. Salt or sugar in the water is, always harmful. If at all strong they set up an osmotic action that actually draws the water from the plants. Ammonia water contains considerable nitrogen but it is not in a form that plants can use and is therefore useless. Cool fresh water is still the best thing for cut flowers.

When the flowers are brought in after being kept at their best, flowers should be gathered early in the morning or late in the afternoon and protected from the sun's rays as much as possible. Plants, like animals, are constantly giving off moisture by evaporation and this process should be retarded as much as possible. Leaves evaporate rapidly and if many are left on the stems with the flowers they serve to decrease the water supply.

It is the practice of florists who ship their product, to place the stems in cold water in a cool room for some time before shipping. The mere placing of the stems in water, however, is often not sufficient for if air gets into the tiny tubes in the stem through which the moisture travels, the flowers have difficulty in absorbing further. In growing plants, there is often considerable tension in the water carrying parts of the stem and when the stem is cut the moisture is drawn further up and the air follows. The remedy is to plunge the stems of the cut flowers under water and while still immersed cut off two or three inches. Curiously enough plants do not absorb readily through their roots; in fact, the roots are covered with a waterproof epidermis. Absorption is carried on by means of very small structures on the roots called root-hairs, which are invariably broken off when the roots are pulled from the ground. All roots should therefore be removed when it is desired to keep the flowers fresh.

In the house, cut flowers should be kept in a fairly cool place and away from the sun's rays. The florist keeps his stock in a refrigerator. Much as the plants need sunlight for growth, the flowers are not benefitted by being exposed to it. In some species, however, light is necessary to keep the flowers open. These species are such as close their blossoms at nightfall. They may often be kept awake and open by night by exposing them to the rays of some strong artificial light. One may have the white water lily in full flower for an evening party by gathering the buds very early in the morning and keeping them in the dark all day. As soon as exposed to the light they open as if it were day.

It is scarcely necessary to point out to people of taste that a few flowers properly selected are far better than a much larger number. Often a single blossom in an appropriate vase is superior to any arrangement of a greater number. It is, however, a common fallacy to assume that the larger the bouquet the more valuable it is. This is especially true in gathering wildflowers where the disposition is to gather all the specimens in sight. If the rising generation could be taught to discriminate in their flower picking, flowers past their prime would be left to ripen seeds and there would be less need for the efforts of the various societies for the protection of our native wildflowers.
THE NEW ROSE—FRANK W. DUNLOP

We present herewith a picture of the newest aspirant for Rose honors—"Frank W. Dunlop," raised in Canada by that expert Rose grower John H. Dunlop, and one of the most admired exhibits at the Dinner of the New York Florists' Club on March 15th.

Mr. Dunlop, has had this Rose on hand several years but on account of the war did not disseminate it, but now has decided that this is the auspicious time for its introduction. It will be offered in 1920.

The Charles H. Totty Co., of Madison, N. J., will be the sole introducers of this variety in America, and Mr. Totty is most enthusiastic regarding the possibilities of this Rose.

"Frank W. Dunlop," is a seedling of Rose Mrs. Russell and Rose Mrs. Shawyer, combining the wonderful free-growing characteristics of Shawyer with the magnificent coloring and lasting qualities of Russell.

Mr. Dunlop, grows Mrs. Russell, extensively and well but says the newcomer, in his opinion, is so much superior in every way that it is bound to supplant Russell, which is by no means an easy variety to grow. It is worthy of note that another recent introduction Columbia was also a seedling of Shawyer, tho neither in the case of Columbia or this new introduction has not Shawyer transmitted to its progeny its predisposition to mildew.

The New Rose, Frank W. Dunlop.

THE DOUBLE COSMOS

The accompanying illustration shows a rose bowl filled with sprays of a double form of this beautiful and popular fall offering, which is sure to come into general use as a florist's cut flower. It is grown from seed planted at the same time as the older variety. Some are entire double, while others have an anemone center with a single row of ray florets. The white are particularly chaste and very desirable for sprays and all kinds of work. It comes into flower at the same time as the single, and lasts until frost.

Say it with flowers, those emblems of love,
Sent to us mortals by the Immortal above;
To show us a part of the beauty that waits,
When St. Peter says Welcome and opens the gates
To that wonderful garden where blossoms unknown
And those we love here together are grown.

Say it with flowers; your message of joy,
To welcome the birth of the girl or the boy;
The symbols of love that bring to the child
His very first glimpse of earth's blessings compiled.

Say it with flowers—your message to her,
Whose love more than riches and fame you prefer;
To hearts sorely burdened what message instills
New strength for the journey, down dales and up hills
As the sight of the flowers that carpet the land,
True pictures of faith by the great Master Hand.

Say it with flowers—your message to quicken
The languid pulse with illness stricken,
For the Great Physician has stored in flowers
The healing balm of countless hours
Of golden sunshine, to shine again
By the bedside of loved ones suffering pain.

Say it with flowers—your message of sorrow,
For those who will nevermore know a tomorrow;
Whose today has dawned in the realm on high,
Prepared for their coming, beyond the sky.

But your tribute of flowers, your last token of love,
Will carry your message to that home up above.

(Copyright)—Hugh Balfour Barclay.
A Water System That Runs Itself

In the famous Green Spring Valley, near Baltimore is the beautiful estate of Mr. Stuart Olivier, known as "Five Farms." The accompanying view of the mansion prepares one for the perfect equipment to look for on this country place.

Perhaps the water supply is more important to the maintenance of the beauty of "Five Farms" than any other one thing. At any rate its liberal supply of water adds greatly to the attractions of the estate and makes possible the swimming pool, duck pond, lily pond, and other much appreciated luxuries.

And, of course, there is an abundance of pure running water available for the mansion, outbuildings and tenant houses.

The water is supplied by a modern steel overshoot water-wheel combined with a three cylinder pump. The Fitz I-X-L Steel Overshoot Water-wheel is 12 feet high with a face diameter of 1 foot. The shaft of the wheel is geared directly to a 2 in. x 3 in. Gould Triplex Pump. The counter shaft and back gear have been removed so that the drive is made direct on the crank shaft of the pump. This makes an exceedingly simple and satisfactory connection.

The stream of water which drives the water-wheel is surprisingly small. It is carried to the water-wheel through a 5-inch cast iron pipe, without a bit of pressure. This tiny stream of water drives the water wheel 24 hours a day and every day in the year. The water-wheel in turn drives the pump. This outfit delivers a continuous flow of from 3 1/2 to 4 gallons of water per minute to the main storage tank. This storage tank is located 1,500 feet away and at an elevation of 147 feet above the wheel. The wheel is allowed to run all the time; it requires no attention except an occasional oiling.

This automatic water plant supplies all the water needed for the big mansion, shown in the illustration, a large stable and four tenant houses. In addition the overflow is used to supply a swimming pool, a lily pond, a duck pond and the pheasant pens.

The water is first pumped to the high tank. From there the excess is allowed to run into another tank at a lower level which has a capacity of 10,000 gallons. From this secondary tank the water is distributed direct to the various ponds.

On nearly every estate, there is a small stream that could be harnessed to such a pumping plant. The first cost is practically the only cost, as there is no outlay for fuel or labor. Such a plant is also decidedly picturesque, retaining the charm of the old fashioned water wheel while multiplying its efficiency.

HOW TO DETERMINE IF SOIL IS SOUR

Organic matter, such as green manures, crop residues and farm manure, either immediately or ultimately, produce acidity, in the process of fermentation and decomposition, of a nature harmful to the growth of plants requiring a neutral or alkaline soil.

A simple and trustworthy test for determining if a soil is sour is the litmus paper test, which is usually made as follows:

Make a ball of moist soil and break it in two; insert a strip of blue litmus paper, which can be purchased at the drug store, and press together firmly. After five or ten minutes open the ball and examine the paper. If it has changed from blue to pink or red, the soil is acid and needs an application of lime. If the soil is moderately dry, the change in color may appear only in spots, and greater pressure and more time may be required. The rapidity of change and intensity of color developed indicate to some extent the relative degree of acidity. It is very important to test the subsoil as well as the surface soil, for if the subsoil is strongly acid then the capillary moisture, which rises in time of drought, will tend to carry increased acidity to the surface, whereas if the subsoil contains lime, the rising moisture will tend to neutralize the surface acidity and this may even save the life of such plants as clover during a critical period.

As many of the garden crops require a neutral or alkaline soil, gardeners should make a litmus test of their soils. If found to be acid, an application of lime will be very beneficial to the yields.
From Here, There and Everywhere

The Garden Diary

A diary of the times of sowing, state of the weather, height and condition of the crops recorded day by day until final fruition is reached, forms a valuable and most interesting book. If this is read during some winter's evening when the fire throws out genial glow while the rain slants down outside on the sodden earth, it will help to recall the forgotten glories to memory. You will forget that winter conditions prevail. With the seed lists upon your knee while you snuggle down into the comfortable depths of your favorite armchair, you picture the garden as you will make it next year.

The great joy of the gardener is anticipation. Anticipation enables him to see long rows of the largest Green Peas he ever saw, the longest Runner Beans that ever grew, the biggest Vegetables the Marrow on record, those monster Carrots, such Onions! One need not elaborate. He sees them all. Anticipation enables him to do so.

Unfortunately, anticipation often proves infinitely superior to realization, but that, to my mind, is the pleasure of gardening. One is always striving to better last year's produce, and if one's anticipations are not realized, well, they will be next season's.

Probably the critic will say that there is no need to keep a diary, and that no useful purpose is served thereby. Practice will prove him to be wrong. Memory is a treacherous thing, and if one relies upon it for the dates of previous years' sowings, failure or half crops may result.

If a certain crop does well when sown at a given time in that locality, one can reasonably expect a similar success if seeds are put in the ground somewhat as the same time a year or two later. Such a record is useful to one's memory. If something fails, it can be discovered the next time that crop is sown.

The interest in such a diary will be enhanced if kept day by day and year by year, the results of such sowings being recorded by interlining in red ink or keeping a special page for such notes at the end of each book.

Memory is a treacherous thing. Walking through the garden you turn to your wife and remark that "everything is very backward this season." On looking up the diary it is found that everything was as forward as they were the previous season; that is if the pages have been kept correctly. Instead you turn to your wife and remark that "everything is very back-ward this season." On looking up the diary it is found that everything was as forward as they were the previous season; that is if the pages have been kept correctly. Instead of being disheartened you feel elated, the knowledge imparted by the diary being responsible for this.

To get the full enjoyment from the book, the notes should commence with the seed sowings, followed by the seedlings' first appearance above ground, the height at different periods, time of cropping, and finally the yield in pounds or bushels. — The Garden, London.

Is a Palm a Tree?

Considered according to the basic meaning of the word tree, as being a "woody plant . . . producing one main erect axis which continues to grow . . . more vigorously than the lateral axes" (Fernow), the palm may not be able to prove its title clear to the name; inasmuch as it has no branches, or lateral axes, but only leaves. But from the standpoint of another definition, that of "a woody plant that produces one main trunk and a more or less distinct and elevated head" (Bailey), the palm, with its crown of ornate leaves, may be conceded to be the queen of its class. Yet botanists and horticulturists generally speak of the palm as a "plant," albeit one of unique type and giant size. But botanists and horticulturists include trees under the general nomenclature of "vegetation," when speaking broadly of the dress of verdure with which nature clothes this globe of earth. A great etymologist has said that the line of demarkation between trees and shrubs is not well defined. And an authority on horticulture says that in certain sections "most palms are trees."

In the tropics the "trees" partake more and more largely of the character of plants, as we approach the equator; while the farther north we go, the more we find the opposite habit in evidence. Some palms attain size and dimensions which give them the general outline and character of trees. Such a palm, for instance, is the Phoenix canariensis, a grand type, native to California and northern Florida. The luxuriant spread of its huge cluster of pinnate leaves produces a compact effect resembling the northern "shade tree." An example of the opposite type, of shrubby habit and digitate leaves, would be the Rhapis flabelliformis.

Acquaintance with the habits, classes and characteristics of palms has been prejudiced by the fact that palms are not native to the climates in which botanists flourish. Due to this unfortunate failure of coincidence, nature has neglected in this instance to co-ordinate her efforts to the best interest of the parties of both parts, so to speak, the classification of many a beauteous "palm plant" has not been accurately determined until after the type has become firmly established in the popular regard, and in the trade, which is more to the purpose from the angle of vision of our readers. It is also the reason for the change of name of many favorites among the family of palms, which numbers some 1,200 species. For palms have become known by names which are not appropriate to their types, due to the fact that the name was given to a cultivated specimen, the flowers and fruit not having been seen, necessitating renaming on closer acquaintance. — Florists' Review.

Beware the Nursery Shark

There have been four hard years for the nurserymen. They have suffered particularly during the last year when transportation took the shipments that the few orders that they were able to fill went astray. With peace we look to an immediate revival of orchard planting. The long delays have impressed upon many communities the necessity of growing their fruit near home.

Our establishment nurserymen are ready to meet the demands as rapidly as new trees can be grown, but that takes a great deal of time. The short-handedness of the past year or two has seriously cut down fruit-tree planting with the result that young trees will be scarce.

Hence the time is ripe and dripping for the nursery shark. Watch out for him. The iniquities of a shyster nurseryman are peculiarly insidious. Your orchard is five or six years old before you can find that a fraud has been perpetrated. In the meantime the shark has changed the name of his firm and moved on.

In most cases the nursery shark is a slippery transient and really a dealer since he buys his trees here and there from small nursery growers, themselves above suspicion and unaware that they are selling their trees through dishonest agencies. — Country Gentleman.

Tree Planting Urged

The project of a widespread and concerted planting of trees has been sympathetically discussed by the press of the country in connection with memorializing our sacrifices in the war, and the suggestion has been greatly stimulated for the moment in the public mind by the lamented death of Theodore Roosevelt. But there has resulted no plan of organization and concerted action in a much to be desired general undertaking of a work so easily to be put under way and so engaging and remunerative as the planting of our public roads, and in the public service the best use of the trees is to put them on our public roads, where in so many parts of our own State they are conspicuous by their absence, and in our parks and other public places, where they are able to renew and replant defunct and depleted plantations, and our public school grounds in the rural districts, where opportunity should be found and which have been sadly neglected by our State Educational Department. — New York Sun.

Forgottenmen Naturalized

A biennial Forgottenmen, probably Myosotis alpestris of the catalogues, has been rapidly spreading on the far northeast corners on this place for the past few years. No doubt the last two very wet autumns were favorable to it. The existence of more of the seedling plants to reach a blooming size. The places where the Forgottenmen have obtained a foothold are semi-wild, and are not cut over with the lawn mower. The illustration, which was taken in May, shows the grass and Dandellions competing with
the Forgetmenots; but at a little distance the effect is that of a great sheet of blue and white. In some places where the shade is more dense, and therefore less favorable to the growth of grasses, there is a solid mat of Myosotis. The late Nathan R. Graves, the horticultural photographer, who visited this place three years ago, was delighted with the beauty of these self-sown beds and made several pictures of them.

The only Forgetmenots that have been planted on the place, so far as I can learn, were in a bed in a secluded garden, hemmed in by a lake, a high wooded bank and a small glen. The gate shown in the picture leads to a footbridge across this glen, the only means of access to the garden. How the Forgetmenot has escaped and established itself in widely separated places in something of a mystery. Evidently conditions are much to its liking, and a few seeds are sufficient to cause it to take root in other neglected corners that are too shady for good grass. The soil where these Forgetmenots are so much at home is a gravelly loam and no rich loam, but moist. The whole place is surrounded by a lake, deep glens and wooded hills, no doubt the air is unusually humid for this central New York country. Not mowing until after the seed has matured has doubtless helped thicken and spread the growths, as they are practically all renewed each year.—Tall Timber.

The Velvet-Stemmed Collybia

Do you know it—this wild winter-growing forest inhabiting, and extremely edible mush? If not, now is the time to enlarge your acquaintance list of worth-while fungi, and with little or no danger of the gathering the wrong material. The velvet-stemmed collybia (Collybia velutipes), also known as the "winter mushroom," is a common form throughout humid regions of the temperate zone, growing in dense clusters on the woodland of various kinds of deciduous trees, on or near stumps, old cedars, cedars, cypresses, cypress trees, etc. It has a reddish-yellow cap, very sticky when wet and usually about an inch in diameter; a brown, velvety stem two or three inches long and a quarter of an inch in diameters; and its gills are white or yellowish. Its principal season is October, November and May, but it may also be found during mild spells throughout the winter, when the caps may freeze and thaw repeatedly without injury. Being abundant when the days are scarce and usually wanting when a spell of wet weather is at hand, its habitat on or around dead wood. It matures also at a season when there is but little chance of its being attacked by worms or other insects. Cooked according to any rule with which the reader is familiar, it is of delicious flavor. The stickiness of the cap is the sole disagreeable feature, and this has its compensations, for it is associated with a remarkable ability to absorb water. Consequently, if what can be used at once is not employed, it should be dried and kept for future consumption. Suppose we add collybia hunting to our program of winter sports?

—Country Life.

Fuchsias in the Conservatory

The brilliance of Begonias and Pelargoniums is not always desirable, or appreciated, in the conservatory during summer time. The bright green, the yellow, the blue, the purple, the red, the heart-shaped at the base and with stems bristling with rusty color of flower, and the whole effect will be good.

Both single and double varieties should find a place in providing, the necessary decorative material. Fuchsias are very accommodating, and may be grown in bush form, as pyramids, as standards, as pillar plants, as basket plants, and for clothing rafters in the conservatory. Bush plants of various sizes are desirable, and look well when grouped in medium-sized batches of a variety. A large sloping bank of Fuchsias, the varieties freely intermixed, is not the best method of presenting these charming plants; it should be grouped in moderate size, with standards of the same, or a contrasting or harmonizing variety, rising above them, and the whole marked with suitable foliage plants. Grouped in this way each variety has a chance to show its own particular grace of habit and color of flower, and the whole effect will be good.

In the matter of cultivation it is as easy to grow a dozen plants each of a dozen varieties as a gross of one variety, and it is much more interesting to show its own particular grace of habit and color of flower, and the whole effect will be good.

Both single and double varieties should find a place in such a floral display, and small-flowered as well as large-flowered sorts.

In the matter of cultivation it is as easy to grow a dozen plants each of a dozen varieties as a gross of one variety, and it is much more interesting to show its own particular grace of habit and color of flower, and the whole effect will be good.

Summer-struck cuttings, grown steadily on, and kept to one stem, if sufficient height is made standards, and subsequent pinching of the growing points, and of the growths that appear immediately below it, will secure a good head.

Dwarf standards, i.e., pinched at eighteen inches high, are especially useful, and only in very large conservatories are those over 2½ ft. high needed.—Gardeners' Magazine (London).

The Utility of Climbing Plants.

Considering that every one with a house surrounded by even the smallest amount of space has the same problem, it is surprising how little attention is paid to this class of plants on all sides. One seldom finds a nurseryman with anything approaching a complete selection; professional gardeners usually regard them as a necessary evil; and written information upon their use and beauty is conspicuous by its absence.

Yet it is one type of plant that is almost as small as they have unique advantages. In the small garden they provide a display of bloom that would only be possible in at least twice or three times the amount of space with other plants. In large gardens they enable us to suitably screen off one style from another, appearing at one and the same time both formal and informal according to the other arrangements with which they are associated.

There are also many gardens with prominent rock faces too devoid of rooting material to accommodate even succulent native plants over which the more rampant climbers may be trained with advantage.

The Trailing Arbutus.

Just why the trailing arbutus (Epigaea repens) should be so commonly known as the Mayflower is hard to tell, for it often blooms in April and at best is only one of many to bloom in May; but one thing, at least, is sure; it is one of the few things for which the Mayflower Mayflower is hard to tell, for it is a native of the New World and is so difficult to transplant successfully that even now it would be hard to establish in a new home across the sea. It belongs to the Heath family and while some of its relatives may be more valuable, it is one of the earliest of the flowering plants, and as it is salver-shaped and five-lobed, with a slender tube that is hairy and its being successfully grown in gardens.—Adella Prescott in American Botanist.

It is a small trailing evergreen plant with rounded leaves heart-shaped at the base and with stems bristling with rusty hairs. The small pink flowers grow in clusters and are limophoric as to pistils and stamens and sub-dioecious—in other words, are of two kinds, one having a long pistil and short stamens, while the other has a short pistil and long stamens with a tendency to unisexualism. The calyx has five sepals and the corolla is salver-shaped and five-lobed, with a slender tube that is hairy within and which holds ten stamens and one pistil with a five-lobed stigma. The many small seeds are held in a five-lobed and five-celled capsule.

The flowers have a delightful fragrance that is rare among our flowers of early spring and this fragrance is often a guide to the dainty sprays that are hidden among the leaves. It plant grows in sandy woods and has a wide distribution ranging from Newfoundland to Minnesota and southward to Florida, but so exciting in its requirements that it has given rise to such interference that I doubt if it really is "common" in any part of its range—certainly it is not so in central New York, where we think it worth an annual pilgrimage to see.

I have read that the difficulty in cultivating it arises from the fact that it grows only in acid soil which, of course, all horticulturists would carefully avoid when trying to propagate an unusual plant. Whether or not it is really a lime hater, I do not know, but I have never known of its being successfully grown in gardens.—Adella Prescott in American Botanist.
WILLIAM J. STEWART

The news of the death of William J. Stewart, editor of Horticulture, of Boston, came too late last month to announce in these columns to his multitude of friends among the gardening profession. Mr. Stewart who was a devout lover of horticulture and all that pertains thereto, was ever ready to further the cause of the gardeners, and never was he more active in the publication, he so ably edited, were always at his disposal to espouse any activities they were interested in. Though Mr. Stewart has passed from among us, we will long continue to live in the memories of those so fortunate as to have been numbered among his chosen friends.

AN ENDORSEMENT AND A CRITICISM

We, the undersigned members of the National Association of Gardeners, resident in Newport, R. I., wish to express our appreciation of the excellent article by Arthur Smith in the February number of the Chronicle. We consider this article graphically presents the fundamental reasons for the unsatisfactory conditions as at present in the profession and we most enthusiastically approve of his suggestion that there should be a standard set which he who would call himself a gardener must reach.

We agree with him that the N. A. G. should take the initiative in such a movement and until this takes place the gardening profession will remain on the level it now occupies and membership in the N. A. G. will mean nothing to the employer or employee beyond the ability of the latter to pay a small yearly fee.


The foregoing communication addressed to the editor of the Gardeners' Chronicle, referring to the essay, "The Value of Scientific Education," by Arthur Smith, distributed by the Committee on Essays and Horticultural Instruction to local societies for discussion at the February meetings; (also published in the February number of the Gardeners' Chronicle, is most gratifying to the officers of the national association, as it gives evidence that the campaign urged for a number of years to arouse the interest of individual members in the association's activities is at last bearing fruit.

This is not the first instance that Mr. Smith, who has been an ardent worker in the interests of the gardening profession in the work that the national association should undertake, has referred to a standard for the gardener, but up to this time it has not been possible to arouse even a discussion on the subject.

The theory advanced by Mr. Smith is a most excellent one, but how to put it into practice has so far not been solved by the few who are known to have given thought to the matter.

The United States covers an extensive territory, so that just between the real gardener and the so-called gardener—between the gardener thoroughly trained in the art of gardening and the garden laborer unlearned in the scientific methods of gardening.

The association should endeavor by its every act to elevate the profession it represents. It is not so much the quantity as it is the quality of its membership that will bring to it the recognition it deserves and the influence it should wield in the development of American horticulture.

In the same issue of the Gardeners' Chronicle, President Weeks, in his message for 1919, appealing for cooperation on the part of the individual members and the local societies said:

"The national association wishes to be of service to its individual members and to the local societies. The local society can stimulate interest within itself and the national association by arranging for a local conference, when the officers of the national associations will be glad to be present with them and discuss with them the problems confronting the gardener to-day."

The National Cooperative Committee worked faithfully and persistently for several years to influence the gardening profession and put their profession and not as yet—some local societies are—to meet once a month, pass on the minutes of the last meeting, listen to the reading of communications, move that they be laid on the table, accept the report of the exhibition committee—and adjourn. But the efforts of this committee were not entirely in vain for as a result of its work, L. P. Jensen of St. Louis, and other local members of the association succeeded in organizing the St. Louis Gardeners' Association. Robert Weeks, of Cleveland, and other members have recently organized a gardeners' society in their city and at a recent conference of members of the association in Minneapolis, it was decided to organize a gardeners' society, all of them organized for the purpose of cooperating with the National Association of Gardeners. At the recent conference of members of the association in Pittsburgh, interest in a local society was revived and the members have pledged themselves to work and also to cooperate with the national organization through the local society on matters pertaining to the profession.

The following criticism made in the foregoing communication, "that membership will mean nothing to the employer or employee beyond the ability of the latter to pay a small yearly fee" is not justifiable. Had those making it attended the last convention held in Chicago, they would have agreed as did many representative men of the profession and allied interests present, that it was the most businesslike convention they ever attended, and some of them, making the statement, have to attend many conventions.

If any member of the association is in doubt as to the progress that is being made by the National Association of Gardeners let him visit the secretaries' office and investigate for himself, through the inspection of records and files, what his association is accomplishing.

The Service Bureau alone has been doing herculean work in its effort to convince the country estate owner that the efficient gardener is as much entitled to proper compensation as are men engaged in any other responsible vocation. It has already established a reputation sufficient to have some of our foremost landscape engineers and public institutions recognize it, and one of the results of the establishment of this department has been the securing of some of the most prominent estate owners of this country as sustaining members.

There are a large number of members ready to lend every assistance to develop the usefulness of the association for the profession it represents, but it is not a few men's work, for, as has been reiterated time and again, without the whole-hearted and
united cooperation on the part of at least a majority of its members, its climb to the altitude that the association should attain in the field of ornamental horticulture will necessarily be slow and irksome.

Let the members manifest a more general interest, such as is now being shown by the members from Newport, and the energy within the association to accomplish big things will become spontaneous. Mr. Smith may be relied on to work out a plan by which his proposal to give gardeners a rating can be put in force and he will have the able assistance of others prominent in the profession, who, having become somewhat discouraged in their past efforts, have not kept at it as persistently as has Mr. Smith to make the National Association of Gardeners as important to the profession of gardening as other national organizations are to the professions they represent.

May the shot fired by our friends in Newport be the signal for a general outburst from all directions that will give voice to what shall be enacted at our next convention, to be held in Cleveland in the early fall.

M. C. Ebel, Secretary.

LOCAL SOCIETIES

THE WESTCHESTER, N. Y., AND FAIRFIELD, CONN., HORT. SOCIETY.

The regular monthly meeting of the above society was held in Hubbard's Hall, Greenwich, Conn., Friday evening, March 14, President William Graham in the chair. Two new members were enrolled and three proposals for membership received. The executive committee reported that all arrangements were complete for a concert and dance which will be held in the Red Men's Hall, Greenwich, Conn., Friday evening, March 21. A letter was read from the venerable John Shore regretting that owing to illness he was not able to attend our meetings. A motion was unanimously adopted to appoint a delegation to call on Mr. Shore and make him a life member of this society. Mr. Williamson read a very interesting letter from one of our members who is doing garrison duty in Germany. A long communication was read from the Secretary of Agriculture, Washington, D. C., giving his reasons for the quarantine order and describing the damage that has been done, the millions of dollars that have been spent in trying to get rid of all the dangerous insects, scale, rust, blister, borers, beetles, earwigs, Japanese beetles and a lot of other darned things which Secretary Houston claims have come in from Europe on nursery stock. Mr. Houston's letter was left over until next meeting for further discussion.

President William Graham read a very good paper on carnation culture. A standing vote of thanks was accorded to Mr. Graham for his very excellent paper.

Jack Conroy, Cor. Sec'y.

PENNSYLVANIA HORT. SOCIETY.

The office and library of this society are now at 606 Finance Building, South Penn Square, Philadelphia. The meetings are held on the third Tuesday of each month, except July and August, at 3:30 p. m., at Griffith Hall, 1420 Chestnut Street, Philadelphia.

The officers of this society for 1919 are as follows: President, James Boyd; vice-presidents, Robt. Craig, Henry F. Michell, Wm. Kleinheinz, J. Otto Thilow; treasurer, Sidney W. Keith; secretary, David Rust.
The program of exhibitions for 1919 is as follows:

Exhibition of Peonies, Outdoor Cut Flowers and Hybrid Tea Roses, Firemen's Hall, Bryn Mawr, Pa., June 3 and 4.

Exhibition of Sweet Peas, Hardy Perennials and Hybrid Perpetual Roses, Jenkintown Club, Jenkintown, Pa., June 24 and 25.

Exhibition of Dahlias, Outdoor Cut Flowers and Vegetables, Masonic Hall, Ardmore, Pa., September 16 and 17.

Annual Exhibition and Chrysanthemum Show at the First Regiment Armory, Broad and Callowhill Streets, Philadelphia, November 5 to 8, inclusive.

David Rust, Sec'y.

NASSAU COUNTY, N. Y., HORT. SOCIETY.

The regular monthly meeting of the above society was held at Glen Cove on Wednesday, March 12, President Joseph Adler presiding. Five petitions for active memberships were received. Thomas Twigg, upon request, gave a brief account of his method of growing pansies, which proved quite interesting. An essay was ably read by Ernest Westlake entitled, "Wanted — A Gardener," written by Robert Weeks, Cleveland, Ohio. A letter of thanks was ordered sent to the author. Arthur Harris, one of our members who went overseas with the Canadians, was present and spoke briefly. We were all pleased to have him with us again and to give him the glad hand. P. W. Popp, vice-president of the National Association of Gardeners, was present and spoke briefly on that organization. A short discussion followed on the making of a clay tennis court, which proved quite interesting and instructive. It was decided to hold a Spring show at our regular meeting on Wednesday, May 14. The executive committee was empowered to draw up a small schedule to be presented at our next meeting, which will be held on Wednesday, April 9, at 7 o'clock p. m. It was decided on motion of Mr. Twigg, that we hold a smoker at the conclusion of this meeting.

Harry Goodband, Cor. Sec'y.

ST. LOUIS ASSOCIATION OF GARDENERS.

The regular meeting was held at Forest Park greenhouses, Wednesday, March 5. The meeting was called to order by President L. F. Jensen.

An important motion was adopted to create enthusiasm in the various branches of the profession amongst the general public. Special notices are being mailed to the press, Chamber of Commerce, School Patron Societies and Parent Teachers' Associations, announcing the club will send lecturers to meetings in the city to lecture on any branch of the gardening profession. In this manner the club will be before the general public, which in due time will be beneficial, especially in placing reliable men in positions.

The subject for the evening was "Spring Planting" by A. Vandereem and S. M. Beer. Mr. Vandereem presented the subject in a manner which created one of the most interesting discussions. He put innumerable questions before the members, such as Spring versus Fall planting? Should trees and shrubs be pruned sparsely or severely before or after they are semi-established? and also the uses of dynamite.

It was interesting to notice how the taciturn members involuntarily entered into the discussion. Mr. Beer's remarks were brief owing to the late hour.

D. Miller, of the Missouri Botanical Garden, spoke on "How to Make a Gardener a Part of the Association," and suggesting the club do more in a social way. He was supported by Messrs. Frienkamp, Huber and Ulrich. Their ideas socially were far in advance of the finances of the club. On motion regularly moved and carried it was referred to the executive board.


NEWPORT (R. I.) HORT. SOCIETY.

A regular meeting of the Newport Hort. Society was held on March 11. Secretary Fred Webber reported a generous response in the way of special premiums for the
NO MORE back-breaking, brow-bedewing hoeing and cultivating with old-fashioned tools. Work upright with an Iron Age. Get health, exhilaration, genuine joy from a turn in the garden.

Iron Age Garden Tools are made in many styles. There are Hill and Drill Seeders that sow with remarkable accuracy either in hills or drills, furrowing, planting, covering, packing the soil and marking the next row in one operation. There are Single and Double Wheel Hoes that make furrows for such crops as potatoes; that ridge, cultivate, hoe and rake, keeping the soil in that well-mulched condition necessary for success.

For every garden seeding and tillage purpose—an Iron Age! They are used in thousands upon thousands of vegetable and flower gardens by men, women, boys and girls who garden in a farm-like way.

See your dealer and write for copy of “Modern Gardening”

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The House of Thorburn has been in the seed business for 117 years. It knows seeds from A to Z. It knows the best methods of collecting, assorting and preparing seeds—there is no guess-work about its methods.

Full sized, handsome shaped, rich, luscious vegetables, commanding the highest market price—that's what you will grow from Thorburn's Seeds. There will be a bigger demand than ever this year for quality garden produce.

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Kunderd's Wonderful New Ruffled Gladiolus

are the most beautiful in the world. No others like them, none nearly so beautiful.

Finely illustrated 52-page catalogue free for the asking. It describes nearly 300 varieties, all of our own production and most of them obtainable only from us. It also contains the most complete instructions on the care and culture of Gladiolus ever published. Let us send you a copy.

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OUR Spring offering is six hundred acres of well grown trees, shrubs and plants—100 page price list on request.

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LENOX, White
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Burpee’s Annual is a complete guide for the Flower and Vegetable gardener. It contains an entire chapter on Edible Seeds, Root Crops and Greens, and Salads, and last, but most delicious of all, the Vegetable Fruits! Burpee’s Annual is considered the Leading American Seed catalog. It will be mailed to you free upon request. Write for your copy today.

W. ATLEE BURPEE CO., Seed Growers, Philadelphia

Balsdon and R. J. Niles. Retiring President Martini in an appropriate speech thanked the officers and members of the association for the support given him during his administration and asked for a continuation for the incoming president, who, upon assuming office, made suitable reply.

The secretary read a number of articles relating to the proposed plant quarantine order and a letter from Theodore Wirth, superintendent of parks at Minneapolis, Minn., met with much approval, a motion being made and unanimously carried that a letter be written to him expressing the approval of the association with his suggestions.

F. W. Sparks.

STAMFORD (CONN.) HORT. SOCIETY.

The regular monthly meeting of this society was held Friday, March 7, at the Moose Hall. The attendance was larger than at any previous meeting, and as soon as the members begin to attend every meeting as well as they did the last one, it will be necessary for the society to look for a better meeting place. A committee of three was appointed to send to the Federal Hort. Board a protest against its more than fool- ish embargo on nursery stock.

Three new members were elected and four applications for membership were received.

Mr. L. C. Root, who has been in the bee keeping business for more than fifty years, entertained the members with a very in- structive talk on bees, supplemented by an- swers to specific questions asked him. The members responded with a well deserved rising vote of thanks.

G. C. Boon, Cor. Sec’y.

HOLYOKE AND NORTHAMPTON (MASS.) FLORISTS’ AND GAR- DENERS’ CLUB.

The regular meeting of the club was held Tuesday, March 4, at the Smith College plant house. There was a good attendance.

How Does the Gardener Judge a Greenhouse?

NOT simply by its beautiful lines and its general attractiveness. These are essential features, but still more important are the questions of heating, ventilation, economy and all-around efficiency.

The Lutton greenhouse, with its scientific V-bar construction, perfect ventilation and its 100% heating plant, cuts down the work of the gardener and enables him to get the results he wants. When he banks his fire in the evening, he knows he can rely absolutely on the right degree of heat during the night, with a good fire left in the morning.

We have visited a number of our gardener friends recently, and the good things they tell us about our greenhouses make us feel well repaid for the years of hard work and study that we have devoted to making the V-Bar a practical, workable greenhouse.

Write to us, or come in to see us at our New York office and talk over your greenhouse problems. We shall be glad to see you, and you will be under no obligation, whatever.

There are no regrets over a Lutton Greenhouse

WILLIAM H. LUTTON COMPANY
Designers and Builders of V-Bar Greenhouses and Conservatories
512 FIFTH AVENUE, NEW YORK
Factory: Jersey City, N. J.

The regular meeting of the club was held Friday, March 7. President Wm. E. Fisher occupying the chair. Mr. Koch, of Garfield Park, Chicago, was to have been the speaker for the evening but was unable to be present. The members hope to have the pleasure of hearing him some future date. Mr. McMillan, of Vaughan’s Seed Store, Chicago, gave an impromptu address on Insect and Fungoid pests and their remedies and he was given a hearty vote of thanks for his instructive lecture. The Society voted to hold a midsummer show in July and a Chrysanthemum show in November. Various committees were appointed to work together to make these shows a greater success than heretofore. Ten new members were proposed.

J. H. FRANCIS, Cor. Sec.

MONMOUTH COUNTY (N. J.) HORT. SOCIETY.

The regular meeting of the Monmouth Co. Hort. Society was held in Red Men’s Hall, Rumson, N. J., on the evening of March 13, with all officers present, also a large gathering of members. After the minutes of previous meetings were read and approved, quite some business was transacted. New by-laws were discussed and approved, also ordered printed. Some few weeks ago secretary Kettell wrote to our Senator and Congressman protesting against the unfair-ness of the Government’s embargo on plant and bulb restrictions. Three new members were elected after business was dispensed with. Wm. Turner gave an essay on Early Vegetables, discussions followed by many
Instruction in Gardening

Practical instruction is offered in vegetable, flower and fruit gardening, greenhouse and nursery practice, together with lectures, laboratory, field and shop work in garden botany, zoology, pathology, landscape design, soils, plant chemistry and related subjects.

The curriculum is planned for the education of any persons who would become trained gardeners or fitted to be superintendents of estates or parks. Students may be admitted at any time.

Circulars and other information will be mailed on application.

The New York Botanical Garden
Bronx Park, New York City

AMONG THE GARDENERS

Frank Edington, formerly of St. Clouds, Orange, N. J., has secured the position of gardener on the property of Mrs. W. S. Read, "Hill Crest," Purchase, N. Y.

William Strobel, formerly gardener to Mrs. W. S. Read, "Hill Crest," Purchase, N. Y., has accepted the position of gardener on the estate of Mrs. W. S. Read, "Hill Crest," Purchase, N. Y.

William Allen has accepted the position of gardener on the country estate of E. J. R. Burton, Oyster Bay, N. Y., succeeding Mr. Francis. Meally, formerly of the Tiffany estate, Glen Head, L. I.

William Strobel, formerly gardener to Mrs. W. S. Read, "Hill Crest," Purchase, N. Y., has accepted the position of gardener on the country estate of Mrs. W. S. Read, "Hill Crest," Purchase, N. Y.

George Alcock, formerly of the A. Albright, Jr., estate, South Orange, N. J., has accepted the position of gardener on Henry L. Van Pragg's estate, Chappaqua, N. Y.

George Wood, recently gardener on the Stuyvesant Fish estate, Garrison, N. Y., is now gardener on the C. O. Iselin estate, Glen Head, L. I.

James Warr, formerly of Beverly, Mass., has accepted the position of superintendent on the country estate of E. B. Dane, Seal Harbor, Me.

David Francis, for a number of years in charge of Charles Bradley estate, Convent, N. J., has resigned his position. John Meally, formerly of the Tiffany estate, Oyster Bay, N. Y., succeeds Mr. Francis.

L. W. Fisk, President of the American School of Landscape Architecture and Gardening, has been released from duties with the Emergency Fleet Corporation on the Pacific Coast and will resume his duties with the School at Newark, New York State.

G. Brink, late of Chappaqua, N. Y., is now gardener on the country estate of Edwin Thorne, Babylon, N. Y.

William Strobel, formerly gardener to Mrs. W. Storcy, Old Westbury, N. Y., is now gardener on the country estate of E. B. Dane, Seal Harbor, Me.

William Allen has accepted the position of gardener on the country estate of Mrs. W. S. Read, "Hill Crest," Purchase, N. Y.
OF GENERAL INTEREST

The New York Botanical Garden, Bronx, New York, offers a series of instructions in gardening in its various branches, which will supply a long felt want in the vicinity of New York City among those unable to engage in college courses.

J. Austin Shaw, well known among the horticultural interests in the Eastern and Middle States, writes from California, where he went in search of health last fall, that the balmy airs of Southern California are proving most helpful to him.

The British Chamber of Horticulture, a governmental body, is at work on a plan to offer protection to the raisers of new varieties, similar to the protection afforded other lines by patents, trademarks and copyrights. The secretary of the Chamber of Horticulture has invited the trade to present its ideas on the subject.

The Pennsylvania Horticultural Society has secured 10 acres of ground in Fairmount park, which is to be turned into a botanical and ornamental garden, to be under its absolute control, and will become, as fast as it can be planned and planted, one of the beauty spots, not only of the park, but of the country. President Boyd is an enthusiastic lover of outdoor gardening. His private collection of peonies and irises is one of the finest in the country. He is much interested in the work of the society which is making great strides under his direction.

WHERE WATER LILIES BLOOM
Garden Visitors Gather

A pool of blooming Lilies is the garden's focal point. Other plants may arouse a moment's interest, but the Water Lily's dainty blooms never lose their charm.

And, best of all, you can grow them just as successfully in a tub or pool as in a large pond. All you need is water, sunshine, and a little soil. The plants may be few in number, but the pleasure they will give is not to be measured by mere quantity.

Let me tell you How and Where to Grow these Beautiful Blooms.

I will be glad to advise you how to start, and the varieties that are best adapted for general planting and free blooming. Tell me, please, whether you must use a tub or pool; if the latter, give size and the source of water supply.

My booklet on “Water Lilies and Water Plants” will be sent to those who ask for it; the edition is limited, so it may be well to write at once.

William Tricker
Box P, Arlington, N. J.
THE ART OF POTTING

THOUGH it may seem a simple matter enough on the surface, there is a good deal of art in potting plants properly. The pots should be well drained, using for this purpose pieces of broken pots or crockery, and placing one large piece over the hole in the bottom of your pot. A little sphagnum or rough material of some kind should next be placed over the crocks to keep the soil from being washed down and blocking the drainage. Then put an inch or so of soil before placing the plant in position, and fill in with the compost, pressing this down firmly with the fingers until the pot is nearly but not full.

If the pot is over-filled, insufficient room is left for watering, while, if not filled full enough, not only does the pot not contain enough soil, but the plant is liable to become “drowned” when water is given. There ought always to be enough space left between the top of the pot and the surface of the soil, to allow the giving sufficient water to saturate the whole of the soil and moisten all the roots.

Some people seem to throw the plants into the pots almost anyway and still they grow and do well. This plan may answer well enough in a country garden, where plants seem to thrive under any condition, but too much care cannot be taken in the suburban or town garden. Most plants, especially those of the “hard-wooded” or shrubby type, require to be potted very firmly—that is, to have the soil made almost hard in the pots, but in the case of soft-wooded plants, generally, pot rather loosely for rapid growth, and more firmly for early bloom. In all potting operations, see that the roots of the plants are spread out in the soil, that is to say, they should not have the soil thrown on them, but among them. The soil should always be slightly lower at the rim of the pot than at the neck of the plant.

DO you find the columns of the GARDENERS’ CHRONICLE interesting? Certainly you do, or you would not be perusing them. Your gardening neighbor, were he familiar with them, would become equally interested. Why not recommend the GARDENERS’ CHRONICLE to him as a guide to his garden work? He would appreciate it—and so would we.

A Perpetual Spinach

A real spinach that you can cut, and re-cut; and it will come, and come again.

Not a Swiss chard but a big leafed, quick growing, Summer and Fall Spinach.

Takes the place of all other varieties.

10c. a package. 30c. an ounce. $1/4 lb.

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NEW ROSE HUGONIS
Two Weeks Earlier than the Earliest

Here is another wonder, for which we are indebted to Chinese Wilson.
Strange to say, its surpassing merits seem to have been overlooked. It weathered the rigid winters at the Arnold Arboretum, and came back in May with its swaying, bloom-covered branches, like veritable sprays of enlivened sunshine.

We count ourselves extraordinarily lucky, in being able to offer Hugonis to you; even if we must restrict the sales to not more than two to any one customer.

And now a word or two more about it.
Every branch of the previous year’s growth is lined on all sides, right to the very tip, with closely set, open-eyed, single flowers. They are, indeed, quite like dainty yellow hollyhocks, bending over with the weight of bloom profusion.
Its hardiness is remarkable.

From trial grounds in Massachusetts and Wisconsin, never so much as a tip of a single branch was winter killed.

Here, within 30 miles of Philadelphia, it bloomed two weeks ahead of the earliest early roses.

Fine for shrub planting.
Makes a symmetrical bush about 6 feet high and the like in diameter.

Need we add the necessity of early ordering, to save disappointment.

Price
Field grown plants..............$1.50 each.
Not more than two, to any one customer.

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IT gives us pleasure to announce that Mr. W. F. Therkildson has come to Advertising Headquarters as Head of the Agricultural, Horticultural and Farm Implement Division.

Mr. Therkildson enjoys a wide acquaintance in the Seed and Nursery trade, having been for years the Advertising and Sales Manager and Catalogue Compiler for W. Atlee Burpee & Co., the well-known seed house. Prior to that, Mr. Therkildson was associated in a similar capacity with the Storrs and Harrison Co., the world's largest nurserymen.

The specialized knowledge and broad, practical experience in his own line of work which Mr. Therkildson brings to this organization, will be reflected in a broader service for Ayer clients.

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BARKER Weeder, Mulcher and Cultivator
Three Garden Tools in One

Eight reel blades revolving against a stationary knife (like a lawn mower) destroy the weeds and break up the clods and crusted surface in one operation— aerating the soil and leaving a level, porous mulch to hold the moisture at the plant roots.

Gets close to the plants. Cuts runners. Has guards to protect the leaves. A boy can use it. Run over the garden after every rain, it keeps the soil in perfect growing condition.

The BARKER also has easily attached shovels for deeper cultivation—making three garden tools in one. You'll give your garden better care and not work half as hard, with this machine.

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Don't Cultivate Bugs!

Bugs, blights and plant losses due to both, rob the planters of this country of seven hundred million dollars' worth of truck and garden crops each year. The worst pests are, perhaps, the lice of many species that suck the plants' life blood. To fight them effectively, use a contact poison.

Aphine has been the standard contact remedy for use against green, black and white aphis as well as thrips, currant worms and other soft-bodied insect pests for many years. Especially adapted for home garden use since it is put up in convenient quantities, quickly diluted, and easily applied as per direction on each can.

Fungine for Fungi

A cleansing liquid sulphur spray, equally effective to combat blight on vegetables, fruits and flowers.

Vermine for Worms

Completely eradicates, worms, maggots, root lice and all other pests at work beneath the soil.

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COLDWELL Combination Roller and Motor Lawn Mower Model "J"

The best and most economical machine yet made for parks, large estates and country clubs. Rolls while it mows; 1100 lbs. on the drive rollers; not too heavy, just heavy enough. Does the work of three horses and three men on half a gallon of gasoline an hour.

The Coldwell Walk Type Motor Mower cuts an acre an hour. Operator guides—nothing more.

Write for full particulars about these, and also Coldwell's Combination Tractor and Threesome Lawn Mower—a wonderful labor saver—and Coldwell's Horse and Hand Mowers in all styles and sizes.

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Save ¼ on Spray Poison

**EVERY DOLLAR** saved in potato production cost is a dollar added to the net potato profits for the year. Figure what a saving of from 12 to 15 cents a pound on all your spray poison would mean. Corona Calcium Arsenate—Dry will go as far per pound as Paris Green yet costs about 30 per cent less. And it does away with all danger of burning the vines.

Being white, Corona Calcium Arsenate—Dry shows plainly upon the vines which is another great advantage to the practical grower. No trouble to tell where you have been or how evenly you are applying it.

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**CORONA DRY**

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**The Universal Insecticide**

is the ideal spray poison for all fruits and for garden vegetables. Sold in both large and small packages.

If you have an orchard, send today for the free "Corona Spray Schedule." It tells just when and how to spray all kinds of fruit trees.

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Every stage of the treatment was shown me by your representative. First, the outlining of the cavity, then the cleaning of every particle of decayed wood; then the importance of every piece of bracing employed, the cutting back of the bark, the disinfecting of the cavity and the waterproofing of the same; and last but not least, the filling of the cavity section by section.

I think the work done by your experts is a marvelous revelation in Tree Surgery. Your experts are worthy of the highest praise, not a minute of their time is wasted, and it would be difficult to choose, from the representative, the foreman or the men, one who is more enthusiastic or more gentlemanly than the others.

I most heartily wish you every success.

Sincerely yours,

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The saving of priceless trees is a matter of first importance on every estate.

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GARDENERS’ CHRONICLE
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This Greenhouse for $3000
Price Includes

Greenhouse Materials
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This snug little Greenhouse and Workroom erected complete, ready for planting, costs $3,000, which is exclusive of freight, cartage or workmen's fares.

The Greenhouse is 18 feet wide by 25 feet long. The Workroom is 12 feet by 15 feet.

The construction is simple, durable and practicable.

If desired, the Workroom can be omitted and the Greenhouse built against the dwelling or garage.

The cost of the Greenhouse without the Workroom is $2,100.
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We take great pleasure in offering this list of the most distinct varieties, among which are some extremely fine novelties, some our own raising. We consider this compact list as complete as necessary, considering that it contains a fine selection of all shades and colors in the best sorts only.

FOUR DISTINCT NEW VARIETIES

White Giant. New. Undoubtedly the finest white known. Scarlet. 75 cts. each, $5 per doz.

Wilbrinck. Extremely charming and pretty. Extra. $1.25 per doz., $8 per 100.

Glory of Noordwyk. New. Very scarce. The finest yellow known. 75 cts. each, $5 per doz.

Red Emperor. Large brilliant red, latest introduction of great merit. 75 cts. each, $5 per doz.

OTHER WELL KNOWN VARIETIES

Mrs. Francis King. Light scarlet. Very large, tall showy spike. 80 cts. per doz., $6 per 100.

Mrs. Frank Pendleton. Delicate salmon-pink, with big red eye. Immense flower. One of the most showy varieties. $1 per doz., $7 per 100.

Niagara. Very large, yellow decorative variety. One of the best. $1 per doz., $7 per 100.

Peace. Very vigorous; large white flower with red feather on lower petal. $1 per doz., $7 per 100.

Pink Perfection. Almost a perfect pink; tall and very beautiful. $1 per doz., $7 per 100.

Schwaben. Light yellow with dark center; heavy spike. $1 per doz., $7 per 100.

BARON HULET. Purple-blue. The best blue Gladiolus. 80 cts. per doz., $6 per 100.

Empress of India. Very dark crimson. Exceedingly rich color. $1 per doz., $7 per 100.

Eva. New. Our own introduction (See illustration on front cover.) This variety produces enormous spikes of a very vivid red color, with white and crimson veins running through the two lower petals. Flowers of very large size. 25 cts. each, $2 per doz., $12 per 100.

Lily Lehman. This is considered the most fascinating white Gladiolus and when fully open has a very light pink tint. 80 cts. per doz., $6 per 100.

America. The favorite pink variety. Most popular of all. 60 cts. per doz., $4 per 100.

GLADIOLUS PRIMULINUS HYBRIDS

Anny. Light yellow of great beauty. 80 cts. per doz., $6 per 100.

Fair King. An exquisite red flower. 25 cts. each, $2.50 per doz.

Jann. Very fine salmon-yellow. 1.25 per doz., $8 per 100.

Nelly. Light yellow. 80 cts. per doz., $6 per 100.

Royal Sovereign. A very attractive yellow. $1.25 per doz., $9 per 100.

Troub. Yellow. $1.25 per doz., $8 per 100.

Tops. Bright yellow. 80 cts. per doz., $6 per 100.

Extra-fine, Mixed. 75 cts. per doz., $5 per 100.

CANNAS

Cannas now are considered the most graceful summer-flowering garden plants, both for borders and beds. The brilliant colors we can now offer, surpass anything we have grown heretofore.

King Humbert. Brilliant orange-scarlet, with bright red shadings. A very large flower of extreme brilliancy. The beautiful bronze foliage makes a rich effect wherever planted. 30 cts. each, $2 per doz.

King of the Bronzes. A unique bronze color which is very attractive. 20 cts. each, $2 per doz.

Winton’s Colossal. The largest Canna we ever grew. Bright scarlet flowers, often measuring 8 inches across. Very vigorous and free-flowering. 25 cts. each, $2.50 per doz.

Yellow King Humbert (Queen Helen). This sport of King Humbert, like its parent, won its place among flower lovers. Very bright yellow flowers with rich green foliage. It is considered the best yellow Canna today. Very popular. 25 cts. each, $2.50 per doz.

We Prepay all Charges to Destination, east of the Mississippi River, if the order is accompanied by Cash; west of the Mississippi River, 25 per cent additional should be added. We will ship by Parcel Post, Express, or Freight, at our option.

Send for our Spring Folder with Prices.

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New York City
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MARTIN C. EBEL, Editor

Entered at the New York Post Office as second class matter under the Act of Congress, March 3, 1879.

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Hardy Liliums

We have been fortunate in being able to procure a number of cases from the only shipment of Japanese Bulbs from Japan since the embargo has been removed. Owing to the very heavy freight cost we are obliged to offer at the following prices.

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<th>Variety</th>
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FOR SUMMER OR AUTUMN DELIVERY $5.00 per 100 increase over the foregoing prices.

Stump & Walter Co

30-32 Barclay St.
New York
Things and Thoughts of the Garden

BY THE ONLOOKER

By this time the garden enthusiast will have passed the worst stage of the "spring fever" and with the preliminary work well out of the way, the season's plans will be taking definite shape. No matter how many years of gardening experience we can look back upon most of us begin to get fidgety at the first sign of the great spring awakening, and two or three successive warm days will have us all keyed up for fear that while we finish the pruning the perennials and bulbs will surely suffer injury because of their winter covering not yet removed; and worst fear of all, our neighbor will surely get ahead with the early peas. But in New England, at any rate, the weather man can usually be relied upon to put a damper on this early enthusiasm, and this year he did so with a vengeance. The balmy weather which prevailed the greater part of March gave promise of an unusually early spring. The elm, soft maple and pussy willow were encouraged to open their flowers much earlier than usual, while the crocus and grape hyacinth established in warm corners gave us their cheery blossoms a full two weeks earlier than we had known them before. Magnolia stellata in a favored spot was studded with fat white buds, and a group of Primus Davidiana, the flower-buds of which so seldom survive a New England winter, promised to be a magnificent sight before March went out. Alas for our hopes, a sudden drop of 40 degrees accompanied by icy blasts, slaughtered these precocious buds, and our garden record registers a disappointment at the very outset of the season. After a wintry opening, April has given us typical days of sunshine and shower, causing vegetation to wonderfully respond to such invigorating influence. The noise of the lawn-mower is heard again in the land, and on every hand we behold again the beauties of Nature daily unfold.

Judging from reports and observation the expected after-the-war gardening boom seems to be getting well started. On estates where the regular garden activities were very much curtailed during the past two years, conditions are getting back to normal again, while the outlook for the development of new places in the near future seems to be good. The nurserymen are most optimistic, and too busy just now to be worrying much about Quarantine 37. A most encouraging sign of the times is the interest that is being displayed in gardening matters by many who have hitherto paid very little attention with regard to beautifying their home surroundings. In my own locality people who have been for years content with bare yards are now planting shrubs, making inquiry about suitable vines for the porch, showing an interest in roses, and growing quite enthusiastic when the possibilities for a border of old-fashioned flowers are pointed out. Without doubt there is promise of a more widespread love for the things of Mother Earth, and while this may not always be expressed in the same intensive way as was manifested in the work of the War Gardens, yet many people who were impelled to plant something from patriotic motives, having tasted somewhat of the pleasures and joys of gardening, (yes, and the disappointments too), will continue from the sheer love of the thing. Disappointments and failures should but sharpen our zest to achieve success, for "He who hath never a battle, hath never a victor's palm."

The question of increased food production is still regarded as a matter of prime importance in official quarters, but surely those who have once enjoyed fresh vegetables straight from their own garden will not need urging to continue to grow at least a part of their table supply. There never has been a time when so much instruction was furnished gratis for the gardening novice. Many of the catalogues furnish valuable cultural hints and this year the W. Atlee Burpee Seed Co. have gone a step further by presenting a garden plan with each of their standard collections of vegetable seeds put up for gardens ranging in size from 600 to 10,000 square feet. Arrangement, planting dates, space required, crop succession, are all clearly shown, together with the necessary cultural instruction in tabloid form. It is a fine example of business acumen which carries a direct benefit to the purchaser and shows the true spirit of service and co-operation.

Uncle Sam seems to have been less generous than usual this year with his free seed distribution, but it is hardly likely that the dwellers in city flats who have hitherto regularly received this mark of Governmental favor, are the persons responsible for the over-time work in the seed stores this spring.

What would we think of a nurseryman who advertised a special sale of underwear, pots and pans, or some either equally incongruous line of goods? Yet that would be no more out of place than is the selling of rose bushes and other shrubs by the department stores and hardware men. Some of these make a feature of a cheap grade of these plants each spring, and strange to say people buy them readily in the belief that they have a real bargain.
What matters if the plants are small and usually badly shriveled by exposure to unkind influences, if the rose is labeled General "Jack" and the flowering shrub "Syringa," why everything is bound to be all right. Later on, if professional opinion is sought as to why these poor unfortunates succumbed the real truth seems to give quite a shock. First cost so often proves a stumbling block and the question of quality is often overlooked even by many who should know better.

* * *

While the purchase of high-class stock is always advisable, it does not follow that the mere fact of doing so will insure ultimate success and satisfaction. One need not be a specially keen observer to note many errors in planting, especially on small places. Quite a common fault is planting in poor soil, especially when close up to the house, where soil moisture is likely to be at a minimum. Good plants, no more than poor ones, can do little more than just exist if sand, ashes, brick-bats, and other souvenirs of the building contractor are mixed with the soil in any quantity. Where this is the case, and it is by no means uncommon, the least that should be done is to provide good soil for immediate contact with the roots when planting if the plants are to have half a chance. To induce good root action there is nothing better than well decayed leaf-mold or old potting compost worked in between the roots. It is a wonderful help to a good start, especially on heavy soils. Leave the rank stable manure to thoroughly decay and apply later as a mulch, rather than mix in when planting. It will do most good in this way. Also it pays to take pains in planting, making the excavation large enough to accommodate the roots spread out to their full extent, and breaking up the subsoil if at all hard. The plants will probably live if their roots are not cramped into hard ground, but they will have a mighty hard time getting established. Firm planting counts a good deal toward success, as does also a certain amount of pruning. Just how much depends largely upon the root system. A poorly rooted tree or shrub should be pruned somewhat severely, but in the case of a good fibrous root system a light pruning will suffice. These are all old truths, well known to every experienced gardener, yet the need for their application is seen during every planting season.

* * *

How eagerly we welcome the earliest flowers of spring in our northern gardens, even though most of them are less showy than many which come along later in the season. Amongst the early-flowering shrubs *Lonicea fragrantissima* is very choice, not showy, but sweet and appealing, and well worth the little space required by just one or two plants. It is quite at home on the north side of a building and we have enjoyed its fragrant flowers for the past three weeks. The native leatherwood, *Dirca palustris*, is another early shrub which is dear to our hearts. The small, drooping, light yellow flowers appear before the leaves, and while individually not very showy, they are usually so abundant as to make it quite an attractive shrub. It is a slow grower and as a single specimen develops into a very shapely bush without the use of pruning shears. It is called Leatherwood from the tough fibrous bark, the branches are very pliable and it was said by the early settlers for making thongs and hoops. Some very good effects are obtained by the free planting of such of the lesser bulbs as *Scilla*, *Chionodoxa*, and *Muscari* as a carpeting for the early flowering shrubs, being especially effective beneath the pendulous golden-flowered branches of *Forsythia*. We could with advantage plant many more bulbs in the shrub beds and perennial borders. Besides these mentioned, *Crocus*, *Snowdrop* and many of the *Narcissus* will flourish and increase under these conditions and appear to much better advantage than when more formally planted.

* * *

An interesting Chinese tree which is finding its way into some of our collections is the so-called Hardy Rubber Tree, *Eucommia ulmoides*. It actually does contain rubber which is said to be of very good quality, but difficult of extraction and not present a sufficient quantity to make it a rival of the famous tropical *Hovea brasiliensis*, the source of the unrivaled Para rubber. This Chinese tree is a quick grower of upright habit with very dark green leaves which keep their color and persist until late in the fall. Those who are looking for something unusual would be pleased with its appearance, and it has proved hardy at least as far north as Massachusetts.

* * *

A florist friend of mine is putting himself on the back just now because he took a chance last fall on which he has just cashed in handsomely. It was this way. Not having his regular supply of Easter Lily bulbs and wondering what he could do about getting along something to substitute, he hit upon the idea of lifting and potting a good batch of *Lilium candidum* which he had growing in the field. They had given him a good crop of cut flowers in the summer and were well started on their new growth when lifted, just at the stage when according to all teaching on the subject they should have been left alone. It seemed like too much to expect to hope for them in flower for Easter, and in fact he was told it just simply couldn't be done. But it was. By good management (or some might say good luck), they came along nicely and a good looking lot of plants they were, averaging five or six flowers to a stem. During the busy days just preceding Easter the lucky man wore a smile that just simply wouldn't come off.

Those who are now making preparation to start plants for greenhouse decoration next winter should sow some seed of *Coleus thyrsoides* this month if they are not already acquainted with this very desirable winter blooming plant. Once having grown it few would be content to do without it and where stock is on hand cuttings should be obtainable and will root readily at this season. The long racemes of bright blue flowers make a striking appearance in the greenhouse in early spring and they are good for at least three months. The foliage is rather soft and unless the plants are very well grown most of it is likely to drop off by the time the flowers open. Plants grown without pinching produce the finest racemes as they are then single stemmed plants, and when pinched they do not branch as readily as the common Coleus. *C. thyrosoides* is a native of Central Africa, where it grows at an elevation of several thousand feet, so that an ordinary greenhouse temperature will meet its needs for warmth. It first flowered under cultivation at Kew in 1898 and soon became very popular in English gardens. It should be equally so with us, for the color is one which everyone admires and it flowers at a season when good blues are scarce. If some of our noted exhibitors want to make a hit grow a batch for the next New York Spring Show.

Blessed is he who has found his work; let him ask no other blessedness. He has a work, a life purpose; he has found it and will follow it! Labor is life; from the inmost heart of the winter and his God-given force, the sacred celestial life-essence breathed into him by Almighty God; from his inmost heart it awakens him to all nobleness—to all knowledge, "self-knowledge," and much else, as soon as work fitsly begins.—Carlyle.
NOW that peace is declared we garden lovers are going to leave to the world's greatest minds the solution of the problems arising from the war, we are going to let them solve the fourteen points, more or less, let them decide what faction shall lead—we are going to leave all these mighty problems behind us to look down a long grassy path six feet wide and looking we shall see a vision of harmonious colors, consisting of greys, greens, and pinks in all their variable shades. To have a border and grass path one hundred and fifty feet long there must be a raison d'être and in this case it happens to be a pergola on one side and a flower bed on the other—concealing what otherwise might be unsightly, a white picket fence, low it is true but nevertheless the object of this gardener was to camouflage it. Ah! when it was planned years ago that delicious word was not in existence and with what a difference from two years ago do we read that word to-day. To-day the camouflaged ships are bringing back thousands of our American boys to our welcome home shores and even that art of camouflaging was taken from our nature artists—but I must not forget we are on a garden topic. The vista before us is one unusually beautiful, the pergola of course in true regulation style covered with Clematis paniculata, climbing roses in pink shades, "Lady Gay" and all her cousins, and interspersed here and there several wild grapes, the summer grape, (Vitis aestivalis), the fox grape, (Vitis labrusca), the winter grape, etc. At the very end is the native Trumpet vine, (Tecoma radicans), winding up afar into the Belvidere or in plain English, simple "double-decker" rustic Summer Cucumber House, which ends the rustic Pergola, made of seasoned, panelled sassafras and by the unknowing called "Old Hickory." This border along this Pergola is four feet wide, and planted in sections between the rustic posts set eight feet apart, are plantings made up of the lovely comparatively new Baby's Breath (Gypsophila paniculata flora plena), and after seeing its rich loveliness one always wonders why one ever plants the sickly looking single Gypsophila. This alternates with clumps of Iris Florentina, our real Orris root, so sweet and fragrant and placed among these clumpings are clumps of Tulips, two varieties only, the Clara Butt and Reverend Ewbank, and the planting of these assures us of very early bloom along with the lilacs across the grassy border but I must not talk of our neighbors until I finish this side of the street.

To assure the visitor of a perpetual mingling of gray greens and all shades of greens, are planted many varieties of ferns, the Ostrich, the Royal, the Cinnamon, and the smaller, finer ones, always placing the tall growing ones in the back. While this planting may seem a jumble, yet it was all planned out on paper with a deep attention to colors, seasons of bloom, and heights of growth. The crowning glory of all is the irregular regular sowing, in late May, of the charming Phlox Drummondii but only one color and one named variety, "Chamois Rose," filling in, irregularly, the entire edge of one hundred and fifty feet and any small open spaces that may appear almost scalloping the edge, making a beautiful undulating wave of color. This little touch of pink gives the dominant note all Summer long to the lovely greens when the Tulips and Iris have finished blooming and this Chamois Rose mingles beautifully with the rich white of the double

Gypsophila. I neglected to mention the six clumps of "Bleeding Heart," Diecletia or Dicentra, placed in the full open spaces, just in remembrance of our grandmothers, knowing the effect of the drooping of these dear old flowers, sometimes the leaves of which entirely disappear after blooming but not always. At the end of this border is grouped at the base of the Belvidere, a lovely assortment of named Peonies, the French Hybrids, and the single Japanese. There is a Swiss Mountain Pine (Pinealum), just the right variety of pine in size for this space, to connect the border just described with the "neighbors across the street" meaning a more rugged, higher shrubbery opposite the Pergola border planted to conceal the fence which was always the bête noir of the gardener. Back of the Swiss Pine is a remarkably hardy Japanese bush, in Japan a tree, in southern Indiana a large shrub, not always hardy in every location but here where it is protected with a gray stone wall back of it, it has flourished for many years, the Cercidiphyllum Japonica and as its name implies, a close relation to the American Judas Iscariot tree or "Red Bud." The gardener placed it here for effect and as a specimen, knowing it would be lost as a specimen, pure and simple, in this end of the border grouping but wanting it because of its variety. At that far end of the opposite border rather under shrubbery is a large clump, several dozen of Galtonia Candidans or summer Hyacinth, with sheaves of leaves like the Gladiola and white flowers in July. It is not very hardy but worth trying in order to add charm and variety to the border.

The deep wide border fully eight feet has for its front line alternate clumps of the very choicest named Peonies and Phlox. This arrangement gives with little effort a succession of bloom which we all strive for and wish to attain. If you are a real garden lover and worker you have received "specialty lists" of both Peonies and Phlox—and will be able to choose the colors exactly suited to the colors of the Bleeding Hearts, Florentine Iris, Tulips, etc. In the immediate background next to the fence, the gardener conceived the idea of a row of alternate purple and white Lilacs of the Vulgaris type and there are lovely to behold, mindful of the famous American poet, James Russell Lowell perhaps, who wrote to his friend in the city that he could not leave his garden to visit him "until the Lilacs cease blooming."

In this garden I am writing about, in another location there is another grouping of choice French named Hybrid varieties, Monsieur Lemoine's hybrids but they are of every color and the culture difference, the necessity of keeping down the suckers being a very vital one. In this back border just described the white Lilac is very delicate as compared with the luxurious purple, Syringa Vulgaris, Common Lilac, but it is all worth while, the result being not "Love's Labor Lost" but a solace to the soul in the months following the planting. Between the front border of the Peonias and Phlox and the back row of Lilacs is a wonderful long arrangement of fully four dozen named hardy Asters, the choicest selections in purples, lavenders, pinks and white that could be gleaned from our attractive catalogues.

It is easy to perceive and study that this little bit of the garden gives continuous bloom from early Spring until late Fall.
DAHLIAS are plants of American origin. It is believed that the first known record of anything that can be recognized as a dahlia occurs in Hernandez' volume on the natural history of Mexico, published in 1651. A brief description of the plant known to some of the Mexicans as *acocotli*, is there given, together with two sketches, one of which is reproduced herewith. From that time until 1789, scarcely anything appears to have been added to the literature of the dahlia. In 1789 the Director of the Mexican Botanic Garden sent seeds of wild plants to the Abbé Cavanilles, Director of the Royal Gardens in Madrid, and that was the beginning of the cultivated dahlias of Europe and the United States. This Spanish botanist in 1791 named the plants Dahlia, in honor of a well-known Swedish botanist, Andreas Dahl. The first form that he named he called *Dahlia pinnata* because its leaves were pinnate or feathery; this had semi-double flowers, with the rays in four or five rows. Three years later he named two more forms, or species as he believed them to be, both with “single” flowers, calling one *Dahlia rosa*, because its flowers were rose-colored; and another one *D. coccinea*, because its flowers were scarlet. But so many sports and variations soon appeared, that botanists found in convenient to lump the flowers of the first-known forms were single or semi-double, some of their progeny soon began to throw double flowers, and these double flowered forms became increasingly popular. By 1826 there were sixty varieties under cultivation by the Royal Horticultural Society of England, and by 1841 one English dealer is said to have listed 1,200 varieties, all supposed to have descended from the Mexican stock, mostly single-flowered, that had entered Europe by way of Madrid.

In America, the general catalogue of George C. Thorburn, published in New York in 1838, offered a choice selection of twenty-five double dahlias for $20, and stated that a special "catalogue of double dahlias is published annually, in March, including all the newest and finest in England." Furthermore, in this Thorburn catalogue of 1838, we find that "In the dahlia season (last week of September), ladies and admirers of that favorite flower are invited to witness the annual show, which this season will be surpassingly varied and splendid."

Growers and exhibitors of dahlias recognize several different classes or groups of dahlias, based upon the form and other characters of the “flower” or head. The extremes of form are very pronounced and it is usually easy to say into what class a flower is to be placed; but here, as elsewhere in nature, and more especially where nature has been interfered with by man, the lines of separation are not always hard and fast, and it sometimes happens that a single variety may be found under two or sometimes even three different headings in catalogues of different dealers. The names of the principal classes and their applications as recently defined by the American Dahlia Society are, when somewhat abbreviated and slightly modified, as follows:

1. **Single.**—Open-centered flowers, with 8-12 floral rays, more or less in one circle.
2. **Duplex.**—Semi-double flowers; rays more than 12, in more than one circle, long and flat or broad and rounded, not noticeably twisted or curled. Many dahlias previously classed as paeony-flowered belong here.
3. **Paeony-flowered.**—Semi-double flowers with open center, the inner floral rays being usually curled or twisted, the outer rays either flat or more or less irregular.
4. **Collarette.**—Of the single type, but without more than 9 large floral rays; but with a circle of smaller, narrower, often differently colored, rays standing at the base or in front of the larger rays and forming a sort of collar between them and the open center.
5. **Decorative.**—Double flowers, full to the center, early in the season at least, flat rather than ball-shaped, with broad, flat, somewhat loosely arranged floral rays with broad points or rounded tips which are straight or decurved (turned down or back), not incurved, and with margins revolute, if rolled at all.
6. **Ball-shaped.**—Double flowers, full to center, early in the season at least.

(a) **Show type:** Flowers globular rather than broad or flat, showing regular spiral arrangement of florets, with corollas more or less quilled or with their margins involute (rolled forward or inward). (Dahlias of this type with flowers spotted, variegated, or parti-colored were formerly classed as fancy, a group no longer recognized.)

(b) **Hybrid show, giant show, or colossal show, type:** Flowers broadly hemispheric to flatly globular, loosely built, so spiral arrangement of florets is not immediately evident; corollas broad, heavy, cupped or quilled, with rounded tips and more or less involute margins. Verging towards the decorative class and sometimes found classed with the decorative.

(c) **Pompon type:** Same as *a* or *b*, but flowers (heads) must be under two inches in diameter.

**Cactus.**—Double flowers.

(a) **True, fluted type:** Corollas long, narrow, incurved or twisted, with sharp or fluted points and with the margins revolute (rolled backward or outward), forming in the outer florets a more or less perfect tube for more than half the length of the corolla.

(b) **Hybrid cactus or semi-cactus type:** Corollas short as compared with previous type, broad, flat, recurved or twisted, margins only slightly revolute and tubes of outer florets, if any, less than half the length of the corolla. This type intergrades with the decorative and paeony-flowered classes.

The “cactus” class is one of comparatively modern development and one that has done much to popularize the dahlia in recent years. Its known history goes back less than five decades. It is said that in 1872, a Dutch florist received from a friend in Mexico a consignment of seeds and roots, and that among the mostly rotten...
roots was one that gave rise to a plant bearing a scarlet or crimson flower roughly resembling a rather flat-rayed specimen of a flower of the variety now cultivated under the name of Standard Bearer. This new form had made its way to England by 1879, and was there called the cactus dahlia on account of the similarity of its flowers to those of a showy cultivated cactus, *Cereus speciosissimus*. Nothing like it now seems to be known in a wild state in Mexico, and its origin is shrouded in mystery. It is believed that all of the hundreds of widely different varieties of modern cactus dahlias have been derived, partly by the aid of crossing with the older types—from this one strain in less than fifty years—a most remarkable example of what nature’s tendency to variation can do in short time, when aided and encouraged by man.

In the matter of soil for growing dahlias successfully it has been found by experience that a light loam, with good drainage, is the most favorable. A soil that is good for corn is usually good for dahlias. A light sandy soil will do as well as any, if one can supply sufficient fertilizer and moisture. A very rich heavy soil will sometimes give a rank growth of stalks and foliage and few flowers, but generally speaking, there is little danger of getting the soil too rich. The chances of unsatisfactory results from having the soil too poor are vastly greater than from having the soil too rich. Most any kind of fertilizer will do, but to get the most good from it, it should be well mixed in with the soil and the bulk of it should be from six to twelve inches away from the root at the time of planting. A heavy clayey soil that is inclined to bake down hard in the summer is commonly much improved by spreading on coal ashes or sand to a depth of three to eight inches and plowing it under or spading it in.

Probably the most frequent cause of want of success with dahlias is lack of sufficient water during the hot, dry weather of midsummer. If artificial watering is done at all, it is much better to do it thoroughly and heavily two or three times a week (preferably in the evening) than to give the plants a little water every day. Light watering, as is the case with nearly all other garden crops beyond the seedling stage, is often worse than nothing, as it encourages the small rootlets to come to the surface, where they are easily dried out or otherwise injured.

Dahlias, as a rule, do best in a sunny location. If planted in the shade, they make a week spindling growth and have few flowers. They usually do fairly well, however, when planted near the side of a building, even on the north side, if they can have four or five hours of direct sunlight a day. The vicinity of trees, shrubs and woody vines is to be avoided on account of the drain that such strong-growing organisms always make upon the food and moisture content of the adjacent soil, though these unfavorable conditions may be mitigated to some extent by deep cultivation and by copious watering and fertilizing.

As to the best time for planting dahlias, opinions vary widely, some advocating early planting, some late, and some favoring a compromise date. If one plants in April or early in May, the plants often blossom by the first of July and then if, as so commonly happens, a summer drought follows and one cannot irrigate, the flower buds blast, the foliage turns yellow or looks burnt, growth stops, the stems become hard and stiff, and that is the end of the blossoming for the season. When one plants later, say in June (for the vicinity of New York City and Long Island Sound and southward) one does not get flowers so early, but is likely to get more of them in
September and October when they do come. The young plants, not yet flowering, are not so much damaged by the hot dry weather of summer as older, larger, flowering plants would be and when cooler weather comes and they begin to blossom they keep it up until killed by frost. Much, of course, depends upon one’s location and the length of the growing season. In the northern parts, where killing frosts often come late in August or early in September, it is desirable to plant as early as it is reasonably safe to do so or even to start the plants in the house or under glass before the season for safe transplanting in the open arrives. There are great differences in the varieties as to earliness of flowering, and if one is familiar with their habits in this respect, he can take that into consideration in choosing the time for planting, starting the late varieties early and holding back the early.grow.

For the propagation of dahlias, amateurs use either roots or seeds, though professionals often resort also to pot-grown cuttings and other special devices for increasing their stock. Seeds, if started early, commonly produce plants that blossom the first season, but one never knows exactly what he is going to get from a dahlia seed, and unless he has a plenty of land, a taste for experimentation, or an ambition to originate a new variety of commanding merit, it is better to rely upon roots for new plants. Some people make the mistake of setting out a whole clump of roots instead of dividing it. This is not only a wicked waste of good roots, but the results are usually not so good as when the clump is divided. All that is wanted for growing is a single good shoot, though it is sometimes well to leave two or three until danger from cutworms has passed. The single shoot makes a strong, firm trunk, sometimes suggesting the trunk of a small tree, and one gets larger and better flowers than when numerous crowded spindling shoots are allowed to run.

The beginner should remember that dahlia “tubers” are not tubers in the botanical sense of the word—they are not tubers with eyes or buds like those of the Irish potato. They are simply fleshy or tuberous roots. The eyes or buds are all on the crown, that is, on the base of the old stalk, the base of last year’s stem. If a root is broken off at the neck and planted, no shoot ever comes from it, even though it may send out little fibrous roots and remain alive in the ground all the season. So, in dividing a cluster for planting, it is essential to get a piece of the crown or last year’s stem, attached to each root. If the buds have not already started at the time of making the divisions, it is desirable to get a good-sized piece of the crown with each division, and even then one runs a risk of getting a piece that will never start a shoot. But it very commonly happens that buds or shoots have already appeared before planting time, so one can see just what to do in order to divide a cluster in such a way as to insure the presence of at least one vigorous bud for each division, or the shoots may be forced a little by keeping the roots in moist, moderately warm earth for two weeks or so before the planting date.

It is a good general rule to put the roots or plants three feet apart each way, though some of the small pompons do not require so much room, and when planted in a single row, well lighted on all sides, even the most luxuriant varieties may be put as close as two and a half feet, giving in their full development, a continuous hedge-like effect.

In planting, it is well to dig a hole or trench one or two feet deep, remove all stones of any considerable size, put in a showyel of well-rotted stable manure six or twelve inches from where the root is to be placed, mix it in well with the soil, and, if one has any doubts as to the fertility of the soil, add also a small handful of bone-meal or commercial fertilizer. The root should be laid down sidewise, in stable equilibrium—not stood on end. It should be placed about six inches below the general surface, but should be covered only about two inches at first, drawing in the soil as the young shoot as it comes up, finally leaving the general surface level or slightly concave for convenience in watering.

As is the case with nearly all cultivated plants, dahlias thrive best when the soil is frequently and deeply stirred during the early and middle parts of the season, but after the flowering season is well advanced, they seem to do just as well or better if the surface is only lightly scratched, unless a protracted drought makes a deeper stirring desirable.

Disbudding is to be recommended as an aid in getting large, handsome flowers on long stalks. The buds at the end of the main stem and of the principal branches commonly produce the best flowers and the size and beauty of these leading flowers is enhanced if the buds and branches in the axils of the three or four pairs of leaves immediately below are removed about as soon as they appear. Late in September and in October one can remove these lateral buds with the easy feeling that they would probably never reach blossoming size anyhow before being overtaken by frost.—From Bulletin of Horticultural Society of New York.
Garden Insects and Their Control

ONE'S training as a gardener is not complete until he has learned effective methods of controlling the various insect pests which would rob him of the well-earned fruits of his efforts.

The control of insects should begin even before the garden is planted. Care in rotating the crops so as to avoid growing the same crop year after year on the same ground will help to prevent outbreaks of many insects. Spading or plowing in the autumn will destroy many larvae. Another precaution which should be observed is to clean up and burn any dead vines which might harbor insect life through the winter.

But by the time this issue of the Gardeners' Chronicle reaches you, your garden will be in the making. Immediate measures of control will soon be needed.

All insects can be roughly divided into two main classes from the gardener's point of view: chewing insects and sucking insects. Chewing insects can be destroyed through spreading poison upon foliage which they eat. Sucking insects must be killed through body-contact sprays.

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The tomato hornworm. a, adult moth. b, larva. c, pupa.

The cut worm, one of the most destructive of garden pests, attacking seedlings principally and a source of much annoyance to all gardeners. a, moth or adult with wings expanded. b, larva or worm, in curled up position when feigning death. c, moth with wings folded.

Now and then, ants become troublesome. This is especially likely to be the case in the back-yard garden. Ants, however, can readily be destroyed by fumigating the nests with carbon disulphid. Inject the liquid into

The cabbage worm. a, female butterfly. b, larva. c, last segments of natural position on cabbage leaf. d, suspended chrysalis.

Common wire worm, another destructive garden pest. a, adult. b, larva. c, last segments of same. d, pupa.

The Colorado potato beetle and "slugs" or larvae at work.

Spray of asparagus with asparagus beetle in its different stages. Asparagus tip at right showing eggs and injury.

The common aphis that attacks flowers, fruits and vegetables. a, Winged female. b, same from side with wings folded. c, wingless female. d, nymph in last stage. (Much enlarged.)

The common aphid that attacks flowers, fruits and vegetables. a, Winged female. b, same from side with wings folded. c, wingless female. d, nymph in last stage. (Much enlarged.)

One of the first pests which the amateur is likely to meet in his efforts to increase production is the cutworm. In some gardens, cutworms are very destructive, destroying freshly-set plants and young corn. A paper collar set lightly into the ground and protecting the young plant to the height of two inches will preserve cabbage, cauliflower, kohlrabi and tomato plants.

Where there is no danger of poisoning chickens or
the entrance of the nest with a machine oil can. If necessary, repeat the dose. Remember that carbon disulphid is highly inflammable and do not allow any form of fire to come near it.

The hardest fight which the writer had in his 1918 “war” garden was with aphids. They suddenly appeared in hosts, not only on the garden truck but on the near-by shrubbery. Repeated spraying with nicotine solution soon brought them under control and saved the plants from serious harm. Some of the neighbors who neglected to spray complained that the “green bugs” had almost ruined their vegetables and sweet peas.

Aphids are typical of the sucking insects which must be fought with body-contact sprays. Next, comes a long line of chewing insects: currant worms on currants and gooseberries, leaf rollers and other pests on strawberries, flea beetles and berry moths on grapes; flea beetles and potato bugs on potatoes; corn-ear worm on sweet corn; striped beetles on cucumbers, melons and squashes; cabbage worms on cabbages, cauliflower and kale; green worms on tomatoes; asparagus beetles on asparagus.

But the gardener need not be alarmed at this imposing list of pests. “Corona Dry” arsenate of lead applied before any serious damage is done will control them one and all. Use two-thirds of an ounce or 10 level tea-spoonfuls, to 1 gallon of water. This solution can be applied to delicate plants with safety; it sticks well to the foliage; it can be prepared in an instant; and it leaves a white coating on the foliage which shows plainly what plants, if any, have not received their share of the solution.

Pumpkins and squashes are liable to attacks from the squash-vine borer. This larva lives well inside the stalk out of the reach of the most powerful spray. Other control methods must be employed. Spade or plow the ground deeply to prevent the moths from issuing. Plant an early variety of squash as a trap. Then destroy the early vines. Encourage the formation of secondary roots on your regular vines. I have seen fair-sized squashes matured when the original roots had been completely severed from the vines.

Get your sprayer and spray chemicals now—before the bugs arrive. Sprayers are to be had in great variety for every conceivable purpose. There are small hand sprayers, bucket and knapsack sprayers and a convenient 20-gallon barrel sprayer mounted on wheels. The latter is especially useful for the large garden. It has capacity enough so that one filling suffices to spray a large garden. And it can be readily wheeled to the spot where needed. Such an outfit will be found especially useful wherever there are trees as well as vegetables to be cared for.

Illustrations through courtesy of U. S. Dept. of Agriculture.

Calceolaria Mexicana

HENRY J. MOORE

Of the many species and hybrids of Calceolaria tested as bedding plants in the Queen Victoria Park at Niagara Falls, Ontario, none have done so well as the pretty little C. mexicana. This yellow flowered annual appears to do equally well in full sunlight as in semi-shade and for this reason is more adapted to the climate of certain parts of the United States, and a large part of Canada than any other plant of the genus. Growing to a height of twelve to fifteen inches C. mexicana is splendid for bedding, for planting or sowing in masses along the front of the annual border, or even in the herbaceous border where annuals are sometimes used to fill gaps. When used for bedding the best effect is produced when it is not associated with other subjects in the same bed. The introduction of this worthy plant to our gardens may mean much to the summer display in that a rare color—golden yellow—will be added to the annual class.

Calceolaria mexicana is known only to a few professional gardeners, therefore the majority have not had the opportunity to test it in their respective localities. Perhaps it may prove to be the progenitor of a class of bedding Calceolarias, which will be as easy to grow as the geranium. If so, this class will undoubtedly be an acquisition to American Horticulture. Here is an opportunity for the hybridist.

The culture of Calceolaria mexicana is as simple as that of any annual. The seeds may be sown during April or May in pans in a cool greenhouse, and the seedlings be later pricked off into flats or into small pots from which, when large enough, they should, during late May or June, be planted in their outdoor positions. If necessary shade from strong light should be afforded for a few days.

Of a very floriferous nature Calceolaria mexicana is prolific in seed production, and as the seeds fall naturally in myriads, hundreds of seedlings may appear the following spring, as indeed has been the case with the writer. This indicates that sowings may be made directly out of doors, thus those who have not the facilities of a greenhouse may adopt this practice and sow during late May on a light, finely prepared soil. When the seedlings crowd each other they should be thinned somewhat, and if necessary many may be transplanted elsewhere. It would, however, seem that masses of the plants produce an equally charming effect whether individually they are only a few inches, or fully a foot apart.

On account of its prolific nature the plant in question may in time become a common wayside flower in many localities. The seeds apparently are not injured by exposure to temperatures 10 to 16 below zero, and seem to have the power to germinate under conditions where many common hardy garden annuals would fail. After the winter of 1917-18 plants were found growing in numbers not only in the border where grown the previous summer, but actually along the edges of walks in proximity to the border, these walks being surfaced with finely crushed limestone rock. The plants flowered beautifully in these positions. From this fact it is not unreasonable to expect that C. mexicana would make an ideal subject for dry positions and conditions such as prevail in our rock gardens.

Whether grown under greenhouse conditions or directly outside, the plant will flower in from six to eight weeks. This will indicate how quickly a display may be created. Plants in small pots may be used for edging groups of flowering or foliage subjects under glass, or for incorporating therein. As, however, the flowers fall rapidly, although produced equally rapidly, the subject may be grown to the best advantage out of doors.
Organic Versus Inorganic Fertilizers

ARTHUR SMITH

A another bacterium has the power of fixing the free nitrogen of the air and bringing it into use for the plants of the leguminous order.

Undoubtedly bacteria also play an important part in bringing phosphates and potash into solution. It has been proved that mineral phosphates only work well on soils containing organic matter; this is because the carbonic acid gas generated by the bacteria enters into the water and dissolves the phosphates, otherwise they are very ineffective.

It is clear, therefore, how dependent we are upon the soil bacteria and that it is necessary to do our part in seeing that the soil is kept in a proper condition for their growth. Without organic matter, we have seen that these bacteria cannot live, and this explains why soils fertilized entirely with inorganics become sooner or later absolutely sterile.

Not only do mineral manures contain no humus, but by the acid residues most of them leave in the soil (especially acid phosphate and sulphate of ammonia) and by the bad effect they have on its physical condition, they are actually harmful to bacterial life.

So that from this aspect alone we see that the organic manures are far preferable to those obtained from mineral sources.

One of the world's greatest philosophers said, "There is a soul of goodness in things evil." In a large number of cases the evil is the result of mis-use or abuse, and it is so with inorganic fertilizers. The greatest harm from them is caused when they are relied upon entirely as a source of plant food, but when used with discretion as an adjunct to organic manures they can fulfil a useful purpose. For rapid results, in cases where the object is to stimulate the plant into very quick growth, we may use the mineral forms of nitrogen—such as nitrate of soda, nitrate of lime, sulphate of ammonia, etc.—because they require to undergo practically no change before being taken up by the plant. They produce an unnaturally quick, soft, sappy growth, just the thing we want to avoid in connection with many crops, but, on the other hand just the thing we require in green short-lived crops like lettuce, cabbage, etc., because besides reducing the time these latter take to come into use, they also produce a tender leaf, though, if this is over-done, the produce is apt to be unwholesome as food.

There is also another point in connection with inorganic fertilizers which recent experiments by agricultural chemists in this country have brought to light.

It is now generally admitted that all plants, as a result of their growth, give rise to a certain toxin or poison in the soil, the toxin being peculiar to the particular crop, and, as a rule, a poison only to that crop. In some kinds of plants this is much more noticeable than in others; probably two good instances are strawberries and clover, which, as we know, are difficult to grow continuously on the same site. At the other extremity we have wheat and mangels, which Rothamstead experiments prove can be grown with success for at least a generation on the same soil.

These toxins have probably a great deal to do with the advantages of rotation, as this system gives the soil time to rid itself of these substances, which we must remember are poisonous to the one crop only.

Intimately connected with this matter is the recent work of Russell and Hutchinson on soil sterilization. They found that after the soil had been sterilized plants grew very vigorously in it. The necessity for sterilizing soils is well known to greenhouse men, and the result for the benefit resulting from it is no doubt due to the operation killing the harmful bacteria that feed on the beneficial ones. Owing to its larger size the harmful species is more vulnerable and suffers more than the beneficial bacteria from the sterilization; consequently, after that operation, the latter, being relieved to a large extent of the preying of the injurious species, are able again to flourish, with the result that they carry on their work more vigorously than ever and large quantities of dormant food material are again prepared for the plant. Of course, in this connection the word sterilization is used in a comparative sense, as complete soil sterilization would kill absolutely all forms of life, however minute, and therefore plant life could not itself exist upon a soil completely sterilized.

These remarks on soil sterilization are made for the purpose of leading up to the investigations of the American chemists above mentioned, which go to show that the mineral or inorganic manures act on the soil as a partial sterilizer; that is, to bring about to a slight extent the state of things just referred to; and for this reason inorganic fertilizers are regarded as useful in combating harmful bacteria. This is not, however, a new theory. Over twenty years ago it was believed that acid phosphate prevented the work of, if it did not kill, nitrifying bacteria, and the Rothamstead experiments above referred to prove conclusively that the continual use of acid inorganic manures renders the soil so sterile that crops will not grow upon it. It therefore appears that while inorganic manures may be detrimental to harmful bacteria they are also harmful to, or at least prevent the work of, the beneficial species. This latter point is the basis of the use of acid phosphate under poultry roosts and for mixing with poultry manure, its action preventing the formation of ammonia in the manure and its consequent loss. It must be remembered that it is the acid which inorganic fertilizers contain, not the mineral itself, which acts on the bacteria, and, as above mentioned, the continual use of minerals dissolved in acid will render the soil incapable of growing good crops, or any crops at all. So, that while the theory of soil sterilization by the use of these mineral manures is an interesting one, if correct, it is possible by it to do as much harm in one direction as good in another.

All scientific experimental, and practical work shows the great value of stable manure, but, as we stated at the beginning, this is becoming yearly more difficult to obtain, and in considering substitutes for it we must apply something more than its mere chemical constituents. As pointed out in a previous article, this can be done by the use of green manures, especially by the use of plants of the leguminous order for plowing under by which means we not only supply the necessary humus but nitrogen as well and at comparatively no cost. We must, in this connection, be careful to keep a proper balance. Humus in the soil is imperative, but if present in excess the soil is practically in the same condition so far as the growth of crops is concerned as if it contained...
GARDENERS' CHRONICLE

Gardens— English and American
Lieut.-Col. G. G. WOODWARK, British Army

I SUPPOSE no one ever approaches the subject of gardens without a mental glance at Francis Bacon—and with the refrain ringing in his ears: "God himself first planted a Garden." For in that essay of his seems presented every phase of the artistry of gardening.

And, indeed that is the keynote of any consideration of the subject: Gardening is one of the finest of the arts; a beautiful garden is a work of art, just as surely as is a beautiful picture—or a piece of sculpture. As the painter works with brushes and tubes of color, and the sculptor with chisel and marble, so the gardener takes the most lovely of nature's products, flowers, and moulds them to his heart's desire into a garden.

A beautiful garden demands of the artist who produces it, just as the picture or the sculpture does, a sense of plan or composition; a facility in selection or arrangement; a taste for "lighting" and color. And how far more various and rich are the opportunities of the gardener! For his work of art lends itself to all the progressive effects from "early dawn to dewy eve," to all the changing moods of the successive seasons. It has a hundred "artistic moments," and can be responsive to or conjure forth a hundred moods, of body, mind and spirit. Such an organ for the artist to play upon never was created by mere man; such a power to play upon man's heart-strings was never merely human.

No matter what may be the size of the garden, these things are true of it. The opportunity of creating "a joy for ever" is as ready to the hand which cares for the cottage garden as for the many hands which carry out the will of the master-gardener in palatial surroundings. The spirit that goes into the work, in its conception as in its genesis, is everything. If a true work of art results, that bespeaks the soul of an artist; it is expressive of a personality, of devotion to a thing of beauty. A true gardener's garden becomes a setting for the finest intercourse with chosen friends; or it forms, perhaps, a record of the discriminating and observant traveller—as it were a collected diary of travel, more vivid to the memory than all the written or pictured journals that can be devised.

It is thus, I think, that we in England have been wont to conceive of gardens and to make them. Those who know well our country-side, and have friends among people of varying means and establishments, will recognize that the cottage's Garden, the pleasance of the rectory or of the manor house, the gardens of the bigger places—all present to the visitor something of the spirit of the individual whose work...
English view it. For instance, generally speaking—though decidedly in diminishing degree—one feels that gardens, in America, are the last thought rather than the first, when building a house or making a home. The garden is made to conform to all other conveniences after they have been provided; it is not laid out along with the rest of the place, and given precedence in order of its proper importance. A pathway is needed, say, to run between this and that point on the place. The path is put where it is most prac-

tical—and laid down to cover the shortest distance between the two points it connects. Then, perhaps, when all these useful needs of the place have been furnished, the garden is thought of, and is set out as the remnants of space permit. No really successful effect can be obtained by this process. The lesser buildings should have been placed in due relation to the composition of the garden as a whole; and the paths connecting them should run between, also in due relation to the garden—its flowerbeds, shrubs, borders, etc. The space occupied by the garden should then be filled according to an artistic plan conceived of beforehand—height and coloring of plants or shrubs being well considered; arrangement of them thought out in due regard for seasons of flowering and to provide a changing succession of effects.

The same principle as to laying a garden holds good as to cities: so long as physical convenience and material practicality are given precedence of beauty, there will be little realization of the latter. Gridiron plans of streets may be most convenient for traffic, house-numbering, etc.—but never can the architect's genius excel in such a utilitarian atmosphere, or on such a purely material city-plan. It requires the utilization of curves, of elevations, of vistas, of culs-de-sac even, to provide all the features of the city-beautiful.

So, in planning a garden, every rise and fall of ground should be turned to most pleasing account; and, furthermore, art should devise effects which nature herself has not offered. Intimate nooks, sheltered and secret, can be made in the smallest of gardens; lovely vistas, susceptible of wonderful atmospheric effects, lit by the morning or the evening star, can be opened in larger grounds. Something that will echo laughing gladness, something that offers tender sympathy, can be found in every garden worthy of the name.

These things cannot be brought to pass in a twelve-month; patient upbuilding, year by year, is what goes to make the garden of individuality, as it goes to make the woman or the man of individuality. Modifications and improvements will suggest themselves from time to time, and are of the essence of the joy of gardening—to linger at the task; to watch it grow under one's hand. But to accomplish at one fell swoop all that one first conceives of, is to deprive oneself of half the pleasure of the art,—and confesses, besides, to a limited and stereotyped vision.

No true garden-lover thinks of his flowers and plants by the year, so to speak—any more than he thinks of his children or his friends as mere yearlings. Perhaps in America there is too often this annual attitude of making a garden as spring comes, or as one goes out to one's summer home, afresh, each year. A garden which inherits nothing from last year's care—that is no true garden! A garden should be put to sleep yearly, late in the fall,—tenderly and with thought for each and all the flower-children in its beds,—and the keenest delight is to watch their awakening, and to tend their early needs after the long winter-dream.

It is human artistry, then, more than any other quality, that is needed in the making of a garden: to make the flowers our friends, and thus to provide, through love of those flower-friends, a perfect "pleasure" in which to enjoy the friends we choose from among the circles of humanity.

Extracts from a lecture delivered before the International Garden Club, New York.
The month of May is one of the very busiest of the year for the gardener. During this month every department commands his attention. Growth becomes more rampant every day and young stock in flats and pots, as well as that pricked out in the frames, will in a short time suffer from exhaustion and overcrowding if neglected. To relieve the congestion is always somewhat of a problem at this time of the year.

A bed of coal ashes or of gravel, in a sheltered corner and upon which can be placed either flats or pots of kinds which now require little protection will improve the situation until planting time. Continue planting the various kinds of reasonable hardiness as sweet peas, verbena, the annual phloxes and larkspurs, clarkia, nemesia, always somewhat of a problem at this time of the year.

To be all right for smoothing the surfaces, but the wooden stock and antirrhinum. If properly hardened prior to planting, the foregoing should now withstand any cold weather we are likely to experience. As opportunity presents move the more tender bedding plants from the greenhouse or hothed into cold frames. This protection will now meet the requirements of heliotrope, geranium, fuchsia, begonia and the tender annuals employed in flower garden embellishment. Toward the end of the month it will be safe to proceed with the planting of such kinds as petunia, dahila, zinnia, aster, etc. Subtropical plants, such as canna, caladium, nicotiana and the castor bean are better kept under control until about the tenth of June.

A full list of annuals should be sown in the open ground this month. Some sorts must be sown where the plants are to flower while others will require to be sown with a view to later transplanting. In either case it is important that the seed bed be well prepared. After having dug the ground use a stout wooden rake for the purpose of pulverizing the soil to the depth of several inches; the short teeth of the ordinary iron rake might be all right for smoothing the surfaces, but the wooden rake is the best tool for doing a thorough job. A seed bed does not necessarily imply a very fine level surface, a mere top coat of powdered soil, so fine that it poaches under rain and cracks with the first gleam of sunshine. To be well made the seed bed must be void of all rough clods and cavities under the immediate surface. What is needed is an uniform degree of fineness to the depth of several inches so that seeds may be sown at an even depth in soil retentive of sufficient moisture to warrant germination without the aid of much artificial watering. In exceptional cases artificial watering becomes a necessity, but when the seed bed has been well and properly prepared, generally speaking, the use of the sprinkler should be avoided as far as possible until the seedlings show above ground.

Many of the best annuals are not amenable to the ordinary methods of transplanting and are best sown where they are intended to flower. Among these are poppies, portulacas, gypsophila, lupin, didiscus and mallow. Some of the foregoing may be sown and raised in small pots, but this method of culture hardly repays the extra trouble when excellent results are guaranteed by sowing them in permanent quarters. We raise each variety occasionally throughout the entire period of growth. Sweet peas are also admirably adapted for planting in clusters through the hardy flower border. Trained on wire columns they are at once attractive. We plant them in clumps of about half dozen plants and train them on ordinary heavy wire stakes about four feet long and to these we add extension supports as needed.

Neat stakes should be afforded all plants requiring support. Nothing detracts from the charm of a garden as does slovenly staking. We employ heavy wire stakes whenever practicable and in supporting plants never allow the stakes to protrude higher than the plant itself. As growth advances, longer stakes are used and of heavier quality if occasion demands. For supporting standard roses, heliotropes and standard geraniums, nothing surpasses half-inch iron piping, it is both neat and durable and stronger than wooden stakes of like calibre.

Give the plants good support without its appearing cumbersome, in other words, afford prominence to plants and not the stakes. For supporting top-heavy plants such as peony, hydrangea hortensis, and dahila the "adjust" plant support surpasses anything we know of. Tubs in which are planted bay trees, specimen palms, and other plants used in porch and terrace adornment, should be given a coat of paint before being set out. Such specimen plants require more or less feeding and it is a good plan to give them a top dressing of old mushroom bed manure a month or so in advance of placing them in their summer quarters. This material provides an efficient mulch as well as being somewhat of a stimulant.

Push the work of transplanting evergreens; all evergreens move well now but any planting to be done should be got under way at the earliest possible moment and be pushed to a finish by the end of the month if possible. Spray fruit trees against attack of Collin moth as soon as the petals fall.

Mulch the strawberry bed with clean litter before the fruit is too far advanced.

Clip hedges that need it; privet hedges must be given attention early to keep them in good condition.

Shear the finer leaf evergreens if compactness is desired and pinch out the central growth of side branches of firs and kindred sorts to encourage bushiness.

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Work for May in the Garden
JOHN JOHNSON

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The Gardeners' Chronicle
American Home Garden Service

will assist you in developing a real gardening spirit in your home town, which will promote civic pride and a general community interest.
The Moderate Sized Greenhouse—Its Practicability

W. C. McCOLLUM

In the April number we described the moderate sized greenhouse and its availability for home grounds of restricted areas. Where grounds are small the greenhouse may be attached to the garage, or, as a conservatory, to the dwelling house, and in either case they would occupy space not usually required for garden purposes.

Where ground is available, however, the greenhouse should not be without a modern little workroom attached, for whether it is a single house of small size or an extensive range, the workroom is an important factor towards success in growing plants. The greenhouse must be controlled through proper piping and heating to secure the desired temperatures, and the heating plant can be best installed in and managed from the workroom, as is indicated in the accompanying illustration.

Apart from the general practicability of the workroom, it possesses other features worthy of consideration. It offers a retreat where many pleasant hours may be spent in in-door gardening in inclement weather, when the joys of out-door gardening are not to be had, and many a business man seeks recreation in the workroom and among his plants after a hard day in the city.

The workroom can be made just as practical and just as comfortable as an owner wishes it to be and careful thought should be given to it when contemplating the building of a greenhouse, for it adds materially to the pleasure of gardening under glass.

Let us consider some of the other factors that enter into the success of growing greenhouse plants.

There is no denying the fact that water is without doubt the greatest factor we have in the forcing of plants. By the proper manipulation of water we cause plants to go into the dormant state of unseasonable periods of the year. With water we control insects. Overwatering causes more trouble in greenhouses than all other causes combined, and underwatering is almost as serious, but it is not so common a practice, because the plants wilt and show the need of water.

When plants are dry they require water, and they want it in quantities, not simply the top of the soil moistened. They should have enough water to soak the soil thoroughly. If the plants are not dry, however, they should not be watered with the idea that they might soon be dry as it is certain death to most plants. Keeping the soil wet and soggy will ruin any class of plants other than aquatic, and the worst feature in the danger is not apparent until it is too late to remedy it.

It is a good habit to make a practice of watering when the temperature is rising in the morning. Go over the plants again the first thing in the afternoon, which will give them a chance to dry out before night. No hard and fast rule can be laid down as a guide to anyone. Each one must work out his own method, as every plant, or class of plants, differs, so that it is impossible to lay down a definite rule. Bulbs, for instance, thrive on an abundance of water, whereas if you watered roses in the same proportion, they would be dead in a few weeks.

Equally important as the water is the soil. Without good soil our labors are lost. Certain soils contain certain elements essential to certain classes of plants; thus the soil of New Jersey is particularly adapted to the rose; that of Long Island produces wonderful carnations; while on that of the Hudson the violet holds sway. Commercial growers were not at all slow in taking advantage of their conditions, as men having money invested, usually travel the lines of least resistance, but the problem that faces the private grower is entirely different. They are confined to a location; they want high standards and well balanced results, but no specializing, and their results must be furnished with the materials at hand.
The best way to procure good soil is to take your automobile and make a trip through the neighborhood. Carry a spade along and investigate any old, well-sodded pasture lots nearby. Squeeze the soil in your hand, and if it adheres in a lump it has one good quality, adhesiveness, which all good soil should contain. Try to get as good texture as you can, always add fertility, but if it is sandy, or too much so, you could add all the manure in the world and you would not have a good soil.

After selecting a soil with a good turf top, remove it to a depth not exceeding one foot. Of course, I do not wish to infer that you should go out and deliberately take this soil. You can usually find someone willing to sell a few loads. Usually the price for good soil is about $2.00 a load plus cartage. A house, 18 x 25, requires about five loads for the season.

Make this soil up into compost, using about one-third well rotted manure to the quantity of soil; add one shovelful of coarse crushed bone to about every twelve shovelsful; also add about the same amount of lime. Stack the heap just as square as you can make it so that the good qualities will not leak out during rains. This should be turned over and chopped several times, when it will be ready for use.

It is always advisable to have a small quantity of sand and leaf mold on hand, as there are a number of plants that require the soil to be lightened up by the addition of either one or both of these elements. The sand is always easy to procure, and if you rake up the leaves about your place and stack them instead of burning them, you will have all the leaf mold you require.

Insects and disease should not be a very serious factor in the greenhouse, as we have absolute control over the conditions which cause these pests. Of course, every plant that I know of will be attacked by some sort of insect or disease in the course of forcing, but the plants should be subjected to a close inspection, and the attack of insects or diseases be taken care of in the early stages, before the plants are weakened seriously. Furthermore, the greatest weapon to fight insects with is fumigation, and this is easily accomplished in the greenhouse.

Insects of the Aphis type are held in check with tobacco or kerosene sprays. If they get any headway, fumigate. Insects that eat are controlled by poisonous sprays. Red spider can be controlled easily by proper spraying with a good force of water.

Sometimes slugs, roaches, wood lice and ants become a nuisance around the greenhouse, but they also can be kept in check. The wood lice feed on potatoes; the roaches on a combination of poisoned bran; the ants on sugar and water soaked in a sponge, and the slugs will crawl under cut boards placed around.

The mealy bug is a hard pest to control. Frequent spraying will hold it in check, but to eliminate it, a campaign of fumigation with ——— must be resorted to.

Mildew is a very common greenhouse disease and it is controlled by blowing powder of sulphur on the diseased foliage, or painting the heating pipe with a paste made from sulphur and water is also a very good preventative.

Different temperatures are required for growing different plants. We will consider this factor next month, together with the many different varieties of flowers, fruits and vegetables that may be grown throughout the year in a glass garden.
A FEATURE of almost all old gardens, as well as of the more modern ones, is paving of one kind or another. The intermediate period, when landscape gardening represented the **ne plus ultra** of enthusiastic gardeners, has little of it to show. **Gravel walks** were the order of the day at that time, and paving was out of fashion. Modern garden designers, especially, make a large use of paving of different kinds; and, judiciously employed, it gives an effect unobtainable in any other way.

The broken stone flag is again coming in vogue for garden walks. **Odd shaped flags** with low creeping plants intersecting make desirable paths for the rock garden. Laid across the lawn, as illustrated, it is more a matter of individual choice.

One point which the garden designer will do well to remember is that the kind of paving and the style of the house it is to be near, should bear some relation to one another. "Random" jointed stone paving, simple brick paths, or even **rough - edged stone slabs**, laid as **stepping stones**, will look well with a house of the **cottage** variety; but they would seem out of place in juxtaposition to a house of more pretentious appearance. Of course, if the house is merely an enlarged cot-

Wall Gardening is easily accomplished, and the illustration is convincing proof of its beauty. Apart from the commoner flowers, there is no reason why a Wall Garden should not give as much pleasure, and impart as much knowledge of Alpine Plants, as do most Rock Gardens.
tage, or of the farmhouse style of building, rough paving may accompany it; but, if it is of pseudo-classic design, or follows what are known as the Queen Anne or Georgian styles of architecture, rough paving will look out of place near it, and a pavement of dressed stone flags, properly squared and laid in a formal design, seems to be demanded.

It is just as well to consider the resources of the neighborhood in planning for the paving to be laid in one's garden. In a district where good local stone is to be had, the problem is naturally considerably simplified. The owners of gardens near the seaside will find that, if they collect colored stones from the beach, a little ingenuity will suffice to make possible the construction of very pretty and uncommon pavements.

Tiles may be very effective also, especially in combination with bricks; and, if the tiles are set in edgewise in the ground, the result may be very good. A "random" jointed stone paving on a terrace path, looks very well edged with a brick border, or it may be diversified by the insertion of squares and triangles of brick.

Terraces and paths are the most obvious instances in which the use of brick paving is effective, but small paved spaces, either of brick or stone, are often found round the base of a sundial, and a paved sunk garden may be a very attractive feature. As in all matters of design, so in a garden, the relation of the component parts to the whole is one of the principal things requiring consideration; for, beautiful as each separate part of the garden may be, there will be something lacking if all the parts do not bear a harmonious relation to one another.

Nearly akin to the subject of paving comes that of walls. Dry-walling is really an art in itself, however. That, used as a retaining wall, is the variety alluded to here. Dry-walling as a means of building partition walls is another matter, and one which had better be left to the trained workman. If the amateur should attempt to build a dry wall as a retaining wall, he must pay good heed to its rules or the first heavy rain may bring it down. It should, in technical parlance, "batter back" in the ratio of about one foot to each six of height. By this arrangement, each stone has its back lying a little lower than its face, and thus all the rain that falls runs inward, greatly to the advantage of the plants growing in the wall. The wall will need little foundation underground, but it is essential that the earth should be laid between and behind each stone and rammed tightly in. These walls are especially useful in a garden made on sloping ground, if they are used to face the front of the terraces, and their effect, if they are well carried out, is charming in the extreme.

PLANNING A WILD GARDEN

The art of gardening has developed in a remarkable way of late years. Growers have specialized, amateurs have experimented, the world has been ransacked for rare plants from China to Peru; and a really formidable literature has grown up dealing with the garden under all its aspects. Formal gardens, wild gardens, rock gardens, wall gardens, water gardens, all these have their devotees; and a little library of volumes is dedicated to them, while even the kitchen garden and the herb garden have their panegyrists.

Possibly the wild garden taxes the skill of the gardener to the greatest extent. To be really successful, a wild garden must wear an air of what an Eighteenth Century writer might call an elegant disorder, by no means the same thing as an untidy garden, and not especially easy of attainment. If a little wood adjoins the garden, judicious clearing and planting will give a charming result, and the really cultivated garden may be made to merge gradually into the semi-wild portion. Such an experience as beffel the writer is, however, to be carefully avoided; a zealous but unimaginative gardener, told to plant lilies of the valley in a clearing in a small larchwood on the outskirts of the garden, dug a neat four-sided oblong bed, which looked as out of place as anything could well do among its surroundings, although the lilies flourished exceedingly.

Clumps of Michaelmas daisies look effective in a half-cleared wood, and little crimson cyclamen will soon make themselves at home, while the discovery of their first blossoms some early spring morning will never fail to be a delightful experience. The yellow globe flower, or trollius, which grows wild in profusion in some favored localities, such as the Western Highlands, never looks out of place in a rock garden. Foxgloves, of course, are suitable; so are campanulas, mulleins and poppies of all sorts. Every one knows how beautiful the effect of daffodils, grown in grass, can be; and every one would do well to add scillas, grape hyacinths and fritillaries to their number.

Where there is sufficient space to allow of the multiplication of separate effects, and labor is not a difficulty, a beautiful little autumn garden may be made of nothing but Michaelmas daisies of various kinds. Every one who has once seen how delicate mauve and pink and silvery coloring gains in brilliancy from being massed together in this way will realize that, good as their effect is when grown with other flowers in a mixed border, they look their best alone.

From Christian Science Monitor.

THE PLANT IMPORT PROHIBITION

Simply because the Secretary of the United States Department of Agriculture has pleaded that in his opinion Quarantine Bill No. 37 is scientific in purpose and based on sound principles, it has not altered the minds of men whose opinions, based on practice and facts, and not merely on theory and conjecture, are that the measure is not only unscientific and unsound in principle and undemocratic in nature, but also that the latest action of the Federal Horticultural Board, in the additional power it bestows on itself through its recent amendment, sustains the charge repeatedly made that the entire ruling is most autocratic. Those interested in seeing that horticulture shall not be deprived of its rights, through the whims of a body of men who by their own acts have demonstrated their impracticability in office, may rest assured that amen has not yet been reached in the matter.

THE GARDENERS’ CHRONICLE

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Vegetables for Exhibition and Utility

S. GOLDING

THE month of May is highly important from the vegetable grower's point of view. Seeds must be sown for succession, and most varieties grown in frames or greenhouse will be planted into their final quarters. Thinning, transplanting and hoeing will be the order of the day, for soon the garden will be carrying its full complement of crops.

Beans require relatively warm weather to succeed, especially the lima type, but the string bean will succeed in a cooler temperature. These can be sown late in April, so that danger of frost is past when they appear above ground, and succlussions of seed can be sown on to the middle of August. They are one of the easiest for the individual taste. Both are, however, very desirable vegetables and fine for canning for winter use. The dwarfs have their counterpart in pole beans. These are most productive and last longer in bearing. I prefer the dwarfs, as they are more easily handled, and for the small garden where space for succession is limited, they have a great advantage.

Limas also are represented by the dwarf and the pole types, the dwarf being the earliest of the two. Do not plant your pole limas until warm weather as they are very tender. When planting, allow plenty of room for development, at least two and a half feet between the rows, and thin to one foot apart, as crowding is fatal to good results. The pole limas allow four feet each way, and if the soil is rich, two vines per pole is sufficient, as the growth is dense and if allowed to grow too dense often fail to set. Plant six to eight beans to the hill on account of cutworms, for which a sharp watch must be kept. Poisoned bait is one of the most effective remedies for coping with this nuisance. Look around in the mornings and if a plant is found destroyed the culprit is usually found close to the scene of its recent depredation.

Sow late peas for succession. These thrive well in cool, moist atmosphere; therefore, it is courting disaster to point at to continue to sow for the first crop, but the second week. They are a very uncertain crop. When the days are excessively hot, especially on dry land, mildews often take them very rapidly. Always aim to carry the peas on until the limas and sweet corn are ready for use. Peas sown in April are usually the most productive. They are always appreciated, but the quantity sown must depend on our space to spare for them. Stake early.

Sweet corn must now be planted. This is one of our most important table vegetables and every effort should be made to have it from July until frost. Varieties differ considerably as to the time required to bring them to maturity. The dwarfs again are the earlier, such as Peep o' Day; consequently these require less space than the taller and more robust later varieties, such as Stowell's Evergreen, or Country Gentleman. Due regard must be paid to the selection if we are to maintain a perfect succession. For the latest crop we must again sow the earlier varieties; Golden Bantam is very satisfactory for this. For the dwarfs, plant in hills two and one-half feet apart, and for the taller allow three feet, with about four plants to the hill or in rows nine inches to one foot apart. It is important that the ground be well cultivated during the growing season.

Okra should be sown this month, as this is another warm season crop and it is wise not to hurry the planting. This may not appeal to all as a crop for the Victory garden, but when canned with tomatoes it furnishes the foundation of delicious soups.

Preparations should be made at once for sowing melons, cucumbers, squash, pumpkins and vegetable marrows. They are all easily injured by frost, therefore we must wait until this danger is past before planting out those raised in frames, but the hills should be prepared for their reception. The hills should be about six feet apart, according to the fertility of the soil. Incorporate good rotten manure into each hill and when conditions are favorable sow about twelve seeds per hill and cover to the depth of one-half inch. After they have germinated a careful watch must be kept for the striped beetle, a small yellow and black insect which can always be expected as soon as the plants appear above ground. If measures are not immediately taken to combat its danger it may be fatal to our crop of melons or cucumbers. Light dressings of air slaked lime and soot is offensive to them, and a weak spray of Bordeaux Mixture is generally effective. Thin out when this danger is past.

Pumpkins can be planted with the early corn and can be used as a successional crop. Squash does best in rich soil and for the bush type, hills four feet apart will do, but for the winter squash ten to twelve feet can be allowed.

Sow carrots for exhibition, as previously advised, and about the last week sow also late cauliflower, cabbage and New Zealand spinach, which is a very important hot weather crop.

If not already done, lose no time in planting onions from flats and early celery. Later plant out tomatoes. A trellis is to be preferred for training them on, as it greatly enhances their appearance when growing and they get the maximum of sunlight and air and are easily managed with regard to proper thinning, spraying and picking, when ripe. The hoe should be freely used among the growing seedlings to keep the soil stirred or cultivated among growing crops, as this is most important and beneficial to their welfare. Also proper regard must be paid to the thinning and it should be done as soon as possible, when the seedlings are large enough for the purpose, leaving the stronger and most robust. If this is neglected, weak and spindly plants will result.

In the case of early horn carrots or early beets, where they are for immediate use, thin lightly, as these develop quickly, and a great saving of space is effected by going carefully over the beds and using the largest as soon as fit, thereby making room for the less robust to develop.

Towards the end of the month plant out peppers and egg plants, if the nights are warm enough and the weather settled, but we must use judgment in doing this because a check is to be avoided. Plant out more lettuce to keep up the supply as long as possible, but after this month it is difficult to maintain a supply of head lettuce and special treatment must be afforded them to succeed during the hot summer days. Endive is a good substitute when well blanched, and will stand the heat better, while also a cold weather crop.

The secret of all success in vegetable growing is to keep a free and uninterrupted growth from the seed bed to the kitchen.
The Appeal That Trees Make as Memorials
FRANK B. MEYER

WHAT ought to be considered in erecting a monument is not only the commemorated person but the effect also that the remembrance of him is going to have upon those who come after. In this respect trees surpass structures of stone or of any other lifeless material. They occupy so large a place in man’s thought and make such an appeal to sentiment.

That this is but natural is easily realized when one considers how important trees are to man’s very existence. To the millions of China and Japan’s inhabitants the bamboo is turned to countless purposes. To other millions of humans the banana is almost of equal serviceability—much more useful, in fact, as food. Over a large portion of the earth’s surface that has been the nursery of civilization and culture, namely, the northern lands of the Mediterranean regions, the olive has afforded a most necessary constituent of human sustenance. The palm, which is divided into 132 genera and about 1,100 species, has not undeservedly been called the Prince of the Vegetable Kingdom.

But the palm, like other trees generally, makes its appeal to man’s spirit also. Lord Nelson’s motto, Let him who has earned the palm bear it, reminds one that the palm is the emblem of victory. It early became such to that people so keenly intellectual and so characterized by a restless striving toward the ideal, the Greeks. They observed that no matter how heavy might be the weight imposed upon the long and large stemmed leaves of that tree these stems and these leaves were never broken and always again resumed their former shape and posture. And the olive became the symbol of peace and good-will among men as it was disseminated in the spread of civilization from one tribe to another. In a hot climate it yields with little labor the oily matter that is so essential to health and human life. The appreciation of this was lovingly recognized at the center of the old world’s culture, the city of Athens, where upon the Acropolis grew a sacred olive tree. It was believed to have sprung forth from the ground when this was struck by Athena’s spear. This goddess of wisdom and of the arts contended, for the privilege of naming the city, with Poseidon, god of the sea and reputed sire of the war steed. Her gift was esteemed better than the horse which her opponent presented. Burned by Xerxes and his Persians it renewed itself from the roots to remind the people for centuries of the things from which true prosperity and real happiness spring, that is, the things of the mind.

In the later capital of the world unhappily grown somewhat more materialistic was cherished a sacred fig tree. The Romans revered it for its having furnished with fruit the twins Romulus and Remus who were being miraculously guarded in the cave close by the tree in order that they might grow up and the one, in accordance with fates, found the city and the race to which he was to give his name. The tree continued long to symbolize to this dominant folk the bounty of the earth that fed it. And but recently, in this same old capital city, when President Wilson entered it he was presented with branches of laurel and of myrtle. The learned professor of the University of Rome who bestowed them explained that in the olden days the laurel signified purification after the shedding of the blood of an enemy and the myrtle was used after civil war had ended. The will of Zeus, who sat upon the supreme throne of the Greek gods, was supposed to be capable of interpretation by priests from the rustling of the leaves of certain oaks.

The introspective Romans found within every tree a spirit life akin to their own. In the thought of these two ancient peoples from whom have been inherited nearly all the beginnings of modern civilization trees have played an indeed prominent part. Odysseus, most austere of Greek heroes, at a time of distress when he greatly needed to gain the favor of a princess into whose presence a hard fate had strangely borne him, likened her, in grace and beauty to a young sapling that he had seen growing up at Apollo’s venerable altar in holy Delos. The Roman Horace, whose genial but most earnest philosophy has an immortal charm for those who are prone to read it, the poet philosopher inculcating the Golden Mean, bids one to consider the trees: it is the loftiest pine that suffers from the blast; the one that lifts its head not so high need not fear the winds.

Likewise the Holy Scriptures of the Jews make abundant references to trees. The wicked spreads himself like the green bay tree; but he is soon cut off and is not.

Trees have everywhere stirred to deep and pious
thought. The children of the dismal northland, not so intellectually bright as their cousins of the isles of Hellas that through the translucent atmosphere sparkle in the azure season as those of sunny Italy, believed that they had descended from trees. To them the oak was especially sacred and upon their minds the mistletoe, so mysteriously parasitic to the oak, made, when found by the priests in solemn pilgrimage, the deepest impression. Indeed the “groves were man’s first temples.” And when the Greeks, who seem by unfailing instinct always to have been exactly correct in their aesthetic sensibilities and expressions, began to construct for the god that their artistic imagination had reduced into concrete representation of the transcendent beauty and for themselves shelters from the rain they retained, so far as was possible, the form of the grove. The enclosing columns of their temples at first actually consisted of the trunks of trees. It was thus that originated that style of architecture that in public buildings and in bank buildings even to-day is so pleasing and so satisfying. And that most wonderful of modern temples of worship and perhaps most wonderful of all buildings, the Cathedral of Cologne, is so beautiful not because of its splendid spires of faultless shape and symmetry and proportion, not because of its marvelous expanses of marble walls perfectly constructed, and not because of its windows of stained glass through which “to everyone standing within,” as Hawthorne says “every ray of light reveals a harmony of unspeakable splendor,” but because of the forest-like upspringing and branch and bough-like merging at the top of the white columns and arches of its interior. So Ruskin is surely right in advising architects to leave the towns and to go out in order to take their lessons from Nature.

By this admonition of the great art critic is suggested one of the benefits that is going to result to the American people from the increasing attention that is being paid to gardening. Enlarged appreciation of the wonders of plant life, wonders that grow amazingly and work everincreasing enchantment, is certain to develop a much needed sensitiveness to the beauties of Nature. By this admonition of the great art critic is suggested one of the benefits that is going to result to the American people from the increasing attention that is being paid to gardening. Enlarged appreciation of the wonders of plant life, wonders that grow amazingly and work everincreasing enchantment, is certain to develop a much needed sensitiveness to the beauties of Nature.

The appeal then that trees make is due largely to the fact that they have life. They spring up and grow like man. They stand with them through the changing seasons and, supplying many of his necessities and giving him comfort, they confirm and temper his spirit and animate its hope.

There is a story that once lived a sceptical and unbelieving nobleman who, when he came to die, gave order to erect above his grave a huge mass of granite. To make the meaning unmistakable an inscription proclaimed the hope in immortality vain and the resurrection a myth. But the rain and the frost began to work in a tiny crevice of the rock and the wind lodged there the seed of a tree. It sprouted and the roots made their way little by little within. In time the ponderous mass parted asunder and the sepulchre to prove that life is stronger than death.

"'Tis life whereof our bones are scant; 'Tis life for which our souls do pant; More life and fuller than we want."
EASTER has passed and we all gladly welcome May. Liliums and other seasonable plants are finished and they make room for the fruit trees in pots, which have been somewhat crowded the past few weeks. Give these plants more space now and they will repay. The earliest lot were set last month and some part disbudded. The later ones should receive the same attention. Give the plants plenty of water and syringe them twice on sunny days. Keep the paths damp the whole time, as they dislike a dry atmosphere. Thinning of the fruits should be done again, being careful to remove all the deformed and smallest fruits. A point to remember is that thinning only refers to an overabundance of fruits, for a light set requires no thinning whatever. The final thinning should take place when stoning is past. To ascertain when this period takes place, cut a few fruits in half and, if the stones are quite hard, they are all right. When the fruits attain the size of a walnut, the plants should be surface dressed. The better plan is to place a round piece of tin inside the pots or pieces of sod, leaving a space in the center for watering. Top dress with rich food, loam, bone and a small portion of soot well balanced. Watch the temperature; the night temperature can be raised to 60° and the day to 70° or higher with sun heat and ample ventilation. Fumigate every ten days with nicotine, as the fruits are unlike tomatoes and will not stand cyanide.

It is usual and interesting to grow along with the Nectarines at this season some of the Florida plants such as Genoa Lemon, Homosassa Orange, and Oneco Mandarin. Give the mums every attention. They should be in cold frames at present, protected at night from frost, and plants struck in April should now be in three-inch pots, which will suffice if they are to be grown in the bench. But if grown for pots on single stems for large blooms, repot into four-inch pots as necessary. They all can be given final quarters by the end of May, and the soil must now be coarser. Chopped sods, three parts, a little leafsoil and rotted manure the other part, and mix a six-inch pot full of Godfrey's Bone to each bushel of soil. A sprinkling of soot will kill the worms and help the plants.

Young carnations in the frames should be given full ventilation, and if not wanted in the house until July, should be planted outdoors in an open situation on well-drained soil. Give a sprinkling of soot over the carnations, which will help to keep the midge off and other troublesome pests away.

Grafted roses are to be preferred for forcing, but this year's stock is limited and many will have to content themselves with one root. The latter require less root room, less water, and heavier loam, but otherwise the culture is similar. If your neighbor is fortunate to get grafted stock, don't be surprised or feel that yourself or your man is at fault. If your neighbor cuts two crops of roses before you cut one, remember that grafted roses are the best beyond doubt and a little explanation like this is necessary perhaps in order to avoid misunderstanding.

Gloxinias in bloom need more air and less humidity. They will then continue in usefulness for a longer period. Cattleyas can go outdoors under the trees at the end of the month. Dendrobiums that were a glorious sight at Easter should be cleansed of old scaly growths and, if necessary, repotted. When nicely established they can go outdoors. This is strictly American culture. Do not study foreign gardening books, if you wish to be successful. Study the climate and adapt yourself to conditions as they are, and failure so often will not result in the case of orchids. In the old countries they give all their orchids a period of rest, and it is suitable and necessary; but in our sunny climate rest means ruin to orchids. They are growing and flowering most of the time, and Cattleyas will often make rapid growth and flower twice a year in this country.

Celosias should be potted on and use horse manure in the final compost. These beautiful plants will fill up any empty space made by the removal of palms.

Azaleas must not be thrown away but kept green and the soil kept free. Set the pots in a somewhat shady place in ashes to keep cool. Syringe with soot water and drive off angle worms and they will make finer plants next year.

Adiantums need shade, and a dusting of air-slaked lime is useful to kill snails; also to invigorate the fronds. These plants dislike steam heat or hot water pipes, and a cool bed to stand on, a good bench of coal ashes with no pipes underneath is ideal.

Cyclamen should be started now, and it is cheaper for the smaller place to buy seedlings in small pots from the specialist who raises them by the thousand. When these young plants are received, be careful not to break the roots and transplant them to small pots in soil made of half leafmold and sand, with cinders for drainage. Grow in the cool, shady frames, and syringe overhead several times daily and they will respond. Insects must be kept away, as one of their common defects of crippled growth is caused by green fly.

Don't fail to sterilize all plant stakes to be used, and the hook or base of the usual rose stake must be washed in hot water and steeped in Fungine. This operation is generally overlooked, I know, but many a case of rust and other dreaded fungus diseases are transmitted to the soil by carelessness in this respect. We cannot put new wine into old bottles.

ORGANIC VS. INORGANIC FERTILIZERS (Continued from page 157)

no humus at all. To prevent excess of acidity which can be produced by the use of green manures, the application of lime is essential. The various uses of lime were pointed out in a previous article.

The general conclusion of the matter of Inorganic versus Organic fertilizers may be summed up as follows:

Stable manure, green manures and other organic materials to supply humus, and thus improve the texture of the soil and enable a goodtilth and seed bed to be obtained: to give plant food, which comes into use slowly and continuously thereby promoting healthy growth. Use the mineral sources of nitrogen as a top dressing for rapid growth and other inorganics which act quickly for securing available plant food in the early life of the plant so as to carry it on until the slower acting organic fertilizers become available.
Some Practical Hints on Carnation Culture

WILLIAM GRAHAM

In the growing of carnations, as in any other undertaking, we must begin right in order that we may end right. In this case the taking of the cutting is the beginning point. Propagation of the carnation may be begun in January; select cuttings with great care as future success depends on the start. I believe the best cuttings are those taken from the flower stems and the nearer the bud the better, as experience has shown that these cuttings will flower much earlier. In the absence of a regular propagating house a side bench in a house that will maintain a temperature about 58 deg. to 60 deg. at night may be considered suitable, but this bench must have bottom heat; the best and cleanest sand you can get is not far to seek. New sand is preferable to that already used; it is a good plan to use sand from the roots of the plants; in the case of fineloamy sand the roots are generally large enough for the first potting, and this potting; in the case of fine loamy sand the roots are liable to break off leaving us nothing but the callous. Harm might be done if the land had not the proper drainage over which acid phosphate is again sprinkled, making it a contributory cause of the splitting of carnations in the dull months of winter. The essential thing is to get the food elements required by the carnation into the soil. There are several good ways to prepare soil and undoubtedly every grower has the best.

Let us now consider the houses are ready to receive the plants, the first thing to do is to shade them temporarily for about a week. The plants from the field will do better if lifted while the ground is dry, never immediately after rain, as the dryer the ball of the plants is, the quicker they will take to their new quarters and root action will be more rapid. After the plants have been set we should be able to see the tip of the field ball on the surface of the new soil in which they are planted—no deeper or we are courting trouble in the form of stem rot. This is one of the most important of the fungus diseases of the carnations. This disease is very common and widely distributed. It sometimes attacks the plants in large numbers which makes it difficult to control, and I do not believe there is any satisfactory method of control other than the practice of good cultural methods, and as I have said good drainage, open thoroughly aerated soil are advantageous, and in digging

WILLIAM GRAHAM

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and handling the plants, care should be taken to prevent breaks and bruises which form points of infection.

The space required for planting is according to the strength of the varieties grown. After the house has been planted give each plant a good watering, but do not water all over the bed for the first 10 days, but keep the house tight and warm, and keep well sprayed 2 or 3 times a day until the plants have taken hold in their new quarters. Then the shading may be removed and plenty of ventilation given. All that is required now is careful watering and this must be done by a man that is interested in his work, the dry places must be picked out and watered, leaving the rest of the bench until it requires water, which may be the next day. Watering, we are all agreed on, must be done, and as we advance into the winter every precaution must be taken that the soil does not become soggy. We must not forget that from the time of planting light cultivation of the surface soil must be kept up. During the summer months the temperature is hard to regulate, but we can cool by means of spraying and damping, with many syringing is a question whether it should be adhered to or not, but even in winter I believe carnations should be syringed at least twice per week with an occasional spraying of salt water, say every 10 days.

Extracts from paper read before the Westchester & Fairfield Hort. Society.

How to Propagate Perennials by Cuttings and Division
T. SHEWARD

Most perennials are raised best from seed, but as seeds of named varieties do not always come true, cuttings are more reliable. Fig. 1 shows a Delphinium cutting taken with a portion of root attached which is the proper way. Fig. 2 shows the wrong way to make a cutting. Fig. 3 shows a hardwood cutting of lilac. These are inserted in pots and placed in a cold frame to root. Green cuttings and suckers can also be taken. Fig. 4 shows a Hollyhock cutting; Fig. 5 a cutting of Michaelmas Daisy; Fig. 6 and Fig. 9 Phlox cuttings; Fig. 8 cutting of Campanula latifolia; Fig. 10 propagating Iris by division; Fig. 7 Clematis cutting. These root easily in sand in the greenhouse. Green cuttings and suckers can also be taken. Fig. 23 Oriental Poppy; Fig. 24 Aquilegia cutting; Fig. 25 Viola or Pansy cutting; Fig. 26 Aubretia cutting. The green tips root easily in spring. Figs. 21 and 22 heel cutting of Roses. Root-cuttings of Oriental Poppies, Phlox, Hollyhock and many perennials can be taken if needed. The roots are cut in pieces about one inch long and handled like ordinary cuttings. The top should be cut off straight across the bottom in a slanting direction. This is to prevent the cuttings from being planted upside down. Fig. 19 shows a piece of root cut up into pieces one inch long. Fig. 18 shows a root-cutting. Fig. 17, how the cutting will grow. Fig. 11 and Fig. 12 show cutting in sand. These can also be laid flat. Fig. 20 Lily of the Valley, propagated by division of the crowns Figs. 14 and 15. Most perennial cuttings are handled in a cold frame or under a hand-glass or Cloche 'til rooted. These are kept shaded from sunshine and syringed daily 'til rooted, when they are transferred to nursery rows or the perennial border.
DON'T think that I am not a gardener, for I am. I was born in it, apprenticed to it, it has been my lifelong vocation and I love it. And don't think that because I am now buried in a cemetery my interest in gardening has ceased or lessened, far from it. I am as vitally concerned in flowers, fruits and vegetables, in landscape work and decorative gardening today as I ever was, but necessarily in a more limited field than formerly. At the same time my mind and soul are with you in your calling, and I am heartily glad to be here among you and have you here with us.

Among the many occupations of men, gardening has an interest and charm exceeded by none; there is a spirit of fraternal fellowship among practical gardeners never approached in any other calling. There is a growing and permanent fondness and fascination about it no other work approaches. This being so we naturally expect and find among gardeners a superior, congenial and kindly-hearted people. Adam, the world's first gardener, was put into the Garden of Eden "to dress it and to keep it," and ever since this has been the work allotted to us. Pretentious gardens, however, are too pective and find among gardeners a superior, congenial spirit and determined to do better than he ever did before and resolves that in the future his place shall be maintained in as fine condition as any place he had visited in his travels, so when my distant friends visit him they shall speak in praise rather than criticism, and he shall be pleased to have them rather than afraid to meet them. He is filled with a spirit of pride and rivalry. And surely this is to his employer's interest.

A gardener is naturally a reader. Our vocation is so varied in detail it behooves every progressive, ambitious man to keep posted in the subject of his work. We have many good books on gardening—general, special and reference, and it is a pleasure to delve into them; we also have excellent periodical literature on garden, florist and other horticultural matters. We peruse these papers for opportune subjects and to keep posted as regards news, timely practical matter, varieties of plants and flowers, etc., in fact, we eagerly await their coming and at once plunge into their pages. This is one of the reasons why gardeners are so well posted, so versatile and critical. Now, if we profit so much from the information contained in these papers, are we not forbidden to "light a candle and put it under a bushel?" If so, then jot down any little thought that may come to you which would be of benefit to any other gardener and send it to the editor. Don't growl at the shortcomings of the paper, get out your own pencil and tell what you yourself know and be happy in helping another for "it is more blessed to give than to receive" even as to information about plants or flowers.

When it comes to professional gardeners who have launched into commercial life, making a success of it, their names are many. We have John N. May, the rose grower, and Charles H. Totty, the new plant specialist of New Jersey; William Nicholson, the carnation grower, and Thomas Roland, of Massachusetts, whose splendid acacias and heather are a special feature of our Metropolitan flower shows; W. A. Manoa, of New Jersey; the Farquhar brothers, of Massachusetts; our own Sam Mc-Clements, of Pennsylvania; Adam Graham, of Ohio; Walter W. Coles, of Indiana; Fred L. Atkins and William H. Duckham, New Jersey, and many more. Among those who have taken to practical botanical work are James Gurney, of St. Louis; Peter Bissert, of Washington; Robert Cameron, of Harvard; the illustrious E. H. Wilson, of Chinese renown, now of the Arnold Arboretum; G. H. Pring, of the Missouri Botanical Gardens, and W. Free, of the Brooklyn Botanic Garden. And although gone, but never to be forgotten I cannot omit my dear old friend and crony, the late William R. Smith, of Chicago, graces the editorial chair, as to information about plants or flowers.

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Prominent park superintendents who in earlier life were trained practical gardeners are not numerous, but standing head and shoulders over most of them are...
From Here, There and Everywhere

Beauties of Outdoors Seen and Told by Daniel Webster

Growing up where the farm acres stretched widely around, and with the shows and the plants at the Stars and Webster, he began to learn the secrets of plant life. Daniel Webster, the boy, had the seeing eye and the receptive sense that made these glories his own, as is evident from the frequent vivacity with which they reappear in the marvelous eloquence of the man.

The classic letter he wrote from Washington to his farmer, quoting at length a "very sensible old author," who turns out to be Virgil, is familiar; and one who was a guest at Marshfield recalled a night when he and his host walked out under the stars and Webster, after being silent a few moments, repeated part of the eighth Psalm—"When I consider thy heavens"—leaving his hearer, when the deep, low tones had ceased, feeling as if he had been in a sacred presence. Less well known is a meditation upon the sunrise contained in a private letter written from Richmond while visiting there in 1847.

"It is morning," he writes, "a morning sweet, fresh and delightful . . . . Everybody knows the morning in its metaphorical sense. . . . But the morning itself, few inhabitants of cities, know anything about. . . . With them morning is not a new issuing of light, a new bursting forth of the sun; it is only a part of the domestic day, belonging to breakfast, to reading the newspaper, answering letters, sending the children to school, and giving orders for dinner. The first faint streak of light, the earliest purpling of the east, which is the crossings up to the great wings of the sun, coloring into orange and red, till at length the 'glorious sun is seen, regent of day'—this they never enjoy, for they never see it.

"King David speaks of taking himself the 'wings of the morning.' This is highly poetical and beautiful. The wings of the morning are the beams of the rising sun. Rays of light are wings. It is this rising sun of righteousness which shall arise with healing in his wings. . . . I never thought that Adam had much the advantage of us, from having seen the world while it was new. The manifestations of the power of God, like his mercies, are 'new every morning,' and fresh every moment.

"We see as fine a rising of the sun as even Adam saw, and its risings are as much a miracle now as they were in his day, and I think a good deal more; because it is now a part of the miracle that for thousands and thousands of years he has come to his appointed time without the variation of a millionth part of a second. Adam could not tell how this might be."

Exchange.

Laurel Philology

In ancient days, the Greeks made use of wreaths to reward heroes, poets and victors in the Pythian games. These wreaths were usually made from the laurel of Southern Europe, known botanically as Laurus nobilis. In the course of time, such wreaths came to be used to distinguish the successful in any endeavor, whence the expression "to win one's laurels." In a similar way the word laureate indicated one who had won the coveted wreath or crown. Apparently laurel was also in favor for indicating academic honors and when loaded with its berries (Lat. bacca.) is reputed to have given significance to the word baccalaureate if it did not, in fact, directly suggest it. The word bachelor seems to have been derived from the same general source—though it is hard to see how a bachelor is entitled to any sort of laurels. Many who are familiar with the laurel in literature, are quite unaware that it is the very same plant that yields the bay leaves, so frequently used in cooking. In the Old World, the firm, evergreen leaves of this plant, interwined with holly, were used for Christmas decorations from ancient times. In America the bay is a very common plant, though few who see it recognize it as the laurel so highly regarded by the ancients. As a tub plant it is ever present in hotel lobbies, restaurants and courtyards, though in such places it is so clipped and trimmed, that the phrase "under the green bay tree" would apply only to the tub in which it grows.—American Botanist.

More Varieties of Plants Needed

Gardeners often complain of the long lists of varieties of each species of cultivated plants. To the laity the multiplicity of names is confusing and discouraging. Often there is cause for complaint but it should be remembered that each variety represents an effort by some one toward plant improvement, even though nothing was done but to select an improved strain of an old variety. No variety will do well everywhere and we are coming to realize that our efforts should be directed to the breeding of varieties for special purposes. We grow tomatoes, cucumbers and lettuce both out of doors and in the greenhouse. There are a few varieties better suited to each method of culture, but we are still in need of more intensely specialized sorts for particular purposes. This is true in all classes of cultivated plants.

Those who grow apples for home use will experience no difficulty in finding varieties of apples for special purposes. We grow tomatoes, cucumbers and lettuce both out of doors and in the greenhouse. There are a few varieties better suited to each method of culture, but we are still in need of more intensely specialized sorts for particular purposes. This is true in all classes of cultivated plants.

Everyone who is working with plants is capable of improving them by selection which is often just as effective as the expert's elaborate methods.—W. J. Green.

Congressional Garden Seeds

In the spring a congressman's fancy lightly turns to free garden seeds. So plastic is he to the solicitations of the representative farmers that he says to his clerk: "Send our mailing list to the federal seed-bin in the basement," which, having been done, he takes up other affairs of state.

A few days later the constituent's heart is warmed as he takes from his mail box a franked package of assorted seeds, together with a franked letter, bearing the warms regards of his congressman.

The gift package is no indication whatever that the congressman saw a cucumber seed from a shoemaker, or that he cares a peppercorn for the fortune of the constituent's sweet corn, or that he knows whether the recipient lives in a fourth floor flat or on a half-section wheat farm. This performance is but the annual carrying out of an ancient custom established no one knows when, and still honored, as All Fools' day and Halloween are honored.

In its inception this custom was doubtless a follow-up favor to the constituent. Why it took the form of garden seeds, no one seems to know. It could as well have been the gift of a spring hat to the wife, or of a necktie to the constituent himself. Ordering in large quantities, congress could get reasonable figures on hats and neckties, if taken as report says congressional garden seeds are taken; from left-over merchant stocks of years gone by.—Minneapolis Tribune.

Federal Land Bank Loans to Eastern Farmers.

The farmers of the First Federal Land Bank District are reported to have received 2,695 loans, aggregating $7,406,345 from the Federal Land Bank of Springfield, Mass. The district comprises the six New England States, New York and New Jersey. The Federal Land Bank at Springfield was chartered under the Federal Farm Loan Act for the purpose of loaning money to the farmers of this district on long time, easy payment mortgages. Loans may be made only to bona fide farm owners who supervise their own farms or to persons who are about to purchase farms which they will themselves operate.

Loans under the Federal Farm Loan Act may be used for the following purposes and none other:

To provide for the purchase of land for agricultural uses.
To provide for the purchase of equipment, fertilizers and live stock.
To provide buildings and for the improvement of farm lands.
To liquidate outstanding indebtedness of the farm.

Now that the war is over, farmers are considering extensive improvements. It is becoming well understood that most successful men have grown prosperous through the wise use of credit. Federal Farm Loans are especially planned to be of service to the man who knows how to make money. They encourage thrift by providing practical plan for repayment.

Federal Farm Loans are made for a long period—35 years—yet at any interest date the farmer may pay as much as he wishes on the principal of his loan. Otherwise, he continues to pay 5 1/2 per cent interest and 1 per cent on the principal yearly. The principal gradually disappears until with the last payment the mortgage is canceled.

If for lack of funds, you have put off making investments needed to bring your farm to full productivity, investigate the Federal Farm Loan easy-payment plan.
A note in Science suggests that some specimens of the American chestnut tree may be naturally resistant to the chestnut bark disease, which has swept large areas of this country bare of chestnut trees and bids fair to exterminate this valuable tree entirely. Living specimens, however, have been found in a region from which the blight had removed practically all the trees of their kind and other specimens of chestnut have been found that are still thriving in spite of the fact that they have been attacked by the disease and bear healed scars to prove it. If these trees prove to be really resistant, a new race of chestnut trees may be developed, to take the place of the variety now rapidly nearing extermination. The resistance of the chestnut to the attacks of the bark disease may also throw an important light upon certain phases of forest botany. There are many regions on the earth that show by their fossils, that trees now unknown to the region, once flourished there. To account for the complete disappearance of a species from a region, some climatic or geologic cause has always been invoked, but who knows how many times in the past, entire forests have been swept away, not by a great convulsion of nature, but by the silent though deadly onslaughts of some microscopic pest?

The Species Conception

Is there any such thing as a species? Time was when even the botanizer believed himself capable of distinguishing species in all but the most difficult genera, but the technical botanist has continued to refine his idea of species until even the specialist finds it most impossible to correctly interpret species made by others working in his chosen field. An excellent illustration of this is found in a recent contribution from the United States National Herbarium in reference to the allies of Selaginella rupestris, one of the fernwoods. The author, G. P. Van Eseltine reports that L. M. Underwood's type sheet of Selaginella arenicola contains twelve specimens, six of which are true S. arenicola and the other six represent probably two other distinct species. In his day, Underwood was reputed to be an accomplished and skilful species-splitter, but he certainly must have been a bungler in comparison with present day operators, if he could mistake two different species for a third one and mount all on a single sheet as typical of a new species. The so-called new species are simply the old species split still finer. Carried to its logical conclusion, the modern species conception makes the individual and the species synonymous and thus ends the matter. It has been well said, that species are merely judgments. All that modern refinements in species making has shown, is that the ordinary species has no definite boundaries, but may be considered anything the namer cares to make it. The ecologist who has investigated the causes that affect the external appearance of plants, is often amused at the importance attached to some insignificant variation points by the systematist who seizes upon it to establish a new genus or species. If the ecologists were not attending to more weighty matters, they would make so many reductions in species names as to give the name-tinkers a shock from which they would never recover. Some day this is sure to happen. We stop here just long enough to point out that fact.

The Gardener and his Wide Field of Endeavor

(Continued from page 171)

Theodore Wirth, of Minneapolis, and John Dunbar, of Rochester, both trained gardeners.

Among the great cemeteries of the country several of the superintendents are trained practical gardeners, to wit: John Reid, of Detroit; Robert Campbell, of Louisville; James Currie, of Milwaukee, and William Salway, of Spring Grove. The superintendents of four of the largest cemeteries in Pittsburgh are apprenticed-trained practical gardeners! They are Hopton, of West View; Youden, of Uniondale; Allen, of Home-wood, and myself, of Allegheny, and each man of us has a mighty good job.

The above will show that there is a wide field for gar-
THE ASSOCIATION’S NEW OFFICE.

In line with the association’s general progress, its executive board reached the conclusion recently that the time was opportune to launch into greater activities and broaden the association’s influence and, as a first step in this direction, it decided to open headquarters in New York City to provide a more central location. Accordingly an office was opened on the first of May at 286 Fifth Ave., New York. The office hours will be 10 A.M. to 3 P.M. excepting by special appointment.

Another step taken has been to advertise the Service Bureau, which, with the new office, will be more available to country estate owners, and the following card will hereafter appear regularly in Country Life and other like publications as they are selected.

OF INTEREST TO COUNTRY ESTATE OWNERS

The National Association of Gardeners takes this opportunity to introduce its service bureau to the owners of country estates and to place it at their disposal when requiring the services of competent gardeners—in the capacity of superintendents, head gardeners or assistant gardeners—thoroughly qualified in every particular to assume the responsibilities placed upon them.

This bureau is maintained entirely at the expense of the association and makes no charge to the employer it may serve, or to the gardener it may benefit. Those desiring to avail themselves of the services of this bureau may apply to:

NATIONAL ASSOCIATION OF GARDENERS, 286 FIFTH AVE., NEW YORK

M. C. Ebel, Secretary

OUR 1919 CONVENTION.

President Robert Weeks suggests that the most suitable time to hold the convention in Cleveland this year will be August 26-28, as at this season of the year horticulture in the vicinity of Cleveland is at its best, and favorable weather conditions can be relied upon. The officers would like to have here for the convention the secretary’s hours will be 10 A.M. to 3 P.M. excepting by special appointment.

The following new members have recently been added to the membership roll: Henry Fielden, Ridgely, Md.; Lewis J. Kalin, Stafford, Conn.; Hiram V. Lawrence, Monterey, Mass.; Joseph Merrill, Bridgeport, Conn.; John Forbes Proctor, New York City; Arthur W. Potter, Newport, R.I.; Thomas Leydn, Port Washington, N.Y.; Roy E. Mickelson, Hibbing, Minn.

BOSTON CONFERENCE ON MAY 16TH.

A local conference under the auspices of the members of Boston and vicinity of the National Association of Gardeners will be held Friday evening, May 16, at 6 o’clock, in Horticultural Hall. An interesting program is being planned, and those who were present at the former conferences in Boston, know what is in store for those who will attend.

NEW MEMBERS.

The following new members have recently been added to the service bureau of the organization: Edward F. Moore, New York City, and Hiram V. Lawrence, Monterey, Mass.

CONTRIBUTIONS TO THE SERVICE BUREAU.

A contribution of $25 was received by the secretary’s office, and is hereby acknowledged, to go towards the maintenance of the Service Bureau. It came from Alfred Lunden, Reading, Pa., who in donating it, wrote: "I feel that in helping the Service Bureau, you help the members, for our association, though young, is doing wonderful work. It will cost considerable money and work to advertise the Service Bureau properly, but if those members who would like to see our association strong and influential and known in every corner of our great country, would pledge themselves to contribute so much yearly, say for five years, I believe we could put our association on a financial basis, for our small yearly fee is not enough to accomplish it."

Joseph Goafley, Portchester, N.Y., recently contributed $10 for the same cause, which is herewith acknowledged.

OUR ST. LOUIS MEMBERS ACTIVE.

M. C. Ebel, Secretary National Association of Gardeners, Madison, N.J.

MY DEAR MR. EBELE—We have for some time felt that when the National Association of Gardeners undertook any sort of garden movement in the interest of the profession, this should be followed by action on the part of the various societies. We are attempting to popularize gardening by an American Home Garden movement, which has been properly started by the national association. This is the time for the local organizations throughout the country to tie up with this movement by spreading it in their locality. The enclosed circular letter has been mailed to all organizations in the city of St. Louis and its suburbs, which we considered had a membership at all interested in our subject.

Another method adopted is that a circular be printed and distributed by our local seed houses with their statements and invoices to their customers. This circular calling attention to the fact that our association is organized for the advancement of gardening generally, and inviting anyone who so desires to communicate with us in regard to their gardening problems, such as injuries to plants by insects or diseases, the identification of plants, or any questions which may be handled by correspondence; also stating that we shall be pleased to recommend experienced gardeners to those requiring the service of such.

We feel that this move is going to be of the greatest value to the association by giving it a standing of authority in all matters pertaining to gardening, and also to educate the public to an appreciation of the value of the professional gardener as compared with the so-called gardener who at present is so detrimental to our profession. Two of the leading seed houses of St. Louis have already promised to cooperate with us in this respect, and are, in fact, glad to do so, for they are continually asked questions on all kinds of gardening which they often are unable to handle satisfactorily to their client. In our case it will be very easy, as we not only have a number of very efficient gardeners in our association, but also an entomologist and a pathologist, as well as several systematic botanists.

You will know from the above that the St. Louis Association of Gardeners is very much alive, and that the national association must depend on our organization to a very great extent.

L. P. Jensen, President St. Louis Association of Gardeners.

The circular referred in the foregoing communication follows:

The successful ending of the world war is bound to stimulate gardening of all sorts, be it for ornamental purposes or practical economic results. In order to help in this movement we feel it our duty to offer our professional services free of charge to the public in general. Any inquiries, whether sent in by post or as undelivered mail, have been very backward in developing the aesthetic side of the homes of its people. Many otherwise fine dwellings lose their attractiveness because of the lack of suitable plant ornamentation.
The following list of names will give a clear idea of who these men are and their positions:

- H. C. Irish, supervisor of school gardens; E. L. Heath, superintendent of Busch Estate; A. Lindahl, superintendent of Webster Groves; A. Lurie, horticulturist Missouri Botanical Gardens; J. Moritz, superintendent of planting Fort Parkway; H. Muskopf, landscape architect; G. H. Pring, floriculturist, Missouri Botanical Gardens; E. Strehle, superintendent of parks; A. Vandereem, superintendent of Davis Estate.

Our plan is to have you call on the secretary before one of your meetings and arrange to have him supply you with a speaker upon any gardening topic that you choose, that being a sidetrack to your general program.

Trusting that you will give this matter your earnest consideration, and place St. Louis on the map as a garden spot of the Middle West through your assistance, we are very truly,

St. Louis Association of Gardeners.

SUGGESTIONS FROM MEMBERS

Secretary N. A. G.

I am a member that is proud the N. A. G. is waking up. The fire is now kindled, let us haul in the wood and keep the flames rolling. Many thanks to Newport members they have lit the match for Arthur Smith’s fire, so let us all do our bit. Gardeners must wake up and be alive to the times. We are not yet recognized for what our profession requires us to know, and the great responsibilities that come to our lot.

A test for gardeners might be held the same as in Great Britain, by the Royal Horticultural Society. Why not have examinations and various centers all over the country? It is done all over the British Isles annually but not here. If a candidate fails to get a first-class diploma, give him another chance. Let this occur annually, and in due time the result desired will be accomplished. The Gardener’s Chronicle is our friend, I wish it God-speed.

Wellesley, Mass.

James Donald.

Secretary N. A. G.

I think Arthur Smith has hit the nail on the head when he writes that it is now time to consider them from all points of view the young man has put two years at the profession as under gardener, including the three years as a boy, making five in all, he should be capable of taking an improver’s position for one year or more, as he thinks advisable. When he has completed the six years in all, as above, he should be capable of taking a head gardener’s position.

I think Mr. Smith’s suggestion that the National Association of Gardeners should have a sitting, say, twice a year, with three good men as judges to pass on young men for diplomas an excellent one. Let us all help the good work along.

Thomas Evans.

LETTER FROM ARTHUR SMITH

Secretary N. A. G.

It appears fitting that I should take this means of thanking my fellow members of the N. A. G. residing at Newport, R. I., for their endorsement of the ideas set forth in the article on Scientific Education. The gratification I felt on reading their communication was not caused, however, by their agreement with my personal opinions but by the fact that it showed that there are at least some gardeners who are beginning to take an interest in the advancement of their profession. To me it has always appeared strange that the majority of our profession adopt, what may be termed, “a let alone,” or as those gardeners who were born in France would call a “Laisser-faire” policy. Yet it would seem apparent that such a policy gets us nowhere. The Newport gardeners have the honor to be the first to take any collective action in getting away from this and in showing that they have the welfare of their profession at heart.

Our association adopted the Gardener’s Chronicle as its official organ for the purpose, among other reasons, of affording members a vehicle for the expression of opinions upon, and discussion of, points of practice or policy, which they have made little use of. Personally I look upon adverse criticism as better than none at all, as the more we look into things and consider them from all points of view the sooner and surer shall we arrive at the truth. But the latter is not always as easy to reach unless we are first careful to become acquainted with all the facts.

The statement of the Newport gardeners that membership of the association means nothing to either employer or employee is correct on one point, namely, that it is no evidence of ability or standing in the profession. Otherwise it means a good deal. The number of employers who are members of the association is continually being added to, and they are making more and more use of the Service Bureau, which, as you state, has already become a very important branch of the N. A. G., but it is now nothing to what it will be. I can speak from my own personal knowledge of your many years of work on our behalf in endeavoring, with considerable success, to educate employers up to the fact that the best man is the cheapest whatever he is paid. I know of numerous instances where you have induced employers to considerably alter their ideas as to the value of a first-class gardener, and in this and other ways you have done for us what no
member of the profession could have commenced doing. In the nature of things the advancement of the association has been comparatively slow, but it has been none the less sure and it has been built up to stay, a tremendous lot of good work having been done which does not appear upon the surface.

As I have publicly stated on more than one occasion, what the association will become depends upon the degree of cooperation which exists among its members and the amount of work they put into it. Let each member ask himself this question: "What have I done to uplift my profession, in cooperating with my fellow members, and in forwarding the interests of my association beyond paying my dues?"

Arthur Smith.

MASSACHUSETTS HORT. SOCIETY

The schedule of prizes and exhibitions of the Massachusetts Horticultural Society and the premiums offered by the state department of agriculture for the year 1919, the dates being as follows:

May 17-18—Flowers, including tulips, hardy narcissi, pansies, lilacs, hardy flowering shrubs and wild flowers. Vegetables—Asparagus, cauliflower, lettuce and collections of six varieties.

June 7-8—Iris exhibition, also rhododendrons, hardy azaleas and hardy herbaceous flowers. Vegetables in all varieties, also collections.

June 21-22—Roses, peonies, strawberries, cherries and vegetables.

July 5-6—Sweet pea exhibition, also Iris Kaempferi, hollyhocks, perennial larkspurs, collections of wild flowers, fruits and vegetables.

August 9-10—Gladioli, phlox and asters, fruits and vegetables.

August 30-31—Products of children's gardens.

September—11-14—Dahlias, hardy herbaceous flowers, Japanese anemones, wild flowers, apples in thirty-four classes, ten classes for pears and awards for plums, grapes, quinces and melons. The premium list for the exhibition also provides first, second and third prizes for vegetables of nearly every kind.

November 8-9—Autumn exhibition of fruits and vegetables.

Copies of the schedule may be had upon application to the secretary, Wm. P. Rich, Horticultural hall, Boston, Mass.

NASSAU COUNTY, N. Y., HORT. SOCIETY

There was a large attendance at the monthly meeting of the Nassau County Horticultural Society held at Glen Cove on Wednesday, April 9. A. W. King, Clinton Lawrence, F. W. Popp, Allen Richman and Arthur Thompson were elected to active membership and one petition was received. W. Noonan, chairman of the executive committee read the preliminary schedule for the Tulip Show, which will be held on Wednesday, May 14. This was adopted as read. W. Sperling, of the Stump & Walter Co., was present and generously donated $15 to be used as prizes at this show. Arthur Cook and Arnold Gatacre, two of our members in the service, were present and each spoke briefly on their experiences. We were all pleased to see them return home safe and sound and to have them with us once more. After the meeting an enjoyable social entertainment and smoker was held. John W. Everitt, our popular toastmaster, handled it in his usual good style.

Harry Goodbrand, Sec'y.
A garden for Every home

Iris Gardens
Rose Gardens
Rock Gardens

Plants for every requirement. Estimates cheerfully furnished.
Planting lists supplied.

MULLER-SEALEY CO., Inc.
Horticultural Specialists
47 West 42nd St., N. Y. City
Phone Vanderbilt 5924

NORTH SHORE, ILL., HORT. SOCIETY

At the April meeting of the above society a beautiful display of Calceolarias, shown by Thos. W. Head, was the outstanding feature. A fine collection of bulbous flowers was staged by Mr. J. Tuley, and some very fine Schizanthus were shown by other members. The essay by Robert Weeks was read by the secretary and was listened to with great interest by those present. A motion was made and seconded that this essay be sent to some of the papers and ask the editors to publish it so that it would be more widely read. A communication from the Société Nationale de France was read before the society and it was voted to send them a donation out of the funds of the society.


THE WESTCHESTER, N. Y., AND FAIRFIELD, CONN. HORT. SOCIETY

The regular monthly meeting was held in Greenwich, Conn., April 11. President W. Graham presiding. Three new members were elected.
The secretary read a very good paper entitled "The Gardener and His Wide Field of Endeavor," by W. Falconer. William Whitton read a very good essay on commercial fertilizers which brought out some discussion. Maurice Fulda gave a lecture on color schemes. Mr. Fulda gave us his ideas on bedding out, and claimed that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be used in a garden. Crimson ramblers he would pull out and burn up. Red colors, to Mr. Fulda, are like the proverbial red rag to the bull. When he says that he would not list any red flowers, Mr. Fulda seems to forget that red flowers should never be
Instruction in Gardening

Practical instruction is offered in vegetable, flower and fruit gardening, greenhouse and nursery practice, together with lectures, laboratory, field and shop work in garden botany, zoology, pathology, landscape design, soils, plant chemistry and related subjects.

The curriculum is planned for the education of any persons who would become trained gardeners or fitted to be superintendents of estates or parks. Students may be admitted at any time. Circulars and other information will be mailed on application.

The New York Botanical Garden
Bronx Park, New York City

There is as much in the making as from what it is made

TAKE any two women — your wife and your neighbor’s, if you please. They both use the same flour and yeast. Bake their bread in the same kind of stove for the same length of time.

Your wife’s bread invariably turns out best. Why is it? It’s in the making — her way of making it.

It’s exactly the same with paint. The list of the materials from which it’s made, as told on the outside of the can, is only half the story — hardly that.

It happens that for a half-century the Schizanthus should be more largely grown, as it is very valuable as a cut flower, lasting two or three weeks in water, and is specially adapted for mixing with other flowers. The outlook for more flowers during the present season is brighter than for several years. Everyone has been raising vegetables, eliminating flowers from their seed order; but this year few gardens will be complete without the flower section.

The next meeting of the society will be held on Friday, April 25, when the matter of a flower show will be brought up for discussion.

Alfred Dixon, Sec.
ST. LOUIS ASS'N OF GARDENERS

The April meeting of the St. Louis Gardeners' Association was held at Forest Park Wednesday, April 2.

The meeting was called to order by President L. P. Jensen. The subject of discussion for the evening was "Hardy Plants," by Messrs. Mority and Werner. Both speakers dwelt upon the disadvantages of the St. Louis climate, i.e., extreme heat in summer and the alternate freezing and thawing during winter, being detrimental to perennials. A list of species and varieties which were hardy and those that necessitated wintering in frames, or annual propagation were given by Mr. Moritz's assistant.

After the lecture the association celebrated Arbor Day by planting an American sycamore by moonlight in Forest Park. After a short address by the president, the members participated in filling the hole and packing the soil around the roots, each taking their pro rata. An appropriate label will be attached to the tree commemorating the occasion.


THE AMERICAN ROSE SOCIETY

The twentieth annual meeting of the American Rose Society was held at Hotel Breslin, New York City, April 2, President Hammond, president. The president in his annual report reviewed briefly the development of the society during the twenty years of its existence, and emphasized the broadened interest in rose growing which has resulted during the period. The secretary reported a membership, April 1, of 1,203, and the treasurer reported a balance of $2,137.58. The election of officers resulted as follows: President, Captain George C. Thomas, Chestnut Hill, Philadelphia, Pa.; vice-president, F. L. Atkins, Rutherford, N. J.; treasurer, Harry O. May, Summit, N. J.; secretary, E. A. White, Ithaca, N. Y. Members of the Executive Committee for three years, Robert Pyle, West Grove, Pa.; George H. Peterson, Fair Lawn, N. J.; James Boyd, Haverford, Pa. The president named Robert Simpson, Frank Traendley and Eugene Daillédouze a special committee to audit the books of the treasurer. Following the election of officers, Treasurer May expressed the appreciation which he personally felt the society should extend to the retiring president, Benjamin Hammond, for the many years of faithful service he has devoted to the organization. It was moved by J. Horace McFarland that the society express to Mr. Hammond by a rising vote its deep gratitude for the efficient service he has rendered. The result of the vote was unanimous. Messrs. Pyle and Pennock also expressed their appreciation of the way in which Mr. Hammond stood by the society in its years of adversity.

Previous to the annual meeting, a session of the Executive Committee was held. Consideration was made of the appointment of a committee to award the Gertrude H. Hubbard gold medal for the best rose of American origin introduced during the last five years. It was the opinion of the Executive Committee that only the varieties registered with the American Rose Society should be considered eligible for this medal. The secretary was instructed to prepare a list of the varieties eligible and mail these to each member of the committee. It was also voted that the award of the Hubbard medal be postponed until a fall meeting of the Executive Committee so that special consideration might be given eligible varieties during the summer.

J. Horace McFarland, as chairman of the committee appointed at the last meeting to consider changes in the constitution and by-laws of the society, read these changes in detail. It was voted that the secretary be instructed to prepare a draft of the changes under consideration and to mail these to each member of the committee. The question of reducing the life membership fee was discussed, and it was the opinion of the committee that the present fee of $50 is not too high, and that no change should be made.

E. A. WHITE, Sec.
Andrew Fullerton, until recently superintendent of the Cravath estate, Locust Valley, N. Y., has secured a similar position on the A. J. du Pont estate, Wilmington, Del.

Thomas Wilson, late gardener of the Erhart estate, Cedarhurst, N. Y., has accepted the position of gardener on the estate of Mrs. Wadsworth, Avon, N. Y.

Ernest Robinson, for a number of years head gardener at Branford Farms, the Plant estate, Croton, Conn., has secured the position of superintendent on the estate of Mrs. Bradley Martin, Westbury, N. Y.

Robert Spiers, for a number of years in charge of the Crane estate, Dalton, Mass., is now superintendent of the Luckenbacher estate, Port Washington, N. Y.

W. M. Robertson, for the past twenty-three years superintendent on the country estate of the late J. W. Pepper, Jenkintown, Pa., has resigned his position. Mr. Robertson has not yet decided what his future plans will be.

Andrew B. Clarkson has resumed his duties as gardener on the Mrs. Meyer estate, Kansas City, Mo., having recently returned from France with the 3rd Canadian division.

Ernest E. Stubbs, who resigned his position as gardener on the A. N. Heimsheimer estate, Far Rockaway, N. Y., in 1917 to join the Canadian forces, has obtained his discharge from the Canadian army after active service abroad.

Alexander M. White, former assistant of P. W. Popp, Mamaroneck, N. Y., has returned from France and taken a position at John Canning, Heatherdell Farm, Arosley, N. Y.

Samuel Clark, until recently employed as gardener on the W. H. Gratwick estate, Linwood, N. Y., has accepted the position of head gardener to Lt. Col. Merritt, Rodman Hall, St. Catharines, Ont., Canada.

A. Adams, formerly gardener on Commodore L. Richards' estate, Havre de Grace, Md., has accepted a similar position on the R. J. Lovett estate, Locust Valley, N. Y.

J. M. Dever has secured the position of head gardener on the H. G. Lapham estate, Chestnut Hill, Mass.

J. Keely has secured the position of gardener on the L. Hofheimer estate, Woodmere, L. I.

J. McAllister has secured the position of gardener to J. B. Smith, Cross Rivers, N. Y.

R. Cochrane has secured the position on the W. R. Addick's estate, Mt. Kisco, N. Y.

The American Sweet Pea Society will hold its eleventh annual exhibition on June 21 and 22 under the auspices of the Horticultural Society of New York in the Museum of Natural History. The schedule may be secured from William Gray, secretary, Belleau Ave., Newport, R. I.

The trustees of the Mass. Horticultural Society have appropriated $5,000 for an orchid exhibit in connection with the spring flower show to be held in Boston on March 24-28, 1920. It is hoped to make this the largest exhibition of orchids ever held in this country.


The Chrysanthemum Society of America will hold an exhibition of chrysanthemums at the same place Nov. 6-7, 1919.

The Horticultural Society of New York will hold an exhibition of plants and flowers on Saturday and Sunday, May 10 and 11 in the Museum building, New York Botanical Gardens. Schedules will be sent on application to the secretary, George V. Nash, New York Botanical Gardens, Bronx Park, New York City.
Gardeners and Owners Agree

That it is the little things in a greenhouse that make the difference in success or in failure.

It is our constant attention to the little things that make Foley Greenhouses easy for the gardener to care for and easy for the owner to pay for. And a greenhouse that is perfect in the little details will be just that much better in the big essentials.

FOLEY GREENHOUSES

Are easy to heat for they are properly built and the Foley heating systems are efficient.

Are certain to give satisfactory crops—whether flowers or vegetables, for each house is built for the use intended.

Are attractive in design because we study the lines as carefully as the floor plan.

Let us send you our book, The Greenhouse Beautiful, that tells how a Foley Greenhouse improves any estate on which it is placed.

THE FOLEY GREENHOUSE MANUFACTURING CO.

3200 West Thirty-first St., Chicago

Improving the Lawns

Coldwell Combination Roller and Motor Lawn Mower

gives a smooth, even clip, and rolls as it mows.

Does the work of three horses and three men on half a gallon of gasoline an hour.

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Continental Motor 4-Cylinder, 20

Width of cut 40"

Uses:

COLDWELL Walk Type Motor Mower and Roller
COLDWELL Combination Tractor and Threesome Lawn Mower
COLDWELL Home Mowers (Demountable Cutter Units)
COLDWELL Hand Mowers (in all styles and sizes)

Write for catalogue and complete specifications.

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BARKER

"Best Weed Killer Ever Used"

Here, folks, is the machine that takes the hard work out of gardening. No tugging or twisting. Does better work than a hoe and ten times as fast.

BARKER Weeder, Mulcher and Cultivator
Three Garden Tools in One

Eight reel blades revolving against a stationary knife (like a lawn mower) destroy the weeds and break up the clods and crusted surface in one operation— aerating the soil and leaving a level, porous mulch to hold the moisture at the plant roots.

Gets close to the plants. Cuts runners. Has guards to protect the leaves. A boy can use it. Run over the garden after every rain, it keeps the soil in perfect growing condition.

The BARKER also has easily attached shovels for deeper cultivation—making three garden tools in one. You'll give your garden better care and not work half as hard, with this machine.

FREE BOOK and Factory-to-User Offer

Our fully illustrated booklet shows the BARKER at work; the different sizes; gives prices, and contains valuable information on gardening. Sent postpaid on request. A postal will do.

BARKER MFG. CO., Dept. 40, David City, Neb.
U-BAR GREENHOUSES
As Now Sold by Their Builders

As general builders of greenhouses, we have for fourteen years been building Pierson U-Bar Greenhouses. Logically, we should best know how they should best be built. In further continuing their building, the former standard of construction will be vigorously preserved in detail. Above all, they will not be cheapened in quality. The Pierson U-Bar Greenhouse bought from us will be the same superior greenhouse you have so long known it to be.

Send for catalogue. Or send for us.

U-BAR GREENHOUSES
Hitchings & Company
General Offices and Factory: Elizabeth, N. J.

Don’t Cultivate Bugs!

Bugs, blights and plant losses due to both, rob the planters of this country of seven hundred million dollars’ worth of truck and garden crops each year. The worst pests are, perhaps, the lice of many species that suck the plants’ life blood. To fight them effectively, use a contact poison.

Aphine has been the standard contact remedy for use against green, black and white aphis as well as thrips, currant worms and other soft-bodied insect pests for many years. Especially adapted for home garden use since it is put up in convenient quantities, quickly diluted, and easily applied as per direction on each can.

Fungine for Fungi
A cleansing liquid sulphur spray, equally effective to combat blight on vegetables, fruits and flowers.

Vermine for Worms
Completely eradicates, worms, maggots, root lice and all other pests at work beneath the soil.

Aphine, Fungine and Vermine are for Sale at all Good Seed Stores

Aphine Manufacturing Co., Madison, N. J.
Save $\frac{1}{4}$ on Spray Poison

Every dollar saved in potato production cost is a dollar added to the net potato profits for the year. Figure what a saving of from 12 to 15 cents a pound on all your spray poison would mean. Corona Calcium Arsenate—Dry will go as far per pound as Paris Green yet costs about 30 per cent less. And it does away with all danger of burning the vines.

Being white, Corona Calcium Arsenate—Dry shows plainly upon the vines which is another great advantage to the practical grower. No trouble to tell where you have been or how evenly you are applying it.

A postal will bring you full information. Send for it today.

CORONA DRY
Arsenate of Lead

The Universal Insecticide

is the ideal spray poison for all fruits and for garden vegetables. Sold in both large and small packages.

If you have an orchard, send today for the free "Corona Spray Schedule." It tells just when and how to spray all kinds of fruit trees.

CORONA CHEMICAL CO.
Dept. G. Milwaukee, Wisconsin
The tribute of George W. Barnett to Davey Tree Surgery

Adamsville, Rhode Island.

The Davey Tree Expert Co., Inc., Kent, Ohio.

Gentlemen: Last year your experts treated a number of trees on the estate of Mr. Morris Whitridge, of which I am in charge.

I naturally was interested in this work, as the particular trees treated had previously been filled with cement. When this crude filling was removed, revealing the hidden decay, I was curious to find out if the same thing would happen again in a few years after your men had completed their work.

As I watched closely each stage of the treatment given by your representatives, I soon saw how your methods made it utterly impossible for the cavity to spread or moisture to enter.

Since then the trees have stood the most severe storms, and no signs of cracking or opening have appeared. I am a staunch believer in Davey Tree Surgery.

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In accordance with my custom I have contracted with Holland growers for sufficient Hyacinth, Tulip, and Narcissi bulbs to supply the demand of my patrons. Bulbs are unusually hard to get this year, and I consider myself singularly fortunate in obtaining a quantity which should normally be sufficient to replenish the stocks of my regular customers.

Early Reservations Are Advisable
Do not forget that bulbs are very scarce and while I feel confident that there will be enough to supply those who rely upon me, it is best for you to order before July 1. The reason for that is plain; unless your order arrives early, the varieties you desire may be exhausted just because someone else has tastes similar to yours.

My Bulb Catalogue for 1919 is ready for mailing and will be sent to my regular customers. If you do not receive one will you kindly notify me, so that the error may be corrected?

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Of General Interest

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NEW YORK CITY
Columbines must be classed as one of the indispen-
sables for the June flower garden, especially
the long-spurred hybrids, for at this or any season
there are few flowers of more charming and attractive
appearance. These long-spurred varieties are of com-
paratively modern introduction and are generally re-
ferred as good, for it has given us plants with flowers of won-
tifully beautiful coloring; white, blue, purple, red,
pink, and yellow, in varying shades and many delicate
combinations. Borne on long stems well above the com-
 pact, very attractive fern-like foliage, they are flowers of
the highest decorative quality, not alone in the garden,
but also as cut flowers. They lend themselves to elegant
arrangement in either large or small vases, and further-
more their keeping qualities are good.

It is not too late to sow seeds now for plants to flower
next year, though personally I like to have the young
plants three months old and in nursery rows at this time,
but of course this is only possible where space under
the cold frame or cold greenhouse till about the first of
February. Start then in gentle heat, increasing some-
what after two or three weeks and a month later they
should be in bloom, about right in fact for the big
Spring Show.

Quite often we hear complaint of such plants as Fox-
glove and Canterbury Bell not wintering very well.
Sometimes this is due to the wrong kind of covering
material being used whereby the plants are literally
smothered to death.

I believe a frequent contributing cause is that these
plants are raised from seed that is sown in spring and
are really too big by fall to winter safely. Better results
are likely to follow if the seed sowing of biennials in
general is deferred until late June or early July, the
resulting plants will be quite strong enough before win-
ter without being of too gross a nature, to say nothing
of the time and space saved by not sowing several weeks
early than necessary. For pot culture of course we
should need to sow Canterbury Bells before July, say
early in May, so as to have good strong plants ready for
potting in September. They are really very effective as
pot plants and not at all difficult to manage.

Some people have claimed that Canterbury Bells will
flower for two seasons, but any I have grown have al-
ways departed after one season of bloom. By picking off
the first flowers as soon as faded one may get two crops
of flowers from the same stem in one season which is
well worth while. Foxglove, Hollyhock and Sweet Wil-
liam may often prove their right to be classed with
perennials, but for first-class returns are best treated
strictly as biennials. The fragrant Wallflower is a de-
lightful plant for the spring garden and well worth
keeping in the cold frame for winter protection.

As pot plants Columbines are not as widely known as
they deserve to be. They are easy to manage and make
splendid plants for conservatory decoration in the early
spring, or to supply flowers for cutting. Those who like
variety and have the necessary conveniences would be
well advised to try a few plants next spring. Pot up
strong two-year-old plants about the middle of September
and keep them out-doors for a couple of months, then in
a cold frame or cold greenhouse till about the first of
February. Start then in gentle heat, increasing some-
what after two or three weeks and a month later they
should be in bloom, about right in fact for the big
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lightful plant for the spring garden and well worth
keeping in the cold frame for winter protection.

The Siberian Wallflower, Cheiranthus Allionii is a
hardier kind, best treated as a biennial though it does
flower early in the summer if raised under glass in Feb-
uary. It is a most pleasing little plant, growing about
nine inches or so in height, with showy flowers of bright
orange, often so freely produced that it literally flowers
itself to death.
It is not alone by the use of the most expensive and showy plants elaborately arranged that one may create a garden picture of charm and beauty. On the contrary, the simplest flower seen growing under favorable circumstances may likely leave a more lasting impression. I know of two gardens where the most pleasing feature of early spring is not the Tulip in all its resplendence, but the modest white pink flowers of *Cardamine protense*, commonly known as Cuckoo Flower, one of the plant immigrants from Europe that has made itself at home in our northern states. In these cases they are growing not just a few in a cultivated bed, but literally by the thousands in the grass close up to the dwellings. Very unorthodox it is true, especially as the lawn-mower is brought into action as soon as the flowers have faded, yet this simple little plant, so well suited to the conditions in these particular instances and flourishing in such quantity, is able to create a lasting impression of its quiet beauty amidst all the gay pageantry of the spring season.

There are situations in many gardens where the majority of shrubs would do little better than barely exist and the garden owner may be puzzled to know just what would succeed in these unfavorable places. One shrub which seems to be specially suitable is the Japanese *Aralia pentaphylla*, a plant which will thrive in close proximity to an Elm tree, which is sufficient recommendation as to its ability to hold its own, equaling the Japanese Barbberry in this respect and often to be preferred because of its greater height. It will thrive in dark corners of buildings and seems to be quite happy when used as an undershrub. Being armed with prickles it is a good plant to use against intruders and can be used to advantage as a hedge plant where a strictly defensive hedge is desirable. It is a strong and rapid grower with bright glossy green leaves.

A native shrub which is perhaps better known and appreciated by botanists than by garden planters is *Rhodora canadensis*, to be found growing to perfection in the woods and bogs of New England and not nearly as often seen in gardens as it should be. It is a very pleasing experience indeed to come across a numerous colony brightening up a peat-hog in the early ; ring days with an abundance of delicate mauve flowers, which are fully open before its leaves expand. While not to be recommended for indiscriminate garden planting, at the same time there are many places where some nook or corner is to be found closely approximating its native environment, and here, away from other flowers at the time, a generous planting could scarcely fail to please when clothed in its loveliness of the early spring days.

While the autumn is the season of gorgeous leaf-coloring, the bursting buds of spring and young leaves of early summer show much diversity and beauty of coloring in softer tones. We speak of leaves in general as being green, yet how many different shades and tints that includes, from the soft green of the young tender foliage of the Laret to the deeper toned and more massive leaves of the Norway Maple or Horse Chestnut. The Birches are beautiful trees at all seasons, but particularly so at the time of the unfolding of the leaf-buds, the cut leaves being especially noteworthy for its distinctive grace and beauty. Wondrously beautiful are the exquisite shadings and tints shown in the early development of the leaves of the Oaks, with a delicacy of form that can scarcely be surpassed. The Weeping Willow is one of the first to respond to the awakening influence of spring and with its head hanging over a stream is a delightful picture indeed.

The use of trees and shrubs with highly colored foliage is frowned upon by some authorities and justly so in many instances, but judiciously planted there can be no question of their value in the landscape at this season, when their color development is at its height. Who could fail to admire the rich reddish-purple of the young leaves of Schwedler's Maple and the equally beautiful Purple Beech as they flash in the sunlight of these late May days? But the most remarkable and most distinguished, both for elegant leaf-form and richness of coloring are the Japanese Maples and it is not surprising to find them widely planted even though they are not always as long-lived as we could wish. From my window as I write I can look out upon a beautiful landscape, across a sheet of water fringed with native vegetation up to a planting of trees on high ground, Hemlock, Norway Spruce, Rock Maple and Red Oak mostly, with one or two Purple Beech mixed in, and in front of this combination some picturesque old apple trees laden with flowers. Who would not prefer such an outlook to gaz ing across a street at mostly bricks and mortar?

Among the numerous woody plants introduced into our gardens from Asia there are two deciduous trees in particular that are especially noteworthy, both for their unique appearance and the splendid manner in which they flourish with us. The best known of the two is the Maidenhair Tree, *Ginkgo biloba*, which is well and favorably known and of which we have in the country some well developed specimens. Its good qualities are rapidity of growth, hardiness, good appearance, freedom from insects and diseases, and longevity. Young trees are likely to differ greatly in their habit of growth, some assume such an awkward shape that rather severe pruning must be resorted to in order to correct their wayward tendency. Generally speaking it can be classed as a pyramidal tree, and is one of the most distinctive of all trees to plant near a building for architectural reasons. In its native land of China it is specially associated with shrines and temples, and scientists consider it to be a survivor of a very ancient flora. Some people are puzzled because some trees bear fruit while others of equal age and vigor do not. This is because the flowers are dioecious, or in other words, the male and female flowers are borne on separate trees. I tried to explain this to an old gardener at one time, but he still clung to the belief that the non-fruiting of one of several trees on his place was due to a topping back it had received at one time, rather than a question of sex. Visitors from England express surprise to find this tree growing so well with us, and on the other hand it is surprising to us to learn that in the north of England it requires the shelter of a wall.

The other tree is *Cercidiphyllum japonicum*, not yet so generally known as the Ginkgo, but doubtless it will be only a matter of a short time before its good qualities will be more widely recognized by planters. Prof. Sargent speaks of it as “One of the largest and most interesting deciduous trees of Japan,” and describes trees growing there 100 feet or more in height. Judging from observations it promises to be a valuable tree for lawn planting, and in its form is quite unlike any other tree we have, developing a group of stems close to the ground and assuming a very pronounced pyramidal shape. Its foliage is good looking, somewhat resembling the Judas tree and so far as I know free from injurious insects or disease. It is also dioecious in its flowering, and while the flowers are not very conspicuous the pistillate form seen in flower against the early morning sunlight glows and sparkles in colors of reddish hue. It grows well from seed, making trees of good size in four or five years.
Defining Double Flowers

WILLARD N. CLUTE

The average cultivator of flowers commonly places a greater value upon those which are double than upon the ordinary kinds. It is difficult to understand the reason for this, judged by any conceivable standard, the specimens fancied are often far less attractive than the others. The standard seems to be some brush-like or pin-cushion effect and the nearer the specimen approaches this, the more it is admired. And yet, even here there is a choice of taste, for many admire the chrysanthemum who pass the dandelion, formed on the same plan, without a thought.

It may be doubted, however, whether the admirer of double flowers could correctly define what a double flower is, or at least could distinguish such at sight. Certainly one would not consider a mere increase in size of the floral parts as a case of doubling and yet a considerable group of flowers are double in this sense only. An examination of any composite reputed to be double,—asters, sunflowers, daisies, dahlias, chrysanthemums and the like,—will show that the doubling is here due merely to an increase in size. It will be remembered that the Composites naturally divide into two groups, one in which the flowers are all ligulate, like the dandelion, and one on which the outer circle of flowers only are ligulate while those in the center or disk are shorter and less conspicuous. When a composite is double, therefore, the disk flowers take on the form of the ray flowers. The dandelion is habitually in this condition, the sunflower and its kind very frequently become so. But if double means to increase in number, there are no double composites: for none of the parts increase in number.

There are of course no completely double flowers in nature, and though we may occasionally find double flowers in almost any wild plant, there are very few species that show a tendency toward regular doubling in normal flowers. All the showy double flowers of the gardener have been bred from chance specimens that have appeared among flowers of the ordinary kind. Among the few species of flowers that indicate slight doubling in the wild state we may name the blood-root, hepatica, anemone, calycanthus, and magnolia. These commonly have more sepals or petals than the number we normally associate with dicotyledon flowers. In most of these it is the sepals that are multiplied, but in the water lily it is the petals and in the cactus it is both sepals and petals that are thus increased in number. It may be noted that nearly all the examples given are from low types of plants. Such forms are especially numerous in the buttercup, poppy, and allied families, and the multiplicity of parts with them is regarded as a survival from still more primitive ancestors in which the typical dicot type with regular 4-parted or 5-parted flowers has not yet become firmly established. If these flowers never have had fewer parts, we can scarcely call even them indications of doubling; however.

In the truly double flowers of the gardener we find one or more of the floral parts increased in number. Usually this increase is found in the petals, not because these are the organs most likely to vary, but because they are the ones the gardener most fancies. The doubling may extend to the sepals or even the bracts near the flower. One form of carnation is called the wheat-ear because there are numerous duplications of the bracts that subtend the flower which make it look like a head of wheat. In sympetalous flowers the doubling may consist of one corolla within another while in polypetalous flowers there may be an increase in the petals, the number of the latter often reaching a hundred or more. It is but natural that the petals should most readily show an increase in number since they are regarded as having originally been derived from stamens and we may suppose the power to make more stamens into petals has not been entirely lost. This is not the only way, however in which a greater number of petals have been produced. Often the group of cells that is destined to form a petal split into several parts before the growth is carried very far and several petals, instead of one, results. This sort of doubling is most common in flowers in which the number of stamens is not large enough to produce them.

Considering the double flower from the standpoint of beauty, it may be noted that not all flowers are enhanced in beauty by doubling. It takes but a little thought to show that some flowers please us by their color while others produce the same effect by their shape, and still others by a combination of the two. Some flowers are individually too small to attract attention and are pleasing only in mass on account of their color. The flowers of orchids, on the other hand, especially the tropical lady-slippers though large, are often dull greenish or of other quiet colors and here it is chiefly the odd shapes that attract. Sweet peas, columbines, bleeding hearts and the like, please quite as much by their shape as by their color. It is clear, therefore, that some flowers can be doubled without loss of beauty while in others doubling would have the opposite effect. One can scarcely imagine how doubling a pansy or iris would increase its attractiveness. On the other hand, mere saucer-shaped flowers may have a certain added beauty given them by a multiplication of the parts.

In a completely double flower, that is, one in which all the essential organs have turned to showy petal-like parts, there can, of course be no seed produced. If the plant that bears such happens to be a perennial, it may be multiplied by budding, grafting, division, and the like but if it happens to be an annual or biennial herb the case is quite different. In some cases it happens that the pistils are normal and capable of forming seeds if pollinated. Even if pollen from flowers that are not wholly double is used, the race can be kept up. When pollination does not occur the seed for a new crop must come from the specimens that are not wholly double. In flowers expected to be entirely double, there are usually some specimens that set a few seeds and these seeds commonly produce more nearly double flowers when planted and thus the supply is assured. The fact that double flowers produce very few seeds accounts for the high price of the seeds of the best varieties.

In the July number of the Gardeners’ Chronicle will appear the first lesson of a study course in gardening, which will be conducted regularly, treating on a seasonable subject each month. See reference to this new departure on page 213.
The Rock Garden

JAMES DONALD

The question often arises, "Where shall I place my rock garden?" It seems natural that to build it on rock would be most appropriate, and so it is, where estates have plenty of natural rock available. Where they have none, the answer would be, if anything rocky can be had within a reasonable distance of the house, start there. There is no objection to northern exposure, providing you are out of the reach of tall trees, as the drip from their foliage and their powerful root system would play serious havoc for the latter in time would upheave your rock work and the former would eventually kill off your plants.

Alpines, natives of the Alps, are the predominating plants used for rock work, but to imitate such a geographical location for their adopted home in this country would be an impossibility, so we must fall back to artificial resources. A load of stones dumped carelessly would be more in touch with the effect desired than any mason-built pile or any formality. No strict rules can be laid down to the building of a rock garden—imitate nature as near as possible. If weather-beaten rock is at hand, use it; collect together as many as you need; place the stones firmly together; make the mound as one chain; in other words let each stone feel itself as a link in the chain, so that there be no looseness. Ram the soil well into the pockets so that no washout will occur. The mound may be any shape, but let no individual stone overlap a pocket. Build so that the rains will water it all, or the hose and sprayer can thoroughly wet each plant when necessary.

The plan of the garden may be any size or shape providing you have a variation, such as high and low mounds, deep caves, flat ledges if practical, winding paths, and necessary steps. Have a good command of water at hand; soft water is preferable. Geology and Vegetation should be combined—rock and plants—some plants to eventually cover or hide all the rock, though I prefer having part of the latter always visible to give the proper result of how a rock garden should be.

At Kew and Edinburgh there are large collections of Alpines from both hemispheres. Natives of the northern hemisphere naturally predominate. The chief character of an Alpine is its rosette or cushion-like habit of growth, with small crowded leaves and relatively large brilliant flowers. They are mostly perennials, evergreens with long tap roots, penetrating into the soil so as to control their environment and keep alive from the severe conditions of their nativity. Some plants are thereby dwarfed and stunted, as the Alpine Saxifrage, Ramondias, Androsaces, and so on. Other Alpines come from the damp meadows—the base of the mountains, as Soldanellas, Primulas (Himalayan type), the Lady's Slipper Orchid, etc.

Rock is not essential to the cultivation of most Alpines, while a good depth of soil is, but a well built mound with the rocks appearing here and there among the display of flowers is very effective and pleasing to the eye, and as Alpines are the most suitable plants for such work they are used to give the derived result to both gardener and geologist. The soil required for Alpines should be varied, and of a light and open character—brick broken up, old mortar, gravel, sand, leaf-mold—may compose fifty per cent of the compost, the other half of good fibre yellow loam. This stands good for most Alpines, but for ferns or any of the Erisaceous family peat should predominate; but the grower himself is the best judge, as

This Rock Garden, Whose Gorgeouness of Color in Full Flower Is Indescribable, Contains One of the Finest and Most Varied Collections of Alpine Plants in This Country.
he knows his plants and the prevailing local conditions.

In planting I prefer grouping the species or variety, using one kind on each mound, cave, or such like. Nothing is prettier than a bunch of Aubretia, a hill of Alyssum, a mound of Saxifrage, a valley of Ferns or a bank of Sedum. A tuft of Sempervivum will grow on rock with very little soil and thrive well. If necessity calls for a retaining wall, plant while you build it, for the roots can be well spread out and will have a better opportunity—such plants as Arabis, Achillea, Artemisia, Aquilegias, Smilacina bifolia, Violas, Ferns, etc. Along the flat top of the wall, plant Crasium tomentosum that will put a finish to the whole picture.

A cool greenhouse or cold frames are desirable in conjunction with a rock garden to reproduce the stock annually. There are three good ways in following out this system, by sowing seeds, inserting cuttings, and dividing the roots. Seeds of most Alpines should be sown as soon as ripe in pots, pans, or flats. Loam, leaf-mold and sand in equal parts makes an ideal soil for propagating by seeds—only cover the seed sparingly with clean silver sand. Water with a fine rose well before sowing, but not again until getting dry. Do everything to prevent damping; if you allow the lichen and moss to grow, few seeds will penetrate them. Use good drainage in the seed pot; sow all seeds rather thinly, and keep a constant eye on them until the plumule leaf appears, then the worst danger is over with most of them. They have a long slow germination, and require lots of patience. Propagating by cuttings or division of roots is the best way to attain the true type, as by seeds some of them revert to the original, but, of course, some can only be procured by seeds. Many Alpines treated cool under glass bloom more profusely than outdoors. Their blooms are more perfect, as they do not suffer from the inclement conditions of the weather. Many bulbs form an important part in the rock garden and make it very attractive with their radiance of color in the early spring, as Snowdrops, Crocuses, Daffodils, etc.

Always plant firmly because Alpines in their native habitat are wedged between rocks for their existence and feel more at home than in a cultivated garden. Loose planting generally proves a failure. Place grit or small stones on surface of pots or pockets. It keeps the soil firm and acts as a valuable mulch; is also a good substitute for the debris and grit that is continually falling down the mountains and is caught by the tufts of the Alpines that are washed into the tufts and here root afresh from the base of the current season's growth. Pruning should be done judiciously on plants that withstand it, as Aubretias, etc. They will produce larger flowers, more compact tufts and a finer looking growth every year, which is more pleasing to the eye.

The owner or the gardener should be the judge in selecting the plants from the large and varied collections of today. In concluding let me enumerate a few of the leading genera used in rock work. My choice and first selection would be Aubretia in their variety, for their color blends beautifully with grey rock. Saxifrage plays a leading role in rock work, and like the former, looks well most of the year. Aquilegias are fine, as are Androsaces with their pink and white predominating and Anemones, although they do not always thrive as they should in every garden. Alpine Asters and Armeacias fill in fine. Companulas fill in a gap almost the entire year, a long felt want in the rockeries. The Edelweiss is a typical Alpine and is gaining popularity. Phloxes in variety, Sedums, Sempervivums, Silene, Yuccas, Daphne, Azaleas in kind, Iris in variety, Veronicas, Gypsophila ripens, Primulas, and many others too numerous to mention: Rhododendrons, Palmias, large flowering lilies, can all help to prolong the flowering period, and Ferns appear well eight months of the year.

Anyone may have a rock garden. As a rule, Alpines are slow to germinate and it takes much patience on the part of the operator, but there is a great deal of pleasure to the Alpine lover, and without doubt this class of plants is becoming known and loved every day by many people and are worthy of a high place in the horticultural world.

This Rock Garden Presents More of the Wild Garden Effect in Which Many Varieties of Plants Not of the Alpine Species are Grown
Work for June in the Garden

JOHN JOHNSON

The garden is now in full swing. Growth is at its height and the chief anxieties of the season are practically over. Live gardeners now reap the fruits of their labors and yet there still remains ample employment in every department. Thorough cultivation of established crops must be practised and some further sowings and plantings made to maintain successions in both flower and vegetable gardens. Watering, staking, weeding and spraying against insect and fungoid pests now demand considerable attention if good order must prevail and the crops continue in a healthy, vigorous condition. Greatly improved systems of irrigation have in late years relieved the gardener of much labor and anxiety and gardeners possessed of such equipment should be indeed content if not truly thankful.

If winter and late spring spraying of fruit trees and ornamental trees was well done. There should be little cause for concern at this time. However, keep a vigilant eye for the appearance of aphid, red spider, thrips, curculio and brown rot in stone fruits, mildew and diseases of like nature. To the numerous pests and diseases attacking apple trees has recently been added yet another nuisance, the “red bug,” which injures the fruit about the “setting” period. The red bug is a tiny flea-like insect and assumes a vivid red coloring during the month of June. This insect is most prevalent in the New England States. The brood hatches about the time the trees begin showing blossom. Spraying should be done when the blossom clusters are discernible but before the petals open. Although too late for this season, in passing we mention this as the best means of disposing of the red bug pest.

It is not too early in the season to spray outdoors roses with either insecticides or fungicides. Remember that healthy growth is sustained more by timely application of preventives than administering a cure to an already debilitate plant.

Cut worms, slugs, squash and rose bugs, elm and potato beetles must all be dealt with this month. The various methods of fighting all these pests have from time to time been well expounded in the pages of The Gardeners’ Chronicle. Earnestly tackle the work of spraying at the first indication of trouble. Now also is the time to fight the gooseberry cterpillar. Mosquitoes are sometimes troublesome about the home grounds. Good drainage and the filling in of spots where water collects are recommended. Stagnant pools which cannot be filled in may be sprayed with kerosene at the rate of one-half pint per 100 square feet of surface.

The work of summer bedding should be pushed forward with all speed. Tulips and other bulbous plants employed in spring bedding may be lifted just after flowering. Heel them in a half-shaded position to finish their growth. Finish planting gladioli required for late flowering and give support to those which are already advanced in growth. Dahlias should be given some means of support, as soon as they are well above ground, or better still, set the stakes at the time of planting the tubers and thus avoid injury to the roots later. Reduce the number of growths on these plants if they show a tendency to bushiness. Single stem plants are the best to handle and are generally superior from every standpoint.

Cannas, Coleus and Crotons cannot withstand cold weather and any to be used in bedding schemes should be kept under control until the middle of the month or later. Gradually inure these plants to cooler treatment prior to planting in the open ground. Many of the ornamental grasses are annually raised from seed and are capable of producing splendid sub-tropical effects. They also furnish valuable material for cutting. An open sunny position should be afforded them. The Pentstemen, Hordeums, Eulalias, Coix lachryma (Job’s Tears), Briza maxima and B. geniculata are among the more prominent kinds, while Poa amabilis and Anthoxanthum gracile are splendid edging plants.

Make sowings of such annuals as mature early to fill any blanks late in the season. Phlox drummondii, Gypsophila elegans, Schizanthus, Marigolds, Nasturtiums, Malva. The foregoing may be sown where they are to flower.

Sow Canterbury bells, Foxgloves, Sweet William and any of the hardy perennials. A great many, in fact nearly all the hardy perennials, are best increased by division of the root stock, but the raising of new varieties from seed is interesting and practicable. Delphiniums, Lupines, Aquilegia, Onothera, Campanula, Heuchera and many others may be readily raised from sowings this month and the plants will be of sufficient size to plant in permanent quarters next fall. A seed bed in the open ground will meet the requirements of these subjects, although a bed prepared in a cold frame might be better and more convenient for handling the seedlings. Shade the seed bed from strong sun until germination takes place, then give the young plants all the light and air at command. Prick off the seedlings during a dull period or otherwise shade them for a few days when newly transplanted.

Give the matter of staking plants in the hardest border rigid attention and also see to it that nothing suffers for want of water. There is a vast difference between plants well-supplied with moisture at the roots and those allowed to suffer for want of it. This fact is more generally appreciated in departments other than the hardy flower border.

Now is the time to increase by cuttings or offsets numerous alpine plants. The creeping Phloxes, Saxifrages, Sedums, Cerasiums, Aubretia, Arenaria and Iberis. Generally speaking, all such plants are amenable to propagation immediately after flowering. A frame which can be shaded from hot sun and a sandy soil are the requirements of any of the above mentioned kinds. The stock may also be increased by sowings made this month.

Prune or thin out the growth of spring flowering shrubs as soon after they have flowered as the work can be undertaken. Remove the seed vessels from such kinds as rhododendron and lilacs. Seed vessels are unsightly and also sap much of the plant’s vitality.

Subscribers are invited to address “The Questionaire,” to begin in the July number, to solve their garden problems, where the desired information is not available through the usual sources.
**Garden Flowers of Springtime**

**HELEN ORR**

We who are obliged to live in a town apartment in the winter, at the maiden blush of Spring when we see the first bursting bud of leaflet answering Nature's call, regardless of environment, turn our heads to our garden in the country, and how we welcome the first box of flowers that comes from our very own, the fruits of past labors! We peep into the box and gently take out each spray or flower, immediately giving each and all a bath of an hour to resuscitate them and then the joy of arranging them and the glad or sad thoughts that accompany the handling of each precious stalk.

We know we must look for the Forsythia, "Golden Bell," but we are not certain whether these particular branches are from the variety suspensa or Fortunet, and therein lies the charm of the box—wonder and mystery. We have had a mild winter and as compensation what a wonderful display of Spirea Thunbergii such as one as we had not seen for years and in our mind's eye we see this planting shining brilliantly white, especially these moonlight nights of the last week or two, last quarters of the moon, shining around the grassy border and reflected in the gazing globe—intermingled with the bright handful of indigo blue which we hold in our hand and but that display was cold in comparison with the lovely moment is revelling in it in the dream picture. But we must proceed with our little box of fairyland.

Another Spirea—the true "Bridal Wreath," so often confused with the Spirea Van Houttei which blooms later than the prunifolia flore pleno, which we have just taken out of our box, recalls to us how for years it was dwarfed under some larger shrubs, until we finally removed it to a damp place near the stone wall and there it has flourished. Spireas, you know, love wet, damp soil and any one who has had given them a house plant of the Japanese variety must not neglect to water it freely. It is already spoken of the Spirea Thunbergii which variety "Thunbergii" is one of the few of the Barberry family that we are allowed to keep in our garden, a large majority of the Barberries being relegated to the flames of the "beach fire," this being the best way to protect our wheat fields from rust. "Thunbergii" is a variety immune from the warfare being made upon the family. You see we have even have war in plant life, our most exclusive circles, without any redress to a Peace Conference!

We saw in a florist's window last week a display of the deep "Heavenly Blue" Muscari, or Grape Hyacinths, but that display was cold in comparison with the lovely handful of indigo blue which we hold in our hand and retrospectively see it peeping out from under the long drooping branches of Weir's Weeping Maple, placed there purposely for this spring effect.

The dear old Flowering Almond, so few care or know about its botanical name of Amygdalus communis or that it belongs to the plum family; we remember years ago the transplanting of one large very old clump from an adjoining farm which had been purchased and added to the present estate. We also remember with shame our earlier crude and ignorant efforts to improve an old clump that had stood since before 1850—and in consequence almost destroyed what in our ignorance we did not know could never be replaced, but here is a spray or two to wish us joy this happy springtime. It never seemed that a white Flowering Almond was really the true old shrub and so it was never planted in this garden.

We are pleased and surprised to see our single magnificent blossom of Magnolia Soulangeana, we know it is that variety from its color and the earliness of its bloom. This causes us to wonder how our Rhododendrons came through the winter, so mild in its icy touch, and all of our thoughts tend to make us want to hasten to the garden that is calling us. Another single flower is a dear little Primula veris, yes, a Primrose, but not the native English primrose nor our native Southern one, this variety being yellow and pink and with a touch of mauve. We can see it peeping its little flower heads from around the stones which make a path leading into the lily pond, perhaps to greet the first warm rays of Spring sunshine.

Here are two little flowers tied together with a note—and a sob almost comes from us as we realize this is verily a voice from our dear departed ones, who always greeted us with flowers at Springtime—a spray of the old fashioned Lilac and beautiful, sad Bleeding Heart (Dicentra spectabilis), most appropriate to send in remembrance of the dear ones, just a little touch added to make the box a personal one.

The new French Hyacinths are here too, Charles X, President Loubet and Souvenir de Ludwig Spaeth, all the dark crimson, reddish purple varieties which are given a space all to themselves in the plantings. They are too choice to mix in with the vulgaris type, however beautiful the latter is because the habit of growth is different. Our hearts swell with gratitude at the lovely varieties and colors of the Tulips and Hyacinths. We recognize our "Keizerkroon" Tulip by its markings of red and yellow, also the "Pink Delight," but we are a little puzzled as to the names of our yellow beauties, whether "Chrysolora," "Golden Queen" or others. Of one thing we are assured at this very early season and that is the variety of Tulip whose name is Legion. The wonderful fancy varieties and Cottage Tulips are all later than these early ones, but in planting in the Autumn one should plant every variety to make sure of this early floral greeting after the season of sleep. However, at this distance as we did not see the hand that plucked them we cannot mark the location and all the ones by name, but we do know the fragrance of these early blooming varieties is delicious.

The single yellow Daffodils, Trumpet variety, are so much prettier to us than the double and we wonder if these are from the old, old clumps that have bloomed in this garden since 1850 and perhaps earlier, or are they some of the newer ones? Whatever they are, we are thankful they are blooming and that we can enjoy them. They seem so much sweeter than the thousands we see in the shops and all the windows wherever there is a flower sold. We recognize our very old Pink Hyacinths which we once removed from a very formal bed to the borders and we prefer them almost to the lovely new pink "Lady Derby" or the double or single blues and lavenders just because they are older and we have loved them longer. We could talk on for another hour about all the reminiscences these harbingers of Spring and Summer recall to our mind and in writing as much as we have we realize we have forgotten to mention the Narcissus Poeticus which recalls in its name "Narcissus" the story of the Greek youth for whom it is named, and we also have forgotten to speak of our silent questionings (Continued on page 197.)
The Moderate Sized Greenhouse—Its Uses

W. C. McCOLLON

In this number we will take up for consideration the growing of greenhouse plants. Do not suppose for one moment that the greenhouse is a sort of mechanical sunshine shop which can be geared up to any desired speed. There are certain hard and fixed rules with which we must content ourselves. Do not start out by trying to make a certain plant bloom every year, for it cannot be done. I once interviewed a party who intended to build a small greenhouse. I asked him what crops he was planning to grow, and he replied that he was going to grow some vegetables,—peas, beans, lettuce,—and also such flowers as carnations and roses. The man became much confused when I told him it would be impossible to grow that combination of plants in one house, and he remarked that all the plants he had named grew in his garden during the summer under precisely the same conditions, and why would they not grow in a greenhouse? Therein is contained a lesson that every beginner must learn—that plants that are being forced are subjected to unnatural conditions, and while some lend themselves to these conditions more readily than others, in no case can you grow a combination of plants of different requirements and be successful. So the first lesson is to learn how to make a combination that will succeed.

There are a number of plants that can be grown successfully with the carnation, and that is the reason why the carnation is so popular. It is a very good neighbor and will concede a degree or two either way to allow another plant to be grown in the same compartment. For instance, with cool growing plants along with the carnation, you would maintain a night temperature of 45 deg., to a temperature of 55 deg., and plants varying in their requirements can find a home in the carnation house. What other plant allows such a latitude in temperature or conditions?

The beautiful snapdragon, one of the best cut flowers that we have, is well adapted for cultivation in the carnation house. It needs freedom and should be planted on the centre benches. The best method of raising this flower is to sow the seed in spring and carry them through the summer in four inch pots, and bench them in August. Primulas also sown at the same time and carried through the summer in a cold frame, make excellent pot plants for the carnation house.

Sweet peas are also a good combination and work in with the carnations. The seed should be sown in August. Solid beds are preferred for the cultivation of the sweet pea, but many good results can be obtained by raised benches.

There is no class of plants that yield such big returns for the amount of bench space they occupy as the hardy bulbs, and they are well suited for the conditions in the carnation house. The hardy bulbs, such as narcissus, tulip, hyacinth, allium and ornithogalum, are potted or boxed when received in late summer or early fall. They are then buried in a trench in the garden from where they can be lifted and forced as required. When first brought in, the bulbs are placed under the benches. This lengthens the stem, and also reduces the time the plants must occupy the benches which is a very important item in winter.

Potted plants, such as cinerarias, calceolaria, and stocks, are all good subjects for the carnation house. Seeds are generally sown in August and kept potted on as required, or they are used in pots as decorative subjects. The stocks, however, are often planted in the benches for cut flower purposes.

Pansies and mignonette are old time favorites, and they can also be cultivated in the carnation house. The seed can be sown during the month of August and the plants should be planted in the benches.

There are a number of the hard wooded plants that can be flowered in the carnation house, but a storage pit is necessary to retard this class of plants. Such as azalea, camellia, genista, and Acacia, can all be flowered but any or all can also be grown in a warmer house as this class of plants is not exacting. All the varieties referred to are simply possibilities that can be grown. Any number of combinations are possible, eliminating the carnation, and running your house at the average carnation temperature about 50 to 55 deg. nights. It is always advisable, however, to reduce your varieties to a consistent point and not have the entire house filled with a collection which can only embody a few plants of each.

In spring the carnation house can be cleaned out so as to make room for the thousands of seedlings that can be raised for the garden, both flower and vegetable. It is surprising the better quality flowers and vegetables that one can raise by this method and a number of flowers are possible which without the greenhouse, must be omitted.

Seed sowing is an art. To start properly, boxes or pots, whichever are used, must be properly drained. This is done by placing drainage which consists of broken pots or cinders in the bottom. Cover this with a little Sphagnum moss to prevent the soil running through and clogging up the drainage. Then place a couple of inches of sifted soil over this; firm and smooth off. This soil should be light in texture and the manure should be taken out during the sifting.

When the young seedlings have made their first leaf, they are ready for handling and must be transplanted into other boxes or pots. For this purpose use a soil with just a little very fine screened manure, and a little leaf mold, and just enough sand to keep it open. You must remember with young plants that any more feed
placed in the soil than the young plants can assimilate, is a detriment.

In spring crops may be started that will make the greenhouse pay its way during the summer. Some gardeners declare a moratorium on the greenhouse during the summer, but there are hundreds of uses for the greenhouses during this period. Chrysanthemums, potted plants for home decoration, vegetables of a finer quality, are better grown in the greenhouse than out of doors. There are also a number of annuals which are improved wonderfully by growing inside, such as asters, celosias and so on.

A crop of melons are also a summer possibility, and they should be started during the early spring months so that they will be out of the way when the carnations must be planted in the benches.

Orchard fruits in pots are also becoming very popular for growing during the summer in the greenhouse. The plants are easily handled and produce some excellent fruit.


Roses are far more exacting than carnations and while other plants may be grown in the same compartment, these plants must meet the conditions demanded by the rose, as there is absolutely no elasticity to the rose or its requirements. Calla lilies, lilies of the forcing type, freesias, poinsettias, similax and lily of the valley can be grown in the rose house, but unlike the carnation the rose must occupy the house during the summer, which eliminates the possibility of growing any other plants during that time except such as can live under the same conditions as the rose, so that one can readily see that with a house with but one compartment devoted to the rose, one will not have nearly as large a collection as can be worked successfully with the carnation.

If the house or compartment is wanted for the cultivation of decorative plants there are a number of very beautiful plants for this purpose, various palms such as Acacia, Kentia, Cocos, and many others, besides stove plants as Cissus, Crotons, Dracaena, Pandanus and other gorgeous foliage plants of this class. There are also the ferns, Nephelepis, Cibotium, Davallia, etc., but such a house where devoted to this class of plants, can be used but for this purpose alone, though tropical vines, which trained along the roof do not interfere with the other plants, may be included. Among this class of vines are the beautiful Alamanda, the sweet scented Stephanotis, or the peculiar colored Bougainvillea, also the goose flower, or Hoya.

Some people are desirous of devoting their greenhouse to fruit, and I can not help but sympathize with them. What is finer than a big bunch of Muscat grapes or a luscious nectarine, but unfortunately these plants require considerable space and the house or compartment must be given over to them entirely, unless they are pot-grown where they can be raised in the house with other plants and such fruits are grapes, peaches, nectarines, and melons are interesting subjects to cultivate in pots and when fruiting transferred to the dwelling house where the fruit may be picked for consumption, a novelty to be enjoyed only by those possessing glass gardens.

Tomatoes and cucumbers, their vines trained to the side of the house, grown in the benches or in pots are of easy cultivation.

Orchids are considered fastidious and while there are many orchids that are rather exacting, there are also many that are very easily cultivated. Confine yourself to the more hardy ones, such as Cattleya, Dendrobium, Laelia, or Phalænopis.

By carefully planning you can have something growing in the greenhouse to interest you practically every day of the year.

Young Tomato Vines Planted in the Corner of the Side Bench with Flowering Plants in the Front of the Benches.
The Proper Treatment of Flowering Shrub

ARTHUR SMITH

MEASURED by initial cost, annual expense of up-keep, permanency and effectiveness, there is nothing so satisfactory as a well-designed shrubbery for the garden surroundings.

By the use of shrubs, flowers can be had from March to November, with berried effects during winter.

Unfortunately it is rare, comparatively, to find shrubs treated in such a manner so as to secure their full possibilities.

Of the two extremes one sees: total neglect in the way of pruning, etc., thereby producing a tangled thicket; or annual bartering with shears across their tops, the latter is by far the worst. The former is at least natural and some flowers are produced on the outside of the thicket; while the latter secures the height of unnaturalness and therefore, ugliness, with no flowers, except in the case of one or two species which bloom on the wood of the current year; and even in these cases they cannot do their best under that treatment.

This latter condition is more frequently seen on those places where a professional gardener, in the real sense, is not employed and where the work is done by the jobbing man who is either supplid by the local florist, or who "attends to gardens" on his own account. This yearly shearing off the tops of everything to a uniform height is the most barbarous treatment it is possible to give to a shrub of any kind, and one cannot realize the condition of mind or taste which garden owners possess in permitting it to be done.

While, as above stated, overgrown shrubbery is not so artistically bad as that which is subjected to the annual shearing, yet the condition of a tangled thicket prevents the full possibilities of beauty being obtained. This is not always the fault of the man in charge. He may have taken over a place upon which years of undone work in this connection exist, or the staff of assistants he may be permitted to have may be too small to permit of the work being done, although he may be painfully conscious of the need for it.

Shrubberies are like habits, they grow and develop unperceived. The eventual result is that the best effects are, in many gardens, spoiled by the overgrown state of the shrubbery. This is frequently soon brought about by the fault of the original planting plan in calling for shrubs to be planted eighteen inches apart, instead of from four to six feet.

When the designer of a garden, who really possesses artistic taste and who understands the varying natural beauty of form of the different species, lays it out, he has a scheme before his mind's eye; the shrubs are planted at the correct distances, and in the right places to give the best effects, with perhaps openings kept for the sake of pretty views in between, and the plan of the whole arrangement can be plainly seen, or at least should be, in the years following the planting.

In many cases, however, owing to the growth and development of the shrubs having been allowed to go on without attention, there is nothing discernible in later years of the original design. Clumps of hestation have perhaps encroached upon all swallowed up space intended to be grass; the sweep of walks has been wiped out; pretty peeps shut out from view and the stretch of landscape behind the garden entirely lost.

It often happens that it is the visitor who is the first to discover that the garden has not grown up, so to speak, while the owner being so familiar with it, has quite failed to notice what has taken place. Yet when one awakens to the fact that shrubs have gotten so big and thick that they need reducing or removing, it is difficult to understand what has been done, and shrubs are left year after year to get bigger and more overcrowded still. A further result of this is that the strongest and quickest growing species kill out entirely the dwarfer and less rampant kinds. Sometimes this grown-up condition has come about without the growth being noticed and nothing has been done because no one has thought of it.

The prevention of this overcrowded and tangled condition is a very simple and easy matter. One hour's work annually over a given area will do all that is necessary to keep shrubs in a proper condition, while the same area will take five days to put right if nothing has been done upon it for five years.

Properly treated, most shrubs throw up young growth from the bottom each year. When they are neglected for a few years, this young growth ceases to appear, or if it starts, soon dies, as the mass of top growth prevents the light getting down to the ground below. A shrub originally planted at the proper distance—four to six feet—should always show its individuality, while at the same time it is connected with and forms part of the shrubbery group. This condition can be best kept up by periodically cutting out the older growth down to the ground and by thinning out the younger ones if they should be too thick so as to afford them room to produce side shoots. This procedure secures the maximum of flowering wood and prevents one shrub encroaching upon another. Sometimes, but not often, a little shortening of the shoots allowed to remain may be necessary.

This cutting out the old wood to the ground is, too, the only way to deal with shrubs which have been allowed to grow into one another and thereby have produced an impenetrable thicket. To get neglected shrubbery back into what should be its normal condition is a work of time, and no light job, so far as the operation is concerned, and it is one very suitable for zero temperature.

Old neglected shrubbery will naturally have the majority of the stems of considerable length, with no young growth coming up from below. These long stems will have to be shortened, and for the first year, or at all events for part of it, the shrubbery will look the reverse of ornamental; but by letting in daylight to the ground, coupled with cultivation and feeding; a very different state of things will soon be apparent.

The main thing in shrubbery treatment is to avoid the necessity for wagon loads of brush having to be taken out by, as previously mentioned, going over the shrubs each year to remove the oldest wood. The object to be attained and kept up is to see that all stems have sufficient room to make side shoots so that each is covered with flowers throughout its whole length, and the individual shrub should have room enough so that it may develop its natural form. If the original planting was too close, no hasty pruning should be felt in uprooting some so as to give sufficient room to those which remain.

Almost any shrub or tree is ornamental if it has room to develop, but when half a dozen ornamental subjects are crowded together, the adjective is no longer applicable, for one spoils the other and collectively they are a mere thicket.

In renovating old shrubbery there is frequently room
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for additions as well as taking away. By this I mean that when many gardens were originally made the material as well as the plants used were limited; many beautiful shrubs, especially those from Japan and China, were not available; also many equally desirable native species were little known and which might be made more use of. Altogether the variety to choose from is practically double to what it was even ten years ago, and by a proper selection one can have a much longer period of flowers.

The shrubbery parts of too many gardens are gloomy, sombre and depressing for the greater part of the year. There is no necessity for this to exist if the different individualities, period of flowering, berry production, of the various species are thoroughly understood and harmoniously blended.

There are some people so adverse to altering things about a garden that it becomes an obsession with them; if they would only break away from this enslaving spirit and do a little at a time, they might see the overcrowded garden changed and its beauty improved in a way they never thought possible.

So far we have merely dealt with the main and general principles of the subject, but in the hands of an expert almost each species calls for more or less special treatment in the way of pruning. Of course, the object to be achieved is to maintain the maximum amount of flowering wood the space allotted to the shrub will permit, and also to allow the shrub to grow into its natural form. Properly planted in good soil and correctly handled from the start there is never any dearth of young, healthy growth to continually replace the older worn out wood, which does not flower so freely.

Shrubs may be divided into two main classes: those which flower on the wood of the current year and which always blossom in late summer and autumn, and those which produce their flowers earlier in the year from buds formed the previous season. Strictly speaking, and under normal conditions, the later class are best pruned as soon as they have finished flowering, to encourage fresh growth during the winter, while the latter may be cut any time during the winter and early spring.

The previous statement as to shrubs throwing up young wood from below must be taken as a rule, to which there are one or two exceptions; in any case no shrub should be planted that is not on its own roots, otherwise the growth from the ground is worse than useless. For instance, the practice of grafting lilacs on the common type, or on privet, cannot be too strongly condemned. Cuttings of all shrubs are easily rooted, so much is made of new introductions from China, many of which are certainly beautiful and valuable, but there is an extensive field in the West which is practically unexplored, where hundreds of at least equally beautiful things of all classes can be found, and which might be used to beautify our eastern gardens.

We would like to again emphasize the fact that the shrubbery portion of the ornamental part of country homes would pay for receiving more attention than it usually gets. The main idea is to allow shrubs sufficient room to grow in their natural way and to keep them from over-crowding one another by periodically cutting out the oldest wood, and above all to remember that "a shrub sheared is a shrub spoiled."

GARDEN FLOWERS OF SPRINGTIME

(Continued from page 193.)

about the absence of some of our oldest friends, always looked for in vain in our first box from our garden, the Scillas or Squills, the Crocus, the Dóromícum, the Jonquils, but then upon second thought, our pretty little scented Jonquils sending up its yellow head from among the large tangle of evergreen creeping myrtle along the driveway, will bloom later just as this Spring we have a great number of flowers blooming earlier than usual so that some of our other friends have already come and gone, all except the Dóromícums and their period of bloom extends over many weeks, enlivening the borders of perennials with their yellow Daisy-like flowers.

One spray of Virginia Blue Bell, or Cowslip (Mertensia virginica), we particularly appreciate because it has a history like that of nations and like the strongest races has survived the harshest treatment. In the alterations and improvements of the old home which had sheltered several generations, we had been obliged to excavate and in doing so many Blue Bells were hauled unknowingly out to the compost heap and to our surprise and pleasure the lovely things appeared in the most unexpected places in the rock garden, under low and high Evergreens, and we have allowed them to seed themselves where they will as they entirely disappear after blooming. This bloom is in memory of one of the grandmothers who was a Virginia belle herself, transplanted from her native Virginia soil to this Middle West.

Such a box as this is an inspiration to plan and plant more and to make of our garden truly a "lovesome thing."
The Asiatic Crabapples

The flowering of these trees makes one of the principal spectacular displays of the year in the Arnold Arboretum; and of these displays only that made by the Lilacs attracts a larger number of visitors. Among these Crabapples are a number of small trees which should find a place in every northern garden for few trees which are hardy in New England are more beautiful when covered in May with their white, pink or rose-colored flowers, or in autumn when the branches are loaded with their brilliant red, scarlet or yellow fruits.

Of the varieties herewith illustrated, Malus floribunda, considered by many persons the most beautiful of Crabapples, was introduced into Holland by Von Siebold in 1853 from Nagasaki, Japan. The place where it grows wild still remains unknown, although probably it is one of the high mountains of Kyushu. Japanese botanists and nurserymen confuse it with the Parkman Crab,

Malus Floribunda.

and Wilson has not seen it in Japanese gardens. It is a broad, round-topped, treelike shrub sometimes twenty-five feet tall with stout branches and slender arching and pendent branchlets. The clustered flowers are white when fully expanded, rose-red in the bud, and as they open in succession the two colors make a beautiful contrast. The fruit is about the size of a pea, yellowish or yellowish brown; from some plants it falls in the early autumn, on others it remains on the branches during the winter or until devoured by birds, who are particularly fond of it.

Malus Sargentii comes from salt marshes in the neighborhood of Muroran in northern Japan, where it was discovered by Professor Sargent in 1892, has qualities which give it a field of usefulness peculiarly its own. This species is a dwarf with rigid and spreading branches, the lower branches flat on the ground; it is well suited for covering slopes and banks. The
pressed as in the common Apple. This is the wild parent of the race of Apples long cultivated in the Orient, and since it fruits freely in the hot moist valleys of central China equally as well as in the cold regions of northern Korea it may prove of value to pomologists in breeding new races of Apples.

Space does not permit even a brief mention of all the species and hybrids of all the Asiatic Crabapples in the Arboretum collection. Among them, however, are trees suitable for the avenue, park or garden, shrubs for lawn borders and the slopes of banks, all absolutely hardy in the coldest parts of New England, and all to be depended upon to produce in spring blossoms in profusion. The plants grow quickly in good soil, love to have the breezes blow freely through their branches, and many of them begin to flower and produce fruit when only a few years old. In collections like that of the Arboretum they hybridize freely, and the species can only be propagated by grafting or budding.

How to Thin Fruit
T. SHEWARD

Fruit trees are thinned to increase the size of the fruit and prevent overcropping. Some varieties produce more fruit than they can carry, and if not thinned will bear themselves to death in a few years. Overloaded trees are very likely to break down by the weight of fruit. Apples bearing a very heavy crop one year will not bear the following season, because all the strength of the tree is taken up producing the fruit and cannot produce fruit buds. Apples, pears, plums, peaches, apricots and some berries are all improved by thinning. Currants may be improved by stopping the young wood at four leaves. Plums, peaches and apricots are usually thinned to about 6 inches apart. When trained on a wall the number of fruit is reduced to one to each foot of space. “Fig. 1” shows an apple branch. To thin it the number of apples would be reduced to one in each bunch (Fig. 2) or in actual practice only three need remain.

In thinning remove all diseased fruit first. Peaches nearly always produce more fruit than they can carry and should be reduced to about 6 inches apart. Plums should be thinned to about 5 inches apart. The thinning of peaches is shown at Fig. 3, “A.” “A” are removed, allowing those that remain to develop. Fig. 4 shows a bunch of grapes under glass, Fig. 5 the same bunch thinned, Fig. 6 and Fig. 7 show how to thin, leaving the “crown” berry. In thinning grapes allow one inch from berry to berry. This is done when the berries are about the size of a pea. In thinning grapes under glass the number of bunches each vine can carry must also be considered, and if too many are produced some are removed. Fig. 9 shows vine scissors for thinning the bunches. It requires a very steady hand, as the bunches should not be rubbed or injured. Some varieties need the shoulders tied, as shown at Fig. 8.
Vegetables for Exhibition and Utility

S. GOLDFING

OUR gardens are now carrying their full complement of crops and we should relax no effort to keep it up to the highest state of cultivation during the growing season. From this date until the end of September our vegetable quarters will demand attention and to carry out and make good our early plant and resolutions to obtain our quota of double crops for this Victory Garden year there must be no waning enthusiasm, but this cannot be conceived, after the tremendous success of the past two years of war gardens.

We are now enjoying the first fruits of the season, and ere this month is past our tables will be well supplied with fresh vegetables.

As soon as vegetable crops have ceased to be useful they should be removed and successional crops sown or planted. Where only the young and tender vegetables are prized and are always in demand only small quantities for immediate use should be planted. Where exhibition bulbs are wanted. This keeps the garden cool, thereby preventing evaporation, a great assistance to the condition of the plant is in full growth, probably during July, the green sprays are frequently attacked by the beetle, which, if once established is very destructive. One or two spraying of Bordeaux Mixture at frequent intervals during the growing season and an occasional dusting with soot will improve the plants and check the celery fly and maggot which are very disfiguring to say the least.

Many of our growers speak of the two Hs, the hose and the hoe, in the garden, and there is no doubt the greater of these is the hoe. And now that June is here, free use should be made of the hoe and other cultivators, for by doing this less artificial waterings will be necessary. By constant cultivation the surface soil is kept loose and free, which conserves moisture and keeps down weeds, thus serving a double purpose.

Our onions and leeks are greatly benefited by manural waterings at intervals. A good plan is to soak a bag of cow manure into a tub or barrel from which the water can be drawn. A mulch of manure is of great assistance where exhibition bulbs are wanted. This keeps the ground cool, thereby preventing evaporation, a great consideration when the hose is wanted in other parts of the garden. Dust them over with lime and soot at intervals, as it helps to ward off attacks of the onion fly. Thrips are also often very troublesome after this date; spray with nicotine solution at one time. Plant lice, or aphids, which are killed by spraying with a nicotine solution or a mixture that kills on contact.

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Beautiful Beds of Inexpensive Flowers

HENRY J. MOORE

It is not always that costly plants will make the most beautiful beds. Very often those which may be bought cheaply or produced at little expense when properly arranged make more effective beds than the high-priced ones, which may be enjoyed by persons of very moderate means. Sometimes a little difference in cultural treatment will enhance the attractiveness of a common flowering plant. Take the Petunia, for instance, which is usually allowed to grow and carpet the ground at will. Most of us had accepted the idea that this was the most effective way of using it. So grown the real beauty of the plant is not revealed, unless it is of a dwarf nature. The tall growing Petunias when planted two feet apart and trained to stakes make most beautiful beds.

Between these the dwarf varieties may be planted to carpet the ground, or any suitable carpeting plant, as verbenas, heliotrope, candytuft, certain dwarf nasturtiums, and many others; so planted nearly every flower of the tall Petunias will develop properly, and these clustered around the stakes to a height of perhaps four or more feet will provide a display which will at once arrest the eye and evoke admiration. Such beds will continue in flower from late June until the frosts of late October.

Not only with our summer beds do we sometimes fail to obtain the best possible results. Often opportunity is not taken to make the spring beds as bright and attractive as they should be. There is a rich choice of subjects for this purpose, and were their arrangement properly understood a vast improvement would be effected in the nature of our spring bedding. In the past we have depended too much on displays of bulbous plants, such as Narcissi, Tulips and Daffodils; while these in themselves may be regarded as indispensable there is no reason that other subjects should not be used in combination. Most excellent plants for this purpose are the under-mentioned.

**Aubretia**—The aubretia in their shades of pink, lilac, purple and white when used in conjunction with tulips of suitable color create beds of surpassing beauty. The plants may be raised in the same manner as the arabis during spring or fall. Can you imagine a bed of pink Darwin tulips, carpeted with the soft pinks and lilacs of the aubretia, or with pink or white alone? No stretch of the imagination can do the reality justice. Such beds will continue in flower from late June until the frost of late October.

**Phlox**—The spring flowering phloxes including several native species or varieties are among the wonderful things which to meet is to love. They enter into many charming schemes. Beds may be made entirely of these, or they may be dispersed through beds of darwin tulips with great effect. Their colors blue, white or pink are always pleasing. Propagation is effected by seeds during summer and by division during September. *P. subulata*, in blue and white; *P. amoena*, pink, and *P. canadensis* var. *Laphami* are exceptionally worthy of mention.

**Violets**—The violets which by cultivation and crossing have been greatly improved, and consequently are larger and the plants more bushy than the native species are among the best for use in our spring beds. They seed very freely and if the seedlings are in late May and June transplanted to nursery lines, a splendid lot of carpeting material will be available for planting with the bulbs during late fall. Seeds may, of course, be sown in spring or early summer, or plants be obtained by division during the fall.

**Violas**—The violas and pansies are perhaps the best known of the plants which are useful for the purpose of beautifying our spring beds. Inexpensive to raise by means of seeds or cuttings or to buy from the florist, they should be in every garden. When used to carpet the ground in beds of bulbs like the aforementioned spring flowering plants, the usual barren and forbidding appearance of the soil is eliminated and the beautiful pansy faces meet you with a smile, content as the gold of the ring to act as a setting to the diamond, for are not the innate beauties of the jewels of our gardens also brought out by comparison.

When this article appears many readers will be contemplating buying bulbs for fall planting. Perhaps from this text they may glean the desire to utilize some of the subjects mentioned herein, and endeavor to make pleasing combinations. If so, this exercise of taste will help to raise the character of our spring gardening to a higher plane. If the stiff and austere appearance of many solid beds of bulbs is any criterion, it is time this was done.

**OF INTEREST TO COUNTRY ESTATE OWNERS**

The National Association of Gardeners takes this opportunity to introduce the Service Bureau to the owners of country estates and to place it at their disposal. When requiring thoroughly competent gardeners, or to the capacities of superintendents, head gardeners or assistant gardeners, thoroughly qualified in every particular to assume the responsibilities the positions call for.

This Bureau is maintained entirely at the expense of the association and makes no charge to the employer. It may serve, or to the gardener it may benefit. Those desiring to avail themselves of the services of this Bureau may apply to—

M. C. EREL, Secretary

NATIONAL ASSOCIATION OF GARDENERS, 265 FIFTH AVE., NEW YORK
The French Garden,
Lynnewood Hall,
Ogontz, Pa.

A NY attempt to vividly describe the French Garden of Lynnewood Hall, the beautiful country estate of the Wideners at Ogontz, Pa., would be an impossible task, for no word picture could accomplish it and one must actually see this garden to realize all its beauty and charm.

When Joseph Widener, an ardent admirer of the unusual and rare in the gardening art, conceived the idea of having a French Garden, he planned for one that is totally different from what is to be found among the formal gardens on any other of our extensive American estates; and in his selection of Jacques Greber, landscape architect of Paris, he...
secured the services of a master hand for his undertaking.

It is astonishing how quickly the results were obtained which are shown in the accompanying illustrations of this enchanting garden, when it is considered that it required but twenty months to remodel and transform the entire grounds surrounding Lynnewood Hall, in which time all the construction work was completed and the beds planted.

While no stretch of the imagination would reveal what is underlying this garden as one views its surface, unless informed of its underground construction, its mechanical contrivances, necessary to operate the magnificent fountains,

One of the groups of Rhododendron edged with Buxus sempervirens, which surround the French Garden.

The large fountain underneath which a reservoir is built with a 79,000 gallon capacity, the center parterre in the background.

of which there are three large ones and ten smaller ones, will prove of particular interest to garden makers. The photograph illustrates the engineering skill and shows the tunnel leading from the mansion to the engine house, the latter being indicated by the square space in the picture just beyond the circular foundation of the large fountain. Under the foundation of this fountain is a reservoir with a capacity of 79,000 gallons of water.

The engine room contains four electrical power pumps, one to supply the reservoir with water from the pond located on the grounds of the estate; two to feed the fountains, while the fourth furnishes water for the

View showing underground construction with tunnel leading from mansion to engine room and circular foundation of large fountain in foreground, below which is a reservoir supplying water for fountains and garden.
garden, this working automatically, for whenever a spigot in the garden is opened the switch starts the pump into action.

During the summer months the beds are planted with the usual varieties of bedding plants, such as Begonias, Achyranthes brillantissima and Emersonii and the different varieties of Coleus which are selected to give the proper harmony of colors. In the fall the beds are filled with bulbs and over 50,000 of them are used each year, producing a magnificent effect, the planting being under the supervision of William Kleinheinz, for many years gardener at Lynnewood Hall.

Surrounding the center parterre and fountains, groups of hybrid Rhododendrons are planted, edged with Buxus sempervirens, forty-two inches in height. These Rhododendrons and Buxus were imported from Holland in 1915 and planted for immediate effect, which was accomplished with remarkable success. The row of plants seen in the illustration on each side of the design of this parterre are Taxus baccata. The walks are all covered with yellowish white pebbles which tend to show the design to a great advantage.

The Bay Trees seen in the photograph in front of the mansion are ninety-two inches in diameter and were brought to this country in 1900 and are estimated to be at least fifty years old.

Interesting Trees and Shrubs at Arnold Arboretum

JAPANESE CHERRY TREES

Of the numerous Asiatic Cherry-trees now established in the Arboretum the handsomest with single flowers are Prunus serrulata var. sachalinensis, the Sargent Cherry, P. subhirtella, and P. yedoensis. These three trees have flowered and produced their fruit for many years in the Arboretum, and have shown the ability to adapt themselves perfectly to the peculiar and difficult conditions of the New England climate. *P. serrulata var. sachalinensis* is the northern form of a Cherry-tree which occurs in three varieties in Japan, Korea, and central China. It was once a prominent tree in the forests of northern Japan and Saghalien but has now been largely cut for the wood which has been used for printing blocks.

This Cherry was first raised here from seeds sown in 1890, and when in flower is the handsomest tree introduced by the Arboretum into western gardens. The delicate pink or rose-colored flowers are short-lived, but the handsome foliage which is distinctly tinged with red as the leaves unfold turns to brilliant shades of orange and red in the autumn. *Prunus serrulata* and its varieties have produced a number of forms with double flowers, and these are the hardest and most valuable of the double-flowered Japanese Cherries which can be grown successfully in this climate. There are fourteen double-flowered named varieties of the Sargent Cherry in the Arboretum collection, but only two or three of them are large enough to have flowered here. These double-flowered Cherries bloom two or three weeks later than the single-flowered trees, and from these may be expected some of the handsomest flowering trees which are hardy in the north. Although double-flowered Japanese Cherry-trees have been cultivated in the United States and Europe for fully sixty years, they have never grown to a large size or given much satisfaction in western gardens.

The trouble has been in the stock on which these double-flowered plants have been grafted. The proper stock for them is naturally the single-flowered species of which they are varieties, and if such stock is used there can be little doubt that larger and healthier trees will be secured than have been obtained when other species have been used as stock in Japanese and in American and European nurseries. It is fortunate that the plants of the Sargent Cherry produce every year good crops of seeds in the Arboretum; these seeds are carefully gathered and widely distributed so that there is reason to hope that in a few years this tree will adorn many American parks and gardens and supply stock on which the handsomest of the double-flowered Cherries can be successfully grafted.

FORSYTHIAS

The Arnold Arboretum collection contains specimens of all the species and varieties of Forsythias, and of many hybrids, and it is interesting as indicating possibilities in plant breeding, when hybridizers enter a broader field than the one to which they have generally confined their efforts. The natural crossing of species of Forsythias has produced plants with handsomer flowers than those of their parents. This is true of some Lilacs and Crabapples, and of many Spiraeas, Deutzias and Rhododendrons, and it is not improbable that from the new material which has come into gardens in recent years handsome garden shrubs and more valuable trees than those we now possess will reward the patient labors of the plant breeder. To the hybrid Forsythias the general name of *intermedia* has been given. The parentage of these plants is not perfectly clear, although one of their parents is certainly the Chinese *F. suspensa var. Fortunei*, the plant which is most often cultivated in American gardens. The handsomest of these hybrids and the handsomest Forsythia in the Arboretum collection, *F. intermedia spectabilis*, came here several years ago from a German nursery. The flowers of this form are bright yellow. Other handsome hybrids are var. *primulina*, with primrose-colored flowers, and var. *palida*, with pale straw-colored flowers. The former appeared spontaneously in the Arboretum a few years ago. The flowerbuds of all Forsythias are often killed in severe winters, but those of these hybrids were for a long time believed to be hardier than those of the species, although in the winter of 1917-18 they suffered even more than those of their parents.

VALUABLE NEW SHRUBS

The shrubs commonly cultivated in Northern gardens, have been known for centuries. Many are native species, possibly somewhat improved by cultivation and the rest are introduced plants which travelers have found cultivated in other regions. The discovery of America supplied European gardens with a multitude of new plants, while in our own country the discovery of China and Siberia in a botanical sense, is having much the same effect. In recent years a large number of promising shrubs have been brought into the country, partly through the efforts of the Arnold Arboretum and partly as the result of explorations carried on by collectors, sent out by the National Government. The flora of Siberia and China, though still little known, have great interest for us from the fact that these...
countries have a climate similar to our own and their plants, therefore, are likely to prove hardy with us. In a list of the twelve best shrubs recently introduced, we find several whose generic names must be unfamiliar to the great army of flower growers. Four of the twelve are species of Cotoneaster, namely C. hupehensis, C. multiflora, C. racemiflora and C. nitens. The first three have white flowers and when in bloom resemble Spiraeas, to which in fact, they are closely related. The fruits are red berries. Cotoneaster nitens has red flowers and black fruits. A large yellow wild rose (R. Hugonis) and two lilacs Syringa Swegingowi and (S. reflexa) are also on the list. A species of bush honeysuckle (Diervilla florida var venustum) is reported to be the handsomest of all its race. The flowers are red. A large yellow wild rose (R. Hugonis) and two lilacs Syringa Swegingowi and (S. reflexa) are also on the list. A species of bush honeysuckle (Diervilla florida var venustum) is reported to be the handsomest of all its race. The flowers are red. A large yellow wild rose (R. Hugonis) and two lilacs Syringa Swegingowi and (S. reflexa) are also on the list. A species of bush honeysuckle (Diervilla florida var venustum) is reported to be the handsomest of all its race. The flowers are red. A large yellow wild rose (R. Hugonis) and two lilacs Syringa Swegingowi and (S. reflexa) are also on the list. A species of bush honeysuckle (Diervilla florida var venustum) is reported to be the handsomest of all its race. The flowers are red.

In the color of its flowers the Fraxinella is very variable, one of the finest and largest forms being Dictamnus albus purpureus, or caucasicus as it is sometimes called. It grows in good soil about 4 feet high, with large foliage and flowers varying in color from light to deep purple. These plants flourish in any good garden soil or sunny position, but resent moving. After being transplanted they take a long time before commencing to grow freely, so that to have good, well-flowered plants it is necessary to leave them severely alone when established. For this reason it is an excellent subject for naturalising in open beds in the wild garden, where it may be left undisturbed for years.

THE FRAXINELLA (DICTAMNUS ALBUS)

This handsome old favorite is generally seen in gardens as isolated plants, and, although attractive when so planted, is much more effective as bold large flowers in terminal spikes well above the foliage during the month of June.

In the progress of variation of a garden plant, growers are apt to overlook the best purpose or intention. The lures of size, novelty and variety are often illusive; they attract and lead into blind paths. The thing to look for is the purest beauty of which the plant is capable. In the matter of coloring in the Aubrieta the very finest quality may often be picked out in a batch of seedlings of the type A graeca. It is a clear, pure lavender purple rather light than deep in tone. Of the heavy reddish colorings, and even the deep purples inclining to reddish, they are better avoided altogether.

AUBRIETIAS IN THE SPRING GARDEN

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The Greenhouse, Month to Month
W. R. FOWKES

The off season, so called, for glasshouses is at hand. Vegetable plants may have been crowding the space, but now more is available in which to grow the flowers for next winter's use. Primulas should be sown. The variety Malacoidis is ideal for any structure. Prepare six-inch pots with two inches besides for drainage and cover with leaves. Do not use moss for drainage with Primula raising as it holds too much stagnant water. Light soil, chiefly leaf mold, sand and chopped sods, screened through a quarter-inch mesh, is the best. Soak the whole one hour before sowing. Primulas are easily grown; the chief difficulty lies in raising the seed. Get good seeds and when sowing, merely press in the soil, afterwards covering with glass and paper to exclude light. Keep in a 60 deg. temperature, or as near to it as possible.

Gloxinias should be sown in a similar compost to the above mentioned, but start cool outdoors in a flat, protected from the heat, and endeavor to grow cool through the summer.

Cinerarias should be sown to larger pots, and a pinch of seed, to bloom the end of August, should be sown now.

Cyclamen should be placed in 3 to 5 inch pots now. Drain well with cinders and use rich soil, but light, well rotted cow manure and Godfrey's bone dust is also ideal. Get the best grade of the latter for cheap grades of bone will form a poisonous bulk that will destroy many plants, and the reason artificial manures are condemned is on account of inferior grades.

Gardenias will require syringing heavily to keep the mealy bug away. Those who have not made a start with these charming flowers should begin at once. In the first place remove the boards from the bottom of the bench and replace with a wire netting of a fine mesh. Set inverted sods on this and a rose soil with one-eighth part of peat will suit fine. The wire bench is to insure perfect drainage, as a sour soil is fatal. Do not shade, but keep them well dampened.

Chrysanthemums are at the present not very interesting to some people, but if their full beauty is to be had when Jack Frost appears in the fall, they must receive every care.

The exhibitor will have his plants in eight-inch pots, but the man who grows a few, can still plant eight inches apart on the bench and get some very nice blooms by November. Be careful in watering these plants. Must require a great amount of water when in a very vigorous condition, but when placed in flowering pots be careful to avoid souring the soil, or the roots will sicken and die. Maintain a growing atmosphere as cool as conditions will allow, and spray overhead several times daily. Also dampen the paths and under the benches. The garden paths near the greenhouse doors must be also moist to keep away the red spider. Mark well the entrance of the house for dry spots and if grown in a conservatory, mop up the pools of water, but have a damp floor by all means. Spray with Aphine to drive off greenfly. Keep the growths tied up nicely, and upright.

Do not overcrowd the pot fruit trees. A peach tree or nectarine tree carefully handled will give useful crops for 15 to 20 years. Allow one foot between each fruit the first year.

Place nets securely under the plants now ripening their fruits to catch any which might fall off. Be careful in gathering to use a pair of scissors and not to break the fruit with the hand. These plants present a pretty sight in the dining room of the house and are not injured in the least in such quarters.

The rose house should now be planted for winter work, and well water each plant before planting. Do not shade the house, as is commonly done by amateurs. Dampen the plants and the paths. Evaporation is so rapid in the hot summer months that unless they are well dampened down, they will not make a good growth. Sprinkle lime under the benches and maintain a sweet growing atmosphere.

Gloxinias should be shaded and grown as cool as is possible. They are usually over-coddled and thrips abound on their velvety leaves, injuring them when overheated.

Do not grow them with Caladiums or other heat-loving plants. Caladiums with their fine, richly colored leaves will stand high temperatures, but they are occasionally wanted in the dwelling house and for that reason, should be grown somewhat cooler for this purpose. Get the plants hardened by less water and more air, and when nicely started they will stand in the dwelling house to adorn an open, unused fireplace or table.

Do not forget those most beautiful and easily grown of all Nature's gems, the orchids.

Many people fail right here after the plants have shed their lovely flowers. They are put aside in a place under the benches out of sight, but they resist such treatment. Observant cultivators have noted that many orchids even thrive in tumble down, dirty looking houses. But the best sanitarium is outdoors from the middle of June until the first of September under the trees.

If you want the space, or do not like the unloveliness of the orchids out of bloom, place them under the trees, and but little care will be needed. Just see that they are made secure in their various receptacles, for an orchid loosely planted will not thrive.

Cattleyas will be blooming soon and the blooms ought to be cut as soon as fully developed to help the bulbs mature. Water the developing plants well, and when in bloom give a less quantity, but not the European rest, as is given by some so-called experts, or your plants will be useless masses of sticks.

Begonias, Lorraine types need careful watering, otherwise they will develop a rusty appearance. Begonias do not require syringing, but an occasional wash from a rose watering pot is relished by the plants.

Remember to feed the Hydrangeas and give abundance of water. If you wish to prolong their blooming period, they must be near the shade of trees, or on the porch, for in the sunlight the flowers soon wither. Bone meal is an ideal fertilizer, also Sulphate of Iron, one ounce to two gallons of water. If iron filings were mixed in the potting soil, this will not be necessary, but they require more iron than most plants.

Azaleas and kindred plants must be plunged outside in a partially shaded position, and be carefully watered. Syringe them to keep away the red spider, and pick off the premature flowers.
Cultural Notes on Greenhouse Calceolaria

The calceolaria is a hybrid plant, the result of much cross fertilization of the finest type, hence its capability of affording ever new surprises and delights. The finest collections that have been exhibited of late years, and that have made lasting impressions on the public by their form and brilliancy of color, have invariably been raised from seeds of selected varieties, saved on scientific principles that insure vigor, variety and splendor in progeny. Calceolarias thrive under intelligent cool house treatment, but it must be clearly understood that in every stage of growth they are quick in resenting neglect or careless treatment. The work must be carried out with scrupulous attention, and the result will more than justify the labor. Extreme conditions of temperature are distinctly injurious, and the plants are especially susceptible to a parched, dry atmosphere.

May is early enough to commence operations, and July is quite late enough for a final sowing. As a rule the June sowing will produce the most robust plants.

The soil, whatever be its composition, should be rich, firm and above all porous. Press it well into the pots or pans. And make the surface slightly convex and quite smooth. A compost that has been properly prepared will not need water, but should it become needful to moisten it, this must be done by partially submerging the pans in water. The seed is as fine as snuff, and requires delicate handling. It is easily lost or blown away, and therefore it is wise not to open the packet until perfectly ready to sow. Distribute the seed evenly and sift over it a mere dusting of fine earth. Place a sheet of glass upon each pot or pan, and the glass must either be turned or wiped daily. This not only checks rapid evaporation but prevents the attack of vermin.

Under favorable circumstances, from seven to nine days will suffice to bring the seedlings up in force, and very few will appear afterwards. Immediately they are through the soil remove the sheet of glass and give them prompt attention, or they will rapidly fade away. So soon as the second leaf appears, tiny and difficult to handle as the plants may be, commence pricking them off into other pots or seed pans prepared to receive them, for it is unsafe to wait until they become strong. Allow about two inches between each plant. The occupants of each pan may generally be pricked off in about three operations, and there should be only the shortest possible intervals between.

With many subjects it is a safe rule to use the robust seedlings and throw the weak ones away. That practice will not do in the case of the calceolaria, or some of the most charming colors that can grace the conservatory or greenhouse will be lost. The strongest seedlings generally produce flowers in which yellow largely predominates. This can easily be verified if the plants are kept under separate numbers. But it must not be inferred that because the remainder are somewhat weaker at the outset, that ultimately they will not make robust plants.

Freely mix silver sand with the potting mould, and raise the surface higher in the centre than at the edge of the pot. From the first appearance of the seedlings shading is of the utmost importance, for a brief period of direct sunshine will prove certain and speedy destruction. Do not allow the plants to become dry for a moment, but give frequent gentle sprinklings of water. Rain water is preferable. As the soil hardens, stir the surface with a pointed stick not too deep, and give water a few hours afterwards. About a month of this treatment should find each plant in the possession of four or five leaves. Then prepare thumb pots. Cover the bottom with fine moss, and fill with rich, porous soil. To these transfer the plants with extreme care, lifting each with as much soil adhering to the roots as a skilful hand can make them carry. Place them in a frame, or in a sheltered part of a greenhouse, quite free from dripping water. Always give air on suitable days on the leeward side of the house.

By September the stock should be large enough for three-inch pots, and it is then quick time to begin the preparation for winter. Some growers put them on heat and are successful, but the heat must be very moderate, and even then the practice is dangerous. Place the plants near the glass, and at one end of the house, where they will obtain plenty of side light as well as 'light from above. During severe frost it may be well to draw them back or remove them to a shelf lower down, and towards the centre of the house, but they must be restored as soon as possible to the fullest light obtainable as they have to do all their growth under glass.

When growth commences in the spring, which will generally be early in March, give each plant its final shift into five-inch or six-inch pots. This must be done before the buds push up or there will be more foliage than flowers. The following is a good compost to use: One bushel good loam, half a bushel of leaf soil, one gallon of silver sand, quarter pint of soot and some good plant fertilizer. Well mix a few days before use. Any sourness in the soil will be fatal to flowering. The mould must be carefully "firmed" into the pots, but no severe pressure should be used or the roots will not run freely. Neglect as to temperature or humidity will have to be paid for in long joints, green fly, red spider or in some other way. But there are no plants of high quality that grow more thriftily if protected from cold winds, and kept clean by the free use of the syringe.

Until the pots are filled with roots give no manure water of any kind. But then it may be administered until the bloom shows. Tie out the plants about a fortnight before flowering, and during the period of full display give pure soft water only. It may be that a few large specimens are required. In this case shift the most promising into large pots, and when the pots are filled with roots, not before, give regular supplies of manure water until the bloom is up.—Canadian Florist.
In past years the orchids of the Missouri Botanical Garden embraced approximately 700 species, the major portion being those species not ordinarily seen in private collections, or most commonly called botanical varieties. These species frequently lack the handsome shape, color, etc., of the everyday type of Cattleya and Laelia which the florist seeks for commercial enterprise. However, for studying the evolution of the order or adaptation for insect reception for pollination, the botanical types are essentially important because their grotesque shapes such as the bucket orchid, Coryanthes. The labellum or "lip" of this genus is so changed that it is hard for the amateur to account for it. We find it transformed into a bucket-like appendage immediately below the sepals and petals. Why this peculiar adaptation? We know the orchids rely almost exclusively upon insects for pollination which is essential for their perpetuation; upon close examination of the flower we find that the round head-like portion (hypochile) at the top of the flower is provided with very short hairs crowded together for about half way, the lower portion being absolutely smooth. Below this directly underneath are two horn-like appendages attached to the base of the column, their function being to excrete nectar upon the opening of the flower. This strongly perfumed nectar is caught in the lip or bucket below, which is kept filled to the column or sexual organs arranged at the back of the bucket forming a channel opening.

This peculiar shaped orchid certainly is not worth growing commercially, but botanically it is one of our most interesting South American representatives.

Nature has so arranged this flower that during visitation of insects the pollen is brought in contact with the stigmatic surface. The flower is of short duration, lasting about three days at the most, and upon opening, the odor is almost overpowering. This attracts honey-seeking bees, which soon alight upon the hairy portion of the head-like appendage fighting for a place. During the scramble some are pushed down upon the edge which lack the hairs for their support, thus dropping off and receiving an involuntary bath in the nectar, caught by the bucket below. Their wings becoming wet, making it impossible to fly out and their sides being glabrous, eliminate the possibility of climbing up. They soon, however, find nature's pathway at the back, their egress being aided by several ridges at the opening of the channel. On this outward journey they have to squeeze below the column, during which progress the masses of pollen becomes eglutinated upon their backs. Not satisfied with their involuntary bath the operation is a again performed, probably to replenish their nectar supply. During this series the pollen becomes transformed on to the stigmatic surface of other flowers, thus performing the work mapped out by nature.

A less attractive botanical type is the monks-hood orchid, Catasetum, native of Mexico, of which there are a dozen species in the collection. They are remarkable in being of a monoecious type (sexes on separate spikes usually at different periods). In reviewing the earlier botanical magazines one will find the botanist puzzled to such an extent that the same plants received distinct specific names. The lip or third petal again plays an immense part in previous species, it is uppermost, and in the staminate flowers it is very thick, the inner lining being palatable to the bees of gnawing type. Inclosed, the column is found joined at its center by two sensitive antennae which fit snugly inside the lip. These are joined at their base by a thin membrane, which is stretched over a conical portion of the column; this is afterward readily seen to be the caudicle or connection medium for the viscid disc on one end and the two large pollen masses on the other. At the time of maturity of the pollen, the insects are busy feeding upon the inner lining of the lip coming readily in contact with the antennae. The first touch of these causes the caudicle to rupture, ejecting the pollen securely fastened upon the bee's back, immediately becoming in position for pollination. The writer has repeatedly shown this peculiar ejection to students by using a pencil, the pollen often jumping ten feet during the operation. The subject of pollination is one of unusual interest, especially in relation to orchids.

The St. Louis orchid collection ranks as one of the best botanical ones in the country. Through the recent noteworthy donation of the entire Brownhurst $5,000 collection of 1,000 species and varieties by Mr. D. S. Brown, of Kirkwood, St. Louis county, the garden now possesses one of the largest and best collections in the country, embracing both the botanical and rare showy types.

Ten years ago our orchids comprised approximately 500 species. An ordinary three-quarter span house facing east and west was given over to their cultivation. This house was open to the general public winter and summer, being a combination of growing and exhibition. The attempt to grow plants from all over the world in this house resulted rather unsatisfactorily. The recently completed orchid range consists of eight 60 feet even span houses facing north and south, joined together by a vestibule house running east and west so as to overcome
variation in winter temperature. All houses are individual in order to obtain perfect ventilation from panel, sides or top ventilators. Two of these are called pit houses, built in the style of European pineapple forcing pits. The floor level being approximately five feet below that of the outside grade. These were built for such moisture loving genera as Vanda, Aerides, Saccalobiurns, Paphiopedilum, etc. During the summer months the main object is to hold down temperature and maintain moisture, when outside conditions are unfavorable. The results obtained from these houses were quite gratifying, the temperature being lowered from eight to ten degrees, with equivalent moisture conditions.

At the north end of six houses, floral alcoves are built facing and forming a part of the spacious aroid house, in which the flowering orchids are arranged during their season of bloom. In this manner the growing houses are kept private, excluding the thousands of visitors who view the public houses throughout the year. The climatic conditions of St. Louis for orchid culture are not as favorable as those of the eastern or western coast, where the necessary moisture requirements are more easily met. This condition is accentuated by the inability to grow those genera which inhabit the higher altitudes of the Andes of South America, particularly Odontoglossum of the crispen type, Masdevallia, Restrepia, Pleurothallis, etc. However, the Mexican Odontoglossum, as Rossi, Cervantesii and Caudatumi, are grown successfully. The sub tribes, Vandae, Cypripedae and Epidendreae, all grow fairly well. The genus Paphiopedilum stands out by far as the best growing genus in this climate. This is naturally the case because of being the easiest orchid subject to cultivation. Some of the lesser known genera as Chysis, Cata- seum, Schomburgkii, Cytopodium and Polystachya, grow and flower remarkably well.

THE BROWNHURST COLLECTION

Through the generosity of Dr. D. S. Brown, of Kirkwood, Mo., the Missouri Botanical Garden recently became the possessor of one of the finest private collections in the country, comprising chiefly Palms, Cycads, Aroids, Nepenthes and Orchids.

For a period of thirty years Mr. Brown purchased the rarer orchids from American and European establishments, particularly the Lady's slipper orchids, which was his hobby, two houses being set aside exclusively for their culture. This genus alone comprised approximately 900 species, hybrids and undetermined type. The rare forms are too numerous to enumerate in this article, the complete inventory, however, was published in the garden bulletins, Vol. VI, Number 5.11. The hybrids derived from bellatum, nivemum, concolor the white parents and numerous Fairieanum types are the most noteworthy. Some particularly rare kinds are represented by duplicate plants, P. maudiae magnificum, P. maudiae Dell var., P. orion, P. Harrisianum albsenes, P. callasum Sanderia, P. Holdennis, P. Dowleri, and var. Hindeanum, P. Dreadnought, P. Phoebe, P. Rolfeae and P. Priam. The common P. insignis is represented by upwards of 50 varieties.

Mr. Brown was quite partial to Brassocatleyas, the albino varieties of Laelias, Cattleyas and Dendrobiums.

The most striking varieties are the true B. C. Veitchii var. Queen Alexandra. Some of the miscellaneous albino types of the collection are Cattleya Dusseldorffei var. Undine, C. gaskelliana alba, C. intermedia alba, C. labiata albsceans, C. O'Brieniana alba, C. Skinneri alba, and type magnifica. Dendrobium noble virginal alba, Laelia anceps alba Bull's var. Lycaste skinneri alba and Vanda teres alba.

Generally the Brownhurst collection was not known in this country as well as to the European specialists, partly due to the fact of Mr. Brown's dislike for advertisement, and owing to the major portions of his purchases coming from Europe. It may be safely said that Mr. Brown never exhibited any of his plants at flower shows and could not even be persuaded to exhibit at our local shows. Visitors were always welcome to inspect the green houses. The “Cyp house,” however, was always locked, and could only be entered accompanied by Mr. Brown or his gardener, Mr. John Krumm. From the standpoint of floral displays, this gift to the people of St. Louis is only second to that of Mr. Shaw's

PHLOX SUBULATA

There is nothing more charming than the moutain of moss pink, botanically called Phlox Subulata, which grows from 4 to 6 inches high, for rookeries unsightly mouldings. In fact it thrives well in the shade and the moss like foliage which is hidden under the masses of bloom, when the flowering season is over is elegant for banks or under trees. Where grass won't grow, it will. But it will not thrive in wet or in sour soil. It comes in three of the most beautiful shades, comprising of Lilacina, light lilac, rosia, bright rose and alta, pure white. It flowers from the beginning of April until the end of May with just a mass of bloom and will grow in the poorest of soil. It is very easily grown either from seed or by dividing the clump which grows very rapidly once it has taken a good hold, and being a native of the middle west, it's a perfect hardy perennial.
Tracing the Migratory Movements and Ages of Birds

THE homing instinct of our wild birds is a universally acknowledged fact. In some species this instinct appears more acute than in others. Blindly obeying its subtle prompting, they must cover unknown distances, in some cases upwards of ten thousand miles, to return again after a time to the nesting grounds of their babyhood.

The return of most birds to their old homes was considered as probable, and in the case of individuals of marked peculiarities it has been possible to establish this fact by a doubt. With somewhat more information of a more definite character to hand at this date, the supposition still belongs to the poetic realms of conjecture, rather than to established scientific fact. Audubon himself sought for indisputable proof by encircling the legs of young phoebes with a silver wire ring. He had the satisfaction of noting the return of two of these birds the following year.

The migratory routes to and from the breeding grounds are fairly well known. In a general way the movement of each species, as a species, is known. However, the movements of the individual of a species is still a mystery. Somewhere along the route the birds of a given locality join the flocks; somewhere, further on, they drop out singly, in pairs or flocks, who can tell?

I know that one of my robins migrated five hundred and fifty miles. Did his own brothers and sisters go as far? Such questions are being made possible of solution through the procedure and efforts of the American Bird Banding Association.

But, aside from the migratory movement of birds, little is known of their respective ages. The popular mind has been led to believe that an eagle, a swan or a crow would live to be a hundred years old. An English authority comes to the same conclusion through a series of investigations. This same authority also fixes the ages of other birds as follows: Wren, three; thrush, ten; blackbird and robin, twelve; lark, thirteen; partridge and canary, fifteen; nightingale, eighteen; pigeon, twenty; crane, twenty-four; sparrowhawk, forty; pelican and goose, fifty; heron, fifty-nine; and parrot, sixty years.

M. A. Walton, the Gloucester hermit, writes of a song sparrow which came regularly to his cabin door-yard for twenty-four years. He early recognized this bird by its habits and individuality. F. H. Sidney, of Wakefield, Mass., also writes of a male English sparrow, which he personally marked with a silver band around the leg twenty years ago. This bird has clung tenaciously to its original home all these years, not, however, without changing mates quite frequently. Captive birds, too, have aided in a measure to throw some light on this subject of age, but, at best, records so taken should not be taken seriously or as final, since the conditions under which wild birds live are vastly different.

To solve the perplexing problems of migratory movements and the ages of the various species, haphazard efforts have been made by many people and groups of enthusiasts to mark individual birds with inscribed rings. A more systematic movement along these lines developed by certain Europeans in 1899. Investigators also began to experiment by banding birds in this country in 1902. From these individual and experimental efforts grew a collective and systematic organization seven years later, the American Bird Banding Association.
In shady, damp places ferns are about the only plants that will thrive and interesting, permanent beds can be made of the hardy sorts. A few native orchids, however, will produce an unusual bed in this situation, so difficult to handle successfully.

If the soil is heavy, it will be necessary to make it more open by working in sand, if orchids are to be grown. Peat or soil from the woods is better than sand, if it is to be had.

When the bed has been prepared plant lady slippers, as these enjoy shade and moisture. All the following are good:

Cypripedium spectabile, leaves six to eight inches long, bearing large white flowers; shaded delicate rose, with globular lip of rosy carmine, flowering in July. It is common in bogs and rich, low woods. It is easily multiplied by means of divisions.

Cypripedium acaule is another beautiful native orchid, to be found growing in moist or sandy ground, usually in the shade of evergreens. The large handsome flowers are of a delicate soft rose. C. candidum grows in the Western States in bogs and on low prairies. The white flowers are not large but pretty. C. pubescens is the brownish purple and yellow lady’s slipper, found growing in low woods and bogs, flowering in the early summer. C. parviflorum has smaller flowers than pubescens, though the yellow and brown flowers are somewhat fragrant.

Then there is the orchis spectabilis with glossy leaves, three to five inches long, growing from a fleshy fibrous root. The flowers are pink-purple and white, produced in May and June. The plants are to be found from New Brunswick south to Georgia and as far west as Missouri, in rich woods.

These will form a rather unique bed and, providing they have sufficient moisture and shade, will succeed at the north side of the house or beneath trees. Sufficient moisture does not mean a drenching one day and drying up for a week, but keeping the soil constantly moist.

The flowers of these plants are almost as beautiful as the choicest greenhouse orchids and the plants can be had for the hunting them up.

Have mercy in digging wild plants. Take no more than will be actually cared for, so they may not be exterminated.

There is also the Habenaria division of the orchis family, probably the handsomest of our native orchids, found growing in bogs or low grounds. These include H. fimbriata, larger purple fringed orchid; H. psycodes, smaller purple fringed orchid; H. lacera, ragged fringed orchid, and others. These require peaty beds with ample moisture, but are worth the trouble given them when they are successfully grown.
From Here, There and Everywhere

Tying Up Plants

Much could be written with reference to the proper way of giving support to plants that need assistance to maintain themselves in a straight and integrity. In some gardens that are fully exposed to strong winds the taller plants are almost sure to be toppled over unless they are helped in some way. Stronger winds too often the remedy applied instead of improving matters does exactly the opposite. A group of shoots constricted in the middle by a string passed around them and fastened to a broomstick stuck in at one side does not present a picture that will satisfy any one having even the rudiments of artistic taste. Better far to let the plants blow over—they will least look natural. The point to remember when staking and tying plants is that they must always be supported in such a way that the supports are as inconspicuous as possible and in such a manner that the beholder scarcely realizes that they are dependent on artificial means for their upstanding condition. This method can be carried out by placing the supports, supported on three or four legs, over the plants before they are fully grown. The subsequent growth of the plants almost entirely covers their supports. This method is very successful with plants that grow in clumps, such as peonies and delphiniums.—M. Free, N. Y. Sun.

To Destroy the Rose Bug

It is claimed a remedy to destroy the rose bug has at last been found in the solution or arsenate of lead and ordinary molasses, and those who have been experimenting with this mixture report favorable results.

The solution is one part of ordinary molasses to five gallons of arsenate of lead spraying material, diluted, ready for use. It appears that the rose bug will feed on sufficient of this sweetened poison to have fatal effects. The rose bug no longer confines itself to roses, but has extended its ravages to fruit trees and flowering shrubs, as well as to some of the flowering and vegetable plants.

This insect has become most destructive, having caused considerable damage during the last few years, and is now spreading its activities over wider areas than in the past. Rose bugs will kill chickens and even old hens that will feed on them, so the practice of feeding them to fowl should be avoided.

Reward for Specially Fine Blueberry Plants

For several years past F. V. Coville, of the United States Department of Agriculture, and Miss Elizabeth C. White, of New Lisbon, New Jersey, have been cultivating blueberries and working to produce new and better varieties. To get new varieties they find the very best wild bushes and then cross-breed these wild plants. The seeds resulting from the cross-breeding grow into all sorts of new varieties, just as seeding apples are seldom like the tree they came from. Many of these new varieties of blueberries are poorer than their parents, but about one in a thousand turns out to be much better than either parent and makes a promising new variety.

About ten years ago the Department of Agriculture published Mr. Coville's first work on blueberry culture. His most surprising discovery was that blueberries cannot live in a well-balanced, fertile soil. They require a sour or acid soil and are actually killed by the application of fertilizer which would be the best possible food for ordinary plants. Some years ago a wild blueberry plant was found in Massachusetts with berries more than three-quarters of an inch in diameter, but it was killed by people who did not understand its proper care by being fertilized.

Since 1911 Miss White has been associated with Mr. Coville in these investigations, he in the Government greenhouses at Washington working out the scientific problems and originating new varieties by cross-breeding, and she at New Lisbon, New Jersey, raising these new varieties and the best wild plants that could be found. Mr. Coville and Miss White are now trying to cross-breed a number of wild plants together. They already have a few plants that have berries three-quarters of an inch through, and hope to produce hybrid berries an inch in diameter. They want more unusually fine wild plants, and will pay $50.00 for especially fine plants with very large berries.

Unfolding Leaves

The leaves of many trees are highly colored when they first unfold and such trees like many of American Oaks, are as distinct and attractive in the spring as they are in their autumn colors. In Massachusetts young Oak leaves now give beauty and distinction to at least two Asiatic trees, Cercidiphyllum japonicum and Acer griseum. The former is an old inhabitant of the Arnold Arboretum, having been raised here first in 1878. It is the largest Japanese tree with deciduous leaves, growing from the ground with numerous great stems. The flowers and fruit are insignificant, but the pyramidal habit of the tree is handsome and interesting. It owes its name to the shape of the leaves which resemble those of the Redbud (Cercis); these have the same lovely pink color, and although they turn clear bright yellow in the autumn it is during the last week of April and in the first days of May that the Cercidiphyllum is more beautiful than at any other time of the year. Acer griseum was discovered by Wilson in central China, and just now very distinct in the red color of the young leaves. This Maple as it grows on the mountains of China is a tree sometimes seventy feet high, with a short trunk and a rather narrow head of ascending branches. Among Maples it is distinct in the beautiful lustrous bright reddish brown bark which separates freely in thin plates. The flowers are small, but the handsome of the Maples introduced from China in recent years which have proved perfectly hardy in the Arboretum, but unfortunately it is still extremely rare in western gardens.

Puddling the Soil

Amateur writers on gardening, frequently show, by most amusing misconceptions, how small is the stock of knowledge they possess on the subject chosen for elucidation. One that has appeared in several books recently is found in connection with the use of the word puddling as applied to soils. A puddled soil is one that has been worked when so wet that the soil crumbs and artificial ponds may be made to hold water, by covering the bottom with a layer of puddled clay, but a puddled soil is another matter. In such soils, plants make little or no growth, because their roots have difficulty in pushing through the compact mass. As our amateur gardeners use the word, puddling means to pour water on the soil until it forms a puddle. This is all nonsense; at least Noah Webster never heard of it, if we can believe his justly celebrated dictionary.—American Botanist.

Two Useful Shrubs

Two plants useful for covering the margins of drives and the borders of shrubbery, Rhiz carlifera (acuminata) and the Yellow Root (Xanthorrhiza apifolia) are covered with flowers. Those of the former are small, pale yellow, arranged in compact heads and of a delicate rose pink color, with the unfolding of the leaves composed of three leaflets; those of the Yellow Root are purple in long drooping, terminal racemes. The flowers of these two eastern American plants are attractive, but their great horticultural value is in their habit of growth. The height of the Rhus is from two to four feet, with spreading branches, the lowest flat on the ground, and with an irregular top. In the autumn the leaves turn bright scarlet. For road borders it is desirable to make a connection between larger shrubs and the ground no other plant which has been tried here has proved so successful. The Yellow Root is tall enough for a wide border and forms with its erect stems and divided leaves an excellent ground cover. Unfortunately it has failed to grow well in those parts of the country where the soil is strongly impregnated with lime.—Arnold Arboretum Bulletin.
Some plants are much more happily dowered with English names than others. I quarrel with English names for plants when they are ugly like Sowbread, and clearly inferior to the mellifluous Greek; but in the case of Windflower and Anemone (Greek, Anemos, the wind, either because it grows in windy places or else because its flowers at a windy season), both are lovely, and suggestive not only of the whirl and tumult of a blustering May day, but of the light balmy zephyrs from the South and West whose magic caresses entice the subterranean gods that inhabit my garden to come forth from their hiding places and lighten the darkness of this very dark world. Thus, Turner in his herbal (1568), which contains figures from the small editions of Fuchs, uses the word Anemone, and observes that "it maye be called in English Rose perseley, because there groweth a floure like a single rose in ye middle of this herbe, which is very like sorrelse in the late leaves that are aboute the rote." Turner's allusion to the foliage refers, of course to the Poppy Anemone, but in the Anemones we are singularly fortunate in possessing a race of plants that is lovely alike in flower and foliage. Anemone blanda is no exception to this rule, as its triternate, deeply cut, light green foliage, in height about 6 inches and of most graceful appearance, gives an additional beauty to the shining blossoms. Unlike our native Wood Anemone, it can hardly be considered a nemoral plant, as it needs more sun and a warmer position than the former; it succeeds well, however, in a thin wood where it can get both shelter and sunshine, while it is excellent in a meadow, dying off early out of the way of the scythe. The cultivation of Anemone blanda is, indeed, simplicity itself, and it will grow on any ordinary soil except that which is waterlogged, whether it be light or heavy. Undoubtedly a strong soil suits it best, though to grow it quickly from seed a light soil is preferable. Like the Crocus with which it flowers, it goes to rest early, and I find it is best transplanted when the foliage is beginning to turn yellow.—Arthur E. Goodwin.—The Garden, London.

An Early Record of Tulips

The following quotation from the "Châh-Nâmeh" of Ferdowsie may interest Tulip enthusiasts. The author was a Persian poet who lived in the tenth century. The poem contains some 120,000 verses and occupied fifty years in composition; an English translation was published in 1829 by Captain Turner Macan at Calcutta.

"The Praises of Mazenderan.
"May Mazenderan, the land of my birth,
Its hills and its dales, be e'er famed o'er the earth
For evermore blooms in its garden the rose,
On its hills nods the tulip, the hyacinth blows;
Its air ever fragrant, its earth flourishing,
Cold or heat is not felt—'tis perpetual spring.
The nightingale's lays in the garden resound;
On the sides of the mountain the stately deer bound,
In search evermore of their pasture and food;
With fragrance and color each season's bedewed;
Its streams of rose water unceasingly roll,
Whose perfume doth gladness diffuse o'er the soul;
In November, December, and January,
Full of tulips the ground thou mayest everywhere see;
The springs, unexhausted, flow all through the year;
The hawk at his chase everywhere dost appear."

—The Garden, London.

There are many misconceptions about the so-called seventeen-year-locust which is due to appear in many parts of the country in May and June. In the first place this insect is not a locust at all, but is more properly called the periodical cicada. There isn't simply one big brood which comes every seventeen years, but it was not in evidence seventeen years ago, and probably has been exterminated.

The cicadas do not strip the trees, as many people suppose. The damage which they do is the result of the female's method of laying her eggs. She drills great numbers of holes in the wood, where the eggs are deposited. Oftentimes small trees are killed as a result.

In most parts of the country it is not to be expected that much damage will be done by the locust visitation. In some of the central states though, there may be losses of young trees unless the natural enemies of the insects appear in large numbers. This is one of the seasons when the English sparrow may demonstrate his usefulness, for this bird is reputed to have an insatiable appetite for seventeen-year locusts, devouring immense numbers.

Something To Be Thankful For

There's something to be thankful for, no matter how things go—
In summertime for fruit and flowers, in wintertime for snow.
There's something sort of pleasant happening to us every day,
And life's a perfect picnic if we look at it that way.
There's always something pretty for our weary eyes to see—
The glory of the sunset or the blossoms on the tree.
And always something tuneful for our tired ears to hear—
The children's voices chirping or the robin's music clear.
There's always something ready for our willing hands to do—
Some halting steps to help along, some job to carry through—
No chance to be kicking when our feet are busy going,
No time for idle growling when we're planting seed and sowing.
There's something to be thankful for, no matter how things go—
No end to all our blessings if we only count them.
And even if you're out of sorts, or sick, or sad, or poor,
Just thank the Lord you're living if you can't do nothing more.
—Selected.

HOME STUDY COURSE IN GARDENING

Believing that many of our readers are sufficiently interested to devote a few hours' study each month to the fundamental principles underlying the art of gardening, we will, beginning with the July number, publish a lesson each month in these columns, which will thoroughly cover some seasonal garden subject.

This department will be under the able direction of Arthur Smith, who requires no special introduction to our readers.

These lessons will furnish timely subjects for discussion at club meetings and will equip the members who study them to lead the thoughts and actions of their respective clubs, as well as to produce superior gardens.

"The Questionnaire" is another new department to begin with the July number, to which subscribers can apply for advice on the perplexing problems that may confront them in their garden work.

The Publishers
THE ANNUAL CONVENTION.

The executive board of the national association has decided, by a vote of twenty-two in favor, one against (six members having failed to respond to date), to hold the annual convention in Boston, Aug. 26-28.

The Hollenden Hotel has been selected as the convention headquarters. Fuller details of the convention and its program will be published in the July number of the Chronicle and the convention committee announced.

GARDENERS' BOSTON CONFERENCE.

Although the attendance of the gardeners' conference, which was held under the auspices of the Boston and vicinity members of the National Association of Gardeners at Horticultural Hall, Boston, May 16, was not as largely attended as were some of the previous conferences held in that city, it was not lacking in interest in the matters which came before it.

Mr. Craig, acting as chairman after calling the meeting to order, presented the Quarantine Bill No. 37 which prohibits the importation of plants after June 1 and told of some communications he had had with the chairman of the Federal Horticultural Board in which he expressed as his opinion that if members of other territories would come together once a month as they do in New York, it would greatly aid the cooperation between the national association and its members.

It was proposed that the Boston members organize to meet regularly but after some discussion it was decided to defer the discussion of the matter until after the annual convention. It was recommended that the association at its convention should adopt some plan to realize Mr. Smith's ideas in regard to examinations of gardeners and granting diplomas. All present were of the opinion that some way would have to be found to give what assistance the N. A. G. is striving for before the estate owners, who are known to be interested in horticulture, and if presented to them in the proper light would no doubt give what assistance they could in furthering the cause by presenting it to their friends and so creating a general interest with the employers.

It was also suggested that a Publicity Committee be appointed. Its special work would be to bring the aims and objects that are usually to be found in each locality one or two estate owners, who are known to be interested in horticulture, and if presented to them in the proper light would no doubt give what assistance they could in furthering the cause by presenting it to their friends and so creating a general interest with the employers. There is usually to be found in each locality one or two estate owners who take more interest in horticultural matters and are interested enough to realize the benefits that such co-operation would mean. Possibly this could be brought about by the committee getting up a carefully worded letter, stating the objects of the N. A. G., and each local branch sending into our secretary's office names of estate owners whom they have reasons to think would give the subject serious attention. Some good work might be done by the different Garden Clubs if they received a letter. It was also suggested that if each estate owner was interested enough to form their own society similar to the R. H. S. of England, and issue their own diplomas, it would be of far more importance to the N. A. G. than the N. A. G. issuing them. Realize this is a big subject, but it seems to us that only by these little discussions and suggestions by all the branches, where there are enough members to form one, and all taking a general interest, can we obtain the objects we are organized for. We meet the last Friday in every month, and if any of our officers or visiting members of the N. A. G. could find it convenient to meet with us at any time, we would be very pleased to have them.

FREDERIC CARTER, Sec.
The Right Spray At the Right Time

That's the secret of clean fruit. The big Fruit Growers' Associations have gone pretty deeply into this matter. And many of the largest have placed group orders for "CORONA DRY," the Universal Insecticide. You can safely follow their lead, for "Corona Dry" has been the choice of successful orchardists since 1912.

Get your supply of "Corona Dry" early and have it at hand when needed. It will keep perfectly until wanted, unharmed by either heat or cold. Write for free "Corona Spray Schedule."

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is the new economy spray for potatoes. It is cheaper and better than Paris Green—costs from 12 to 15 cents a pound less and never burns the vines. It will not clog the sprayer. And you can see just how you're spraying because it's chalk-white.

Write for Circular

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LOCAL SOCIETIES

The Holyoke and Northampton, Mass., Florists' and Gardeners' Club

The regular monthly meeting of the Club was held May 6 at Holyoke, Mass. D. P. Gallivan presiding in absence of Harold Keyes the president.

The industry was mostly taken up with a discussion of plant prices.

The exhibits were rather few and discouraging. Members were urged to keep up the good spirit of the past.

A. Haeseler.

St. Louis Association of Gardeners

The monthly meeting of the St. Louis Association of Gardeners was held on May 7. The members were called to order by President L. P. Jensen. The subject scheduled was "Outdoor Bedding" in the form of a general discussion. The principal phases argued were design, location of beds and floral versus foliage plants.

Printed copies of the bylaws were distributed to all members. A committee was appointed to purchase introductory badges to be worn by all members at all meetings, as a medium of bringing members in closer touch with one another.

G. H. Pring, Cor. Sec.

Tuxedo Horticultural Society

The regular monthly meeting of the Tuxedo Horticultural Society was held Wednesday evening, May 7, with President Lyons in the chair and a fair attendance of members present. After the routine business was disposed of the arrangements for the annual ball to be held on May 28 was taken up it was finally agreed that the executive committee attend to the details.

A question asked was if rust on Chrysanthemums was curable brought out considerable discussion.

James Ventor and Gustave Beckman were elected to active membership.

James Davidson, Sec.


New London Horticultural Society held its April meeting on May 10. After the usual session of business an address on Perennials was given by Alexander Cummings of the A. N. Pierson, Inc., Cromwell Gardens, Conn.

Mr. Cummings showed Purson's new rose, "Evelyn," everybody was loud in praise of this beautiful rose. A vote of thanks to the speaker concluded a very pleasant evening of the society.

Stanley Jordan, Secretary.

Oyster Bay, N. Y., Horticultural Society

The Oyster Bay Horticultural Society held its regular monthly meeting on May 7. The president, Geo. H. Hale, presiding. The society is growing both in interest and membership, 3 members elected and 3 proposed at the meeting. The society will subscribe 1 dollar per member to the Roosevelt Park memorial fund. The society will hold a celebration Smoker and Rose show in June.

J. R. McCulloch, Sec.

The Westchester, N. Y., and Fairfield, Conn., Horticultural Society

The regular monthly meeting of the above society was held in Greenwich, Conn, Friday evening, May 9. President W. Graham in the chair. After considerable discussion it was decided to hold the Summer flower show in Greenwich, the date to be announced later. Some very important business was left over until our next meeting owing to the absence of the chairman of the executive committee who was reported sick.

A communication was read from the Tarrytown Horticultural Society. Alex. Clarkson, who served with the Canadian Highlanders in France gave a description of several battles that he was in, the terrible scenes that he witnessed and their March into Germany. Our next meeting will be Friday, June 13.

Jack Conroy, Cor. Sec.

Nassau County, N. Y. Hort. Society

There was an unusually large attendance at the regular monthly meeting of the above society, held in Pembrooke Hall, Glen Cove on Wednesday, May 14, Vice-President Frank Watson, presiding. Thos. Richardson was elected an active member and six petitions were received. It was decided to hold a Rose Show some time during June with all arrangements to be left in

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Some Choice Ones

WHEN anyone tells you there is no Box to be had, just politely tell them they don't know what they are talking about. Tell them you know to a certainty that I came back from Holland a couple of months ago, with about as choice a lot of Box as anyone could wish for. We have them in all sizes and shapes.

Bush Box. Anything you want, from 6 to 8 inch, for edging window boxes. Likewise, 10, 12, 15 and 18 inch sizes, for end or center plants. All sizes in large bush or pyramids.

Odd Shapes. For lovers of odd shapes and sizes, we have a regular barn yard full of chickens, ducks and swans. Likewise, geometrical shapes, such as spirals, globes, gate posts, tables and the like.

Japanese Miniatures. For you who fancy Japanese plants, we have miniature pyramids and standards for use in Japanese vases or jardinières.

But what's the use of trying to tell you about all the goodly things I picked up. Send for a complete list and descriptions.

At The Sign of The Tree
Boer 20 Rutherford N. J.

Julius Rohrs Co

Odd Shapes. For lovers of odd shapes and sizes, we have a regular barn yard full of chickens, ducks and swans. Likewise, geometrical shapes, such as spirals, globes, gate posts, tables and the like.

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At The Sign of The Tree
Boer 20 Rutherford N. J.

Julius Rohrs Co
The regular meeting of the Monmouth Co. Horticultural Society was held in Redmen's Hall, Rumson, N. J., with the President in the chair. A good gathering of members was present, and several members were keenly interested in the business of the evening.

President in the chair. A good gathering of members was present, also excellent exhibits staged in competition for points to be decided at the end of season.

THERE are a lot of folks (maybe you are one of them) who think that pure linseed oil and pure white lead make the best paint. Such folks talk a lot about such paint being pure. But so is pure whiting and pure fish oil paint; a pure paint; but it's a mighty poor one.

If a so-called pure paint is also a poor paint, then better use some other pure thing, that is not so pure.

Measured by that pure rule, we do not make a pure paint. But we do make a paint containing pure linseed oil, pure white lead and several other pure things, that some unknowing folks call adulterants.

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MORRIS COUNTY, N. J., SOCIETY

The following officers of the Morris County Gardeners’ and Florists’ Society of Madison, N. J., have been elected for 1919: Otto Koch, Greystone Park, N. J., president; Samuel Golding, Morristown, N. J., vice-president; William H. Duckham, Madison, N. J., treasurer; Edward Reagan, Morristown, secretary.

Last year, on account of war conditions, the society held no fall show, but plans are now being made for an elaborate summer exhibition and a fall show up to the usual high standard of the society’s events in the past. Monthly exhibits are also held, divided into four classes, as follows: Indoor grown flowers, indoor fruits and vegetables, outdoor grown flowers and outdoor fruits and vegetables. The exhibitor receiving the largest number of points during the year will receive the society’s silver medal, in each class as the case may be. A bronze medal is awarded for second honors. The National Association of Gardeners is to give the society a grand sweepstakes medal.

Edward Reagan, Secretary.

NORTH SHORE, ILL. HORT. SOCIETY

The regular monthly meeting of the North Shore Horticultural Society was held at the City Hall, Lake Forest, Friday, May 2, Mr. W. E. Fisher presiding. The hall was finely decorated with specimen plants, etc., brought by the various members for exhibition, the principal feature being the fine Calceolarias shown by T. W. Head and T. Doblin.

The committees working upon the summer and fall shows gave their reports, also the Picnic Committee. After some interesting discussions by the members, the exhibits for the evening were judged by Messrs McNaughton, Bollinger and Geppert.

AMONG THE GARDENERS

Thomas Hughes, for a number of years past head gardener of Thornedale, Millbrook, N. Y., has accepted the position of head gardener on the J. I. Waterbury estate, Cornwall, N. Y.

James R. K. Bannister, formerly of Lenox, Mass., has succeeded the late Edward Dolby, who was thirty-two years in charge of the Zenas Crane estate, Dalton, Mass.

Thomas Wilson, for seven years gardener on the Mrs. Murray Mitchell estate, Tuxedo Park, N. Y., has secured the position of superintendent of the country place recently purchased by Dr. Joseph Blake, Tarrytown, N. Y.

Hugo P. Stenstrom recently accepted the position of head gardener of Rockledge, the estate of H. L. Blum, Hartsdale, N. Y.

G. H. Fellows, formerly gardener on the J. L. Schoelkoff estate, Lakeview, N. Y., has accepted a similar position on the estate of H. S. Sherman, South Euclid, Ohio.

Robert Grieves, recently of the Smithers’ estate, Glen Cove, N. Y., has secured the position of superintendent on the A. H. Alker estate, Great Neck, N. Y.

Harry Bendelow, who recently was released from war work, has accepted the position of H. S. Sherman, Great Neck, N. Y.

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position of head gardener on the Poor estate, Southampton, N. Y.

John D. Gillis, who received his discharge from the British Flying Corp recently, has secured the position of head gardener on the Montgomery estate, Richfield Springs, N. Y.

Walter Dack has secured the position of gardener on the estate of C. H. Hutchins, Shrewsbury, Mass.

OF LOCAL INTEREST

The American Sweet Pea Society will hold its eleventh annual exhibition and convention at the American Museum of Natural History, New York City, on June 21 and 22, 1919. The schedule may be obtained from William Gray, secretary, Bellehold Springs, N. Y.

The International Flower Show committee has issued the preliminary schedule for the New York Spring Flower Show to be held at the Grand Central Palace, New York City, March 15-21, 1920. Copies may be obtained from John Young, secretary, 1170 Broadway, New York.

Wm. C. Rickards, for a number of years travelling representative of J. M. Thorburn Co., has become associated with William M. Hunt & Co., and will travel for that firm.

John Ingram, of Oyster Bay, L. I., well known among the gardening profession, died at the Huntington Hospital on May 15, following an operation. Mr. Ingram is survived by his widow and five young children.

William McLeod has resigned his position of the Mrs. Horace Russel estate, Southampton, N. Y., which he has held for the past nine years.

The fall exhibition of the Horticultural Society of New York will be held from Oct. 30 to Nov. 2, at the American Museum of Natural History. Schedules will be ready shortly, and may be had by addressing George V. Nash, the secretary at the New York Botanical Garden, Bronx Park, New York City.

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Guaranteed Analysis 5.50% Ammonia, 2% Phos. Acid, 1% Potash
100 lbs. (net) $3.75 500 lbs. (net) $17.50

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A cleansing liquid sulphur spray, equally effective to combat blight on vegetables, fruits and flowers.

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After the expiration of one year I cannot see the least imperfection that might, in work improperly done, be caused by weather conditions, but the thorough cleaning and waterproofing of the cavities insures work of long standing. I am convinced.

I wish you great success.
Sincerely yours,
F. L. Downs, Superintendent.

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Things and Thoughts of the Garden

THE ONLOOKER

Most everyone will agree that the finest and most luxurious garden and landscape effects are produced by the generous planting of certain plants in groups or masses of one kind rather than a mixed medley of sorts, none of which are predominant enough to give a distinctive character to the picture. Of course, it is only in our large gardens and public parks where this kind of thing can be carried out on an extensive scale, yet the same idea may be expressed with the happiest results even in gardens of very moderate dimensions. An instance comes to mind, where in an old garden a big patch in partial shade had been planted to Lily-of-the-Valley and the Tiger Lily in combination, each in its flowering season easily the chief feature of the garden. In another garden a solid bed of Viola cornuta compels attention the season through, whereas had the selection been limited to a few kinds, increasing the numbers of each, there would be greater possibility of the scheme representing some medley of sorts, none of which are predominant enough to give a distinctive character to the picture. Of course, it is only in our large gardens and public parks where this kind of thing can be carried out on an extensive scale, yet the same idea may be expressed with the happiest results even in gardens of very moderate dimensions.

Just how interested people can become over the matter of a fine public floral display was recently shown in England, where considerable protest was raised when someone made the suggestion to adopt something different from the pre-war style of decoration in the flower beds and borders at Hampton Court Palace. During the war the beds were turfed over, but now people are anxious to see them opened up again and have the elaborate combinations of summer bedding plants appear once more in all their glory. This historical old palace is well known to many people outside England, and it is probably safe to say that the flower gardening they saw there will live longer in their memories than most of its other interesting features. A great display of an entirely different character was that afforded by the long lines of horse chestnut trees when in bloom in the neighboring Bushey Park, and Chestnut Sunday used to be a high day and holiday for thousands of Londoners. Kew Garden has many notable features of attraction apart from the fact that it is the most wonderful garden in the world in which to study plants, but with all its wealth of scenic beauty there is one particular feature which once seen will surely remain clear and distinct in the memory, and that is the wonderful effect produced by the thousands of bluebells, *Scilla festalis*, growing under natural wood-
A long step in the right direction would be taken if the question of how the well-trained man shall receive the proper recognition is one which has caused much argument and discussion, and will do until some definite method has been adopted. A better understanding between the two chief parties concerned, employer and employee, is highly desirable, and the agency to promote this should be the National Association of Gardeners, which ought to have the whole-hearted support of every forward looking member of the profession. It is so easy to sit back and criticise the association for not doing this, that or the other thing to better the lot of individual members, but the power for good of any organisation depends very largely on those who constitute the membership. It is not sufficient to merely elect officers and then go home and expect them to think up and bring about reforms unaided. Membership in the N. A. G. should mean something worth while, with quality before quantity the watchword. A long step in the right direction would be taken if every employer before engaging the services of a gardener would insist on the production of evidence as to professional ability in the form of a diploma of horticulture awarded by the N. A. G. This would mark a

* * *

The nurserymen and florists of the country are launching extensive publicity campaigns to awaken a keener interest in their products, and it would seem as though one sure drawing card would be the offering, at least collectively, of a much greater variety than the printed word is a living specimen, and the surest way of getting people acquainted with new plants is to show them. That many plants not generally known have only to be seen to be appreciated and called for is a pretty safe guess.

* * *

One of the most pressing problems claiming the attention of many head gardeners and employers at this time is that of obtaining skilled young men as assistants, and it is interesting to note that the question of how interested young men in our profession is to be brought forward for discussion at the forthcoming annual convention of our association.

As a profession gardening has much to offer to young men of natural ability and keen intelligence, yet for some reason or other the supply of the right kind of men has fallen short of the demand. Naturally there are two sides to every question, and things are not always what they seem. Taking a general view of the subject, it must be admitted that professional gardening has not occupied the high place in public opinion to which it is rightly entitled. In general the remuneration is not at all commensurate with the skill and knowledge which a professional gardener must have if he is to be successful. A good many employers need educating on the subject for they show in so many ways that they do not properly understand and therefore cannot appreciate the qualifications of a first-class man. This may not always be the intentional fault of the employer, who may be so busily engaged in some particular line of business as to have time for nothing more than a superficial interest in the affairs of his garden. Gardening is a rule are patient and long-suffering, and hesitate a long while before bringing grievances to the attention of their employers. The ideal situation is where the owner takes a keen delight in the things of the garden, for then a spirit of kindly consideration and friendliness is more likely to exist between the gardener and his employer. Such a happy state of affairs would be an incentive to any man to put forth his best efforts, whereas if treated merely as a menial, with never a word or token of encouragement and appreciation it is but natural that a man should become discouraged and disgruntled, a state of mind which is sure sooner or later to be reflected in his work and actions.

On the other hand, there are men passing as gardeners who are neither by training or ability worthy of the name, pleasant enough fellows to get along with, perhaps, but as a matter of fact just interlopers in the profession, willing to engage themselves at a cheap rate, which in the eyes of some employers is the highest form of recommendation. Gardening is a complex profession which cannot be mastered in a few months, no matter how intensively one might work and study, and young men willing to work hard in the school of practical experience and at the same time apply themselves seriously to acquiring knowledge of the scientific principles which underly their work, are seldom found nowadays. The first questions of an applicant for work today are relative to the pay and the hours of work, perfectly proper questions to ask, but to place them foremost is scarcely showing the right spirit. More important to the beginner is what the position offers in the way of gaining sound practical training, and whether the man in charge is disposed to encourage and answer questions regarding the why and the wherefore of the various operations. That is the only sure foundation upon which to build a really successful gardening career. Objections to the European system of apprenticeship have been raised in certain quarters, yet that is the system of training that has given the world its most proficient gardeners, and while it might be modified to advantage in some respects, as yet no better method of acquiring a thorough training has been offered. It is easy to raise a laugh at the old rule-of-thumb methods, yet we have to admit that they did at least produce excellent results, and some noted cultivators while they could not explain very clearly why they did certain things could certainly show how, which, in the final reckoning, is by far the most important. But the value of a working knowledge of the scientific principles of our work is such that none of us can afford to ignore if we are to give good service, and at the same time enjoy our occupation to the full. The men who can combine first-class practical ability with sound scientific knowledge stand the best chance to occupy the front rank positions, achieve fame for themselves and honor for the profession.

* * *

The question of how the well-trained man shall receive the proper recognition is one which has caused much argument and discussion, and will do until some definite method has been adopted. A better understanding between the two chief parties concerned, employer and employee, is highly desirable, and the agency to promote this should be the National Association of Gardeners, which ought to have the whole-hearted support of every forward looking member of the profession. It is so easy to sit back and criticise the association for not doing this, that or the other thing to better the lot of individual members, but the power for good of any organisation depends very largely on those who constitute the membership. It is not sufficient to merely elect officers and then go home and expect them to think, and bring about reforms unaided. Membership in the N. A. G. should mean something worth while, with quality before quantity the watchword.

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(Continued on page 238)
ALTHOUGH a government official, an advisor to the Federal Horticultural Board, has distinguished the orchid as a "mere bagatelle" of the floral kingdom, and some of our scientists at Washington, intrusted with the regulation of foreign plant importations, in defense of their action in debarring the importation of orchids, claim that orchids are easily hybridized, no doubt the many lovers of the orchid will be disheartened when they learn, by what is here illustrated, how long it actually takes to develop an orchid from the seed to its flowering stage, for there are few American gardeners who possess the patient temperament to cultivate plants for five years, or more, before they can bring them to flower.

While Cattleyas and Cypripedias may be raised from seed, many others of the finest varieties cannot be raised, and few growers, knowing what is involved in the raising of seedling orchids, would undertake it as a commercial proposition, for the question arises whether the orchids could be profitably disposed of to fanciers to make it a paying proposition to the hybridizers.

The seeds are sown in flower pots which are stood in water and covered with a glass globe which keeps the humid atmosphere about the germinating plant.

The pod of Cattleya partly opened showing a part of the seeds below and containing millions of minute, dust like seeds.

The flowering plant five and a half years old in a five inch pot.

The four pollinia which have discarded their anther, glue themselves to the point of the pencil. These are now ready to be transferred to the pistil of another flower which they pollinate.

The young plant two and one-half years old in a three inch pot.

The four pollinia which have discarded their anther, glue themselves to the point of the pencil. These are now ready to be transferred to the pistil of another flower which they pollinate.

A seedling nine months old in a one inch pot and another twelve months old in a two inch pot.

With the tip of a pencil the anthers are removed.

Seedlings six months old in a two and a half inch pot.

The young plant two and one-half years old in a three inch pot.

The pod of Cattleya partly opened showing a part of the seeds below and containing millions of minute, dust like seeds.

The flowering plant five and a half years old in a five inch pot.
Plants That Will Do Well in the Shade

"What shall I plant in the shade that will do well?" is a pertinent but vexed question not so easily and readily answered because so much depends on what causes the shade—which is whether it be buildings or trees and, if trees, kind of trees.

If it were but mere shade to be contended with there would not be so great a trouble to establish plants, but unfortunately shade is more often than not accompanied by an extremely impoverished condition of the soil as well as an insufficiency of moisture. This condition is usually created by the presence of many hungry roots of adjacent and overhanging trees.

'Neath such trees as Beech, Elm, Maple and other surface-rooting ones, it is difficult indeed to get any form of plant life to grow, except Moss, unless special measures are taken before planting and extra treatment afforded the plants afterward. The soil in every case should be cultivated and relieved of much of the surface roots. Additional top dressing of rich soil is also necessary, while a yearly mulching with manure will tend to give the plants the necessary chance to compete favorably for position and to make good.

Under trees, the roots of which penetrate deeply, like the Oaks and Hickories, conditions are more favorable and there is consequently less difficulty in getting plants to thrive. Such trees, when used on lawns, rarely kill the grass beneath them—a point worth remembering—especially when the choice of a tree for a small lawn is to be decided upon.

Trees like Silver Maple and Norway Maple have become the bane of the small lawn, the combination of dense shade and surface roots having transformed what was once a pleasing greensward into a barren brown waste which in winter may aptly be termed a mud yard. To remove the tree after it has reached large proportions is a step which the owner hesitates to take and yet a good lawn under such trees rarely exists.

Another position that is perplexing to the planter is one surrounding the base of a dwelling of the Dutch-Colonial and Old American farmhouse style of architecture on account of the usual overhanging eaves. Here insufficient moisture is the chief drawback, and whether the position be on the shady side of the house or not it is a case of supplying the plants with moisture the first year and overhanging eaves. Here it rests largely, then, on the choice of plants for all of these difficult situations as to what success is attained. It must be said that for plants which best stand shaded conditions our widest field to draw from is among evergreens, the ones which come under the broad leaved class of plants. Among these the Azaleas, Unduliflora, Calendulacea, Vaseyi and Amoena. The three former ones are deciduous native kinds often collected from their native haunts to fill similar positions under cultivation. Azalea amoena is the hardiest of the evergreen kinds and, though an exotic, is raised in this country by the thousands from cuttings. Other members of the Azalea family which do well in partial shade are Azalea pontica, mollis, viscosa, indica alba and Kaempferi.

Still other plants of the same natural border that fit in with shaded conditions are the Andromedas, beautiful low-growing plants of good foliage and with pure white flowers in the early Spring. The three most commonly used are Andromeda japonica, floribunda, and Cateskei.

All the plants in this ericaceous group, to be most effective, should be used in quantity, for they are really social plants and love to be massed together. A position shaded from early morning sun is best for them because in winter the leaves, after being frozen hard, become browned if thawed out too quickly by the action of the sun.

The two forms of evergreen Barberry, Mahonia aquifolia and japonica, are admirable plants for that shady spot, as is also the Japanese Holly, Ilex crenata. It is true we will get the Mahonias to flower or fruit quite as well as in sunlight, but the foliage will be better looking, the leaves of Mahonia aquifolia turning a bronzy red color in the winter.

For that position on the shaded side of the residence where formal plants are in keeping, use the Box Bush and the Yews in variety. Especially hardy and fitting for extreme shade is the native Yew, Taxus canadensis, its spreading habit forming a splendid ground cover. Where a real low ground cover is needed, as in the case of bare areas under lawn trees, pergolas, porte cocheres, etc., there is nothing better than the Japanese Spurge, Pachysandra terminalis. In this little herbaceous evergreen plant there is a certain charm and neatness of foliage rarely found in ground cover plants. Being very hardy and having a stoloniferous root growth, it soon tends to give the plants the necessary chance to compete favorably for position and to make good.

The number of deciduous shrubs that thrive well in shade are comparatively few in contrast to those that require good sunlight.—Edwin Matthews in Florists' Exchange.

HAVEN'T YOU FELT THAT WAY?
Maurice Smiley

HAVEN'T you often worn goggles of blue,
And seeing Life's sham and its shame,
Felt it was all a big scramble, and you
Might as well get into the game?
That nothing much mattered but a big bunch of cash,
And the man who was good was a jay.
And the whole blooming country was going to smash:
HAVEN'T you, haven't you felt that way?
HAVEN'T you, haven't you felt that way?
HAVEN'T you felt it was hardly worth while
To try to live up to your best?
And haven't you smiled a cynical smile—
And something way down in your breast
Whispered Life had a prize that was higher than gold
And sweeter than fame or display?
And the faith that had slipped took a brand-new hold:
HAVEN'T you, haven't you felt that way?
HAVEN'T you, haven't you felt that way?
And didn't a peace come near that was far
And urge you to strive toward it still?
And didn't you turn your face to a star.
Might as well get into the game?
And the man who was good was a jay.
And the whole blooming country was going to smash:
HAVEN'T you, haven't you felt that way?
HAVEN'T you, haven't you felt that way?
HAVEN'T you, haven't you felt that way?
Autumn Transplanting of Peonies Favored
W. E. Bontrager

Within the last few years the finer varieties of peony have become well known and established in public esteem; any extended comment on the excellent qualities of these plants appears to be superfluous at this time. The purpose of this discussion, therefore, will be to make plain a few essential points in peony culture which may not have come to the notice of prospective planters.

Peonies may be grown in many soils, succeeding best in a deep, well-drained loam. The soil should be prepared by spading or plowing to a depth of 15 inches. No manure should be used about the roots at the time of planting, but a coarse mulch applied to the surface of the ground will retain moisture and later will prevent heaving out of the plants by freezing. This mulch should be applied about the plants, but not immediately over them.

Peony plants are slow to become established, hence experience has shown that autumn is the best time to transplant them. While the operation may be performed as late as the middle of November, the proper period is the month of September, since plantings made in this month have time to accomplish considerable root growth before freezing weather. Young plants obtained from a nursery will contain at least two or three buds or eyes, and must be carefully handled to avoid injury to them. Very old, established plants growing in the home garden or lawn should be divided into sections that have three or four sound eyes, using for the purpose of division an axe, hatchet or spade. Many varieties of peony will not produce perfect flowers in less than 2 or 3 years after transplanting.

As Peony varieties now run into the hundreds, with new sorts being added each year, the limits of this discussion will only permit the mention of a short list of thoroughly tested, moderate-priced kinds which may be obtained from any first-class dealer. One of the best early whites in Festiva Maxima, a fine strong plant producing extra large blooms, which is an old variety that has scarcely been surpassed by the expensive kinds of recent introduction. A success of good whites to follow Festiva Maxima might consist of Duchess de Nemours, Madame Emilie Lemoine, Couronne d'Or and Marie Lemoine, a very late sort of superior quality.

One of the earliest in pink is Edulis superba. Following Edulis superba in various shades of pink come Madame Jules Calot, La Perle, Mons. Jules Elie, one of the very finest, Mathilde de Roseneck and Livingstone. A succession of reds will be found in Felix Crousse, Modeste Guerin, Atrosanguinea, Marechal Vaillant and Rubra superba. A collection of rare and expensive Peonies, embracing some of the very choicest kinds, both old and new, may be made up from Baroness Schroeder, blush white, midseason; Milton Hill, light pink, late; Sarah Bernhardt, rose-pink, late; Walter Faxon, bright rose, midseason; Therese, violet rose, midseason; La Cygne, milk white, midseason; Soulange, lilac white, late; and Mons. Martin Cahuzac, very dark purplish-crimson, midseason.—Ohio Exper. Station Bulletin.
Causes That Produce the Colors of Plants

WILLARD N. CLUTE

The subject of the coloring of plants and animals is one of ever recurring interest. Not that the color itself is in any way especially remarkable, but the causes that produce the myriad tints in leaf, flower and fruit are subjects of endless speculation. At the outset it may be well, however, to define what we mean by color and in doing so we find that opinions in this matter differ. To the descriptive botanist, green is not a color; to the artist, white is the absence of color and black the strongest and deepest; while to the physicist, white is a combination of all the colors, or rather it reflects all the colors of the spectrum and black the absence of all color though it absorbs all others. For our purposes we shall adopt the definition of the artist since it will more readily serve our purpose in presenting certain facts.

In discussing the causes of color, we cannot fail to be impressed with the fact that few objects in nature entirely lack it. Paleness is ever regarded as a sickly hue in species normally colored, while the entire absence of pigment results in forms to which we give the name of albino. There are, of course, many species of both animals and plants that find the absence of color of great advantage in the station in life to which they have become adapted. Animals that live amidst the snows are protected from their enemies by a white coat and find their most dangerous foes those that have patterned after them by adopting the same inconspicuous covering. An absence of color may be of service to flowers by making them more noticeable amidst the green of ordinary vegetation, while at night it renders them more conspicuous than any other color could.

When plants have to appeal to the tastes of the higher animals, white is very seldom chosen. In an extensive list of North American plants, I find only nine species with white berries. Three of these, the poison ivy, poison sumac and baneberry are decidedly poisonous, others like the snowberry and bayberry are avoided by the birds unless pressed by hunger, while only one—the mulberry—isa favorite for the purple hues it bears.

Shortly after the publication of Darwin's "Origin of Species" it became the fashion to explain every variation in the form and structure of the plant and every phase of color, as an adaptation to some useful end. Nothing was left to chance and as a consequence many fanciful theories were built up later as tumbling down when the cold light of scientific inquiry was turned upon them. We now feel sure that many colors are purely incidental. It would be absurd, for instance, to imagine that the red of the beet, the orange and yellow of the carrot and the bright orange of the parsnip could give either of these roots the advantage over the others when grown in the same piece of ground. Similarly the iridescent tints in the shells of mussels, oysters and other marine or subaqueous animals can be of no service to the species; in fact, instead of being of use, they often prove the species' undoing since man fancies these tints and calmly appropriates the shells for his own.

It may be said, however, that in the majority of instances, color is of advantage to plants. The brightest colored blossoms are most successful in attracting pollinating insects and there is considerable evidence to show that flowers cater to the esthetic tastes of the latter by producing the hues they like best. Bees are reputed to be fond of blues and violet, while wasps fancy red and chocolate colored flowers. Insects uneducated in the matter of color, are supposed, like the uneducated human animal, to like any color of flower so long as it is yellow. Not only do the plants lay themselves out to please their insect admirers by the selection of the right shade of color, but they go still further and display upon petal or sepal colored guides to the place where the nectar is secreted. Not infrequently the color of these guides changes with the age of the flower thus indicating to the insect where the newest stores of nectar are located. In the calyptra, the linear honey guides within the corolla are at first deep yellow and later turn to orangebrown. The horse chestnut has a lemon-yellow spot at the base of each white petal that finally turns deep purple. In the toad-flax the young flowers have a yellow palate which at length becomes deep orange. In some instances, the same flower may turn the color. The common bush honeysuckle opens citron yellow and later turns to scarlet, one of the climbing species of honeysuckle opens white and turns light orange the shephardia opens white and turns to cream color while the hound's tongue is first red and then purple.

The causes of these color changes is still somewhat obscure. Probably they are due to chemical processes in the cells which are stimulated into activity by the pollination of the flower. This appears to be the more probable since different chemicals in the soil are regarded as the cause of color changes in other flowers. In New England the meadow lily is yellow, in the Middle States red. Kerner has noted several species in the Alps that change color with the location. A bellwort with white flowers in one soil produced blue ones in another. A violet was blue at one locality and yellow at another. A vetch found in the Tyrol was yellow and the same species in Hungary was violet. In the central Alps, the anemone is sulphur yellow, in the eastern Alps it is white. A botanist who recently experimented with the color changes in flowers was able to turn yellow, blue, pink and red flowers to white by adding alkali and to turn them back to their original colors again when acids were added. From his experiments he concludes that flowers have but three pigments, red, yellow and blue, and that from these by various combinations all the others are produced.

To chemical changes in the fruit are undoubtedly due the bright colors which fleshy fruits assume in the processes of ripening. Indeed, chemical reactions in fruits seem often to determine the shade of color they shall assume. Small amounts of the pigment called anthocyanin, or carotin, may give the fruits a yellow or orange color; more of the same pigment makes them red and a superabundance turns them black. The common blue blackberry runs through all these changes from youth to maturity.

The way in which colors are borne in the plants is also a matter of interest. In purple, violet and blue fruits and flowers the color is diffused through the cell sap. In red and yellow specimens it may be borne in this way, also, but is more commonly borne in small bodies in the cell which are called chloroplasts and are related to the chloroplasts which give the green color to leaves. White flowers are white for the same reason that snow is—because the light is reflected back from a multitude of tiny surfaces. In the flower, these surfaces are the walls of empty cells. When the petals of such flowers become water soaked they lose the power to reflect light and become almost transparent.
One of the most curious and interesting things in connection with this subject is what is known as the correlation of color. By this is meant that if a certain color is met with in one part of the plant it is likely to appear in others. Plants that produce red flowers usually have a red tinge to the stems, petioles and veins, even when seedlings, and white-flowered forms are noticeably paler. The gardener often takes advantage of this to separate his plants from a mixed sowing into their different groups according to color while they are yet in the seed bed. But he can go still further. It is well known that deep colored flowers are produced from the darkest seeds and in plants that produce flowers of a variety of tints, such as the snapdragons, verbenas and the like, the plants that will produce the deepest colors may be selected before the seeds are planted.

Fall Work on the Trees

HENRY J. MOORE

NEXT autumn will soon be with us, and it is now time that we began to think of the work that is necessary to maintain a healthy and symmetrical growth of our hardiest shade trees. Nearly every reader of the Gardeners' Chronicle has trees of some kind, and it is hoped that to them this article may be interesting and helpful.

In the United States and Canada too little attention is annually given to the pruning and thinning of the shade trees during fall. Generally the writer has found the supposition prevalent that late winter is the best, and in some cases, the only time to prune the subjects in question. As a matter of fact, however, in nearly all cases valuable and substantial work may be done by fall pruning.

September is the proper time to thin out dense or obtrusive growth in our shade trees, whether these be specimens on the lawn or aligned along the streets. At this time, while they are still in leaf, it is possible to note and to remedy any defect, and to rectify many things which are derogatory to the trees and to so thin and prune them as to leave them desirably symmetrical.

Upon the artificial treatment we give our trees depends largely their shape and, other conditions being favorable, their life's duration. We must remember that on our lawns and streets they rarely enjoy purely natural conditions, as they must be restricted, root and branch, to conform to their artificial surroundings.

Fall pruning and winter pruning must be regarded as entirely different operations. When we speak of the former we mean the thinning out of superfluous growth, and the shortening or heading back of straggling limbs. The thick and massive limbs should be left until winter, as their removal would cause too great a loss of foliage at this time. Winter pruning is really a general operation in which the heavier limbs and other growth may safely be removed if necessary. Where, however, fall pruning has been practiced consistently from the time the trees were in a young stage of growth, winter pruning will not be so essential.

Fall pruning has some advantages over winter pruning. The weather is usually more propitious for the operation, and as the sap has practically ceased to flow little or no injury will accrue to the trees. During our cold winters it is sometimes April before proper winter pruning can be effected. This leaves a very short period for the work, as in May the sap is flowing too freely for pruning to be performed with safety.

Only when the trees are in full leaf is it possible to fully ascertain their density or sparseness of growth, and if the operation of pruning is directed by an observer more satisfactory and less expensive work can generally be done than in cases where the operator works unaided.

Trees which are not fully hardy should not be fall pruned. Winter pruning will be the safer practice. The general run of shade trees embracing Elms, Maples, White Ash, Basswood (American and European), Oriental Planes, Oaks, may, however, with safety and to advantage be pruned in September.

Equally as neglected as fall pruning is the feeding of trees at this season. Very few people deem it necessary to afford manure of any kind to their trees, consequently the greater beauty of these God-given subjects would be returned to the soil. Do we ever think of the serious drain made upon the shade trees when the leaves are idiotically burned every year? And where no other food is afforded, which is almost universally so, as in not more than ten per cent of cases are the trees ever manured.

During September and onward until the ground freezes a dressing of bones of any size from one-quarter inch downward will greatly benefit the trees. They may be applied at the rate of ten pounds per one hundred square feet. Fall is also a good time to use stable manure, and if applied during late October will not interfere with the cutting of the grass. By early spring the manurial matter will have been absorbed by the soil, leaving only the strawy residue which may then be quickly and readily removed.

Fall is the time to take steps to remove the mossy growth which is often found under trees which cast dense shade. For this purpose slaked carbonate of lime, that is, lime which after slaking has re-absorbed carbonic acid from the air, is the best. Lime immediately after slaking (quicklime) should not be used. A mixture of carbonate of lime and finely broken charcoal is excellent for the purpose. The lime will quickly kill the moss, neutralize the soil acids, and restore fertility, while the charcoal will absorb the impurities and thus aid in sweetening the soil. During spring the dead mosses may be removed, and the soil be lightly forked or raked, as the case may be, to receive the grass seed.

The point to bear in mind when manuring trees is that (Continued on page 240)
PLANT BREEDING AN INTERESTING OCCUPATION

OCCUPATIONS abound on every hand for the improvement of plants with which we grace our conservatories, greenhouses or gardens. Let us consider a few winter and spring flowering plants which, though little known, are beautiful and most excellent decorative subjects.

Many of us grow the Gloxinia, but very few its relative, the Gesnera. Yet it is a flowering plant of delightful habit, commands admiration wherever well grown, and invariably makes a person desire its purchase. The Gesnera is not a novelty. It is a very old plant.

Many of the Gesneras have flowers of an attractive color. Others in which the colors are all mixed and mottled are not so attractive. It will thus be readily seen that to produce varieties of fixed colors is a valuable and desirable work. To do this is not purely a matter of hybridizing, but of selection. It is simply necessary to improve the variety by caring for the best seedlings, keep them immune from pollination from other varieties, and systematically collect the seeds. Apart from selection, however, there is an opportunity to improve the Gesnera by hybridization. Were this work undertaken seriously, many good hybrids would likely be produced. There are now a few splendid yellow and red flowered varieties, but few other definite colors. There is no pure white, perhaps not a good pink, all having yellow or speckled throats in the corolla. The seed of the Gesnera will ripen during early spring, and may be sown in May. The seedlings will flower during November, it well grown, and thus quickly give the grower an idea of what he has produced. The full beauty of the plants will not develop until the second year, and for this he must wait.

The Streptocarpus or Cape Primrose is a beautiful cool greenhouse subject, but one which is too little known. In the hands of a capable hybridist, this plant has great possibilities, although many beautiful varieties already exist. It would seem that one of the objects of improvement would be to lengthen and strengthen the flower stems, as there are few kinds in which these are erect. Many varieties are not sufficiently floriferous so another object would be to produce free-flowering varieties, and eliminate the inferior ones. The Streptocarpus may readily be propagated by leaves or by division, and is of easy culture. Flowering during September, October and sometimes as late as November, it is excellent for use in groups at exhibitions, and should be grown by every exhibitor of flowering plants.

The Aubrietia or "rock cress" is one of the most beautiful spring flowering plants, and as a carpeting plant for beds of bulbous plants, few can equal it. Usually we associate the Aubrietia with rock gardens. It is, however, equally good used as an edging for beds and for carpeting. Being so hardy, as to need little protection in temperatures as low as 16 below zero, it is an excellent subject for most localities where herbaceous perennials can be grown, and where the soil is a sandy loam, or where heavier soils may be lightened and the beds properly prepared.

There are many beautiful varieties, purple, lilac, pink, white and shades of red and blue. The Aubrietia offers a splendid chance for experimental work, whether in crossing or selection, as the seedlings do not always come true. The Aubrietia is accommodating, as it may be potted in the fall, be carried over in frames, in localities where the winters are too severe, and be planted out in spring again.

CULTURE NOTES ON GREENHOUSE FERNS

PERHAPS it is not saying too much to say that there is no other class of plants cultivated in green-houses that afford more pleasure the year round than ferns. When healthy, they are interesting and all seasons, and the gracefulness of their fronds, combined with the various shades of green exhibited by different varieties, attract the attention of many who take little notice of other forms of vegetation, and so secure for them an amount of admiration not exceeded by any other family.

When growing ferns for decorative purposes, they require to be treated somewhat differently to what would be the case were they not intended to undergo the vicissitudes to which they will be expected, in the dry atmosphere of the rooms of a dwelling house. The object which the grower should have in view is to produce plants of as hardy and robust a description as possible. To attain this, it is necessary to grow them in as low a temperature and with as little humidity in the atmosphere as is consistent with an average development of the fronds.

Plants intended for room decoration should be grown in pots of such dimensions as will fit into vases, etc.; provided for this purpose. In general, this causes the size of the pots to be limited, in comparison to that of the plants. A great many ferns remain healthy for a considerable time under restrictive root room, providing other conditions are favorable and their style of growth gives them an advantage in adding a finish to a vase or flower basket not surpassed by any other class of plant. The restriction of root room demands that the compost used should be of as good a kind as possible and of a character suited to maintain the plants in health. I have found good fibery peat with a liberal proportion of silver sand and wood charcoal, broken about the size of small peas, to be a good mixture in which to grow them. No doubt some sorts make stronger fronds when sandy loam is used as compost, and when the plants are intended for exhibition, it is necessary for the fronds to be as large as possible, but when they are intended for the home a less luxuriant development is desirable.

Although ferns require a liberal supply of water to their roots, particularly during the season when they are making their growth, it is true that a sloppy state of the compost is opposed to their well-doing. Over-watering is the most common cause of the soil in flower pots becoming sour, and in the case of ferns it is a frequent occurrence. This arises from a rather prevalent idea that as a class, they are not easily overdone in this matter, but, although they delight in a liberal supply, it should never be given them until the state of the soil warrants it. It is indispensable to the successful culture of ferns that the pots be properly drained in the first instance, and that care be taken that nothing interferes to prevent the drainage from acting properly afterwards.

Worms are often the cause of obstructing the drainage through filling the interstices with their casts, causing the soil to become sour. When peat and sand are the material used as a compost, worms are not as troublesome as when loam is used. As soon as they are observed, means should be taken for their speedy removal. Watering the plants occasionally with water heated to 100 degrees is a means whereby worms may be induced to come to the surface, where they can be caught.

Shading is an important consideration, and unless it is properly attended to one of their principal charms will be lost, as shading from bright sunshine is the means whereby the beautiful tints of green are brought out and preserved.—The Canadian Florist.
THE POPPY AS A GARDEN MEMORIAL

The brilliant scarlet Poppy which has so suddenly leaped into public favor, has heretofore not enjoyed garden popularity, as many flower growers recognized the fact that it required considerable artistic ability and skill in arranging and grouping to keep its gaudy scarlet color from clashing with the soft, harmonizing pastel shades usually selected to grace milady's garden. But it is quite safe to predict, that due to its intimate association with the battlefields on which American heroes sacrificed their young lives, the Poppy will, in the future, be planted under the rude crosses "over there."

"In Flanders fields where Poppies blow..."

There are numerous species of the Poppy family (Papaverace), but the Poppy referred to above by the martyred poet-soldier (McCrea), who himself lies under the Poppies of France, is probably the old, common variety of Poppy (Papaver Rhaea) from which the Rev. Wilks, of Shirley Vicarage, England, an ardent nature-lover and successful hybridizer, developed the beautiful Shirley Poppies of cultivation which exhibit such a wide range of color from the most delicate shades to the richest of dark hues.

The showy, scarlet Poppy blooms in May and June and its season of flowering may be lengthened if the flowers are not permitted to mature. If allowed to produce seed, it will self-sow freely, monopolizing more than its share of the garden. Its voluptuous flame-red flowers, on graceful stems, strikingly contrasted with the beautiful foliage make a picture so remarkably gorgeous as to beggar description.

The Poppy is easily raised from seed sown in autumn or in spring. The soil should be sandy, porous and well drained. As the seed is exceedingly small it requires some care in sowing. It is well to mix the seed with 10 or 12 times its bulk of fine dry sand, broadcast it thinly where the plants are to remain, and then cover lightly. It usually germinates quickly and the seedlings should be thinned out to at least eight or ten inches apart so as to guard against crowding, a condition to be especially avoided in Poppy culture, as it is the cause of stunted growth, lack of bloom and the rotting at the base of the plant that sometimes attacks the Poppy during continued hot, moist weather. Though the transplanting of Poppies is considered difficult, it can be successfully accomplished with well grown plants if one is careful not to injure the long tap roots. When transplanted, the growth of the plant is retarded, the time of bloom delayed usually for a year and the foliage invariably lost, but in a few weeks' time when the plant has recovered from the shock caused by transplanting, the growth is renewed and new leaves appear.

Bertha Berbert-Hammond in The Flower Grower.

THE JOYS OF A GARDEN POOL

There is no need to plead the merits and joys of a garden pool. They are everywhere acknowledged, and everyone has a pool who can afford the cost or the water. Growing aquatic plants is but one of the pleasures. Would that our flower-beds could be so beautiful in their surface and appealing in movement, so satisfying, in short, whether the flowers grow or not!

The structural design of a pool is not a difficult matter. As a piece of engineering, it is simple so long as the pool is full of water. If it be emptied, then the walls of the pool become a retaining-wall and must be designed to resist earth-pressure, and, if it be in low ground, possibly hydrostatic pressure.

The pool, however, presents a difficulty in that it must be water-tight, so that a movement of the walls which would pass unnoticed in a terrace wall will produce cracks which are sure to leak. This is most likely to happen if the pool be empty in winter, when the pressure of the frozen ground will inevitably crack the walls by moving them slightly inward. Leaving the pool full of water through the winter usually prevents this damage, since the ice-pressure is equalized by the ground-pressure outside and the ice buckles or slips on the side of the pool until the outside and inside pressure are practically the same.

It has been our invariable experience that damage happens only when pools are emptied in the winter, and that pools with water in them never come to harm so long as the water-level in winter and the ground level are the same.—Landscape Architecture.
Some Suggestions for Finer Gardening

ARTHUR HERRINGTON

Art has been defined as the “power to see and give form to beautiful things,” therefore art in the garden can be expressed in ways beyond number untrammeled by so-called rules of design. By this I do not mean that there should be an absence of design or plan, or order of arrangement, for there must be some appropriate adaptation of the garden to prevailing conditions and essential needs.

But the art of gardening is progressive. Travellers and collectors still bring to us new species and varieties of plants adapted to our gardens. The hybridist or plant breeder originates new forms and varieties of great garden value so that we have a veritable embarrassment of floral riches, and to such an extent that no garden can display or is even adapted to all.

It follows then that you must consult the gardener in the making of a real garden because it is his business to know trees, shrubs and plants, how they grow, what they need for their permanent well-being, why some would succeed where others fail from inadaptability, why certain plants and flowers are a success under some soil conditions and a failure under others. Underlying all these things there are certain basic laws governing life and growth, and unseen, but none the less real forces and agencies that are helpful if we work in harmony with them, but detrimental even to the extent of totally nullifying our efforts if they are misdirected through being contrariwise and out of harmony.

Time will not permit me to go into this matter in all its ramifying details, so I am merely making a few suggestions that may be helpful in making better gardens and I will commence with Lawns. I need say nothing about the importance of the lawn in its relationship to house and garden, but how rarely are we satisfied with its quality and texture? It is something green to certain plants and flowers are a success under some soil conditions and essential needs.

How do we grow these? If at all, is it not generally in a prim bed or border, planted with mathematical precision in some painfully spectacular design, for making which we seem to have a special aptitude.

Most of the spring bulbous flowers need no cultivation at all in the garden sense of the word. They often perish from disease if not killed by disturbance in the deeply dug and manured borders; yet in association with trees and shrubs and left undisturbed they go on from year to year increasing in numbers and spreading out into carpets and masses of true spring beauty.

A colony of the rich blue Scilla sibirica in a garden that I know may be cited. Some bulbs were planted through a group of Rosa rugosa to my actual knowledge 20 years ago. I have watched the development of this colony and got inspiration therefrom. Its extent and beauty have grown progressively as the years have passed, and in all that time nothing has been done but to annually prune the Rosa rugosa. A week to ten days is the average duration of that spring picture, but is it worth while?—Extract from lecture delivered before Newport, R. I., Garden Club.

ADAPTATION OF SEEDS—HOW TO SAVE THEM

My study and work for over fifty years have been devoted to seed breeding and growing, and I have carefully examined and watched the growth of thousands of samples of varieties of vegetables and flowers grown from the same original stock, but under differing climatic and soil conditions, and selected by different people; and I have inspected hundreds of crops grown from seed in different locations from Maine to California and thus have had abundant opportunity to notice differences in strains grown in this country or Europe from the same original stock, but under different conditions of soil and climate, which had resulted in the development, without crossing or even careful selection, but simply as the result of differing soil and climatic conditions, of very distinct strains, each adapted to certain cultural conditions or conditions' requirements and often as well worthy of being distinguished by distinct varietal name as those already found in seedsmen's catalogues.

Through this experience it has become the conviction of my later years, that every individual seed carries the same sort of potentiality and limitation of development as an egg or a new born rabbit. When we hatch the hen's egg under a duck the chick will not take to the...
water though the duck and rest of the brood do so and leave it alone on the shore. Nor can we by putting a still blind young rabbit to nurse with the litter of pups, teach it to bark.

Every seed is made up of a certain balanced sum of ancestral influences and fixed in character beyond the possibility of change by growth conditions, before it left the parent plant. There are often distinct differences in the varietal character of seeds from individual plants of the same breeding as well as in the yield of seeds in different locations. Although the varietal character of every seed is fixed at its maturity, it is sometimes modified by climatic and other conditions while developing, and in some cases such modifications are transmitted to succeeding generations, so it is sometimes the case that local-grown seed will give a different return from that matured under other conditions, and not infrequently seed grown in one's own garden will give better returns than that grown elsewhere.

Different species and varieties, and even individuals of both animals and plants, differ greatly in the extent to which variety of form or habit of growth occurs naturally or can be secured by cultivation and breeding. Selection and breeding have given us less than a dozen but slightly different varieties of parsnip compared with scores of distinct sorts of carrots and beets, differing in size, form, color and adaptation to certain uses.

Prevention is the practical way of decreasing the damage wrought by this turf disease according to the United States Department of Agriculture. Preventive measures consist in providing thorough drainage, both of the surface and subsoil. Watering should be done in the morning. Often in spite of these precautions the disease will appear in warm, wet weather when the excess surface moisture can not be controlled. The growing of turf plants immune or highly resistant to the disease—Bermuda grass in the South and blue grass and white clover in the North—is the ideal method of prevention, but the last two are not the most desirable for putting greens or for lawns of superior quality. The fescues and the bent, the peers of all fine turf grasses, are markedly susceptible to the "brown patch" disease, although resistant strains are available in both these groups of grasses.

When a person is sufficiently familiar with the time of appearance and development of the "brown patches" among grass plants to notice the occurrence of the disease, he can partially control and check its damage by persistent spraying with Bordeaux mixture, in amount just sufficient to moisten the leaves and crowns of the grass, without thoroughly wetting the ground. Frequent applications are necessary. The difficulty attending the use of Bordeaux or any similar fungicide is that as soon as it has been removed from the plants by rain or by continued mowing the fungus breaks out in new places, undeterred by the fungicide which is on the surface of the soil or on the older stems and leaves.

“BROWN PATCHES” ON THE LAWN

O BJECTIONABLE "brown patches" appear on fine lawns, greenswards, and the putting greens of golf courses usually during the hot, moist weather of summer, the disease being most noticeable when the weather is hot and muggy, and on ground which is kept too moist by insufficient drainage or heavy sprinkling. The brown spots—caused by a fungus—are at first more or less circular and grow in centrifugal fashion, becoming a foot or more in diameter in certain cases.

During the early morning many of the spots are covered with a fine mivldew. Later in the day the border of actively growing spots is smoky green in color where the grass leaves are dying. When the disease is abundant and a merging of the spots occurs, an entire green often will be completely brown and appear as if dead. Peculiarly enough, with the coming of cold weather in fall most of the infested spots recover, indicating that the grass has suffered no permanent injury. However, occasional diseased spots are completely killed. Apparently the brown spots radiate in the form of a small circle from one unit and continue this process, season after season, until large circles are formed. Occasionally a green spot is found in the center, but usually the whole patch is brown.

The home-growing and saving of seed of garden vegetables is quite practical and by no means as difficult as is commonly supposed. The principal requisite is a wise choice of superlative plants and the thorough curing of the seed before storing. The way to accomplish this varies in different species. With peas and beans, selected plants should remain in place as long as possible without serious loss from shattering, then, while still damp from dew, should be gathered and stored where there is good circulation of air until the seed is perfectly dry, when it may be thrashed out and stored in muslin bags.

In saving seed of sweet corn, as early as the probable character of the grain can be determined, strip down the husks on one side sufficiently to enable you to make a selection; turn back the husks and hold them in place by a rubber band. Mark the selected ears by covering them with a paper bag which will also save them from the sparrows.

Allow the plants to stand in place until there is danger of a killing frost, then cut the stalks, store under shelter until thoroughly dry and save either on the ear or shelled, in paper bags.

In saving seed of tomato, pepper, eggplant, cucumber, melon and squash, selected fruits should be left on the vine without their becoming so soft as to be disagreeable to handle, or being exposed to even a light frost. Then opened, the seed scraped out with as little of the pulp as possible and allowed to sour and ferment from one to four days, when the seed should be washed, using plenty of water and repeatedly pouring it off until seed is perfectly clean, when it should be spread out not over two grains deep until perfectly dry, when it may be stored in muslin bags and kept in any airy place.

Selected plants of lettuce should be allowed to stand in place until there is danger of serious loss from shattering, then each plant covered with a large inverted paper bag, the lower end tied about the plant so as to save the early matured seed which drops, and allow to stand until most of the seed is matured, when the plants, still enclosed in the sacks, may be cut and stored in any place until thoroughly dry, when the seed may be winnowed clean and stored.—Extracts from a lecture before Massachusetts Horticultural Society.
SUMMER suns are glowing over land and sea, and yet the thought strikes one that winter is to be prepared for, and if we want flowers then, we must prepare the bulbous stock now.

Freesias should be potted in light soil, leaf mold, sand, and loam with a little bone meal as soon as received. Just press the bulbs in and cover lightly. Start cool and do not cover but shade with boards. Lilium Harrissi should be started and they will grow well right along in any house at this time of the year. A similar soil to the previous bulbs will do.

Watch out for fungus on the carnations in the field, and the roses indoors. Use Fungine in dry weather. When growing roses under glass without the aid of fire heat at night, use Grape dust, for it will destroy the first signs of mildew or black spot.

Empty the boilers and pipes and repair any leaks, and get the entire greenhouse plant in first class condition for winter's work. When growing plants, plenty of water and keep as cool as conditions allow. Feed any that have filled the bench or pots with roots.

Break off all rose buds on small rose bushes, and cut the long shoots down to two eyes, and build up the plants for winter work.

Pot fruits that have fruited must be fed and watered and ripened to be in good condition for next year's work. Sublaterals must be pinched back to two eyes.

Begonias should be kept as cool as possible and it is well to place a few in baskets to ornament the roof of the conservatory.

While the war is over, and we do not have to crowd out our favorites with vegetables, many people have acquired a liking for cauliflower and lettuce that they never dreamed of before, and in a cool corner of the house, a space can be arranged to accommodate them. Cauliflower of the snow ball type will force readily, and should be sown in a flat in the frame and transplanted ready for fall planting.

Rochford's Market is a fine cucumber for fall work and when the out-door varieties are becoming hard and tough, the in-door ones are greatly appreciated.

Sow a batch of Snapdragons. Phelps White is a fine one of its color, and Nelrose is a grand pink.

Sweet Peas must be ordered and ready for sowing the middle of August for Thanksgiving. It may yet seem early to talk about this, but the wide awake person must prepare. Procrastination is the thief of time, and it is better to be ahead of the game.

Sow more Smilax for table decoration; also Asparagus Pluminus. They can be raised in the cutting bench in sand with no difficulty.

Sow Schizanthus and grow as cool as possible. They will make magnificent specimens in ten inch pots by next Easter, if sown now. No pinching is necessary but in order to obtain large plants at that date, six feet across, the flower buds must be pinched off.

Palms should be sprayed with soot water and well watered.

Sow a batch of pansies and primroses. Sim's special strains are admirable for cool greenhouse work.

Take pains to have the seedlings come up strong without coddling or weakening them, and you will be surprised at the wealth of bloom from one or two packets of seed, costing a mere trifle compared to the cost of a few Lily of the Valley roots that are only good for a day.

Primulas sown last month must be pinched off carefully, and when in need of water, see that sufficient is given. Many people fail with these lovely plants and deprive themselves of the best strains by being careless with the watering. The young seedlings germinate in a casual manner and if left exposed on a dry surface soil, quickly succumb. So prick them off into shallow flats, better than pots, and grow cool.

Cinerarias should be sown. A five inch pot will full well suffice and use similar soil to the former. Cinerarias are now brought to a high state of perfection. The Paris Strain of France was the finest at one time but American seedsmen through great expense and elaborate and systematic trials have perfected the art of seed raising that our friends never dreamed of.

Now is the time to start a few heliotrope standards. There are a few left over from bedding out plants, and by a selection of the taller growers, fine plants can be had that will give a nice lot of blooms for winter, and fine standards for next summer's bedding. Encourage the young plants to grow as tall as possible without throwing a bud.

Occasionally a strong shoot will start from the base of an older plant. Encourage this by feeding with Clay's fertilizer, and if you want the best heliotropes, Clay's is the ideal manure. See that the plant is not stunted and when it throws a bud, pinch it out carefully and a new growth will appear, which in turn will give another bud, that can be pinched again until the desired height is attained. Four feet is sufficient and a fine head of bloom will present a noble appearance. They will not stand frost so grow out doors until there is danger, and they must be one of the first plants to be brought in doors.

Mignonette should be started. New York Market is a fine type for indoor culture. The soil must be mixed with well decayed manure. Sow a few seeds in three inch pots, and thin out flat, and when a bench is ready later on, they can be planted one foot apart.

THINGS AND THOUGHTS OF THE GARDEN

(Continued from page 228)

definite distinction between the competent and incompetent man, and a choice could be made with eyes wide open. To obtain this diploma the candidate should be able to answer correctly certain questions regarding the principles of horticulture, but most important of all, demonstrate by actual practice that he is not a man of theory alone.

A college course is highly desirable yet not essential, but if it is possible to take it my advice to would-be gardeners is by all means do so, but get in a good groundwork of practical experience first. To do otherwise most always proves to be a case of "putting the cart before the horse."
Work for July in the Garden

JOHN JOHNSON

The busy planting season is truly past and the chief aim of the gardener will be to keep every department neat and pleasing. Some sowings and planting must be done in both vegetable and flower gardens to ensure succession of the various kinds and to avoid blanks. The vegetable garden must be cropped to the limit. As the early crops are cleared plant the ground to late brassicas, celery for winter, and make frequent sowings of salading plants. There is yet time to sow carrots, beets, turnips, kohlrabi, string beans, and sweet corn as well as endive and parsley for winter. All new plantings should be well watered in, and continue to give water as occasion demands from now on. Maintain a good tilth by frequently stirring the surface soil, and dispose of all rubbish as fast as it accumulates.

When the strawberry crop is gathered all weeds, litter, superfluous runners, and large old leaves should be removed and, if need be, the surface soil lightly forked over. To maintain a constant succession of plants in full vigor a certain number of rows should be annually destroyed and similar number planted with young stock. The earlier the planting of this young stock can be accomplished the better and the work should be undertaken immediately the runners are well rooted to give the young plants ample time to become established before winter. The ground should be deeply worked and if light and poor must be given a liberal dressing of well decayed manure. Plant in rows 2 feet 6 inches apart and set the plants 15 inches apart in the row. Some growers prefer the double row method of planting and allow greater width from center to center; i.e., two rows are set 1 foot apart and the plants set alternately in the rows, at least 3 feet is then allowed before planting the next two rows and so on over the whole plot. As soon as the raspberries and their kindred have finished fruiting, cut away the old canes to allow the new canes plenty of room for development. Leave from five to eight new growths to a stool for next year's crop and loosely tie these selected canes to the wires. The young canes require all possible sunlight to properly mature, therefore, do not bunch them. Clear the plantation of weeds and rubbish then give the ground a thorough drenching. If the new growths are puny a dressing of bone meal applied prior to water will stimulate growth. Too much of the new growths and remove weak and superfluous shoots. Spray against mildew and see that the plants do not suffer drought. Ramblor roses should have much of the old wood cut away soon after flowering. Tie in the new canes but give them plenty of room, select only the most promising of the new growths and remove weak and superfluous shoots. Spray against mildew and see that the plants do not suffer drought. Ramblers trained against buildings are generally infested with both fungoid and insect pests. In this position the plants require careful watching if they are to prove objects of beauty, and as one often sees them, merely an eyecore. Shorten the growth on bush roses when flowering ceases to encourage vigorous new wood for fall flowering. A dressing of tankage, or blood manure well watered in, would benefit the plants at this season. Liquid manure from the cow barn is also excellent. Give the beds a thorough soaking if they show signs of dryness. Don't water by driblets. This does more harm than good and is inviting trouble. Maintain perfect order in the flower garden by timely staking of the various plants needing support and by removal of dead flowers. Many of the hardy perennials require abundance of water. Phloxes are thirsty plants and are very susceptible to an attack of either red spider or mildew. Keep an eye on them and spray at the first indication of trouble. Cut down delphiniums as soon as flowers are past if a second crop of flowers is looked for. Give the plants a stimulant; it pays. Both the German and Japanese Irises move well immediately after flowering. Any changes can therefore be undertaken this month. Cultivate the borders frequently, and water, as occasion warrants. Shear Privet and Barberry hedges as the growth becomes ragged. Evergreen hedges require less shearing; it is a poor policy to clip them late in the season in northern districts.

Thin the growth of spring flowering shrubs if the work has been neglected thus far. Do not mar the natural beauty by shearing them. Merely thin out superfluous branches or such as are getting beyond bounds. Keep up the fight against red spider on the dense growth evergreens and spruces.
Summer Pruning of Trained Fruit Trees
By T. SHEWARD

DWARF trained fruit trees are especially suitable for small gardens. These can be purchased as bush, pyramids, espaliers, fans or cordons according to the position they are to occupy. Apples, pears, currants and gooseberries are especially suitable to train as cordons while cherries, plums and peaches are better grown as fans against the side of a house. These dwarf trees are covered with spurs and are summer pruned by stopping the young shoots and in winter pruning are cut back to two buds. Fig 1 shows a double cordon pear; "A" shows the summer pruning; "B" the spurting back in winter pruning. The summer pruning consists of stopping the side shoots at 4 leaves (Fig. 6) and any laterals that start are stopped at 1 leaf, (Fig. 7, "B" "B"). Fruit spurs should not be stopped. Fig. 1 "B" shows the winter pruning also "Fig. 8," the young wood cut back to two buds. Gooseberries grown as shown at "Fig. 2" are better for pruning, picking and netting than if grown as bushes. "C," "C," "C," "Fig. 2" shows the way to stop the young shoots at 4 leaves, E, as the shoots will appear before winter pruning. "F," "F" after winter pruning when the shoots have been spurred back to 2 buds and the leader "F" shortened to 6 buds. In Fig. 1 the leader has been shortened to about 2/3. "Fig. 5" shows the summer pruning of the Gooseberry. "Fig. 4" the spurting back to 2 buds at winter pruning, "A," "A" are the buds formed the previous summer. Shorten back the leaders (D) to 6 buds, (Fig. 3). "Fig. 9" shows a very good way of growing currants. These are trained to lath supports and no side shoots allowed to form till 4 feet high when the branches are trained to wires as shown at Fig. 10 and Fig. 11. "Fig. 13" shows the summer pruning and "Fig. 12" the winter pruning of the trained currant. "G," "G," "Fig. 12" are buds formed the previous summer. "D," "D," "D," "Fig. 11," shows the summer pruning and "Fig. 10" "F" before winter pruning, "E" after pruning. This summer pruning can be performed about July and on bush currants and gooseberries as shown at Fig. 5. Plums and cherries grown as fans are treated in this way but peaches are not stopped. These are disbudded in spring and old wood replaced by young wood of the previous year.

FALL WORK FOR TREES
(Continued from page 233.)
there is usually a sufficiency of mineral plant food except nitrogen in the soil, as trees use up more carbon than other substances in building their bodies. This they obtain from the air. Often, however, nitrogen is deficient in the soil as a result of the removal and destruction of the leaves. When applying manure aim to replace the nitrogen, and nature will quickly restore your trees to full health and vigor.

THE HOME STUDY COURSE ON GARDENING
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What Constitutes Pruning.

As understood today, the word “pruning” covers a considerable number of operations connected with the culture of the various classes which make up the Vegetable Kingdom, from trees downwards. A very much older word from which this originated meant “propagating.” While this latter fact may, on the surface, appear strange, yet we can gather from it the idea that pruning should benefit and invigorate the plant operated upon; but it is not uncommon to see pruning which does more harm than good, and like all other good things is liable to abuse, especially in connection with fruit trees, by the novice who frequently places too much stress upon the operation, looking upon it as the one and only thing needful to make them “bear,” and who leaves undone many other essential things conducive to that end.

There are few, if any, of the operations connected with forestry, agriculture, or horticulture, which are not capable of being explained by scientific principles, these principles being based upon natural laws. The laws of nature are constant in their operations. Our knowledge of them has gradually been built up by observation and experiment, involving a true appreciation of the relations between cause and effect. At the same time the more one knows of these scientific principles the greater is the apparent size of the unexplored field. The operation of pruning is therefore based upon certain well-defined principles, derived from the accumulated knowledge acquired by many years of observation of the effects produced.

When we take into consideration the period during which pruning has been practiced, and the countless repetitions of similar actions, invariably ending in similar results if all other circumstances are the same, there is nothing unreasonable in assuming that a sufficient number of facts have been observed to establish a complete science or code of laws, the practical application of which is easily carried out. But like all other applications of science to an art, the operation of pruning must be performed from an intelligent standpoint. In this connection one must be careful to take into consideration all the facts and circumstances which may be called “fixed,” such as soil, climate, species or variety, and whether the object to be achieved is fruit or wood: a plant for ornamental or utilitarian purposes.

The Principles Involved in Pruning.

The principles connected with our subject mainly divide themselves into two objects which are carried out by removing portions of the plant for, (1) lessening the struggle for existence amongst the branches by the prevention of overcrowding, and for (2), assisting nature by bringing about certain desired effects which may be increase or decrease of wood; increase of quantity and quality of flowers and fruit, or making a more shapely and better balanced head.

In a state of nature, plants—by which term we mean everything from the largest forest tree downwards—produce many more branches than persist, and dead and dying branches are evidences, among other things, of nature’s pruning. The forester who requires high class lumber practically free from knots, plants his forest trees close together so that the branches will be pruned off by nature at an early age, while they are small, thus preventing the formation of knot holes and causing the maximum amount of growth to go into the formation of lumber. When a large branch dies or is cut off there is a liability for the resulting decay to penetrate into the trunk, especially if a stub of any length remains. This is why branches should always be cut off close to the limb or trunk so that the bark can grow over and heal the wound. Decay from this cause is always proof of neglect, and to prevent it, while the bark is growing over, the cut portion should be treated with some preservative such as tar or creosote, after which the rough edges caused by the saw should be smoothed with a knife, which will cause the cambium, or inner bark, to start new growth more quickly and at the same time the knife will remove the preservative from the outer edge where it does harm to the cambium.

The thinning out of branches or shoots causes more food to be conveyed to those which remain. If we shorten a branch the portion left will receive the sap intended for the whole and it will therefore sooner or later, if there is room, throw out side branches, or laterals from buds, some of which had perhaps hitherto been dormant. The removal of a portion of a plant will invariably cause more nourishment to go to the remainder, thereby lessening the struggle for existence which continually goes on between various parts of the plant. By this means a weak or sickly plant may be strengthened and caused to make more vigorous growth, as its roots will have a smaller amount of top to feed. This is why newly planted deciduous trees, shrubs and woody plants should be cut back more or less, according to the conditions under which they are moved. In this connection, especially in the case of trees, the mistake is sometimes made of cutting back too much. It is usually sufficient to remove about three-fourths of the previous year’s growth, and to leave enough active buds to start new growth. One’s practice in this respect must vary in accordance with the species and age of the tree. Oaks, for instance, rarely make new growth from dormant buds, and old trees are always slower to make new growth than young ones.

In the general care of shade trees a thinning out of the branches is constantly necessary, and this operation is too frequently left until the branches get big, with the result that a large wound is made. This thinning process might be done much earlier, at least before the branches are an inch in diameter, so that there would be no danger of after decay. It is far better and less costly to go over shade trees every year than leaving them until natural pruning begins by branches dying for want of light and air, and the necessity arises for the removal of large limbs.

From a strictly gardening point of view, however, our thoughts when the subject of pruning is mentioned generally turn to fruit and flowers.

In these connections it is not possible to formulate
Importance of When and How to Prune.

In this connection I am afraid we do not experiment enough. By taking several trees of a given variety and giving them different treatment in the way of pruning, taking care that all other things are equal, we should ultimately arrive at a more or less correct solution of the problem as connected with our own individual conditions.

It is impossible to over-estimate the importance of pruning, or perhaps we should say, when and how to prune, and when not to prune at all.

In nature there is a general balance kept up, and a constant reciprocal action going on between branches and roots; and no one should prune without being satisfied of a reason for doing so, and of foreseeing the influence and ultimate effect of such pruning.

The Treatment of Fruit Trees.

As regards fruit, some growers say that the most satisfactory average crops are produced in those orchards where little, if any, pruning is done. Instances of this no doubt exist, especially in the case of standard trees (apples and pears) twenty-five or more years old, but in all probability their present state is due to judicious pruning in the past, and to the fact that they have become "set" for as regards trees of this kind it is in the earlier years of their growth that they require the greatest amount of attention. There is no shadow of doubt that injuries to trees caused by vicious and altogether unnecessary pruning have been very great, yet it would certainly be erroneous to state that, by reason of this, trees should not be pruned at all.

It is always judicious to thin out the tops of fruit trees when the branches become overcrowded, or more correctly speaking overcrowding should be prevented by thinning out shoots, so as to let in a sufficient amount of sunlight and air to the center of the tree. But an indiscriminate removal of branches or the shortening of shoots, every year upon every tree, as a matter of orchard routine, without any special object in view, will, sooner or later, work harm. Beyond a little thinning the less an orchard tree is pruned the better after the young tree has been "shaped," because under orchard conditions space is practically unlimited and the main object is to secure a large head as soon as possible, for, while some varieties bear sooner than others, fruit in any quantity cannot be expected before the top over-balances the roots.

When trees are on dwarfing stocks, such as bush, pyramids and trained, which commence to fruit at three years old, the case is entirely different. This class requires more or less annual pruning, and one important point connected with it is to know when to prune. In principle, the old saying "prune in summer for fruit and in winter for wood" may be taken as still holding good, but there is probably no point connected with fruit growing on which there is so much difference of opinion as this, which is doubtless caused by the different behavior of different varieties and the varying effects in growth brought about by variations in soil and climate. While it is therefore impossible to formulate anything approaching hard and fast rules for summer pruning, there is little doubt that as regards this class of trees, the operation is in the main best performed during the growing season.

The object of summer pruning is to check the growth of useless wood so that the whole energy of the tree can be directed towards the development of the fruit and to the formation of fruit buds. The latter effect is, of course, the reverse of what is desired, since it will result in the formation of numerous side shoots which will not have time to ripen. Also, the result may be a combination of the two, that is, some of the higher buds on the shoot will produce secondary shoots while the lower ones will merely become enlarged and nourished into fruit buds. In point of fact this latter result is the most desirable, as, so long as there are one or two fruiting buds at the bottom of the shoot the portion above can be removed at the close of the growing season.

Whether this system of pruning will bring about the desirable or the undesirable result would appear to depend upon so many circumstances that any certain prediction of the event is a practical impossibility, and this is perhaps one reason for the diversity of opinions which are held on the question.

To guard against the formation of secondary side shoots the pinching of the terminal of the shoot should not be done too early. The actual time to choose will depend upon climate and the extent of the growing season which may be expected after the shoot has been stopped. The natural vigor of the tree and the variety also have considerable effect. Practically, the work of pruning may be more or less continuous throughout the summer, although to a great extent it will only be stopped by pinching with the thumb and finger, leaving actual cutting until the close of the growing season.

The point to be aimed at is to make the tree bear its fruit close to the stem, not at the end of a more or less long shoot. This is the main idea underlying the Lor- ette system of pruning which has caused considerable stir in Europe and was recently lectured upon by Dr. H. E. Durham, President of the principal Fruitgrowers' Association in Britain, at a meeting of the Royal Horticultural Society. The system is described at length by Mons. Louis Lorette in his book La Taille Lorette, which was first published in 1913 and has gone through several editions. So far as I am aware it has not been translated into English. In Lorette's system the whole of the pruning is done during the period of active growth, commencing in the spring and finishing in September. Winter pruning is abolished, and the usual distinction of winter pruning for wood and regulation, and of summer pruning for fruit production, also falls away; for it
is found that a sufficiency of wood is formed without resort to cutting in the dormant period of the winter months.

The fruiting value of shoots derived from normally latent stipulary buds has been for many years more appreciated by French growers than by others. The most important feature of Lorette's system is pruning to force these latent buds into activity.

In respect to the fruiting capacity of the growths from stipulary eyes, it is perhaps not entirely fanciful to think of the Peach and Apricot where the stipulary buds develop into blossoms while the central bud gives a wood shoot.

The practical side of the Lorette system of pruning, as it more particularly affects the Apple and Pear, may be classified into two categories: (1) that needed for forming and shaping, and (2) that for maintaining the form and the productivity. We will consider the latter as being of the higher importance.

**Lorette System of Pruning for Maintenance.**

1. **Treatment of leading shoot or leader.** This is the first operation of the year, and is undertaken in France in April or May, according to the situation, season or soil. In any case, the Apple will be ready much later than the Pear. The criterion whereby the proper time is judged is the growth of side shoots from pre-existing eyes to the length of about a couple of inches; this shows the sap is rising well. If the tree is still being trained and has not yet reached its full designed height, Lorette only pinches away the top few buds in cases where the tree is well sunned and exposed to the air; on the other hand, if it is not so favorably situated, and is partially shaded, a quarter or half may be removed, for the eyes are not so full of vigor, and there is less risk of engendering the growth of numerous premature shoots. If, on the other hand, the tree has attained its desired proportions, the leader is cut back to about half an inch above its base.

2. **Treatment of fruiting branches.** The objects in view are to keep the fruit branches as short as possible so that the fruit may be borne as close as possible to the supporting branch, to evoke the formations from stipulary eyes and so produce new fruit buds to replace old ones. The criterion for judging when the shoots on the branches are ready for cutting is a semiligious condition at the base; they are somewhat woody, but somewhat juicy within. The proper moment is indicated by the physiological condition rather than by a particular date or a precise diameter or length attained. All the shoots will not be ready at the same time, but Lorette usually commences from the end of May to the middle of June. Naturally the position of the tree will make a considerable effect on their progress; thus an espalier trained on a wall will be ready earlier than those grown in the open.

The upper half of the tree should be dealt with first, the lower parts a week or two later: this instruction is based upon the physiological ground of favoring the lower parts and preventing denudation, and is most important when this system is first being adopted.

There are three possibilities in the constitution of a shoot at or about its base.

1. There may be a fully-formed blossom bud.
2. There may be a "dard." (This is a French word for the first stage in the development of the fruit-bud for which there is no English equivalent.)
3. Or there may be no sign of a fruiting organ.

In the first two cases, the shoot is cut back in June to leave one leaf with an apparent eye; the sap drawn by the basal cluster and the one other leaf is enough to throw sufficient sap for either fruit-bud or dard, and not make the latter break. When there is no fruiting organ the cut is made to the basal cluster to throw more sap back into the dormant eyes and cause them to make dards; where there is no definite cluster the base of the shoot is weak, and it is better to remove it entirely, or leave two or three leaves if it is wanted. In the course of events from the concentration of sap the basal cluster region often becomes swollen and looks much like a "knob," and with the increased nourishment one or more dards may make their appearance.

At this pruning it is well to give special attention to the "knobs"; if there should be many shoots on a knob, the least vigorous is left with a couple of eyed-leaves, while the rest are completely removed; otherwise too much crowding will ensue.

There will be a more or less number of shoots which have not acquired sufficient size or woodiness for the June pruning; these will be left until the following month or in August. Attention must be given to the secondary shoots if sufficiently woody; they are removed with care to preserve the leaf whose bud gave them origin. Frequently the July pruning is eliminated, especially if the season is one to encourage wood growth. Lorette regards the August pruning as one of great importance, for the sap is thickening and slackening.

The treatment is brought to an end for the season in September, and when finished the trees are not again touched until the following spring. First there will be a number of shoots to cut back to their basal cluster, and as growth has practically ceased no distinction is made between them, excepting the thin twiggy ones. These may be left, but care must be taken not to retain too many, for they easily cause overcrowding. Those which are kept are best bent downwards. For the rest a general clearance is done, and wherever a good fruit-bud has formed the cut is made right back to it, otherwise the cut is to the basal cluster.

Many critics of the Lorette system of cutting back to a fruiting organ or basal cluster in September have placed considerable emphasis upon its novelty, but J. J. Thomas many years ago (The American Fruit Culturist, New York, 1897, p. 240) recommended summer pruning by stopping or pinching, and in conclusion wrote: "Early in autumn the shortened shoots are to be cut down, leaving the fruit-buds only, to bear next season. By this regularity of pruning, the tree will preserve a neat appearance, and bear regular crops."

In Lorette's book there is a mass of detail connected with the system of which the above are the principal points, and they refer primarily to Apples and Pears, but the system with suitable modifications has been worked out in connection with all kinds of fruit. The question arises as to how far it is applicable to this climate. There is no doubt as to the soundness of the underlying principles, but owing to the hotter and generally dryer summers here it would appear advisable to do little stopping before July or August, and also to leave the shoots longer so as to retain more foliage during the hot weather; it might in addition be well to delay the final pruning a few weeks later.

Before leaving this portion of our subject it is well to mention that as regards the Peach which bears principally upon young wood, that Lorette suppresses summer pinching entirely, and controls by snipping off some half to two-thirds of each leaf on the basal parts of the shoots from twelve to twenty or more inches—which are destined to bear next year. The tendency of premature development of secondary shoots is thereby prevented and the formation of blossom buds is favored. In the
When Root Pruning is Desirable.

Sometimes fruit trees produce an excessive quantity of wood each year without any or little fruit. This is frequently caused by the roots growing into the subsoil, this condition is aggravated and encouraged by winter pruning. Cultivation and surface feeding is necessary to encourage roots to refrain from going down too deep. When the latter is the case, root-pruning is desirable, the object of which is to check excessive luxuriance. In fact in connection with bush, pyramid and trained trees, it is a good plan to run a sharp spade under them once in two or three years so that any roots growing downwards may be cut off, care being taken not to injure the surface roots.

A good deal of the trouble with trees of the above classes ceasing to fruit is caused by winter pruning to keep them within the space allotted to them. This practice encourages the production of more wood, the balance of the tree gets thrown out of order by reason of the root system being too large for the top. If a tree in this condition were allowed to grow unchecked for a few years the condition would right itself but the conditions under which it is growing will not permit this, so it is necessary to create a balance between the top and roots by removing some of the latter.

Standard orchard trees planted at the correct distance rarely if ever need root pruning because they can make free and natural growth and there is no artificial upsetting of the balance between roots and branches. If the tree is not too big the simplest way of root-pruning is to take it up, cut through the tap-roots which are penetrating the sub-soil, preserve all the fibres and replant. In the case of larger specimens it is necessary to make a trench around the tree and cut off the deep roots from underneath.

Root pruning is frequently a very useful and desirable operation under certain circumstances, but the objects of the work should be kept in mind and the causes which, in the majority of cases, bring about the necessity for it.

Pruning Flowering and Ornamental Shrubs.

In connection with Shrubs, their value in beautifying home surroundings lies in the flowers they produce, together, in many cases, with the ornamental character of their fruit and the bright coloring of their bark. As a general rule shrubs do not receive the attention they deserve, or what is worse, they receive an annual shearing which entirely destroys their ornamental value.

The majority require more or less pruning every year, and the operation should be carried out so as to help them to produce the maximum effect they are capable of and which is desired.

Mainly, shrubs may be divided into two classes; those which produce their flowers upon the wood of the previous year's growth and at which time their flower-buds are formed, these blossom from early spring to about midsummer; and those which flower later in the year upon wood grown during the same season. Obviously, when pruning is necessary, the former class require it to be done at a different period from the latter, otherwise there is a liability of destroying the flowering wood for the following year. A safe rule to apply to each species is to prune immediately the flowers are over, although of course in the case of those blooming late and which do not make new growth after, the work may be done any time when convenient before the following spring.

The operation of pruning shrubs should be so carried out that there is a continual supply of healthy young wood continually coming on; that one specimen does not overcrowd another, and that each retains its natural form.

The majority make new growth from the bottom each year, provided conditions are right, and it is on the younger wood that most flowers are produced. Therefore pruning mainly consists in cutting away old wood close to the ground in thinning the young growth where necessary.

Too often shrubberries are allowed to become a mere tangled thicket. We can retain the effect of mass planting and at the same time allow each individual to grow in its natural form. To these ends it is better to do a little each year after they have become established. Frequently shrubs are planted too closely and they have therefore no room to develop.

Almost every species calls for more or less difference in the details of treatment. Those having an arching form of growth should be permitted to produce this characteristic. Others grow more straight and columnar, these may be caused to have a more spreading habit if desired by topping the young growth at the desired height, care being taken to avoid forming a flat artificial looking crown like that produced with shears.

The best effect as regards quantity and quality of flowers is obtained from others, as for instance, Hydrangea arborescens, by cutting entirely down each year. This method is also necessary with the Lespedeza and Vitex, as in any case these latter generally die to the ground north of the latitude of Philadelphia. Those which derive their chief ornamental character from the bright coloring of their bark should have all old wood annually removed to the ground as the new wood is the most brilliant. This may be done any time during winter so that when growth starts in the spring the only wood remaining is that grown the previous season.

While most shrubs will make annual growth from the roots, some have not this habit, in which cases we have to obtain young wood from the main stems. An example of this is seen in Hydrangea paniculata and its varieties. These should be cut back to one or two buds before growth starts in the spring. Hibiscus syriacus is another instance of similar habit; this also flowers upon young wood and should be cut back severely any time when dormant.

Syringas (Lilacs) are best pruned immediately after flowering so as to induce them to make flowering buds for the following year.

When the fruit of a shrub is not of an ornamental character the flower-heads should be picked off immediately the flowers are past, as it always takes more out of a plant when seed is allowed to form and if allowed to remain future flower-buds are prevented from forming.

Evergreen shrubs do not as a rule call for much in the way of pruning. Those whose value is in their flowers, like the Rhododendron family, should be pruned when required immediately the blossoms drop. Those like the Box which have no conspicuous flowers should be pruned just after growth starts in the spring.

Coniferous evergreens having the characteristics of Juniper, Retinospora, Thuja, Taxus, etc., should have more or less annual pruning so as to keep them dense and compact, otherwise they are liable to get thin and unsightly. About the time growth is starting in the spring is the best time for the operation.

For many obvious reasons the correct pruning of shrubs is important and competency can only be acquired by actual practice, and a careful study of the individual requirements and characteristics of each species.
**Flavor in Tomatoes**

The adage that there is no disputing about tastes limits this sort of discussion. I am seeking in vain the Tomato flavor which used to make a Tomato a Tomato, but has now been improved away. Others call this flavor "nasty" or "atrocious." It seems to me that they like a Tomato only when it has been changed into something else. I find many to agree with me. An Australian has just promised to send me another Tomato which tastes like a Tomato, to use his own words. A writer is arguing for and against me when he speaks of the native Tomato flavor being "mellowed to the delectability of a ripe dessert Plum." No one wishes a Plum to taste like a Tomato, nor should a Tomato taste like a Plum. Every fruit should keep its own essential character. I see an Apple-flavored Rhubarb advertised, but I despair my Rhubarb to be Ribbed Tomato-flavored. Will someone inform me why a ribbed Tomato is ugly, also what "ugliness" in a fruit or vegetable matters if it is better to eat than one more like a cheap chromo-lithograph?—The Garden.

**Absorption of Salts by Plants**

Plants absorb a much greater amount of water than they ever use in building up their parts. In some cases the amount used seems almost incredible. The common mustard is said to use 900 pounds of water for each pound of dry matter the plant contains. It is well known, of course, that there is a constant influx of water at the roots and as regular outflow from the leaves in the form of water vapor. The transpiration stream is called the transpiration stream. This stream was formerly thought to be of service to the plant by bringing in the mineral salts used, but some investigations have shown that the amount of watched (ash) in a plant in no way depends on the amount of the transpiration stream. The transpiration from two sets of plants of the same species, one in sun and the other in shade, was measured and, though the plants in the sun gave off the more moisture, the set in the shade was found to contain the more ash. This seems to show that the absorption of mineral by plants does not depend upon the amount of water absorbed. Probably a large part of the water taken in is simply used in keeping the plant cool, just as our perspiration regulates the heat of our own bodies.—Exchange.

**Seasons for Planting**

Considered from the standpoint of a plant, the act of transplanting is a violent one and consists of stopping at once a large part of its vital activities and generally causing the loss of a considerable part of its root-system. Therefore, transplanting should be accompanied by precautions to prevent too great a loss of moisture from transpiration and to insure that the plant will become reestablished at the earliest possible date. Seeding differs from transplanting in that a seed is a ripened embryo which is a minute but complete dormant plant. As the entire process of germination includes the making of a vital connection between the young plant and the soil sufficient to enable the plant to produce green tissue and support itself, seedage must also be surrounded by precautions to insure that proper conditions exist. One of the most important factors in transplanting or seeding is choosing the proper season, because upon the season the plant hangs the whole future of the plant.—Landscape Architecture.

**A Tree Within a Tree**

A forty-foot high eucalyptus tree, with a perfectly preserved smaller tree inside, was cut down not long ago by a resident of Los Angeles, Cal. The trunk, boughs, and limbs of the inner tree were completely covered by the new outer tree. No one seems to be able to explain this unusual growth, as scientific men have never seen anything like it before. The gentleman who cut the tree says that about three feet from the ground he noticed a circular cavity, through which could be seen the bark and balsam, both of which seemed to be pressed out. The covering of the inner tree is exactly like the bark of a tree. The large section shown in the picture is a slice cut from the tree, showing the texture and clearly defined bark. The smaller sections show the inner and outer growth from various parts of the tree. These sections are now at the Chamber of Commerce, Los Angeles, for permanent exhibition.—Country Life.

**Sobarias**

The Sobarias are better known under the name of Spiraeas and the one most commonly listed in the catalogues is Spiraea sorbifolia.

They are a handsome genus of flowering shrubs and it is really a wonder they are not more often met with in shrubbery plantings.

The planter is usually concerned more about a plant's general appearance and time of flowering than botanical differences. Some of the points in their favor that should commend them to the gardener are: They are adaptable and vigorous in their growth, sometimes too much so, as they spread rapidly by means of suckers when the position suits them. They flower during the summer when there is a dearth of bloom on the average shrubbery border. A moist, partially shaded position suits them, and it is often difficult to select a shrub for such a place that will be so much at home. The foliage is rich and handsome and due to the habit of growth usually clothes the plant to the ground.

The one fault, if it be a fault, is the unsightly appearance of the dead panicles when the bloom is past. These, however, are easily removed which gives the plant a longer season of good appearance than most flowering plants.

The different kinds are all much alike in habit but flower at different times. The first to bloom is the Sobaaria sorbifolia, which comes in June, followed by S. stellipila, S. asurgens, S. arborea and, last of all, S. Aitchisonii in September.—National Nurseryman.

**To Control Onion Thrips**

The onion thrips is an insect so small that it is almost invisible to the unaided eye, but it is prolific, and the most serious menace to onion-growing. Though the insect has a particular liking for onions, it preys upon other garden and truck crops, such as cabbage, cauliflower, cucumbers and melons, and also has a ravenous appetite for greenhouse and many ornamental plants, particularly roses.

The first indication that an onion field has been attacked by thrips is shown by the leaves, which become whitened. In advanced attacks the leaves are curled, wrinkled and twisted, and finally die down permanently.—Bulletin No. 1007, U. S. Dept. of Agric.
Hypochondriac of the Garden

Among the flora of the world there are trees for every purpose and plants for every place, ranging in character from the palm and banyan of the tropics and the oak and fir of the temperature climates to the mosses and lichens that dwell as a matter of necessity in a particular region or for a particular purpose and gave it a zone of habitation, but man has not been contented with her arrangement. We have never half appreciated our own indigenous plants, but are continually introducing from foreign zones and trying to reestablish them in place when it is possible to create an artificial environment for a plant we may expect to grow it with success. In New England we may have all the figs, oranges, and pomegranates that we wish, if we will but grow them in properly constructed greenhouses. A great many varieties of plants grow under very restricted conditions, and refuse to vary these in the least, while some grow under almost any condition. Soil, soil rainfall, drainage, and even air conditions and altitude are some of the agencies affecting plant life. A careful study of environment means much toward ultimate success. I have several times successfully transplanted trailing arbutus. This was done by removing it with very large clumps of earth and planting it in a well-drained, partly shady place where the plant was only shifted to another position of identical environment. We were one to try to grow arbutus under any other conditions it would most likely become a horticultural corpse. Plants indigenous to any given latitude will grow equally well around the world, provided soil, moisture, and other conditions are compatible, but it is in longitude where the zones are clearly defined.

We find people of New England, persistently trying to grow English ivy and boxwood, people of Ohio and Indiana fussing with Magnolia grandiflora and fig trees, and people of the South spending money on blue spruces and balsam firs, and many other exotics which in its own latitude is a healthy, happy specimen, full of vigor, life, and beauty, becomes a hypochondriac. The more we nurse it and fuss with it, the more it pines and weeps. We are always explaining its presence in the garden, with an apology, saying that we know it does not belong there, but nevertheless we are trying to violate nature's "Thou shalt not." A little experience soon teaches one what plants are suited to his special location and conditions, and by a process of elimination the hypochondriacs of the garden may be soon discarded.—Country Life.

Acclimatization of Plants.

Acclimatization is a debated question and it is held by some scientists that the thing is impossible. Certain it is, as everyone knows, that plants cannot be shifted about indiscriminately from one region to another. There are many factors that govern the adaptation of plants to different locations. If this were not so we would have no such thing as local floras or vegetation characteristic of a particular region, ordinary only as a way of expressing it, of a particular condition. Of course, the extremes are patent to everyone. You do not look for Water Lilies on a bleak mountain top but there are other, more subtle divisions of a biological climatic nature. The region east of the Rockies presents a climate that is biologically very different from that west of the Rockies and the flora of the two regions are radically different. A few striking exceptions will be noted. Plants of one region adapt themselves to the other only serve to emphasize the conditions. As it is true that many of our eastern plants may not thrive on the Pacific Slope, so equally, we find to the multitudes of plants of California. The Mariposa Lily is one of the elusive gems; the California Poppy, of course, is the notable exception. The range of the annual mean rainfall is a determining factor. Climatically, California is allied with Europe; whereas the Eastern United States finds its parallel in Western Asia. Hence, in the past much of the disappointment in eastern gardening resulted from an attempt to transplant into the Eastern United States a garden material that was most characteristic of Western Europe. It fits California, however. These are fundamental factors of a biological and climatic nature. Plants are living organisms and will not always act to a cli
date selection. The problem of the gardener is to find the plants that fit his conditions. That is good gardening; rather than forcing a struggling existence for a plant that is palpably crying out against being made to endure in a place where it would prefer to die.—Garden Magazine.

The Questionnaire

Subscribers are invited to make free use of this department to solve problems that may arise in their garden work. Questions on the ordinary pursuits of gardening, that can be readily answered by applying to the usual reference books should not be referred to the Questionnaire.

I have a few Gerbera plants, three years old, in my greenhouse that commenced blooming in December and have continued all winter and at the present time show some buds. I wish to know how to treat these plants during the summer as probably they will not last, and also if I can lift them from the bench and remove out of doors to a frame so that I may clean and fumigate the greenhouse of all fungus and insects before another season. These Gerbera were in pots until last season when I benched them. C. C. W., Mass.

I would recommend that the Gerbera plants be lifted from the bench and plants outside, being careful to shade and water them until re-established. After the greenhouse has been cleaned and fumigated they could be replanted, but a better plan would be to keep them out until August or early September and then replant them in the benches. H. G.

I would like instructions how to handle Amaryllis after they bloom so that they will bloom the next season. I have a small greenhouse and can give them any kind of treatment as to heat or cold through the winter. My main trouble with Amaryllis is to get them to grow foliage after they bloom. J. A. K., Pa.

Keep on growing Amaryllis all summer until they make their full growth after having bloomed; then permit the bulbs to dry but just not too quickly. Give a little water in awhile to prevent the bulbs from shriveling, reducing the amount of water given at each watering till all the foliage has been ripened and dies, and can be picked off the bulbs with the fingers. Then they will bloom the next season as they are, in a cool, dry place and when you want to start up again, place them in the greenhouse and give them a good soaking with water. After the bulbs have begun to grow, take them out of the pots, shake off the old soil and repot in fresh soil.

The announcement of the Questionnaire will no doubt be received as good news by many readers, who have long wished to get in touch with such a department to turn to for practical advice. I will avail myself of it at once. At a meeting of the garden club lectures held several years ago, the lecturer stated that a second crop of Sweet Peas would result if the plants were cut back immediately after bloom. I have tried the experiment several times but only with disastrous results. Have you ever heard of this method? J. S. C., Md.

If some of our garden lecturers were held to a strict accountability for all they assert, they would have a busy time attempting to extricate themselves. We have heard that the method you have referred to has been recommended, but we know of no record of its ever being successful. The flowering season of the Sweet Pea is prolonged in some localities through a copious watering and mulching of the plants (not cutting), and produces a continuous bloom until late August, but we have never heard of a second crop appearing. E. D.

I would like some information how to grow Primroses from seed. K., Pa.

Primroses, or Primulas as they are more generally termed, can be grown from seeds by sowing the same in pans or small, shallow flats, in a soil composed of sand, loam, and leaf mold of about equal parts, making the surface very fine. Press the seeds evenly into the soil, and then cover lightly. Then they should be placed in the light, with a temperature of about 70 degrees by day and 65 degrees at night. When the seedlings begin to appear in two or three weeks and are large enough to transplant, they should be set into other flats two to three inches apart. If the weather is at hand they will have made good plants, and are ready for planting in some protected spot in the garden, where they can remain until early fall. At that time they are to be planted in permanent beds, or if intended for flowering in the greenhouse, they should be potted. M. C.
NATIONAL CONVENTION, CLEVELAND, AUGUST 26-28


The Hotel Hollenden has been selected as the association’s headquarters and convention meeting place. Rates at the Hollenden are $2-$3 for room and bath for one person; $3-$5 for two persons.

The preliminary program is as follows:

- **Tuesday Morning, 26th—Meeting of Executive Committee.**
- **Tuesday Afternoon, 26th—Opening meeting of convention.**
- **Tuesday Evening, 26th—Illustrated lecture.**
- **Wednesday Morning, 27th—Business meeting.**
- **Wednesday Evening, 27th—Banquet.**
- **Thursday Morning, 28th—Business meeting.**

Visits to some of the country estates in the vicinity of Cleveland will be incorporated in the completed program which will also include other entertainment features.

The local committee is planning for a large attendance of members and their families, and is looking forward to making the 1919 convention, which will celebrate the declaration of peace and the future welfare of the gardening profession, a great success.

New Members:

The following new members have been recently added to our membership list: Otto Koch, Greystone Park, N. J.; Joseph E. Shaw, Lacombe, Alta., Canada; H. T. Bulbitt, Mamaroneck, N. Y.; Charles Kurz, Swickley, Pa.; A. E. Thatcher, Coldbrook Springs, Mass.; Frank Lewis, Roslyn, L. I.; Bruce Butterton, Newport, R. I.; Alex D. Elder, Hartford, Conn.; Thomas Mackey, Bellport, L. I.; J. Malcolm McAllister, Riverdale, N. Y.; Donald McRae, Greens Farms, Conn.; Clemmer A. Johnston, Norfolk, Va.; H. Hundt, Yonkers, N. Y.; James Young, Oyster Bay, N. Y.; Albert E. Green, Portchester, N. Y.; Thomas Kennelly, Locust Valley, L. I.

NEWPORT (R. I.) BRANCH N. A. G.

Secretary National Association of Gardeners:

The Newport Branch of the N. A. G. held its monthly meeting June 6th. Mr. MacKay gave a report of the conference of gardeners recently held in Boston, which he attended as a delegate from this Branch. He reported the meeting an interesting one. It was voted to change our meeting night from the last Friday of the month to the first Friday. It was a great pleasure to have us as the speaker of the evening, our national secretary, M. C. Ebel.

EASTERN PARTY PLANNING TRIP

A number of members from New York and vicinity are planning to leave New York on Sunday evening, August 24th, on the New York Central to arrive at Niagara Falls the following morning, and will spend the day there; thence proceed to Buffalo, taking a steamer to Cleveland from that point on Monday night to arrive Tuesday morning. Members going by way of Boston will join the New York party at Albany. The complete itinerary of the New York party will be published in the August Chronicle.

A BURNING QUESTION

What promises to be the most important question to be brought before the convention, although there may be some of more immediate interest, will be that of “How Can We Interest the Young Men in Our Profession?” This is a subject which should receive the very careful consideration of the meeting to assure the future welfare of the gardening profession. Many of the young men have been lured from the vocation of gardening by the more tempting offers which have arisen in various industries. There is no question, however, that if the opportunities for young gardeners, and the future is decidedly brighter than it has been in the past, are probably presented to the young men seeking to take up a profession, the inducements that can be offered will be as equally attractive as those of some of the other professions.

This question should receive thoughtful attention, and ideas or suggestions should be forwarded to the secretary to be presented before the convention, if the member possessing them, cannot attend.

NEWPORT (RI) BRANCH N.A.G.
July and Evergreens

WHAT’S the use of talking about Evergreens in July, when the new growth is so soft it is not good sense to move them? Let me ask, what’s the use of talking about anything you have to sell, before it is time to sell it? What’s the use of Henderson advertising seeds in December that cannot be planted until April?

He does it so he’ll get the business before someone else gets it. That’s why we are talking Evergreens now.

August and September is the next planting time for them. In the meantime, where is there a Nursery that is small enough to receive the personal oversight of the owners, and large enough to contain a desirable assortment?

That’s exactly what this ad is for. It’s to tell you that our Nursery is that kind. But don’t take my word for it—I may be prejudiced. Come and see for yourself. Come and pick out exactly what you want, knowing that you will get exactly what you picked out.

Mr. Ebel addressed the society on the valuable work in raising the profession to a higher level and deserves the support and co-operation of all practical gardeners.

J. Davidson, Sec.
ST. LOUIS ASS'N. OF GARDENERS.

The St. Louis Association of Gardeners, upon invitation, visited the estate and country home of Eugene H. Angert at Clayton, Mo., on Sunday morning, June 1. The forty members present, taking a special car to Clayton, were greeted by Mr. Angert who personally conducted the members through the grounds. The most striking feature of the estate is the well-kempt herbaceous border, the most noteworthy flowering plants which caught the eye, were oriental poppies, delphiniums, veronica, muscari, iris, aquilegia and dianthus. The border being well screened by flowing shrubs as Philadelphus, Amorypha, Robinia, Diervilia and Physocarpus, etc. An interesting feature of landscape planting to the city gardener is to see the coveted conifers, which were grouped in well-selected places.

Our next meeting will be known as "Sweet Pea Night" and will be held on Wednesday, July 9.

Harry Goodband, Cott. Sec'y.

STAMFORD (CONN.) HORT. SOC.

The regular monthly meeting of the Stamford Horticultural Society was held on Friday night, June 6. Eighteen new members were elected. The Liberty flower show will be held on June 26 and 27 at the Preparatory School on Prospect street. Practical gardeners as well as amateurs and school children will show their products. The bees and their products will be another feature. Tickets and schedules can be had from the secretary Owen Hannich, Clapboard Ridge, Greenwich, Conn., or the Quality Seed Store, Stamford.

SOUTHBAMPTON (N. Y.) HORT. SOCIETY.

At the recent monthly meeting of this society, there was a large attendance, including several out of town visitors, and President D. T. Wills was in the chair. Mr. Doublin, superintendent of the Samuel Thorne Estate, Southampton, had a very fine display of well ripened indoor fruit consisting of Peaches, Nectarines and Figs. For this section of the state and for this season they were very early, well grown and well developed.

The society will hold its annual exhibition of flowers and vegetables on July 30 and 31.

There is every prospect of a good display. S. R. Candler, Sec'y.
WESTCHESTER (N. Y.) AND FAIRFIELD (CONN.) HORT. SOCIETY.

The regular monthly meeting of the above society was held in Hubbard's Hall, Greenwich, Conn., Friday evening, June 13, President W. Graham presiding. There was a good gathering of members present, including representatives from the Tarrytown and Mount Kisco Horticultural Societies. The executive committee reported that all arrangements for the coming flower show were complete. The exhibition will be held in the Town Hall, Greenwich, Conn., on Friday and Saturday, June 27 and 28. Schedules were distributed to the members. A silver medal from the National Association of Gardeners was presented to James Stuart. W. J. Seeley was appointed to make arrangements for the coming-out and games which are to be held at Rye Beach some time in the month of August. Mr. Fieldhouse gave a very interesting lecture on growing flowers and vegetables by electric methods.

JACK CONROY, Cor. Sec'y.

SOUTHAMPTON (N. Y.) HORT. SOCIETY.

At the recent monthly meeting of the Southampton Horticultural Society, when there was a large attendance with several out of town visitors and President D. T. Wells in the chair, Mr. Dowling, superintendent of the Samuel Thorne estate, Southampton, had a very fine display of well. The above society will hold its annual exhibition of flowers and vegetables this year on July 30 and 31, when there is every prospect of a very good display.

S. R. CANDLER, Sec'y.

NORTH SHORE (ILL.) HORT. SOC.

The above society held its usual monthly meeting June 6th, President W. E. Fisher occupying the chair. The exhibits as usual were very fine, the most prominent being group of Calegarias shown by H. Chalmer, group of Celargoniums shown by T. W. Head, and some fine Iris shown by J. Tuley. The picnic committee reported upon arrangements made and date of picnic was set for July 15th at Pound Lake. Several new members were proposed and elected, bringing the active membership to 100 members.


NEW LONDON HORT. SOCIETY.

New London Horticultural Society will hold its June meeting Thursday, the 12th, in its rooms at the Municipal Building. Professor S. P. Holeister of the Agricultural College gave a very instructive and interesting talk on "Spraying of Fruit Trees and Spraying Material," giving a demonstration on the making of Lime Sulphine Bordeaux for use as outlined in his remarks.

Two new members were admitted and one old member renewed his membership. A good number of the Amateur members were present. The secretary would like to see the Professional Gardeners come up to the meetings more regular and thus help to keep the "home fires burning."

STANLEY JORDAN, Sec'y.

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AMONG THE GARDENERS

Members of the association returning from the service, should forward their new address to the secretary's office. The association carried all members on its books during their service in the army or navy except of dues.

Alexander D. Elder, recently secured the position of gardener on the estate of G. M. Stadelman, Congress Lake, Hartville, Ohio.

A. Sheriffs has accepted the position of gardener on the F. S. Smithers' estate at Glen Cove, L. I.

J. Buckingham who has received his honorable discharge from the army, has resumed his duties as gardener to Irene du Pont, Wilmington, Del.

Malcolm McAllister has taken the position of gardener at E. C. Delafield, Riverdale, N. Y.

Peter MacDonald, formerly of Oyster Bay, has secured the position of superintendent of the estate of C. M. Danaherts, Sabattis Park, Long Lake West, N. Y., succeeding John Alexander, who resigned.

William Warburton of Franklin, Mass., has accepted the position of head gardener on the estate of Theodore F. Thieme, Fort Wayne, Ind.

Joseph Goodier, for many years head gardener to the late Charles G. Roebling, Trenton, N. J., has secured the position of superintendent of the new estate of Dr. Dksen at Ogonx, Pa., now in the course of development.

Morell Smith, who resigned his position as superintendent on the estate of Ralph Pulitzer, Manhasset, L. I., to enlist in the army, rising to the rank of lieutenant, we regret to report, was last seen going "over the top" in the Argonne, and an extended search has failed to find any trace of him.

OF GENERAL INTEREST

What is probably one of the most valuable, private horticultural collections ever imported to this country by an individual for his country estate is that of the collection of Azaleas and Camillas, imported by Pierre du Pont, Wilmington, Del., through John Scheepers, Inc., part of it being of the famous collection of Gelle de Galle, Belgium, who planted the plants for more than sixty years. Most of the Azaleas are of a fine specimen type, five to fourteen feet in diameter, in standard and pyramid forms. The estimated cost is more than $50,000.

WILDFLOWERS

The horticulture of our native plants, their behavior under cultivation, and the originations of new forms by sports and hybridizing is the special field of study at the famous orchid collection of the late Charles G. Roebling of Trenton, N. J., was recently sold to Dr. Dksen, Ogontz, Pa., now in the course of development.

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1. That the owner is: The Chronicle Press, Inc., 286 Fifth Avenue, New York, N. Y.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give the name and the names and addresses of stockholders.)

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent, or more of the total amount of stock.

4. That the known bondholders, mortgagees, and other security holders are: (Give the number of holders, mortgagees, or other security holders, and the amount of interest held, if known.)

5. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, are true, and only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing all matter required to be returned in said report, as to the circumstances and conditions under which stockholders or security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities, or any stake in the success of the company, which is not so stated by it.

C. B. LEONARD, Editor.
Rosa Rugosa

Rosa Rugosa, which is an old inhabitant of gardens, is a native of the coast sand-dunes of northeastern Asia. The thick dark green leaves seem able to resist the attacks of insects and the diseases which often discolor the leaves of many roses. The flowers of the typical wild plant from Japan are red, but there are varieties with pure white and with clear pink flowers. No other rose is harder than Rosa rugosa, and left to itself it spreads into great thickets. No shrub is better suited to grow in exposed positions on the New England coast: it grows equally well in the rich soil of the garden, and no other rose is so valuable in this climate for making low hedges. Valuable as the Japanese Rosa rugosa has proved itself as a garden plant its greatest value is in its ability to transmit its hardiness, handsome foliage and large flowers to its hybrid offspring. Among these are already several beautiful garden plants which suggest that the plant breeder who wishes to produce new races of roses able to grow and flower successfully in the northern states must combine Rosa rugosa and its hybrids with other hardy roses. Rose breeders are singularly reticent about the plants they have used in their work, and there appear to be no printed records of the parentage of any of the rugosa hybrids with the exception of the two which have been created in this Arboretum. One of the earliest of the rugosa hybrids, Madam George Bruant, has pure white semi-double flowers which continue to open until the coming of frost. More distinct is the plant named Conrad Ferdinand Meyer which was raised in Germany. This is a large shrub, with large, nearly double, clustered pink flowers. The foliage and flowers show little rugosa influence, but its vigor and hardiness are probably derived from the Japanese parent. Nova Zembla is a white-flowered sport of this rose. At least twenty other European hybrids of Rosa rugosa have received names. Some of these are not distinct and others have little to recommend them as garden plants. In England standards with weeping branches have been successfully grown by budding this rose on the tall stems of other roses, and it would probably prove one of the hardiest standard roses which could be grown here. It can be trained over a fence or arbor, but can be best used to cover banks and the ground under other shrubs or small trees. The two rugosa hybrids raised by Dawson at the Arboretum have proved to be good garden plants. In habit Lady Duncan resembles R. rugosa repens alba but the stems are not as stout; it can be used as ground cover or trained on an arbor or trellis. The flowers are rather smaller than those of R. rugosa and pure pink, and the leaflets are smaller and very lustrous. This rose was obtained by crossing Rose rugosa with R. Wichuraiana. The Arnold rose, R. Arnoldiana, was made by Dawson, by crossing R. rugosa with the hybrid tea rose, General Jacqueminot. It is a stout bush with good foliage and large, bright red, single flowers, and when in bloom perhaps the showiest of the roses in its shrub collection.—Arnold Arboretum.

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EVEN if it is so, we can't recall having said that the Pierson U-Bar Greenhouses are the best all steel framed greenhouses built. But those who own them do say it. Admittedly, they are in a good position to know.

When it comes to building Pierson U-Bar Greenhouses, we have said that no one knows how to build them as well as we do. Which statement is well founded, when you learn that we have been building them exclusively for the inventors, for fourteen years or more.

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Two Points of View on U-Bar Greenhouses

EVEN if it is so, we can't recall having said that the Pierson U-Bar Greenhouses are the best all steel framed greenhouses built. But those who own them do say it. Admittedly, they are in a good position to know.

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One of our trained U-Bar experts will be glad to talk it over with you; or conduct the matter by correspondence—whichever you prefer.

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WHILST some of our garden flowers have not appeared altogether at their very best during the hot dry weather of the first half of summer, the "Geraniums" at least have been perfectly happy and are making a fine showing. These well-known garden plants are really deserving of the popular favor bestowed upon them, and what little criticism may be directed against them is most likely based on the poor judgment sometimes displayed by their use in unsuitable locations or some other cultural mistake. Being descendants of South African plants they naturally delight in sunshine, appearing most unhappy if deprived to any extent of this most essential condition to their well-being. While tens of thousands are planted annually throughout the country for summer bedding, we have not made use of them to any great extent as pot plants for winter-blooming. Perhaps it is because they are considered too common to bother with in this way, yet it would seem that a selection of choice varieties, especially doubles, in well grown plants, could scarcely fail to be appreciated by any greenhouse owner during the winter months. Rightly understood they are the easiest of plants to grow and manage, but growing conditions to be avoided at all times are loose potting in rich soil, frequent and heavy applications of water overhead and at the root, shade, and a close atmosphere. If one so desires and has the facilities it is an easy matter to have a continuous display of "Geraniums" the whole year through. Year-old plants cut hard back at this time make good stuff for winter-blooming, being more gloriferous than young plants. Visitors to sunny California are impressed by the wonderful "Geraniums" to be seen there which are permanently planted out. In favored spots in the south of England they may be seen several feet high trained on dwelling house walls.

These plants popularly known as "Geraniums" are strictly speaking Zonal Pelargoniums, a race of garden plants considered to have originated from Pelargonium inquinans and P. zonale, both of which were introduced into English gardens early in the 18th century. They may still be found in botanical collections and a comparison between them and present day varieties shows a wonderful improvement in size, form, and color of flowers and in the habit of growth. Well over two hundred Pelargonium species have been described, practically all of them found wild only in South Africa. It is a genus which has responded well to the work of the hybridist and many, many hybrids and varieties have been produced and are classified into several sections, of which the zonal section and the domesticum group, better known as the Show or Lady Washington pelargoniums are now the best known. Fifty years or so ago there was quite a craze in England over the variegated-leaved section, especially the tricolors, some of the new varieties at that time being priced as high as ten to fifteen dollars apiece. Few of them survived, however, for any length of time, proving to be of poor constitution and consequently difficult to propagate. A selection from the species and hybrids ought to appeal to the real plant enthusiast with greenhouse space at command, especially those kinds which have pleasantly scented leaves. It was interesting to read that a group of fine specimen plants of this section was exhibited from one of the best known English gardens at a recent big flower show in London.

The true Geranium is a genus of mostly herbaceous plants comprising a great many species widely scattered throughout the temperate regions of the earth. The Spotted Crane's-Bill, Geranium maculatum is a familiar member of the family, conspicuous amongst the flowers of the roadside and open woodland, where it produces a pleasing effect full of suggestion to those who can command the proper conditions and who take a delight in the more advanced naturalistic form of gardening. It is one of the plants which contributes its share to the material well-being of mankind, its roots being used in medicine, and we are told its healing properties were well known to the Indians by whom it was much used for the dressing of wounds.

The European G. sanguineum is one of the best species and well worth a place in any herbaceous border, making a neat growing plant about a foot and a half high with dark red flowers.

A dwarf form of this species, listed as var. lancastriense has lighter colored flowers and is a most excellent subject for a sunny position in the rock garden.

One of the best, and perhaps it would be safe to say the most showy of the Evening Primroses, is the one commonly known as the Mission Primrose, Enotera missourienasis, and if called upon to select but one from the several desirable species and varieties of this interesting family, it would be my first choice. In habit of growth it is prostrate, which makes it a very desirable...
plant to use along the front of the border, or to help
furnish the rockery, especially as it flowers at a time
when this is rather shy of bloom. With its reddish stems
and bright green leaves it is an attractive looking plant
all through the season, but its most striking character
is the size of the flowers for a plant of such slowly growth,
which at once excites the interest of all who see it. They
measure four to five inches across, are bright yellow in
color and develop a large interesting looking winged seed
vessel. It is generally advised to grow this in a straw,
sandy soil, but with me it succeeds better than I had
hoped in a low lying situation and in loam of a retentive
nature. Young plants from March sown seeds are now
in flower so that one does not have to wait a great while
for results. Another kind I am very fond of is /E.
aaculis, sometimes called /E. taraxacifolia, from the close
resemblance of its leaves to that of the dandelion, so
close in fact that it is well to point them out when young,
lest the hired man in his zeal uproot them in mistake
for the common weed. Being a native of Chili it is
one of Annual duration with us, but it is well worth
while as a garden plant. It grows but six inches high,
and the large pure white flowers open fresh in the eve-
ning, changing to pink next day.

Many people are fond of the so-called Everlasting
Flowers, which not only help to brighten the summer
flower garden, but retain their color and form for some
time when in a cut and dried state, and are, therefore,
prized for winter decoration. The Helichrysum or Straw
Flower is perhaps the most widely known, and a good
strain will embrace many beautiful shades of coloring
which show to good advantage when massed together.
If the flowers are cut before fully expanded and sus-
pended heads down in a dry airy room for a time they
are more satisfactory that when allowed to develop fully
on the plant. A plant which belongs in this class, and
one well worth wider cultivation is Statice Sivovorae, a
strikingly handsome annual and one of the choicest of
the Sea Lavenders. While good in the outside garden,
the flower spikes reach their highest development when
the plants are grown under glass, and to those who
would like to try something different it can be well
recommended as a good subject for winter blooming
in pots. It is not at all difficult to manage and ordinary
greenhouse temperature suits it very well. The flowers
are rosy red, produced in dense, branching spikes, and
I believe there is also a variety with pure white flowers.

Enquiry is sometimes made for flowering plants that
will not only grow but also flower freely in a window
box or bed that is pretty well shaded. Plants which are
admirable in every respect for such positions are Impa-
tiens Sultanii and /I. Holstii and commercial growers
report a growing demand for them as summer bedding
plants. As pot plants for the greenhouse and dwelling
both are well and favorably known for their free-flower-
ing qualities, the former especially being practically a
continuous bloomer, though scarcely as robust in growth
as /I. Holstii, which also has larger flowers and in the
eyes of some people of a more pleasing color. /I. Sultanii
is said to have found its way into cultivation by chance,
seedlings coming up in the soil with other kinds of plants
sent to Kew from Zanibar, and was subsequently named
in honor of the Sultan of that island. The Impatiens
is a very large genus, including both annual and perennial
kinds, mostly natives of warm countries and ranging in
size from tiny plants to the dimensions of a large shrub.
The largest species we know of is /I. Oliveri from the
mountains of Uganda, which if planted out in a green-
house makes a bushy plant about ten feet high, a very
showy subject indeed when laden with its glistering
flowers of pale pink each measuring two inches or more
across.

Some sturdy looking plants of /I. Hawkeri, a large
 crimson flowered species, were exhibited in New York a
few years ago, but it does not appear to have become
very well known as yet. Glowing accounts came from
England a few years ago over the discovery of a new
kind in New Guinea, named /I. Herzogii, but so far we
have not seen or heard of it in our gardens here.

The best known of the Impatiens family, the common
Balsam, is a very old garden plant indeed, having been
classed as such for over three centuries. During that
time of course, it has been very much changed by cul-
tivation and breeding, the highest form of development
being represented in the double Camellia flowered type.
Though a commonly grown annual it is only occasion-
ally met with in really first-class form, for too often they
are seen overcrowded in a soil lacking in sufficient
nourishment, consequently the plants suffer badly and
give but poor results. They delight in a rich piable soil,
plenty of moisture at all times, and ample room for
bushy development which means planting not less than
eighteen inches apart.

Fragrance in flowers is a delightful quality which ap-
peals to every one and enhances the value of many kinds
which otherwise have little to attract popular attention.
Mignonette, Lavender and the night-blooming Stock for
example, have little to recommend them as garden plants
from the point of view of making a showy display, but
yet are beloved and grown in many gardens for their
fragrance alone. On the other hand we have many
flowers which attract the eye with beauty of form and
color but yet fall short of what we consider to be per-
fec tion because of the lack of odorousness. I think most
people experience a deeper sense of satisfaction from a
bowl full of old-fashioned red roses or clove pinks than
we get from the more elegant looking modern Rose and
Carnation varieties, which as far as fragrance is con-
cerned are not to be compared with the old fashioned
types. It is a pity that in the process of improving some
of our garden flower size, form and color have been
 gained at the expense of fragrance, one of the chief
charms of the flowers we love.

When mention is made of flowering Peas the Sweet
Pea is likely to be the first thought, and because of its
beauty of form, great variety of color and delightful
fragrance, it has undisputed claim to first place, while
overshadowed by this most popular of annuals, the Ever-
lasting Pea, /La/xirus latifolius is a very good represen-
tative of the family and is possessed of certain good
qualities not to be found in its more showy relative. It
is perfectly hardy, of perennial nature and a good doer,
not at all particular as to the kind of soil in which it is
planted except that it be sweet. Though a climber it
attains to no great height, but for covering a low trellis
or fence it is first rate, being a thrifty grower with a long
season of bloom. The color of the type is rose-pink and
there is also a very fine pure white variety called White
Pearl, both are excellent as cut flowers. If only it had
the fragrance of the Sweet Pea, what a highly popular
plant this would be!
WONDERFUL is Iris, the so-called Orchid of the flower garden, for she in beauty and general usefulness is unsurpassed by any other herbaceous perennial. The flowers make excellent bouquets, and when they are arranged in vases enchant the enthusiastic perennial. The flowers make excellent bouquets, and varied are your varieties that it would be impossible in a short article to describe them, therefore mention will only be made of a few useful kinds, and their culture given.

The genus comprises two sections: (1) The Rhizomatous, that is plants with creeping, fleshy root stocks, or rhizomes; (2) the Beardless, plants which possess long bulb-like corms. To the former section mention will in this article alone be made.

Though many varieties are fastidious in their requirements, generally the Iris is easy of culture. It is in the choice of soil and of position that the grower may encounter difficulty. If, however, a short study is made of the nature of the subjects no difficulty will arise. If a swampy position is available semi-aquatic Irises should alone be planted. If a dry one, plants suitable for this position must be chosen. If irregular germination takes place, do not become discouraged. This is characteristic of many varieties.

Choice of subjects.—Where a succession of bloom is desired in the garden, the types must be carefully selected. The first to flower are the dwarf bearded Crimean hybrids (hybrids of I. Pumila). They are suitable for planting on rockwork or as edgings to borders. A new race, crosses between the I. Pumila hybrids and the tall bearded kinds to which belong the German Irises, has come into existence. They are intermediate in habit, and in time of flowering, and may be placed second in the latter respect. They are very worthy of culture.

Next in order of flowering are the tall bearded Irises, all of which are fragrant and are represented by the blue, purple and white flags. They all bloom at the same time. These, the German Irises, are followed by other tall bearded kinds of beautiful and varied colors in the following order, varieties of Amoena, Neglecta, Pallida, Picata, Squalens, and Variegata. It would indeed be an interesting experiment for any lover of Irises to try them out in the order given. The continuity, wealth, and beauty of bloom would simply be amazing in a large collection.

The Beardless kinds.—Having considered the early flowering dwarf and tall bearded varieties, we still have another interesting group, viz.: the beardless types, many of which are semi-aquatic in nature, not all of them however, for included in this group are plants suitable for rock gardens, borders and some even so accommodating as to flourish equally well in a fairly dry border, or at the water’s edge, if when planted their crowns are well above the level of the water. Included in this group is the beautiful Japanese Iris, I. Laevigata (syn Kaempferi) the Clematis flowered Iris. I. pseudoacorus, the yellow Flag and its varieties. I. sibirica, with its varieties alba, Orientalis or Sanguinea, Snow Queen, superba, and others which are all semi-aquatics and suitable for water side planting.

Propagation of the Rhizomatous Irises.—Division of the rhizomes (root stocks) is the most popular method of increasing the stock. Plants so raised flower in one or two years. Nearly all the hardier Irises may be raised from seeds, however, but as the seedlings may not flower in less than three years the method is too slow, in many cases.

When propagating by division sever the rhizomes with a sharp knife, allowing one or two corms to each portion. If a large number of plants are not required the larger clumps may simply be divided into two, three, or four portions during late September or October, and be planted directly in their permanent position. Where extensive propagations carried out the small portions should be planted in nursery rows and allowed to remain for a year, after which they may be used in permanent planting schemes.

Spring is the best time to sow seeds, and where this is done flats containing sandy soil will be found excellent receptacles, as they may be readily and quickly moved to any position. Seeds may of course also be sown on prepared seed beds in cold frames. Place the flats in cold frames, keep the soil moist and shade until the seedlings appear strong, after which transfer them singly into specially prepared beds in frames, and protect them during the first winter of their existence. If irregular germination takes place, do not become discouraged. This is characteristic of many varieties.
Patience with the seedlings will usually be rewarded.

Culture of the Bearded Irises.—A rather dry and sunny position and ordinary garden soil will suit these early flowering kinds. October is the best month to plant. This, however, is not imperative, but better results will follow than if the planting is done later in the Fall or during Spring. The magnificence of the Iris is only revealed when blooming collectively, therefore plant in masses. Do not plant deeply, simply cover the rhizomes with soil. The border should not contain any fresh stable manure, nor should the plants be mulched with this material, the deleterious effect of which may be quickly noticeable in the stunted growth and unhealthy appearance of the leaves. Half rotted leaves, or strawy litter from which the manure has been shaken will answer admirably as a protective mulch during winter. This may be forked into the soil during Spring, where in time its fertilizing qualities will greatly benefit the plants.

During the growing season it is just as necessary to cultivate the soil after the Irises have flowered as before, for at this time the plants prepare food materials for the following season and store it in their rhizomes. Without this food flowers could not be produced—Conserve the moisture by cultivation. In the Fall do not remove the foliage ere it matures or before natural decay occurs, or it will be detrimental to the rhizomes. To cut away growing leaves prevents the transference of sap containing the food solutions to the store house. Avoid by all means disturbing the roots when cultivating. Many of the less vigorous kinds resent careless treatment, and show their resentment by their weak growth.

*To be continued.*

Rose Growing and Propagating

E. G. HILL

Our country is so wide in extent, and so variable as to climate, that roses suited to one section may be absolute failures in others, hence the need of supplying suitable soils for given localities; the knowledge necessary to make such selection requires long and careful study, and can only be made complete by personal experiment, and in this experiment, many points considered singly or in various combinations must be taken into account, notably drainage, composition of the soil, exposure, temperature, humidity and the behavior of the variety in response.

The climbers and the Wichurianas should be better known, and their individual characteristics fully appreciated, for they succeed in nearly all sections of the country, except perhaps in portions of the northwest, and in the extreme south. Our present varieties in these two classes are the pioneers of garden planting among the masses of our people; varieties more resistant to severe cold are needed for the Dakotas and that latitude. In the south the tendency to a continuous growth is apt to lessen the vitality of the rose, but in the gulf territory and in California, the climbing teas and Noisettes prove highly satisfactory. Lamarche, Gold of Ophir, Solferatte, Gloire d’Dijon, and that wonderful rose, the Marechal Niel, with its climbing sports of coronation and hybrid teas, like Kaiserin Augusta, Meteor and others, give a fine choice of color subjects in trellis roses. These tender climbers suffered considerably in the terrible winter of 1917-18, but this spring they are again a mass of bloom and brilliant color, reinstating themselves with all who love roses.

Some of the most satisfactory in the hardy climbing section are Dorothy Perkins and White Dorothy, Dr. Van Fleet, Tausendschon, Excelsa, Mary Lovett, Silver Moon, Bessie Lovett, Gardenia, American Pillar, and Grand Toplin, and this list can be considerably extended by other excellent sorts.

If I wish to make friends for the rose I should recommend to the novice, the dwarf polyantha type of rose. These invariably succeed under even adverse circumstances. They are hardy, wonderfully free, and absolutely continuous up to killing frosts at Thanksgiving in our middle-western states. Beginners in rose culture should be urged to make their first experiments with these lovely bouquets of "baby" bloom; among the true and tried are Erna Teschendorf, Mme. Levasseur, Catherine Zeimet, Mrs. Cutbush, Clotilde Soupert, and Mme. Gouchault.

What the rose loving public demands are the "ever-bloomers," and we may as well say at once that outside of the polyanthas, the everbloomer is an impossibility so far as the production of bloom during July and the first half of August is concerned. Among the teas and hybrid teas, after the flush of June bloom is past, there invariably comes an interval of rest, lasting until cooler nights herald the approach of autumn; then comes the great show of the summer, lasting until cut short by frost. After a most critical scrutiny of the fine collections in the trial gardens at Washington, D. C, and other noted collections, the following 25 sorts seem to constitute the very finest of the hybrid teas. In making up this list, I have first of all considered constitution and vigor, combined with shapeliness of form, good color, and free production of bud and bloom. Fragrance must be present for milady's bouquet, but is not so essential where the mass of color is the aim, though rose perfume is a joy to the senses wherever its subtle fragrance is felt.


The hybrid perpetual class is better known among the men of your association than by myself, though I still have clear cut pictures in my mind of those magnificent sorts Frau Karl Druschi, Paul Nevron, Ulrich Brunner, Gen. Jacqueminot, Anna de Diesbach, Alfred Colomb and Hugh Dickson. These are still widely known.

The rugosa has a future for the hybridist, and from the intermingling of the blood of this rugged species will come beautiful varieties for the colder climes of Canada and the United States. This we may now anticipate with certainty, for are they not already arriving?—*Extracts from paper read before convention of American Association of Nurseriesmen.*
Interesting Trees and Shrubs at the Arnold Arboretum

SUMMER FLOWERING SHRUBS

Many shrubs with conspicuous flowers bloom in the Arboretum during the summer months. The list includes the Heathers (Calluna vulgaris), and several species of Genista and Cytisus.

Of this European group the handsomest which can be grown here is the bright yellow-flowered Cytisus nigricans, the yellow-flowered C. Capitatus, the white-flowered C. leucanthus and the yellow-flowered Woad Wax and its varieties (Genista tinctoria), too well known in Essex County, Massachusetts, where escaped from cultivation it has ruined many hundred acres of hillside pastures. The Lespedeza with their abundant purple, pea-shaped flowers, and the handsomest of the Chinese Buddleias are still to bloom, as is the very hardy Acanthopanax sessiliflorum, a vigorous shrub of eastern Siberia, most conspicuous in winter when the compact round clusters of the shining black fruits are on the ends of the branches. The Japanese Hydrangea paniculata and its varieties, and the Hydranges of North America produce here the showiest July and August flowers. The early-flowered forms of Hydrangea paniculata (var. praecox) which is the handsomest of the group, is already in flower; and all the American species are blooming or just opening their flower-buds. The most popular of these American plants is the form of H. arborescens (var. grandiflora) with snow-ball-like heads of white sterile flowers. There is a similar abnormal form of another of the American species, H. cineraria. More beautiful, and one of the handsomest of the genus, H. quercifolia will flower this month in the Shrub Collection. This is an unusual event for this shrub, which is a native of the Southern States, is frequently killed to the ground here. In the Middle and Southern States it is an important and valued garden ornament. Of the American Hydrangeas which are perfectly hardy in the north the handsomest is H. radiata, a native of mountain slopes in North and South Carolina, once a popular garden plant but now rarely cultivated. It is a broad, round-topped shrub with leaves of ample size, dark green above and silvery white below, and broad flat heads of flowers surrounded by a ring of white neutral flowers.

THE LILAC COLLECTION

Many additions to the lilacs which can be cultivated in our gardens have been made during the last fifty years, and there are now in the Arboretum collection
some twenty-three species, several hybrids, and one hundred and sixty or seventy forms of the common garden lilac (Syringa vulgaris). Lilacs to most people mean tall bushes with lilac-colored or with white fragrant flowers, the forms of Syringa vulgaris found in all old gardens and known in the eastern states at least since the middle of the 18th century, the plants loved by Washington and planted by him in his garden at Mt. Vernon. A good example of these old-fashioned lilacs can be seen in the Aboretum on the east slope of Bussey Hill just below the overlook. These lilacs were planted at least a hundred years ago by Benjamin Bussey on each side of one of his garden walks which they have now obliterated. These old lilac bushes bloom every year and their flowers, although small, are more fragrant than those of many of the modern varieties. Although the common lilac reached England from Constantinople as early as 1593 it is only in comparatively recent years that horticulturists have seriously undertaken the task of improving the flowers by selecting and propagating the most distinct seedling forms and by crossing these among themselves. The largest number of these improved forms of the common lilac have been made by the French nurseryman Lemoine of Nancy; many of the good varieties were raised in Germany and in recent years Mr. John Dunbar of Rochester, New York, has raised a few seedling lilacs which seem destined to find a permanent place in gardens. Only a few hybrids between species of lilacs have yet been raised, but the crossing of some of the new Chinese species might well produce forms unlike any of the lilacs now in cultivation. As with roses, some of the new forms have lost much of the fragrance of the flowers which is one of the great qualities of the old-fashioned garden lilacs.

A fine specimen of Philadelphus splendens (a new variety).

Lilac Row in the Arnold Arboretum. There are more than two hundred species and varieties of the lilac.
usually scarlet fruits. Nearly all of these shrubs are able to show their greatest beauty in this climate, but this can be obtained only by planting them in rich soil and

RHODODENDRON (AZALEA)

CALENDULACEUM

A LOVER of flowers who has had the good fortune to see the yellow-flowered azalea in June on the wooded slopes of the southern Appalachian mountains can never forget it. North America does not offer a more beautiful flower show. No other North American shrub has such brilliantly colored flowers; and no other azalea hardy in New England can be compared with it in the variety of color found in its flowers. The flowers of the Korean Azalea Schlippenbachii are larger and more delicate in texture and color, and those of the Japanese A. Kaempferi are more surprising, for it is always a surprise to find the bright red flowers of this azalea on a bare New England hillside. These plants when they are in flower look exotic here and do not fit our American surroundings as well as our yellow-flowered plant. The flowers, too, of the American plant remain in good condition longer than those of any of the Asiatic azaleas, and they were not injured by the recent excessive heat which spoiled the flowers of many other plants. A good many plants of R. calendulaceum have been raised at the Arboretum from seed, and many of the seedlings which are now blooming on Azalea Path show the variation in the color of the flowers from clear yellow to flame, which adds to the interest of a collection of these plants in early June. Single plants of this azalea have also been planted among other shrubs on the borders of some of the drives, and these show how this azalea can be used with advantage in New England plantations.

AMORPHA CANESCENS

AMORPHA CANESCENS, the Lead Plant, is beginning to open its small, violet-colored flowers arranged in long, narrow clustered spikes, which are conspicuous by the contrast with the color of the leaves and branches and are thickly covered with gray down. This plant is a native of the Mississippi valley, where it grows on low prairies from Indiana and Minnesota to Texas.—Arnold Arboretum Bulletin.

Hydrangea petiolaris. An interesting climber which clings firmly to the Wall.

with sufficient space for free growth in all directions. In poor soil and when crowded by other plants they are usually miserable objects. The large growing kinds like the different forms of L. tatarica, the hybrids L. bella and its varieties with white and with rose-colored flowers, and L. notha, should be planted as isolated specimens at least twenty feet from any other plant. L. Morrowii, a plant of the Amoor region in eastern Siberia, requires even more space, for its lower branches which cling close to the ground naturally spread over a great area. This shrub has gray-green foliage, comparatively large white flowers and bright red fruits. It is one of the most useful of the early introductions of the Arboretum into the United States and has been largely planted in the Boston parks. Like many other bush honeysuckles, L. Morrowii, hybridizes easily with other species, and most of the plants raised from seeds, now sold by American nurserymen as L. Morrowii, are hybrids of this species with L. tatarica and are erect growing plants of little value for those who want plants with the peculiar habit of L. Morrowii. Among the less vigorous growing plants attention is called to two hybrids of L. Korolkowi in the collection, L. amoena and L. Arnoldiana. These have small gray-green foliage and small, bright pink and very attractive flowers, and are, perhaps, not surpassed in grace and beauty by any honeysuckles in the collection.
AUGUST is the month of the year when we think
that the time is flying. Out doors, flowers are all
glow and indoors all is preparatory work for
winter's bloom.

We can grow more flowers this year. Peace has
again shed its good to mankind and the horizon is
brighter. Nations are again settling down to com-
mercial life and nothing will revive the bonds of peace
more quickly than the interchange of products 'twixt
friend and foe. Our former enemies have always sup-
plied us with some of our choicest bulbs and we can
now renew the custom.

Lilium longiflorum will be required for Christmas
and the bulbs should be secured from reliable se-
eds, and potted into six inch pots. Remember that
it is not necessary to coddle these plants. Mix a good
compost of loam, sand, well rotted cow or horse manure,
but remember that it must be well decayed or disaster
will result and a five-inch pot of bone meal to a barrow
load of the compost. Place a good sized crock at the
bottom of the pot for potting the coarser pieces of
loam next. Place the bulb thereon, filling in quite
firmly. Set the pots away on the bench of the green-
house and cover with excelsior. No water is to be
applied any more. The rose house must never be shaded.
Plant firmly, and will take good liquid manure.

Freesias should be potted by August 15th if wanted
for Christmas.

By August 20th the carnation plants should be all
in the benches. Their culture is well known, but as
fungus diseases are always lurking, it is well to re-
mind the amateur to avoid deep planting. Keep the
stem way out of the soil, even if you have to stake the
plant to hold it upright for a few days. Press the soil
firmly at the roots. Also avoid a rich soil to begin
with, and see that the same has sufficient lime to
sweeten it. Shade the house for ten days.

The rose house must never be shaded. Plant firmly,
and those recently planted require plenty of water at
the roots, avoiding water on the foliage too late in the
day. It is during August that fungus will trouble the
roses if they have been shaded at all. Keep the young
growth strong and vigorous with careful syringing.
Break off all the small buds until the middle of Sep-
tember.

Sweet Peas for Christmas should be sown in three
inch pots at the end of this month. Put a little bone
at the bottom of the pot and four seeds, just covered,
will do nicely in the pot. They require a light position
in carnation temperature.

Mums must be fed now. Give soot water and sheep
manure for liquid, and once a week give a light sprinkle
of Clay's or Thompson's manures—both are safe ones
to apply. We have used the latter with good results,
being unable to get Clay's, but either one is economi-
cal and valuable.

Spray the plants well for the aphis, and keep the
plants as cool as possible. By the 20th all buds can
be retained for the large blooms, and do not pinch the
plants back any more.

Antirrhinums intended for winter bloom, should be
in four inch pots now and can be planted into a bench
at any time. Keep the flower spikes off and they will
respond with three feet stems in winter when they are
most valuable.

Mignonette should be thinned to one plant in three
inch pots and grown cool along with sweet peas.

A fine combination can be secured by growing sweet
peas and antirrhinums in the centre bench, and on the
side benches which have less room, can be grown
violets, pansies, calendulas, parsley, useful and orna-
mental, and a batch of lettuce, May King variety. All
these plants will succeed with a night temperature of
45°.

Pansies can be sown now, and later transplanted.
Keep cool and they will give a beautiful lot of dainty
blooms in three months' time, that are a great delight
to those who like to pick them each day.

Poinsettias should be started now. Cuttings usually
bleed somewhat but they can be helped by covering
the bleeding part with fine charcoal. Place in the
sand, shade for two weeks and then rooted, pot off.
The old, cut back plants can be taken care of. Keep
on the dry side for ten days, and then shake off all the
old soil from the roots. Repot in sandy soil into small
pots. A compost of leaf mold two parts, sand one part,
old sod and a little well decayed cow manure will
benefit them. Be careful to avoid overwatering these
plants for a month for this is fatal to their success.
But if common sense is used, they will give excellent
results. When nicely rooted they can be grown cool,
and will take good liquid manure.

Poinsettias are not often bothered with insects, and
the mealy bug is the worst pest to contend with. To
keep off this pest have everything clean, and if it does
come, sponge with a strong solution of Aphine, being
careful not to break the leaves or they will lose sap.

German Iris are fine plants to grow along with
Spanish Iris, and are magnificent, easily grown bulbs.
Last year they were grown by the thousands in un-
heated houses with gladioli. They succeed finely but
should not be planted deeply.

Beware of a cold night which occasionally pays a
visit this time of the year. To the amateur eye the
roses may not seem to have been injured, but it is lay-
ing a sure chance for black spot, that will ruin the
plants in a little time, and also set the plants back by
a loss of foliage and consequent hardening of the
wood.

Cyclamen in frames should be left uncovered at
night to get the dews so beneficial to these lovely
plants. Avoid feeding, for good soil at potting time
will carry them along nicely.

Watch the mums and all kindred plants and winter
will not find the greenhouse at all dull, but interesting.
Order all bulbs and pot the Paper Whites for fall
work as soon as received.

Remember that the secret of the successful culture
of bulbs such as narcissus is in covering well outdoors
with ashes, or any substance to induce free root action,
and then when well rooted, they can stand hard forc-
Work for August in the Garden

JOHN JOHNSON

The work of this month is not generally of an arduous nature, but much forethought must be exercised if full advantage is to be taken of the short period of good weather that remains. In the vegetable garden we are more particularly concerned with the growing crops, watering, mulching, feeding and so forth and yet certain sowings must be attended to with all the care and judgment the cultivator might possess. The rapidly maturing salads must be sown in frequent succession, while such kinds as carrots, beets, turnips and even string beans are still a possibility from outdoor sowing in the more favored districts. In northerly sections stump rooted carrots, beets, turnips and even string beans are still a possibility from outdoor sowing in the more favored districts. In northerly sections stump rooted carrots, beets, turnips and even string beans are still a possibility from outdoor sowing in the more favored districts.

In the greenhouse culture Masterpiece bean is the best variety of good weather that remains. In the vegetable garden we are more particularly concerned with the problems. In northerly sections stump rooted carrots, beets, turnips and even string beans are still a possibility from outdoor sowing in the more favored districts. In northerly sections stump rooted carrots, beets, turnips and even string beans are still a possibility from outdoor sowing in the more favored districts.

Before attempting these late sowings, in fact any sowings at this season of the year, be satisfied the ground contains sufficient moisture to insure germination. Water beforehand, if need be, rather than after the seed is sown, and whenever practicable shade the seed bed until germination takes place. For frame and greenhouse culture Masterpiece bean is the best variety we know of. If cucumbers and tomatoes are in demand throughout the winter season now is the time to make a sowing of these kinds under glass. Sunrise Tomato and Telegraph Cucumbers are staple varieties.

Cultivate frequently between the rows of winter greens. Remove decaying foliage on Brussels Sprouts and at the same time stake any plants needing support. Cauliflowers are now coming into good supply. Break a few leaves over heads just turning in to protect them from strong sun. A drenching of liquid manure would now be of great benefit to this crop, but above all, afford the plants abundance of moisture at the roots. Celery requires similar attention in the matter of watering and feeding. Keep side growths off the plants and commence earthing as occasion demands, allowing about six weeks for perfect blanching. Remove also the basal growths on sweet corn and cultivate this crop freely.

Thin out early or otherwise transplant the young stock of lettuce and endive from last month’s sowings. Lift early and second early potatoes as soon as growth shows signs of ripening and harvest onions which have ceased growing. Cut the heads of globe artichokes as soon as these are ready, do not allow them to flower. Toward the end of the month sow a good breadth of spinach to stand the winter. Very little protection will be needed and the crop is always valued as being the first green vegetable available in the early spring. Cotton crops should be practiced whenever possible and it is not altogether necessary to await the clearance of ground before sowing such kinds as cowpeas, vetch, soy beans and red clover. Stir the soil between the rows of the tall growing vegetables and sow the seed of a leguminous cover crop forthwith. Vacant plots, of course, should be similarly treated. Aphis becomes very troublesome on all cruciferous crops at this season. Spray with a non-poisonous insecticide at the first indication of trouble. Spraying with a non-poisonous insecticide at the first indication of trouble.

LAWNS. The fall sowing of grass seed in the making of new lawns is often followed by better results than similar work done in the spring. As a rule more time can be devoted to the preliminary work and unless thorough preparation of the soil can be done some time in advance the result is bound to be disappointing in some particular. The ground either settles unevenly or else weeds become a great nuisance in lawns that have been hurriedly made. Ground ploughed in the spring with a view to Fall seeding should now be in perfect condition providing it has been well harrowed during the summer. Since all weed seeds have probably germinated and perished under frequent cultivation it is very obvious that we now have better conditions under which to sow grass than in spring. Late conditions met this season generally favor quick and even germination of grass seed. Sow when the soil is reasonably moist or just before a rain if possible, and preferably from the middle of August to the middle of September, thus allowing ample time for the grass to establish before winter. Remember that a fine friable surface upon which to sow the seed is an absolute necessity and that thorough consolidation of the soil is highly important.

FLOWER GARDEN. The principal aim in this department is to maintain perfect order and to have everything present and neat and pleasing appearance. Attend regularly to details of staking, weeding, watering and hoeing. Continue to spray against mildew and red spider on roses, phloxes and other plants attacked by these pests. The rose garden should be kept scrupulously clean to prevent disease spreading. Such plants as asters and dahlias should be disbudded if large flowers are looked for. Dahlias should be kept securely tied to the supports, inspect the plants for thrips and red spider. Late flowering perennials are better sown in cold frames that season generally favor quick and even germination of grass seed. Sow when the soil is reasonably moist or just before a rain if possible, and preferably from the middle of August to the middle of September, thus allowing ample time for the grass to establish before winter. Remember that a fine friable surface upon which to sow the seed is an absolute necessity and that thorough consolidation of the soil is highly important.

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LAWNS. The fall sowing of grass seed in the making of new lawns is often followed by better results than similar work done in the spring. As a rule more time can be devoted to the preliminary work and unless thorough preparation of the soil can be done some time in advance the result is bound to be disappointing in some particular. The ground either settles unevenly or else weeds become a great nuisance in lawns that have been hurriedly made. Ground ploughed in the spring with a view to Fall seeding should now be in perfect condition providing it has been well harrowed during the summer. Since all weed seeds have probably germinated and perished under frequent cultivation it is very obvious that we now have better conditions under which to sow grass than in spring. Late conditions met this season generally favor quick and even germination of grass seed. Sow when the soil is reasonably moist or just before a rain if possible, and preferably from the middle of August to the middle of September, thus allowing ample time for the grass to establish before winter. Remember that a fine friable surface upon which to sow the seed is an absolute necessity and that thorough consolidation of the soil is highly important.

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Getting Down to Intensive Gardening

L. W. C. TUTHILL

The peacock sprinkler which throws water like the spread of a peacock's tail is just the thing for lawns and golf courses.

It started to happen at Bonny Rigg.

Its actual happening was at Noc-a-Noc Roost.

It was the fifth day of the first week of Nineteen Eighteen's April. You remember how prematurely warm and sunshine filled that week was.

When kids together, Tom and I had always found special favor with our gingham clad, red hair-ribbon bedecked school lassies, by being the first in the spring to bring them Arbutus blooms.

Many's the tiresome tramp we have taken over the hills, going miles out of the way, just to fool the other fellows; so they wouldn't find the "secret place" where the little fragrance-filled floret nestled.

With the exception of the year Tom was at college, there has scarcely a Spring passed that we haven't had an Arbutus pilgrimage together.

Sometimes it's been back at the old home town. Then again, midst the wondrous Berkshire Hills of Massachusetts.

That's how we happened this time to be at Bonny Rigg Farm.

There were four of us. Tom and his wife Molly; and Mrs. Leddra and her husband. The latter of which is the sure enough chap telling you this.

We were gathered around that curious century old fire place, that has symptoms of being a Franklin stove, but all the behavior, all the charm, of the really and truly fire place.

We had found our Arbutus and sent two boxes home; besides a goodly portion to Capt. Jack Neal, one of the home town fellows, who you may recall, was decorated by the French for a "bit of bravery" on the Marne front. Poor chap—he came back home minus a leg and an arm—but game—you never saw anything like it.

Thinking of Jack, we started talking of the war.

And talking of the war, just naturally made us think of our experiences in war gardening and the things we were going to grow this year.

Tom has always been a bit chesty about his garden.

The walk line sprinkler can be turned from one side of the garden to the other by simply using the turning lever.

He goes at it in rather a big way. Has a plot so big he ploughs and harrows it; uses a horse cultivator and all that sort of thing.

The only really mean streak in Tom, that I ever knew to crop out, takes the form of a painfully polite sneer at the size of Mrs. Leddra's garden (which is also "my garden"—said timidly).

You see he is one of the extensive brand sort. While Mrs. Leddra and I are fashioned on the intensive.

You see I have never quite been able to get away from Dad's old saying that "a small farm well tilled, means barns well filled."

However, last year, like so many other war garden enthusiasts, I dug up every available piece of ground in the
yard and planted it with just three times as many potatoes and other vegetables as we could use or possibly give away. Let alone being able to grant them anything like the care needed.

As a result, it just kept me digging and dubbing the whole summer through, only to have that five day scorcher in the middle of August shrivel up a good part of it.

By dint of much hose holding; and Mrs. Leddra’s pitiful attempts with a sprinkling can, we did manage to save all we really needed for our own use and winter canning.

But what a loss of love’s labor lost, were all those vegetable shrivelites, that for the rest of the season made a pathetic attempt to look like real garden inmates.

So it was, that when Tom mentioned gardening that night at Bonny Rigg, I simply went up in the air and made a request not to stir up the animals.

However, he kept right on stirring. He always has ignored my requests. However, we never came to blows.

But we do come to conclusions.

In this instance, frankly am I glad he kept stirring me up. Glad because he also stirred up something that has absolutely turned gardening uncertainty into a certainty.

Something has, a sa result, “come into our life,” that actually made it possible to this year cut down our garden space to a quarter the size and still produce just as much. Not only just as much; but so much better in every way.

Sounds like a fairy story—doesn’t it?

Instead, it’s the story of an actual, right-here-on-earth rain-maker. The kind that is kind to you at any and all times you need its garden growing kindness.

But to go back to the starting point, Tom was determined to prove his claim by the Missouri method of “show me.”

So the next morning we left Bonny Rigg, and trundled in his Buick Six down Jacob’s Ladder, so on through that lovely valley of the Woronoco, and on to a place midway between Springfield and Holyoke.

Here, along the river bank, were acres of fertile sandy loam, covered with what looked to be

This portable sprinkler is a most convenient sprinkling device for it can be shifted wherever one wishes to shift it in the garden.

a rather light arbor for grapes, or some sort of something or other for something to clamber over.

It was neither or nor.

Simply a potato field of numerous acres, equipped with an automatic rain machine. The kind that all you have to do, is turn on the water and the water itself automatically turns from one side to the other, those nozzle equipped lines of pipes, watering a space 25 feet each way or 30 feet in width.

It looked all very good, but you couldn’t help thinking what a lot of money it must cost. This fear-thought was promptly dispelled when the owner assured us that the increased yield practically paid for the equipment the first year.

To prove that his experience was not an isolated one, he quoted Charles Seabrook, whom you of course know as the live wire President of that huge strawberry farm at Bridgeton, N. J., where the famous Honey Heart berries are grown.

Mr. Seabrook has proven to his entire satisfaction that an acre equipped with this same rain machine, is worth five without it. Says not only is the quantity of the yield greatly increased; and the quality wonderfully improved; but the crop comes a week or ten days earlier and lasts as much longer. All of which sounded fine for Mr. Seabrook, with his thousand or more acres, but where did my few feet square garden come in?

Tom was ready for just that question; the answer to which was a picture in part of his own garden, taken last summer just before those fatal five days.

Here is the picture.

This automatic sprinkler controlled by a powerful little water motor makes a complete turn and can be timed automatically to stop itself.

The grape arbor sprinkler is quite an innovation for intensive gardening. The illustration shows the top rail of the center trellis turned into a sprinkler which efficiently waters the fruits and vegetables planted on either side of it.
It shows what he called a sectional movable line, one that he puts up wherever he likes, and connecting it with the hose, has rain any old time he wants it.

It is a fifty foot, or three section line, that waters 2,500 square feet at the one time.

Although Tom's place is in the really and truly country; and comes in the farm class; still with his Delco Light equipment, which operates a pump for the pressure tank, he has water piped about the place just like we town folks.

Well, from where we went on up to Greenfield over the scenic Mohawk Trail to Williamstown and so on to Troy and down the Hudson to Newburgh. And then went 18 miles to No-c-a-No Roost, which is the Perch of The Tuthillites. In short, the abiding abode of Mrs. Leddra and husband.

The next day, wrote those rain-maker folk, asking for all the information they could give, and a lot they couldn't, about their rain machine. What they could and did give was ample, however.

So ample in fact, that we now have one of the happiest kind of happiest solutions for our watering worries, whether for garden or lawn.

It's what they call their Lawn Mist. It's a pipe fifteen feet long, fitted with groups of three little brass spray spreading nozzles, placed every 36 inches apart.

It spreads a dew-like mist over a space 18 to 20 feet wide. Spreads it so gently that you can let it run on your garden all night long without beating down even the little seedlings.

The surprising thing is the way it wets right down into the soil. Wets it but doesn't pack it.

Every so far apart in our two vegetable garden plots, as well as in the flower garden, we drove stakes with a notched top to rest the pipe on. It's a very simple thing to move it about from one to the other.

When it comes to watering the lawn, we have a 9 foot section that easily connects to the 15 foot one with a short piece of hose. This makes a sprinkler that covers a space about 25 feet long and 20 feet wide. With that hose coupling, you can actually water around the corner.

If our lawn was a very large one, believe the Peacock spray would be the thing, as the one section will water a space 12½ feet long and 60 feet wide. Our Golf Club has half a dozen of them for the putting greens.

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When I was a boy, the farmers had a saying about corn that if it was "knee high by Fourth of July," it was considered a good growth. Ours was knee high and more by the Tenth of June. That tells the story of how that rain machine made it hustling along.

And as for parsley, you know what an exasperatingly slow thing it is to germinate, no matter if you do soak the seeds. Generally, it takes four to five weeks to give any substantial evidence of life. Well, in three weeks ours had leaves on. Of a very respectable size. And the way it grew after that was a revelation.

The entire season through, none of our flowers nor vegetables have had any of those periods of stand-still so trying to one's patience.

But that's not all. Bear in mind that we have a quarter the garden space this year, but are getting twice the yield of last. All we can possibly use and plenty to share with some of our gardenless neighbors, besides.

When I was telling these last few facts to Col. Anderson yesterday, he shook his head querysome-like. Said it reminded him of the story of two darkies walking along an icy sidewalk. Without announcement of formality, Ned suddenly found himself in a prostrate posture. Looking up at the still standing one, he casually remarked: "Say, Sam, the Good Book it says, the wicked dry stands in slippery places. I don't see how the debble dy does it."

Of course I laughed, out of compliment to my dear old Civil War friend. But between us two, I would have done it anyway, as it was almost funny. However, haven't yet been able to just figure out how it has any bearing on the subject under consideration.

By jingo, there is Tom now out in front, blowing that concert pitch horn of his. Doing it, I suppose, in an attempt to offset my blowing about Mrs. Leddra's garden.

To be plain honest with you, am glad he has come. Want to apologize for getting so irritated that night he persisted in stirring up the animals at Bonny Rigg.

Illustrations through courtesy of Skinner Emigration Co.

AMERICAN MAGNOLIAS

Unlike most of the Asiatic species the American magnolias flower after the appearance of the leaves; they are hardy and handsome trees. A hundred and fifty years ago letters of English plant lovers written to their American correspondents contained many appeals for magnolia plants and seeds, and in the early years of the nineteenth century these trees were to be found in the principal collections of plants in the middle states. To the present generation they are almost unknown, and it is only in a few American nurseries that an occasional plant of one or two of the species can be found. There are six of these magnolias, but one of them, M. pyramidata, grows only in the extreme southeastern corner of Alabama and adjacent Florida, and would not be hardy here. Of the other species, the so-called mountain magnolia, M. Fraseri, is the first to open its flowers in the Arboretum. It is a small tree rarely more than forty feet high, with an open head of long branches, leaves often a foot in length and deeply divided at the base, and creamy white, sweet-scented flowers eight or ten inches in diameter and very conspicuous as they stand well above the crowded leaves at the ends of the branches.

This magnolia is a native of the southern Appalachian Mountain region and, although it has not been found growing north of southeastern Virginia, is perfectly hardy in eastern Massachusetts. The next to flower is M. cordata which for several days has been covered with its cup-shaped, bright canary yellow flowers unlike in color those of any other magnolia. There is an interesting story connected with this tree. It was discovered toward the end of the eighteenth century by the French botanist and traveler Michaux on one of his journeys from Charleston, South Carolina, up the valley of the Savannah river to the high Carolina mountains. By Michaux it was introduced into French gardens where it flourished. For more than a century every attempt to rediscover this tree failed, and it is only within the last five or six years that it was found by the Berckmans Brothers growing in the woods not many miles distant from Augusta, Georgia, where plants only a few feet high flower profusely. Grafts from Michaux's trees, however, preserved this tree in cultivation, and the plants in the Arboretum were raised from grafts taken from old trees in the Harvard botanic garden for which they were imported from Europe probably when the garden was laid out, that is, more than a century ago or not long after Michaux had first introduced this tree. The flowers of M. cordata are followed in succession by those of M. acuminata, the cucumber tree, M. tripetala, the umbrella tree, M. glauca and M. macrophylla.
How Much Do We Love Her?

There are a hundred million of us, bound together by an invisible bond, nurtured by a common spirit, fostered by the same blessings, protected by a mutual power, inspired by an all-pervading ideal.

There are physical limitations, of course, and temporal qualities. There are the great oceans to the east and to the west of us. There are imaginary lines separating us from other peoples on the north and south. There are the wide stretches of country, beautiful hills and majestic mountains, fertile valleys, stately rivers and murmuring brooks, wonderful trees and forests, rare and plentiful flowers.

But WE are America. We—a hundred million of us—make this nation great or small. We interpret and apply the spirit of the past. We make the national voltage of today. We shall leave to another generation the qualities of life and purpose which we develop as a people. We are the soul of this republic.

The American people have never failed in a great crisis, from the first throbbing moment when the nation was born until today. But, sadly enough, it seems to take a threatening emergency to develop and make manifest our real character. We rise to heights of patriotic fervor in times of real stress. We do great and wonderful things.

We show a unity of purpose and a national consecration that is wonderful to see and live through.

But how far our zeal subsides and our animation cools when the emergency passes! How much we drift apart and separate into selfish, careless groups! How little concern we show for the vital affairs of country as we travel our separate ways of life! How thoughtless we become of the great nation which is ours! How gayly or sadly we plod along in blind faith that somehow or other God in Heaven will keep our nation safe and make her great!

This country—this republic—is ours to make what we will. It will be safe as we make it safe—and by high Heaven, as we keep it safe. It will be great as we live the life of national greatness, young of limb, keen of eye, big of thought and worthy of deed.

A hundred million of us is America—you and me and all the rest. God give us the inspired purpose to see and live the great life of a noble nation. May we maintain our patriotism and our devotion at a constant high level. May our reverence for the flag and the things that it symbolizes be and always steadily remain a living thing, a vitalized fact.—M. L. Davey.
A GARDEN OF SHRUBS AND PERENNIALS
M. Robert Conover

The plan here illustrated for a garden, 80x100 feet, is a very good arrangement for shrubs or for a combination of perennial plants and shrubbery. It is very adaptable and can readily be used for a smaller plot or one of different proportions. In fact, for a small plot it is very desirable, because the arrangement of its paths emphasize its greatest distances.

Within a smaller compass than before specified, lower plants would have to be used and fewer borders of annuals could replace the hedge plants; no trees would be used and the diagonal walks would have to be narrower; likewise the approach and curved part of the walk.

This plan can also be applied to a knoll rising gently in the center of the garden. It is capable of several interesting variations: the intersection of the paths in the center may be shaded by a pergola, or a semi-circular pergola can be built to shade the curved path across the front. The approach, built somewhat narrower, might also be covered with a pergola.

The garden, here described, is entered from the south by a paved approach, 20 feet wide. On either side of the approach are eight privet (California) plants, trimmed to cones. On each side is a Maple tree and near the angle on either side of the entrance is a mass of shrubbery.

On the north side of the garden is a windbreak of Cedar trees. Nine of these are planted in a straight row across the rear. This gives a splendid backing to the perennial phlox and hollyhocks massed in the rear border. Cedars are planted at intervals along the sides and privet hedging is used along the side and front boundaries. Roses are planted in the side borders. The middle plot of the gardens is interestingly divided by the diagonal paths. These paths are sodded and planted along their edges with single privet plants pruned to dome-shape. A width of 5 feet is allowed for these paths.

The section nearest the entrance has a circular bed, 10 feet in diameter. This is planted with dwarf evergreens. Back of this are a silver maple and a group of tall shrubs, Japanese Storax, Syringa and Hawthorn. On either side of the circular bed are grouped Japanese Snowball and French lilac. The side and rear sections of the central plot are bordered by clipped box on the sides next the outer walks.

These outer walks are 4½ feet wide and are paved with concrete.

Masses of Spiraea are used in the corners on either side of the garden jars which are placed in each corner in line with the diagonal walks. The side sections of the center block are planted with Peonies and hardy Chrysanthemums. The north section is planted with Rhododendron, monthly roses and Chrysanthemums.

CORNUS RUGOSA

Attention is called again to the value of this common native shrub for the decoration of parks and gardens. Where, like many other eastern American trees and shrubs, it is rarely seen. C. rugosa or C. cinnata, the name by which it is best known, is a shrub sometimes ten feet high which with plenty of space spreads into broad thickets. The young branches are green blotched with purple, becoming purple as they grow older. The leaves are broad, sometimes nearly circular, and dark bluish-green; the flowers are ivory-white, in compact clusters, and are followed in the early autumn by bright blue or nearly white fruits.

This cornel has been much planted in the Arboretum and is greatly improved by good cultivation. It can be seen in the cornel group at the junction of the Meadow and the Bussey Hill Roads; and the large individual plants, the great clumps on the right-hand side of the Bussey Hill Road beyond the lilacs, and the masses among the hickories in the groups of these trees show the value of this shrub in park planting when broad compact masses of foliage are needed.

KEY TO THE PLAN.
1. Concrete paved approach
2. Walk 10 feet wide
3. Walk 4½ feet wide
4. Sodded paths
5. Privet
6. Chrysanthemums
7. Monthly roses
8. Nasturtium
9. Jars
10. Privet hedge
11. Box edging
12. Norway Maple
13. Circular bed of Dwarf Evergreens
14. Mock Orange or Syringa
15. Japanese Snowball and French Lilac
16. Japanese Storax
17. Silver Maple
18. Peonies
19. Rhododendron Maximus
20. Color Trees
21. Perennial Phlox
22. Hollyhocks

Convention, National Association of Gardeners
See page 285
The Structure of Plants

WILLARD N. CLUTE

Ever since man emerged from the savage state and became a tiller of the soil, he must have wondered more or less about the structure of the plants he cultivated, but many centuries slipped by before the race possessed the means of gratifying this curiosity. The microscope is a comparatively modern invention and scarcely antedates the steam engine, but until it was perfected no study of the microscopical cells that make up the body of plants could be attempted.

It is probable that the microscope developed out of the art of the spectacle-maker. Certainly there were spectacles long before there were microscopes. As early as the thirteenth century it became known that pieces of glass of a certain shape, that is, lenses, would aid the eyes in reading and other close work and the business of spectacle making soon proceeded with energy. But the idea that the process of magnifying could be pushed farther never seems to have entered the heads of these plooding artisans. It was enough for them to make good spectacles and they went on making them for quite three hundred years before a lucky accident showed them some of the possibilities that lay dormant in their wares. It was just two years after the first English colonists had made a beginning at civilization in the new world that the children of a Dutch spectacle-maker while playing with some of their father's lenses discovered that by holding two of them at the right distance apart and looking through them at the clock in a distant steeple made it appear much larger and nearer. Thus was born the microscope's elder sister, the telescope.

But even this discovery failed to give the needed hint to these structures from their resemblance to the cells of animals. Hooke gave the name of cell to these structures in his "Micrographia," issued five years later, he says: "Our microscopes inform us that the substance of cork is all together filled with air and that the air is perfectly enclosed in little boxes or cells distinct from one another." Nehemiah Grew, another investigator of the time, likened the appearance to "an infinite number of extremely small bladders." Hooke gave the name of cell to these structures from their resemblance to the cells in a honey-comb and cell they have remained to this day.

In the middle of the seventeenth century, it was nearly the middle of the nineteenth, in 1838 in fact, before two investigators, Schleiden and Schwann demonstrated that the real cells build around themselves. Indeed, the ability to move under proper stimuli is one of the characteristics of the living substance of the plant.

To that same Robert Hooke who confirmed Leeuwenhoek's discovery of the infusoria is due the credit of greatly extending our knowledge of plant structure. In 1660, by means of an improved microscope of his own manufacture he was able to recognize that unit of plant structure which we call the cell. His discovery was made while examining a thin piece of cork. In his "Micrographia," issued five years later, he says: "Our microscopes inform us that the substance of cork is altogether filled with air and that the air is perfectly enclosed in little boxes or cells distinct from one another."

It was a German botanist, named Unger, who discovered the infusoria. Hooke gave the name of cell to these structures from their resemblance to the cells in a honey-comb and cells they have remained to this day. In his "Micrographia," issued five years later, he says: "Our microscopes inform us that the substance of cork is altogether filled with air and that the air is perfectly enclosed in little boxes or cells distinct from one another." Nehemiah Grew, another investigator of the time, likened the appearance to "an infinite number of extremely small bladders." Hooke gave the name of cell to these structures from their resemblance to the cells in a honey-comb and cells they have remained to this day.

The idea of the cellular nature of plants was of slow growth and although cells were known shortly after the middle of the seventeenth century, it was nearly the middle of the nineteenth, in 1838 in fact, before two investigators, Schleiden and Schwann demonstrated that the tissues of both animals and plants are made up of cells. Modern science has gone still further and asserts that the substance in these cells is essentially alike in all animals and plants.

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covered while working with a species of *Vaucheria*, one of the green algae, that the real cell is not the box-like compartments familiar to the early students, but is enclosed within them. Good reason appeared for their failure to recognize this sooner, but the real cell consists of a colorless semi-fluid substance not very unlike the white of an egg that is not readily seen. This substance has the power to surround itself with a wall, much as a snail builds its shell. It was this cell wall that the earlier students had mistaken for the cell itself. However, this name for two different things persists, and the botanist may use the term cell for the box-like compartment or for its contents though for the latter the word protoplast is fast coming into use.

Further study of the cell by the German Botanist, Mohl, resulted in the discovery of the cell-sap and the openings called vacuoles, in which it is contained. In 1846 he gave the name protoplasm to the contents of the cell and this name it has since borne. Mohl's work showed that the protoplasm was not homogeneous, but it was not until 1850, less than ten years before Darwin issued his famous book on the Origin of Species, that Mohl's work resulted in the discovery of the cell-sap and the latter consisted of water absorb almost their own weight of difficulty. A wax of this kind, called suberin, is found in the externallayer of leaves and other plant parts and makes them practically waterproof. Lignin is found in wood cells but such cells readily admit water. The seeds of flax and quince will come to mind in this connection. The ordinary independent plant cell may now be said to consist of a bit of living protoplasm, called a protoplast, surrounded by a cell wall which it builds from its own substance. The protoplast is further distinguished as consisting of cytoplasm and nucleus, the cytoplasm being all the protoplasm except the nucleus. When the cells are young, the cytoplasm is somewhat sponge-like and fills all the space between the cell walls, but as it grows older it withdraws from the center which is now occupied by one or more openings called vacuoles in which is found the cell sap. The latter consists of water and dissolved foods and food materials and often contains various coloring matters that gives the color to many flowers, variegated leaves and the like. Scattered through the cytoplasm are numerous plastids—tiny grains from three thousandths to eleven thousandths of a millimeter in diameter. Although given different names according to the colors they assume, all are regarded as having a common origin. The most familiar of these plastids are the chloroplasts which give the green color to all leaves and young fruits. Later they may assume various shades of red and yellow when they are known as chromoplasts. It should be remembered, however, that the colors of many fruits are due to colored cell sap, and not to chromoplasts. Plastids, which remain colorless, are known as leucoplasts. Many of the latter are concerned with the storage of starch in roots and other organs and are then known as amyloplasts. It is of interest to note that in the fruits of some plants, a single plastid may run the whole gamut of color in the course of the season. In the pistil of the flower it will be a leucoplast, in the young fruit, a chloroplast and as the fruit ripens it becomes a chromoplast.

Chloroplasts often have the power to change their shape in adjusting themselves to light and it is supposed that some of the chromoplasts have this ability also. Some botanists incline to add to the list of plastids, the elaioplast whose function is the storing of oil. These are said to be easily seen in the vanilla plant, but do not seem to be common in others.

Most independent cells contain starch grains which are formed by the plant as a food store. Under the microscope these are seen to be generally round or egg-shaped objects much larger than the plastids and marked with curious curved lines. A drop of dilute iodine solution turns them blue or purple and enables them to be seen to advantage. Under certain conditions, starch grains are formed in the chloroplasts, but the reserve starch found in roots and other underground parts are formed within the leucoplasts from food manufactured in the leaves or stem. The crystals found in cells are frequently regarded as waste materials, though on occasion they may possibly be a source of food. Among the most common are crystals of calcium oxalate and calcium carbonate.

The independent cell, separated from its fellows is usually isodiametrical—that is, it is the same diameter in any direction, being spherical in shape unless pressed upon by adjacent cells when it becomes angular. In adapting itself to the needs of the plant it may become greatly modified both in form and structure. In roots, the pith of stems and in other organs the cells may retain their thin walls and rounded shape. Such cells are known as parenchyma cells. In the stems of annual plants, many of these cells are thickened at the angles for greater strength and then are known as collenchyma. The cells of the wood and bast are greatly elongated and thickened forming the prosenchyma. Grit cells or stone cells, familiar to us as the hard knots encountered in the flesh of pears and in the shells of nuts are called sclerenchyma cells. The cell walls of the wood and bast are usually so thickened that there is not room for the protoplast. As a result, such cells soon die. The ducts, which are always associated with the wood are extended tubes formed by other elongated cells whose centers do not become solid. In most thickened cells, the thickening is not uniform and we have in consequence cell-walls marked with spirals, rings, pits and other curious figures.

The wall of the ordinary cell is composed of a substance called cellulose allied in composition to the starches and sugars. It may contain in addition, various waxy matters through which water penetrates with difficulty. A wax of this kind, called suberin, is found in cork cells while a similar substance, cutin, occurs in the external layer of leaves and other plant parts and makes them practically waterproof. Lignin is found in wood cells but such cells contain little water. The cells of some seeds also contain much mucilage and in the presence of water absorb almost their own weight of it. The seeds of flax and quince will come to mind in this connection.

(Continued on page 278.)
What Constitutes a Winter Garden
EDWIN MATTHEWS

To the general run of people a winter garden is nothing less than an assembly of tropical verdure enclosed in a massive structure of glass wherein the temperature stays at from 70 to 80 degrees and the humidity is in keeping with the requirements of the plants which hail from zones that know no bleak days or frosty nights.

If this were the only description, then, to the average Northern garden owner, winter would indeed be a dark and dreary period in which there was nothing left to do but hibernate until spring brought relief. Happily, this is a false idea, as will be seen when it is thoroughly analyzed, for to a true student and lover of nature a winter garden of the cold north can hold almost as many charming constituents as any that summer can afford.

It is true that at the first sign of winter many large garden owners leave their beautiful country estates for the city, with its artificialities, returning only when spring has again softened the harder lines of winter by bursting bud of flower and leafage. But in the interval have they not missed a wealth of beauty in many trees and shrubs that winter best reveals?

Consider the interesting and pleasing bark coloration of many deciduous trees and shrubs which await the arrival of winter before taking on their bright hues! In this category are found some old and well known plants, as well as several not so commonly seen.

Among the willows and bush dogwoods are some striking examples of winter bark colors. The golden and red barked varieties of Salix vitellina—namely, aurea and britzennis—are too often overlooked by the planter who has thought only for flowering plants and evergreens. These golden and flame barked willows, when planted in a moist and unrestricted situation, are capable of rendering gay color tones to an otherwise sombre landscape. As it is the young wood that gives the brightest colors, the plants should be severely cut back every spring to stimulate thick wand-like growths and, consequently, an array of color such as would vie with many a floral display.

The best of the dogwoods for winter color are Cornus stolonifera, C. sibirica and C. lutea, the first two having red, and the latter yellow stems. With the falling of assume colors which grow more vivid with the advance of winter. They should be treated like the willows; at least a hard cut back every other year will assure those higher shades of color in the growths. Unlike the willow, however, they will thrive in much drier locations, and so we are able to afford a similar color scheme in entirely separate parts of our grounds.

Shrubs with conspicuous green bark are few, the best being Kerria japonica with polished green stems that stand out prominently in contrast with other shrubs; Cytisus scoparius (Scotch Broom) with its slender, angled stems which give it the appearance of being clothed with leaf, and Stephanandra (or Neillia) Tanakae with graceful growths of a beautiful green color.

One or two shrubs with white bark are distinct enough to be mentioned. They are Rubus biflorus and R. lasiostylus. The young wood of these two ornamental blackberries shows up well during the leafless season, especially against a background of evergreen plants.

Trees with distinct colored bark are not wanting for, apart from the birches, which must take premier place, there are some others which ought to be used more frequently in plantings. Special reference to the striped-bark maple (Acer striatum) is timely. This tree, a native of our Pennsylvania mountains, has a unique bark coloration in winter, being shining green with a pin stripe of pure white running longitudinally through it, as if the artist had used his smallest brush in the work.

For a unique and striking color effect in winter, our
native white birch, Betula populifolia, or B. alba, var. populifolia, is unsurpassed. Its bole is covered with a smooth, silvery white bark, diversified by almost black rings and patches, along which its twiggy branches are very irregularly placed.

Our native beech (Fagus americana) is wonderfully attractive at this season, with its silvery gray trunk and branches, standing out in clear profile against the darker shades of other trees. Where can one find anything more striking in winter than a grove of matured beeches, tall, symmetrical, nobly proportioned?

Bark peculiarities provide quite a study in themselves and it is the purpose here only to speak of the few that are especially distinct or odd. It is only when the trees and plants are devoid of leafage that we can clearly note some of their bark peculiarities.

The native sweet gum (Liquidambar styraciflua) is made conspicuous by the corky protuberances all along its trunk and lateral branches. Others with the same characteristics are the "winged elm" (Ulmus alata), the cork elm (U. racemosa), and Evonymus alata. The latter has all its branches and twigs winged with thin layers of bark.

A most interesting tree in bark formation is Phellodendron japonicum. In old specimens the bark of the trunk is very thick and spongy, giving it the name of "Japanese cork tree." Beautifully furrowed is the bark of Sassafras officinale, of Liriodendron tulipifera (the tulip tree), and of other native trees, all of which at a mature age show off these and other attractive qualities in winter as they can do at no other season of the year.

Among the constituents of a winter garden we are not without some flowers which, despite frost and snow, invariably appear in due season. During the four months which, on the average, are allotted to winter, there are a number of shrubs and plants that can be relied on to give their quota of flowers. True, they may not be highly conspicuous, nevertheless they hold a deeper interest because of the season in which they appear. In December it is our native witch hazel (Hamamelis virginiana) that opens the program with its pale yellow, twisted flowers; and along with it generally comes Eleagnus pungens, with inconspicuous but highly fragrant tubes. In January there is usually a dearth of flowers except that some seasons we may see Hamamelis mollis, one of the Japanese witch hazels, having very attractive bright yellow flowers with reddish brown markings at the base of the petals. February brings along other witch hazels, like Hamamelis japonica and its variety Zuccariniana, with the all too rare Chimonanthus praecox, with pretty pale yellow and highly perfumed flowers. Often we may see in some sheltered and sunny position the yellow jasmine, Jasminum nudiflorum and Sieboldianum, studded over with quantities of primrose-like blossoms.

In March the number increases, for in addition to those mentioned for February we can invariably rely on having with us Lonicera standishii and L. fragrantissima (bush honeysuckles), Cornus mas (Cornelian cherry), Daphne mezereum, Corylopsis pauciflora, and C. spicata. The two last named plants are rarely seen in collections, but the flowers are extremely interesting, being yellow, pendant-like tubes with protruding anthers. Closely allied to the hazel is the witch hazel, the cutkins of which are formed early in the year and now with the first warm days are ready to open the pollen cases.

The little hardy heath (Erica carnea) will be showing color, as will also Mahonia japonica, in places sheltered from cold winds. Shelter then is really the one thought to bear in mind if we would have all these charming winter plants give us the best there is in them.

This leads up to the importance of evergreens and the part they play in affording shelter and beauty. No grounds, however small, are complete without them and after we have said all we can in praise of the many interesting things in flower, fruit and bark, that help bridge over the dormant season, we must all admit that without the presence of evergreens the winter garden would have lost its chief basis of beauty.

In choice and numbers of these plants we are not so limited, for among the many kinds and varieties there are those to fit any particular use for which we may need them.

Do we need to form a windbreak, there are the pines and spruces, or, if we desire a foil for throwing into relief some color given by bark or fruit display, we have the Retinisporas, Thuja, Tsugas and Cedars. Often in a group planting of evergreens we depend on the component parts for its color effect, and for this purpose the collection to choose from is not stinted in numbers or variety of color. In greens of many shades, in gold, bronzes, silvers, grays and blues there is material to satisfy the most fastidious.

The garden in winter is what we want to make it. It may be the interpretation of desolation or it may be so inviting and interesting that the owner regrets to leave it for very long at any season of the year.—By courtesy of Florist's Exchange.

THE STRUCTURE OF PLANTS

(Continued from page 276.)

Finally, no cell arises de novo. It must come from the division of another cell. In this process of division the nucleus takes a leading part, dividing into halves which retreat to different sides of the cell before a new cell wall separates them permanently. Each half cell now grows to full size after which it is ready to duplicate the process. In the simplest plants, all cells may thus divide, but in higher ones, this faculty is possessed by only a few cells in certain regions as in the tips of roots and stems, and between the bark and wood in stems.

WORK FOR AUGUST IN THE GARDEN

(Continued from page 269.)

Many trees and shrubs, otherwise difficult to propagate, root readily now from cuttings of half ripened wood inserted in the ordinary greenhouse cutting bench. "Budding" is an interesting method of propagation though not much practiced in private gardens nowadays. Among flowers roses are most generally budded, while various kinds of fruit trees are also amenable to this practice. This month, when the bark rises freely, and this is a very important point in successful budding, is about the best time to undertake this work. Select a dull day for doing the work, or if the weather is bright, work early in the morning. Undue heat and dryness are inimical, and for this reason the operation should always be well and quickly done under favorable weather conditions. Care should be taken not to injure the bark in raising it, or in inserting the bud beneath it. Make sure that the upper end of the bud fits closely against the undisturbed bark at the top of the T. Close the bark carefully over the bud after it is placed in position and bind the slit portion moderately firm with broad strands of raffia.

Outdoor grapes will now require protection against birds and insects. Protection bags may be purchased at a cheap rate from nursery men and seedsmen.
A Lesson on Perennials and Biennials
Explaining Their Characteristics, General Adaptability and Planting Requirements

The Second of a Series of Lessons of a Home Study Course on Gardening, to Appear Regularly in the Gardeners' Chronicle Under the Direction of ARTHUR SMITH

WHAT THE TERM HARDY IMPLIES

The seasonableness of our subject is by reason of the fact that seeds of these invaluable classes of plants should be sown now for next year's flowering.

As this journal circulates over a wide area of the Western world, embracing both tropical and arctic conditions, the term “hardy” will not convey the same idea to all readers. Even in the same latitude, soil and situation make considerable difference in the average conditions which affect hardiness. For instance, a garden situated on a more or less sandy soil, near the sea, open to the south and protected from cold winds from other quarters, can have many species which will withstand a very low temperature of dry cold in the north will frequently be winter-killed further south where winters are milder, but more moist. This is especially the case with true Alpines which require protection from wet in winter rather than cold.

Most of the evergreen species of perennials, especially those usually treated as biennials, like Hollyhocks, Sweet Williams and Campanulas, will frequently die during a wet, comparatively mild winter, when they will go through one of exceptional severity, when the ground is continually frozen from November to March. Covering these evergreen plants with mulch which retains moisture, does more harm than good; something light, such as pine boughs or a little coarse straw, just to keep the sun from them is sufficient.

Strictly speaking the true biennial is a plant in all latitudes flowers the year after the seed is sown and which dies after it has itself produced seed. There are, however, many species like those above mentioned, which, while being more or less perennial under their native and similar conditions, give the best results when treated as biennials, and in fact there are many others which while they will continue for several years and are therefore true perennials, produce more flowers of better quality the first year after sowing.

Then again some members of both these classes may be treated as annuals by sowing seed in the spring and they will bloom during the late summer and early autumn. In districts having mild winters many true annuals give far greater results when they are sown late in the autumn in the position where they are to flower, as by this method they become established and deeply rooted before the advent of summer heat. This practise is especially desirable, wherever it is possible to put into effect, in the case of Sweet Peas, and the sowing of these in November is under some conditions the only way they can be grown out of doors to amount to anything.

THE MERITS OF OUR HARDY PLANTS

While the artistic value of a system of gardening based upon the entire use of hardy plants is generally admitted by every one of good taste, yet, strangely enough, there are still a number of garden owners who still use the “bedding-out” system. There is nothing artistic in a formal garden based upon this, with its lawns cut up into geometrical beds in which the natural beauties of flowers are lowered to level of being used in mere color designs, without any reference to the habits and idiosyncrasies of the plants themselves, clipping—especially in the case of “carpet-bedding”—being always resorted to for the purpose of keeping the patterns flat and geometrical. No true artist who is a lover of flowers and who is capable of seeing beauty that exists in nature would attempt to desecrate a garden or public park by this tracery work.

To the majority of people the great incentive in causing them to have a country home is to have a house surrounded by a garden, and a place for rest and recuperation. But what is there restful to the eye or brain in a garden laid out in a stiff formal manner and which depends more or less entirely on bedding plants? In the first place the lawn is generally spoiled by having beds cut into it; then it is unsafe, except in the south, to “bed-out” until early in June; July is well advanced before the plants cover the ground, and before the end of September frost invariably does away with it all. So scarcely three months of effect (and bad effect at that) is the total which is obtained for the trouble and expense; and during the whole of this short period the beds are as interesting as the patterns of the floor coverings of the house.

But do the majority of people using the bedding-out and carpet-bedding system really prefer it? The present trend of ideas in relation to gardening points to the contrary.

ESSENTIALS IN HARDY GARDENING

It almost goes without saying that dealing with these hardy plants requires a much wider and deeper horticultural knowledge and experience than necessary in using ordinary ephemeral bedding plants. Any one proposing to use things of such a permanent nature should understand them thoroughly. He should know their various heights, color of flowers, character of foliage, period of blooming, soil they prefer and native habitat, sun or shade, &c., &c. The fuller and wider his knowledge the more easy it will be for him to arrange harmonious groupings, although the very nature of this class of plants renders it much more difficult to plant them in such a manner as to produce discord than it is to produce a pleasing picture at all seasons.

The movement, which has for some years been gradually increasing in intensity, in the direction of using hardy plants, has undoubtedly come to stay; for the reason that it is more economical when compared with results, more attractive the year through to all garden lovers and enthusiasts, and it affords greater space for greater variety. There is every reason for believing that owners of gardens, both small and large, are gradually becoming better educated in gardening matters and the more a person's education is extended along this line, the more logical, as well as the more artistic
and interesting will gardening with hardy plants appear.

One of the most interesting features connected with hardy flower-gardening is the charm of association.

I once spent an hour of extreme pleasure in the garden of an amateur enthusiast, one of those gentlewomen of the old school unfortunately becoming extinct, whose collection of hardy plants was very unique inasmuch as every specimen had some fact associated with it, either connected with people or of places. Some were actual parts of plants from the New England garden of her childhood; the memory of a month in the mountains a thousand miles away was kept by a plant of the rare Lobelia ramosa. Connecting links with the gardens of real lovers of flowers like herself were to be seen by specimens from them, and so on.

One can form lasting friendships in a hardy garden. If a hardy garden is given intelligent appreciation it will soon grow to have almost a human atmosphere. We meet our old friends each year with added interest. How we watch for the blooming of some favorite! If it is late in appearing, how frequently we visit the spot day after day, until at last it arrives in all its fresh-born beauty, but still the same old friend; not like the human acquaintances made on a vacation tour, but one we can depend upon to visit and cheer us with periodical faithfulness, and, as year after year "the same dear things lift up the same fair faces," we would like to become perennial ourselves to longer enjoy our hardy flower-friends.

There is always something fresh in a border of hardy plants. A walk about a garden where they have been planted invariably reveals something new, some flower which was not there a few days before; in the latitude of New York there is the possibility of a succession of flowers from February to November, ensuring never ending interest which it is impossible to find in connection with monotonous and fleeting bedding plants.

ADAPTABLE OF HARDY PLANTS TO SURROUNDINGS

The adaptability of hardy plants to various situations and soils is a valuable feature. Species may be found for use in every position where a plant of any kind will grow at all. Bare ground under trees where grass fails, a dry sunny bank, a swamp or bog, water in all shapes, excepting a deep fast-running stream, a stone wall, woodland walks, both the shady and the sunny sides of the house may have something which will be in bloom for eight or nine months of the year, to say nothing of hardy Ferns and other hardy foliage plants, many of which are evergreen and beautiful all the year. Perennials may be planted anywhere and everywhere that requires to be made beautiful, and every day in the prolonged season something will be in flower.

Hardy perennials and biennials lend themselves artistically to general natural landscape effects and are especially useful in blending with shrubs. The want of knowledge of hardy herbaceous perennials has caused them to be too much ignored in planting plans and the planting of shrubs is frequently overdone, that is comparatively, as the quantity used has been too large in proportion to perennials when the latter are used at all, consequently there is a general want of balance in the majority of country home surroundings, the result being that in many parts flowers are only in evidence for a short period, instead of all the season.

However good the selection of shrubs may have been so as to obtain the longest possible flowering season from them, where nothing else is planted in certain parts of the garden a more or less flowerless condition, sometimes for the greater part of the year, is seen. By using hardy perennials in conjunction with shrubs no part of a garden need be devoid of flowers at any period of the floral year. The plausible supposition that the roots of the shrubs will rob the other plants of all their food, need trouble no one, provided that the ground has been properly prepared for the reception of both and that the necessary annual feeding is not omitted. The shrubs form a pleasing background for the flowers of the other plants, and the latter do away with the generally abrupt junction of lawn with shrubs.

For house decoration, no plants are so valuable for cut flowers as hardy perennials and biennials. The artist in arranging flowers is always glad when out-door ones are available, as they lack the stiffness and continual sameness of the stereotyped hot-house products. Where a considerable quantity of cut flowers is required, a reserve planting for the purpose should be made in the vegetable garden. In fact, a vegetable garden should always be made something more than a field of vegetables by having the walks bordered with hardy flowering plants, so that it may be a place of beauty as well as of usefulness.

Before the advent of glass our forefathers had their beautiful gardens of flowers, although the number of species they had to draw from was small compared with the wealth of hardy garden flora we have to our hands today, and there is still a large number of desirable native plants unknown in our gardens.

KNOWLEDGE OF CHARACTERISTICS OF PLANTS REQUISITE

A thorough knowledge of the characters, likes and dislikes of hardy plants is necessary before one can arrange a hardy flower border satisfactorily. The most important points to know about a plant are, its height when in flower, period of blooming, color of flowers and whether it prefers sun or shade. It is a great help to make a planting-plan and have the arrangement of the plants first put upon paper. Plants should be placed in irregularly shaped groups; circles, squares, and rows should be avoided, and by keeping this in mind the effects produced by nature's planting are to a great extent accomplished. Although the taller species may generally be placed at the back of the border yet the groups of them should run towards the front, while at the same time the dwarfer kinds should be planted towards the back between the groups of taller ones; by this means a broken and pleasing, instead of a stiff, monotonous, surface is obtained and naturalness and informality secured.

No arrangement can possibly be more ugly than that which is sometimes seen of having the tallest growing species in a line along the back; then a row of those not quite so tall, and so on down to the dwarfs at the front.

The distance apart at which to set out plants should vary with the habit of the species. Vigorous growing and spreading ones may have much more room than others of a less robust habit, varying from nine inches to two feet apart. As the general effect of the border is increased by having as little bare ground as possible between the plants, the larger species may have weaker growing ones placed in between as a temporary arrangement which can be gradually allowed to be killed out as the others spread; those of a prostrate or creeping nature fit in very well for the purpose, as do also some of the biennials. These spaces can also have hardy bulbs planted in them, these bulbs being also necessary in the general scheme for early spring, as well as later, effects.

The number of species of hardy plants is so large that one can only make a selection from them. A very beautiful garden can be made with native plants only, and in spite of the discussion going on in relation to plant importation, there is no reason for going out of the country, so far as beautiful home surroundings are con-
cerned, for either trees, shrubs or herbaceous perennials. In making a selection, the first aim should be to have a constant succession of different species throughout the season. The fact that this is easily obtained is what constitutes one of the charms of gardening with hardy plants. Every week, almost every day, brings a different effect from that of the days which have passed.

Some species, Coreopsis lanceolata, for instance, will produce a continuous crop of flowers for three or four months; Delphiniums give two more or less distinct seasons of bloom; while others like Thalictrum leave a pleasing mass of foliage which rests the eye while it passes from one group of flowers to another.

Another point to be considered in selecting is the size of the garden and extent of ground to be planted, and also the distance from the principal point of view. For instance as regards the latter, a large border with a background of shrubbery at the far side of an extensive lawn a hundred yards or more from the house can have much bolder masses of color of a harder nature, than in a position which is always under view from a short distance, like a small border in a suburban lot for which the softer colors are preferable. In the latter case one plant of Oriental Poppy would be as effective as twenty in the other. In a small border or in a confined place like a sunken garden, plants of a strong growing, rampant nature, like Ilocasia and Physostegia should not be used, but a place in connection with tall shrubs which cannot be smothered by them.

Good taste is as necessary in planting a flower border as it is in dressing one's person. A style which would be suitable for a tall stout individual would be entirely out of place upon one of the less robust order of beings. When one plants a large, wide border, different species can be included in the selection than would be the case in planting a small, narrow one.

The period during which a particular species is in full flower is another factor to which undue weight must be given. Some will push their way through the snow in March, while others will bravely wave their blossoms after snow has fallen in November. Between these two extremes a constant succession can be arranged for, and bearing this in mind, it is also obvious that the period at which flowers are at their maximum can be made to suit special requirements; we can have a garden of spring flowers; one devoted entirely to species which are at their best at midsummer, or one containing nothing but autumn-flowering kinds. Thus, if a country house is only occupied for a month or two a selection can be made which will give the greatest quantity of flowers during those particular months. But this idea can be only possible when the desired period of maximum is the same year after year. In these days, however, people possessing country homes are beginning to acquire the true spirit of country life and are living in the country for a more extended period, even giving up their city residences altogether. For those capable of appreciating it, every season of the year in the country possesses its own peculiar beauty and charm.

**PLANTING TIME**

September is a very good month for planting the majority of perennials, but there are some, like Japanese Anemones and Hardy Chrysanthemums which bloom late, that are best planted in the spring. In some districts August is not too early, while in others the work may be successfully done in October. Under the same climatic conditions one may plant later in a sandy soil than in one of a clayey nature, the object to have in mind is to obtain root action before the ground freezes. All other things being equal plants set out in the autumn will produce far better results than the same ones planted in the spring, and this applies to all kinds of planting.

In purchasing plants it is useless to get old clumps that have been growing in a nursery for some years, as, even if they can be obtained for nothing, they are not worth planting. A large number of species form new growth at their circumference every year, and the growth in the interior part of the clump becomes weaker as time goes on and ultimately dies. If the young and thrifty outside growths are carefully divided from the clump some good plants may be obtained, but one usually gets from these choppd up clumps more weak old growths than young and consequently the results of planting them is, to say the least, not of the best. The best stock to use is what may be termed, two years old, that is, either seedlings of that age which have been growing for that period under suitable conditions at sufficient distance apart; or healthy divisions and cuttings grown in the same manner. Material of these latter characters naturally cost considerably more, but it will be found to be the cheapest measured by results.

**SOIL PREPARATION**

The preparation of the ground for the reception of hardy plants cannot be done too well. Important as this is for annual plants which occupy the ground for only a few months, this importance is ten-fold intensified when preparing the soil for plants of a perennial nature which, to a greater or less extent, occupy it permanently. By thorough preparation we mean in connection with our present subject that the soil should be broken up to a depth of at least two feet. In doing this keep the surface soil at the top and thoroughly mix six inches of good stable manure with the subsoil, that is, with the bottom foot. It is better to have this subsoil preparation completed before dealing with the top foot. The latter should have several inches of *well rotted manure* incorporated with it; if this cannot be obtained, pulverized sheep or cattle manure may be used instead; in either case half a pound of pure bone meal to the square yard should be applied in addition. The quantity of manure may be reduced by using leaf mold or half rotted leaves (the latter in the subsoil), the idea being to get the soil as full of humus as possible. Should the soil contain a large proportion of clay the addition of sand and sifted coal ashes is advisable, although of course the leaf mold and stable manure also have a lightening effect. In several instances the writer has had to deal with soil of such an impossible natural character, such as a very hard clay, that he has deemed it imperative to remove some of it and substitute something better in its place.

Too much care cannot be taken to bring the soil into a friable and mellow condition so as to encourage root growth to the fullest extent; the roots of the deeper rooting species will soon find their way into the mured subsoil and thereby become more independent of weather conditions, while at the same time the shallower rooting kinds will find the good condition of the top soil a congenial feeding ground. It must be borne in mind that it is the fine rootlets which gather food and moisture, and these cannot work properly in a hard lumpy soil. No trouble or expense, intelligently used, is too great in making a border for herbaceous perennials, as it will always be well repaid by results.

**NECESSARY CARE**

It is frequently said that hardy perennials take care of themselves. This is correct only in a comparative sense, as like everything else, they will repay for all the care and attention given them. Of course weeds should not exist among them; dead flowers should be kept removed, as seeds should not be allowed to be produced (unless
Planting the Seeds

Seed of perennials and biennials should be sown in a cold frame. Soil should be light, and if dry should be thoroughly watered the day before sowing. Rows should be six inches apart and the seed covered with fine soil to a depth about four times its diameter and some fine, sharp sand sprinkled along the surface which checks the damping-off fungus. The sash with lath shading over it should be put on and allowed to remain until the seed commences to germinate when the sash should be removed but the shade should be replaced and allowed to remain during the day if the weather is sunny, removing it at night and in dull weather. After the seedlings have their second leaves the shade should be withheld a little longer each day until it is dispensed with altogether. As soon as the seedlings are large enough to handle they must be thinned to stand two inches apart.

A reserve planting of young plants from which to draw is required in certain cases, but it should be given at all times when weather permits; this can be done in wet weather by propping up the sash back and front alternately. Of course earlier in the autumn rain does no harm. In very cold districts mats and boards will be required in addition to the sash, which under very severe conditions will have to be kept on altogether.

There are very few places where more cold frames could not be used to advantage, and on some, which exist are not used to the fullest extent of their possibilities. The flowering season for hardy chrysanthemums, for instance, may be prolonged by the use of a Fungicide just before growth starts in the spring and at intervals during the season, the idea being to spray frequently enough to prevent the spores of fungi from germinating.
Successful Suburban Gardens.

By far the greater part of the gardening literature, which has assumed such large proportions during recent years, is devoted to the subject of large gardens. With a few notable exceptions, books dealing especially with the needs of owners of really small gardens are lacking. Nevertheless, round about most large towns there are miles and miles of suburban roads, bordered by either detached or semi-detached houses, each with its own little garden. Sometimes these gardens surround the house, the larger ones are miles and miles of suburban roads, bordered by either detached or semi-detached houses, each with its own little garden. Sometimes these gardens surround the house and these are easier to deal with, but, in many instances, they consist of a strip of ground in front and at the back, to all intents and purposes the same width as the house.

It cannot be said that, as a rule, these gardens are well laid out; indeed, it is often a matter for regret that so much should be lavished on gardens designed in a manner which precludes the attainment of any really good effect. The chief reason for this state of things seems to be ignorance. Generally, it is plain that those who designed the gardens and the care who cultivate them know very little about their subject. For this reason, they go contentedly along the same narrow lines, both as regards the designs of their gardens and the range of plants they grow in them.

In these suburban gardens far too much space is, almost always, devoted to grass, to paths, and to non-flowering shrubs; there are far too many rectilinear flower beds, there are many where the beds should be cut on more generous lines. Another deplorable and very general feature of such gardens is the aimlessness of the whole scheme. Nor can any adequate reason, as a rule, be shown for the location of the beds or shrubs. Where they are, why they might just as well have been placed somewhere else: better indeed, very often.

The first preliminary requisite for making a successful garden, whether it covers many acres of ground or less than a quarter of an acre, is a well-thought-out design. There are far greater possibilities about the smallest plot of ground than most inexperienced people believe, and there is no reason why the most uncompromising strip of suburban garden should not be flowery for quite eight months of the year. Moreover, it may be made to contain a good herbaceous border, a rose garden, a rock garden, or many other features generally considered the exclusive prerogatives of large gardens.

Some knowledge of the subject of gardening, on the part of the owner, is the first necessity, and, given this asset and the possession of a good garden, there must follow that constant attention to the right preparation of the whole ground if good results are to follow. The soil in the suburban gardens frequently leaves something to be desired, but manure will go some way toward improving it, and it is false economy to be sparing in its application. Deep trenching of the beds is of little use, if the beds are to be attained; the amateur may carry this work out himself, but he will generally be well advised to call in professional assistance, when it comes to the question of making paths or laying turfs.

If the owners of small suburban gardens will be enterprising enough to break away from the bad traditions which only too often prevail in such gardens, and will take the trouble to study their subject and then follow up their study with some hard work, they will reap a full reward for their labors in the results they attain.—Christian Science Monitor.

The Amaryllis

The Amaryllis is a large family. Botanists make distinctions that amateur flower-lovers do not care to observe. For instance, we do not usually call the Giant Fairy Lily an amaryllis, but it is botanically A. Atamasco. It bears an exquisite tubular flower on a stem six or seven inches high, and are often beautiful in containing a grotesque center. Their culture is simple. The most inexperienced cultivator succeeds with them. Just tuck the little bulbs in the border and forget that they are there, and some morning the lilies will remind you that they have been doing the work for you, just like the gladioli. They open their flowers in the night, but bloom all day.

The amaryllis makes tall, hollow stalks, and bears the lilies on top: four or more, on some others at one time. Jacobean and A. Jonsonii, like and unlike in rich crimson, have four large lilies evenly balanced on a stalk, and last many days. White amaryllis in sunny weather opens at twilight and closes early in the afternoon and remains open about half the next day. This is the kind with the rose-colored land down the petals; the pure white variety blooms four to a stalk, and keeps wide open for days.

The fairest of the family, and the closest rival of the Madonna lily, is the new hybrid. A. blanda. Not only the flowers but the fruit are white. It blooms in midsummer until the close of autumn, having some barren weeks when new stalks are forming. The blooms last several days and make fine garden ornaments and very handsome cut-flowers.—Exchange.
names of common species universally referred to in anatomy, medicine, agriculture or other lines of applied science. I have else-
where hinted at the discouraging nature of these nomenclatorial
acrobatics to the student entering on zoological work. I have good
reason to believe that many promising and brilliant young work-
ers have been disgusted and have drawn to other fields of effort
because of the complexities and apparently senseless chaos in-
volved in the synonymy of many of our common animals. Think
of thirty-six different specific combinations for the annual scale
(that is, 36 the last time I had occasion to note the num-
ber) or twenty-six for the screw worm fly."—American Botanist.

The Questionnaire

Subscribers are invited to make free use of this depart-
ment to solve problems that may arise in their garden work.
Questions on the ordinary pursuits of gardening, that can
be readily answered by applying to the usual reference
books should not be referred to the Questionnaire.

I have a hedge of several thousand feet which necessitates
trimming several times during the year. The old method of
using the hand shears is very expensive. Do you know of a
modern implement which would do this work more
economically?

T. S., Texas.

We know of no implement that is an improvement on hedge
shears. Expert gardeners use the hedge shears for the first
cutting of the season, after which they keep the hedge trimmed
by the use of the hedge knife, a somewhat similar tool to the
sickle. The use of the hedge knife is practical only in expe-
rienced hands, however.

J. Y., N. Y.

I have melons (muskmelons) growing in the greenhouse on
single stem, and they are set more than half the stem up. Can
you advise me which would be the best for fruit—the first
set at the bottom half way up—or at the top?

J. P.

Two years ago a two-year-old "Silver Queen" rose was
planted by the side of a Crimson Rambler. The other roses
on the 30 ft. trellis are Pink, White and Aviateur Bleriot—
also a Dr. Van Fleet. This year the Silver Moon flowered
fruitfully. Among the hundreds of blooms, many of the
stems of which measured over one foot, was one flower two
petals of which were deeply edged with crimson, another
bloom had only one petal singed. I found not one other
such. Upon examination I found also a cluster of Crimson
Rambler, half white and half red, also the only one! Is this
occurrence common, that the colors of climbing roses merge
as do those of some other flowers?

H. R. P., N. J.

The variation of merging of your "Silver Moon" and Crim-
son Rambler Rose petals is not an uncommon occurrence and
frequently has been the means of improving types, and originat-
ing new varieties of plants. In the case of roses, however, new
varieties are most generally raised from seed. The plants tend
to variate and take on new characters. Darwin proved to us long
time ago that "pigs is pigs," but the govern-
ment does not consider nuts are nuts,
and if a gardener desires to engage strictly in his vocation, he
ought not to let it go through because nuts were not on the favor-
list. The company claimed that a dried ivory nut was not a nut
but the officials contended that a nut was a nut "no matter
what way you look at it." The case was taken to Washing-
ton where it was found that a dried ivory nut is not a nut. It
was characterized as "raw material."—Wall Street Journal

Strawberries.

For the past six months we have been
so fed up on news from Paris, "Jeru-
salem and Madagascar," and other for-
lign sections, that we might be in danger of forgetting some
important sections of our own country. An agreeable reminder
of one of those sections—California—reached us a few days ago
in the shape of the monthly bulletin of the state commission
of horticulture. The title page states that it is a "bulletin deal-
ing with the acreage, distribution, tonnage and valuation of
commercial fruit and vegetable crops in California." It is all
that, and more, for by the aid of the maps and illustrations—
and a little imagination—one may dwell among the orchards
and gardens of the "Golden State." About 80 years ago, R. H.
Dana wrote an interesting book entitled, "Two Years before
the Mast." It is the story of a voyage around Cape Horn
to California and back to Boston. A considerable part of the
book is devoted to California, and it was at that time, and for
nearly a long time; there are many living men who have
passed that age, so when we contrast Mr. Dana's descrip-
tion of California with what we now know of it, we may well
be amazed. Under the head of "Oranges," this bulletin says:
"The entire output of the state during a season of normal pro-
duction on the basis of the present acreage, would approximate
50,000 cars. If placed in one train, these cars would occupy
approximately 400 miles of track. And, you happen to know
that only five counties of California produce over 90 per cent of
the lima bean crop of the United States, and that in 1918 they
produced 2,575,000 bushels.—American Florist.
National Association of Gardeners
Office: 286 FIFTH AVE., NEW YORK.

ROBERT WEEKS, President, Cleveland, Ohio.
P. W. POPP, Vice-President, Mamaroneck, N. Y.
PETER DUFF, Treasurer, Orange, N. J.; ROBERT TYSON, Madison, N. J.; ANTHONY BAUR, Deal, N. J.; THEODORE WIRTH, Minneapolis, Minn.; ARTHUR JACKSON, Detroit, Mich.

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P. W. Popp, Mamaroneck, N. Y.

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ANNUAL CONVENTION.
NATIONAL ASSOCIATION OF GARDENERS.
The Hollenden, Cleveland, August 26-28.

THE PROGRAM.
Tuesday, August 26.

11 A.M. Executive meeting of trustees and directors.
2 P.M. Convention convenes.
Address of Welcome.
Report by ex-president Thomas W. Head.
President's address.
Secretary's report.
Treasurer's report.
Report of committees.
Communications and resolutions.
Consideration of next convention meeting place.
General discussion.

8 P.M. Illustrated lecture by J. Otto Thilow, of Philadelphia, on "Flora of Hawaii."
Wednesday, August 27.

9 A.M. Unfinished business.
Nomination of officers.
Address, "How Can the Gardener Best Advertise His Profession?" by Sidney S. Wilson, vice-president of Associated Advertising Clubs of the World.
Consideration of the proposed cooperation between the country estate owners and the national association.
General discussion.
Luncheon.

2 P.M. Visit to some of Cleveland's fine country estates.
7:30 P.M. Banquet.
Thursday, August 28.

9-9:30 A.M. Polls open for election of officers.
Unfinished business.
Address, "How Can We Arouse the Interest of the Young Men Towards our Profession?" by Edwin Jenkins of Lenox, Mass.
Consideration of providing gardeners' examinations and the management of the Service Bureau.
Discussion of Quarantine Bill No. 37.
Final resolutions.
Luncheon.

3 P.M. Bowling tournament.
Members intending to attend the convention should write to James Fisher, Chairman of the Hotel Reservations Committee, 10504 St. Clair Ave., Cleveland, O., for hotel accommodations without delay. Other conventions being held in Cleveland on the same dates as ours, will make it difficult to secure accommodations unless engaged in advance.

All members who can possibly arrange to attend the convention should make every effort to do so, as important business is to be transacted. Members who cannot attend and who possess ideas or suggestions to be brought to the attention of the convention, should communicate them to the secretary at his New York office before August 23.

Members desiring to join the Eastern party leaving by way of New York should address the secretary for further information.

The local committee is preparing for the largest convention attendance in the history of the association. Let us not disappoint the committee.

OUR RETURNING MEMBERS.
The men who entered the service at their country's call are now being released. Most of them are seeking to return to assistants' and foremen's positions, some of them single head gardeners' positions. The association wants to aid these men to locate as quickly as possible. Members can be of great assistance to the association in its efforts, if they will advise the secretary of positions which they may know of that can be filled by our returning members.

NEW MEMBERS.
H. S. SHERMAN of SOUTH EUCLID, Ohio (G. H. Fellows, gardener), has become a sustaining member of the association.
The following are new members recently added to our membership list: M. Thomas Reynolds, Princeton, N. J.; John Thomas Allan, Newport, R. I.; Alexander Thomson, Hoy Donald, Mt. Kisco, N. Y.; Walter Maximo, Claude Rider, Cleveland, Ohio; William G. Dennis, Akron, Ohio; Daniel Pastore, Green-which, Conn.; Andrew Crombie, New York City; George H. Palmer, New York City; E RNEY ROEPKE, Brooklyn, N. Y.

CONTRIBUTION TO SERVICE BUREAU.
George Crone Smith of Rapidan, Va., has forwarded $10 as a contribution towards the maintenance of the Service Bureau, which the association herewith acknowledges.

CRITICIZING THE ASSOCIATION.
Having read various articles on the Gardener in your valuable paper including the item from The Onlooker recently, a few remarks from one of those creatures won't be amiss.
Being interested in the gardener and knowing his conditions thoroughly it seems extremely foolish to the writer that so much has been written about the gardener and all the different organizations try purposely to evade the real question that will ever do any good to the gardener to put him where he belongs.
To talk about the education of the gardener is idiocy, to be a gardener anywhere is a school itself and to learn to be a gardener through a college is out of the question.
The real gardener need not worry about the interlopers in the profession, or even the landscape architect who is as much value to a gardener as a .
Then again why should a gardener belong to an association with nurserymen and commercial growers, in fact one of the worst — in the interest of the gardeners as a whole. It is the nurseryman who commercializes the gardener's job.
The one and the only one problem to be solved to put the gardener where he belongs is to organize to protect the gardener when he is out of a job, at present the gardener has to do it himself and it is one mighty "tuff" job and still remain a gardener.
If the N. A. G. is not a great big joke, why evade the question? St. Louis, Mo.

D. MILLER.
The views expressed by The Onlooker are entertained today by men recognized as leaders in their respective vocations, no matter what the calling—that education is the most

Robert Weeks, President, Cleveland, Ohio. Ernest Guter, Treasurer, Pittsburgh, Pa. Martin C. Ebel, Secretary, Madison, N. J.

Peter Duff, Orange, N. J.; Robert Tyson, Madison, N. J.; Anthony Bauer, Deal, N. J.; Theodore Wirth, Minneapolis, Minn.; Arthur Jackson, Detroit, Mich.

P. W. Popp, Vice-President, Mamaroneck, N. Y.

Directors


The following are new members recently added to our membership list: M. Thomas Reynolds, Princeton, N. J.; John Thomas Allan, Newport, R. I.; Alexander Thomson, Hoy Donald, Mt. Kisco, N. Y.; Walter Maximo, Claude Rider, Cleveland, Ohio; William G. Dennis, Akron, Ohio; Daniel Pastore, Greenwich, Conn.; Andrew Crombie, New York City; George H. Palmer, New York City; Ernest Roepke, Brooklyn, N. Y.
valuable asset that any man can possess to achieve success.

My position as secretary of the N. A. G. has given me ample opportunity to learn how helpful practical training and theoretical knowledge are to the gardener who possesses them, and fortunate indeed is the young gardener who after serving his apprenticeship, can secure a year or two of college education.

If Mr. Miller could spend a few days in my office, listening to some of the young men who, finding that they lack the qualifications to accept a position which requires some knowledge of poultry, dairying, and farm crops, condemn themselves because they had the chance in former positions to learn something of these subjects, but considered it not compatible to their profession to give attention to them, he would change his views.

It is the ambition of most young gardeners to be in charge of a country estate some day, and to have charge of a modern estate today requires an insight of farming and economic horticulture as well as ornamental horticulture, besides possessing executive ability. How is a gardener to acquire all this unless he studies and learns.

No sensible gardener today ignores the need of the landscape gardener has established for himself, and that he is here to stay and to multiply. We recognize, however, that just as there are good practical gardeners and poor ones, so are there good "landscapers" and poor ones, and the poor of both these branches of the profession will sooner or later find their places.

Concerning the charge that commercial growers are commercializing gardeners, it requires two men to make a bargain, and no gardener becomes contaminated through commercialism unless he is a willing victim. Intercourse between all horticultural interests is constructive, and therefore desirable, though in the case of the commercial man, membership in the gardeners' national association gives him no other privilege than to pay his dues annually.

What Mr. Miller says of the National Association of Gardeners is, of course, his personal opinion, against which we find that the foremost men of the profession, gardeners in important positions, are giving serious thought to the activities of the association, realizing that it is well started to accomplish what it has set out to do—to improve the opportunities of those rightfully entitled to the calling of gardener. Through its Service Bureau the association is succeeding in selling the services of the gardener based on his efficiency and reliability—the first step towards destroying the system of shopping the gardeners' services, whereby the interloper finds no difficulty in competing with the real gardener, a system most detrimental to employer and gardener alike.—M. C. Ebel, Sec'y.

NEWPORT BRANCH OF THE N. A. G.

Sec., National Association of Gardeners:
The Newport Branch of the N. A. G. held its monthly meeting of July 11, which was well attended. The question of "How can we win the young man in our profession?" was taken up and discussed at length, but we have not found an answer as yet, which we could offer. It was suggested that something might be done by approaching the principals of our schools at the time the boys are graduating and wondering what work they would take up. It would be to the advantage of our profession and given an insight of the road they would have to travel, but even that might arouse much interest. We realize it is a very serious question and seems to amount to this: Are we to teach the young Italian, Pole, Portuguese or whatever the non-English speaking are that are doing the laboring work in our locality? And leave the future of our profession in their hands, or can we create enough interest to get the American boy to take hold, by bettering working conditions and making them more attractive?

Another subject taken up relates to our annual conventions. The suggestion was made, that a program of the subjects that would be brought up for discussion should be printed in The Chronicle at least one month before the convention takes place. If this was done, it would give members attending time to give serious thought and make notes of such subjects, and be better prepared to talk and vote on them. It would also give members not attending a chance to send in their views in writing if they wish to do so. A committee could look over all the suggestions and other matter sent in during the year, and select those of any value, such as Mr. Smith's examinations and granting of diplomas. We believe it would also be the means of inducing more members to attend the conventions, as they would know what was coming off, and would like to have something to say, and thus make a greater effort to get there.

FREDERICK CARTER, Secretary.

WE could talk from now until the cows come home, about our paint, and we couldn't tell you as much as knowing how our paint films would in a minute. Drop us a postal, saying "send a two coat paint film, as advertised in Gardener's Chronicle." By next mail, along it will come. You will be surprised to find it is as flexible as your handkerchief, and elastic like a sheet of rubber. But most surprising of all, will be how thin two coats really are. It will start you thinking when you look at that film, which is less than 1/100th of an inch thick. Then you will begin to realize how little a thing protects your greenhouses. You will appreciate as never before, how necessary it is that the 1/100th of an inch thickness shall be made of materials having all possible lastingness. Send for a film and see for yourself the kind of paint Lowe Bros. make.

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LOCAL SOCIETIES

LENOX HORT. SOCIETY.

The regular monthly meeting of this society was held in the Town Hall, Lenox, Wednesday, July 9. All officers were present.

A letter was received from the State Board of Agriculture inviting the society to stage a vegetable exhibit at the forthcoming Eastern States Exposition.

A committee was appointed to arrange for the annual held day to be held in August and will report at our next meeting.

NEW LONDON HORT. SOCIETY.

New London Horticultural Society held its regular monthly meeting Thursday, July 10. President Schoonman presided. Voted to hold picnic the Second Thursday in August at Rolyars Park, Norwich, on the invitation of Superintendent Smith, one of our members recently appointed in charge of the park. Mrs. W. Smith, Superintendent of the Lewis Estate, Ridgefield, Conn., gave a very interesting talk on Plant-feeding. Mr. Smith also exhibited Nielon "Ridgefield Scarlet" and Muscat Grapes, grown to perfection, proving that the speaker was an expert on feeding and treating his plants and fruits.

Rising vote of thanks was given the speaker. Lilium Myrophyllum was shown on the exhibit-table as grown on the Harkness Estate,—several amateur members never before having seen this beautiful lily.

THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY.

The regular monthly meeting of the above society was held in Greenwich, Conn., Friday evening, July 11. There was a good attendance present with President W. Graham in the chair. Three new members were elected. W. J. Seeley reported that he had made all arrangements for the dinner and games which will be held at Rye Beach, Tuesday, August 12. The Tarrytown Horticultural Society will join in with us, so it will be a big affair. George Baldwin who recently returned from a business trip in Europe gave a very interesting account of Horticultural doings over there. Mr. Baldwin was very fortunate in securing a large collection of Hybrid orchids before the Quarantine act No. 37 became law. In referring to the Quarantine act Mr. Baldwin claims that the English, French and Belgian growers will suffer by its enforcement. Joe Stobo who served with the American Army in France, gave a vivid description of what he saw and the hardships he came through. P. W. Popp announced that he was going to attend the convention at Cleveland on August 26 and called for suggestions that he might bring before the National Association of Gardeners. Mr. Popp gave a very interesting address on the good work that the association is doing. The summer show which was held in the town hall Greenwich, June 27 and 28, was not up to the standard of other years. The principal prize winners were W. Graham, Duncan MacIntyre, R. Williamson, J. Linane, A. Brown, J. Andrews, W. Smith and R. Grunert.

A Word More on EVERGREENS

WISH you could have walked through the Nursery with me, yesterday, just after a shower, and seen the Evergreens strung with beads of moisture, glistening in the sunlight.

The Pfitzer's Junipers, in their feathery mass, were more like a chiffon of mist; while the Rhododendrons growing in ideal condition under actual forest trees, had a crystal tip on each of their leaves.

This has been a wonderful season for Evergreens and Rhododendrons. Never have I seen more uniform vigor of new growth.

Sometimes, wish our Nursery were larger; then again am glad it is not. It isn't the quantity we are aiming for—it is quality—the best there is of the choicer, less usual things. The things that mean personal attention in collecting and growing.

If choice stock and this kind of personal service appeal to you, then it looks like we ought to do business together.

ST. LOUIS ASSN'N OF GARDENERS.

The monthly meeting of the St. Louis Association of Gardeners was held at the new city nursery, Chain of Rocks, Sunday, July 6. The members arrived at Chain of Rocks at 9:30 A.M. with forty-five present.

The members were conducted through the nursery and several new introductions from the U. S. Bureau of Plant Industry were examined. The nursery in general showed 100 per cent efficiency.

A short business meeting was called to order by vice-President G. H. Pring. A brief account of the nursery was given by John Moritz, emphasizing the cost annually vs. the saving to the city treasury. The Cleveland convention was discussed, the indications being that St. Louis will be represented by several members.

G. H. Pring, Cor. Secretary.
NASSAU COUNTY HORT. SOCIETY.

The regular monthly meeting of the above society was held in Glen Cove on Wednesday, July 9. President Joseph Adler, in the chair, Floyd Blowers, East Norwich, and Wm. Waraksa, Glen Cove, were elected to active membership. A fine display of Sweet Peas, with exceptionally fine blooms and long stems, were on the exhibition tables. There was good competition in each of the classes. Jas. McDonald, Wm. McCloud and Sam J. Trempe were appointed to judge the exhibits.

Mr. Noonan gave a short talk on his method of growing Sweet Peas which proved quite interesting and instructive. Mr. Arthur Gibb generously donated a special prize for preserved fruit and vegetables for members' wives only, to be competed for at the fall show to be held on Thursday and Friday, Oct. 30-31. Several other donations for this show were received, for which all received a hearty vote of thanks. Ed. Harris was elected secretary for the following dry day. The Dahlia show will be held at the Matinecock Neighborhood House, Locust Valley, on Oct. 2 and 3.

HARRY GOODBAND, Cor. Secretary.

AMONG THE GARDENERS

Harold N. Bryant, who, previous to enlisting, was gardener on the George F. Baker estate, Dalton, Mass., has secured the position of gardener on the George M. Hendee estate, Springfield, Mass., where he will assume his duties on September 1.

Herbert Brown, who, previous to entering the service, was gardener to A. M. Lindsay, Rochester, N. Y., has accepted the position of superintendent of the Daniel Tateum estate, Glen Cove, L. I.

John Alexander, formerly superintendent of the Charles M. Daniels' estate, Sabattis estate, Centre Island. Oyster Bay, N. Y., has accepted the position of superintendent of the Daniel Tateum estate, Glen Cove, L. I.

William Ellings, just returned from service in France and prior to that assistant gardener on the George F. Baker estate, Tuxedo Park, N. Y., has secured the position of gardener on the Colgate Hoyt estate, Centre Island, Oyster Bay, N. Y.

John T. Whittaker, formerly gardener to William F. Sellers, Edge Moore, Del., has accepted the position of gardener to W. Himiker Smith, Bryn Mawr, Pa.

OF GENERAL INTEREST

Muller-Sealey Co., Inc. has sold the entire horticultural establishment of Herman Komitch, Secaucus, N. J., consisting of 9 acres of land and about 60,000 feet of glass. Among the fine collections of plants are nearly 50,000 orchids. The purchaser of the property is Walter S. Chapin, of Glen Cove, N. Y., who will continue to conduct the place as a commercial orchid-growing establishment. The purchase price has not been disclosed.

GARDENERS' CHRONICLE

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For Garden and Greenhouse

Freesias—Improved Purely

Hannam's Bulbs, doz., 50c: 100, $3.00

Large Bulbs, doz., 30c; 100, $2.00

Rainbow Freesias—Grand Shades of Yellow, Pink and Lavender.

Separate colors, doz. $1.15; 100, $8.00

Mixed, doz. $1.00; 100, $7.50

Paeonies for Autumn.

You are cordially invited to visit the Andorra Nurseries at any time.

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STRAWBERRY PLANTS

For Autumn and Fall planting. Pot-grown and runner plants that will bear fruit next summer. Also RASPBERRY, BLACKBERRY, GOOSEBERRY, CURRANTS, GRAPE, ASPARAGUS, CHERRIES, PEACHES, POMEGRANATES, FRUITS, SEEDS, HERBS. Catalogue free. Harry F. Squires, Good Ground, N. T.

IMPORTED ORCHIDS

If you contemplate buying imported stock this year write to me.

JOSEPH MANDE

Orchid Expert, Seedsmen and Florist

West Orange, N. J.

FOOTNOTES

1) Circulars and other information will be mailed on application.

2) The curriculum is planned for the education of any persons who would become trained gardeners or fitted to be superintendents of estates or parks. Students may be admitted at any time.

3) The New York Botanical Garden

Bronx Park, New York City

The American Botanist

The New York Botanical Garden

Manuscript Colors and special lists on application.

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Bronx Park, New York City

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Rare trees or shrubs of any variety, particularly large Blue Spruce and other evergreens, or large specimen Maples, Lindens or Bay Trees.

Do you intend to thin out the trees on your place? Are they growing too close together?

We have tree moving machines located in most all sections for rent for moving any trees you have that you do not wish to sell. We send a good man to operate the tree-mover.

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MARTIN C. EBEL, Editor

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Stumpp & Walter Co.
30-32 Barclay Street
NEW YORK CITY
"I will go root away
The noisome weeds, that without profit suck
The soil's fertility from wholesome flowers."

THUS spoke one of the Shakespearian characters; a resolve that most of us who garden have carried into effect time after time without seemingly bringing about any very great diminishing effect on the hordes of weeds which so easily spring up from the soil. It makes little difference as to the character of the soil, whether it be rich or poor, heavy or light, weeds of some kind are sure to appear, and, in fact, if they did not we should stand a poor chance of getting anything else. At the same time, weeds in general are quite properly voted a great nuisance, and without a doubt constitute one of the chief troubles of those who cultivate the soil. Someone has defined agriculture as "a controversy with weeds," and it is certainly one which is never-ending, keeping the cultivator continually on the alert lest they get the better of the argument.

Thomas Hale, in "The Complete Body of Husbandry," dated 1756, says, "Everything that grows without being sown or planted, among a crop that has been sown or planted, is in that place a weed."

Today this definition has been shortened to "A weed is a plant out of place," which gives rise to the question, when is a weed not a weed? The answer is obvious, and, continuing this line of thought, we can imagine all plants being classed as weeds at some time or place, while assuming all plants were in their proper place, why, then, there would be no weeds at all.

At first thought this would seem to be a very delightful state of affairs, and in our 'prentice days would certainly have been considered so without any reservation whatever. Hand-weeding day after day is a good test of the spirit, and the one who sticks to it with vim until the job is complete has the right stuff. But supposing there were no weeds to pester, would we not be likely to grow careless and indifferent about surface cultivation? Some of us would surely, because now it takes often quite a big stand of weeds to start the hoe going. Therefore, by the fact of their presence they act as an incentive to good tillage, and in this connection it might truly be said that the more persistent they are the better, at least in certain cases, because only for them some of our crops might yield only indifferent results from lack of proper cultivation. Weeds or no weeds it pays to scarify frequently and so maintain a fine surface tilth, which more than is yet generally understood is one of the principal factors in raising good crops. While we mostly hoe with only the object of destroying weeds, at the same time we are conserving the soil moisture, the greatest benefit which results from frequent surface cultivation and something which cannot be overdone.

"One year's seeding, nine year's weeding," runs an old saying which contains more than a suggestion of truth. That weed seeds retain their vitality for a number of years, even though buried deep in the ground, is a fact that has been often observed. In a neighboring garden where clean cultivation has been practiced for many years an examination was made across it early this spring, and the soil thrown up into a pile, on which in a very short time thousands of weed seedlings appeared. According to experiments conducted at the Michigan Agricultural Experiment Station seeds of "Pussley" were able to germinate after being buried in the earth for thirty years.

But there are weeds and weeds, not all of them are offensive and useless. Weeds of the field, despised as a nuisance in one place are often regarded with the highest favor in another. Our native asters, which are now beautifying the countryside, are a case in point. Neglected by cultivators here because they were common weeds, they are immensely popular in Europe, and have given many fine forms under cultivation which we now import, or rather used to import before the F. H. B. said no!

In cultivated land there is not a more pestiferous weed than the quack-grass, witch-grass or couch-grass, to mention but three of the common names of Triticum repens, but as a soil-binder on embankments and similar places nothing but good can be said concerning it, its close matted rootstocks acting as a most effective guard against washouts. A few years ago something like a quarter of a million pounds of these rootstocks were imported annually from Europe for use in the drug trade there. This would seem to be a market that might very well be supplied from the home-grown product, for surely there does not exist a finer or more vigorous strain. Quite a number of weeds are distinctly useful by reason of the fact that they contain certain substances which are widely used in medicine. Chicory, with its attractive blue flowers often seen and admired by the roadside, is grown as a cultivated crop in Europe, many thousands of tons of dried roots being imported to mix with coffee. As a weed with us it is not old, less than
fifty years, it is said, since it first ran wild in Massa-
chusetts, but it now extends through several States.

Such weeds as shepherd's purse, chickweed and puss-
ley are very cosmopolitan in their range, being found, I
believe, on all five continents. The latter is very bother-
some in a wet summer, when it resolutely refuses to
wither and die after being hoed off. At one time it
was cultivated as a pot-herb, and none would have re-
gretted had it remained more of a rarity. Young shoots
of milk-weed are still served as a country dish in New
England, and the roots of _Asclepias tuberosa_ most
showy of all the milk-weeds and a desirable garden
plant, have medicinal value.

There are instances where plants under a new environ-
ment have developed so rapidly as to get out of control
and become quite a serious menace, so much so that con-
siderable sums of money have been expended with the
sole purpose of seeking to exterminate them. Two
notable instances are the water hyacinth, which hinders
navigation in Florida, and the prickly pear, which has
over-run vast tracts of land in Australia, and has so
far defied all attempts to keep it in check.

Some weeds are dangerous by reason of their deadly
poisonous properties, the victims being mostly cattle,
though human lives have been lost because certain of
desingular plants bearing a resemblance to some familiar
herbs. It is generally permitted by plant food, but by mistake
illustrating these deadly weeds should hang in every
schoolhouse so that children might early learn to dis-
tinguish them. Jimson weed, monkshood, poison hem-
lock, cowbane and fool's parsley are all credited with
human victims. Sneeze weed, _Helenium autumnale_,
prized for autumn display in many gardens and a com-
mon plant in pastures of the West, is said to have caused
trouble to stockmen by reason of its being poisonous to
cattle.

Poison ivy is one of the most noxious of weeds in the
opinion of most people, yet viewed from a safe distance
in the autumn, especially when it has raised itself above
ground level by means of some support, it is an object
of great beauty by reason of the brilliant coloring of its
dying leaves.

Every once in a while the question is asked as to
whether the tomato should be classed as a fruit or a
vegetable, and on more than one occasion a wordy bat-
tle has been fought when a dish of "Love Apples" has
been included in a collection of vegetables where the
schedule failed to specify particular kinds.

Botanically speaking, of course, it is a fruit pure and
simple, since a fruit is that part of a plant which contains
the seed. At the same time it is also a vegetable, and
it is as such that the tomato is mostly used. A dictio-

nary definition of the word vegetable is "A plant that is
used wholly or in part as food," and on that basis it
would be perfectly correct to say that fruits are vege-
tables, but on the other hand, it by no means follows that
all vegetables are fruits. The line of distinction
between a fruit and a vegetable which is marked by
popular usage may not be scientifically correct in all
cases, but it answers very well for all practical purposes.
The string bean, for example, is a fruit used wholly as
a vegetable, while rhubarb which is essentially a vege-
table, is popularly considered and used as fruit.

The tomato is a notable example of a tropical weed
that has had its characters greatly developed by cultiva-
tion during the past three hundred years. Today it is in
such demand that almost every garden contains
at least a few plants, and fresh fruit is to be found in
the markets the year round. Inquiry is frequently made
as to why plants which are seemingly the picture of
health and extremely vigorous should be unsatisfactory
as regards the yield of fruit. Such a condition as this
is pretty certain to be the result of over-feeding. While
the tomato is a good feeder anything in the shape of
rank and highly nitrogenous manure freshly applied
merely results in a lot of wasted energy. I have
seen this demonstrated to perfection this season in the
case of two adjoining plots in a field of newly turned
sod, the soil being only fair in quality. One man mixed
in a shovelful of leaf mold for each plant when set out
and raked in a light dressing of bone meal. The other
grower had a barrel of good warm hen manure and ap-
plied this with a generous hand on two or three oc-
casions. My, how those plants did jump! A hint of im-
pending disaster was scoffed at in view of the wonder-
ful way they responded to the driving power behind
them, and as far as looks were concerned the other
planting suffered by comparison. But there is where
their superiority ended, for the poorer looking ones are
away ahead now that the fruit yield is being calculated,
both as to quality and quantity. This case brings to
mind the story of a farmer who applied nitrate of soda
(this was before the war) to a field of mangel-wurzel,
and later had his men go through and pull off some of
the excessively large leaves. A waste of plant energy
and good plant food in both instances.

The order to which the tomato belongs, _Solanaceae_,
comprises more than sixty genera and twelve hundred
species, mostly natives of the warmer regions of the
earth. Included in this large number are some very
important economic plants of which the most useful is
the tomato, the product of _Solanum tuberosum_, and at
the present time one of our staple food crops.

Then there is the tobacco, the product of species of
_Nicotina_, chiefly _N. tabacum_, which is considered by
many to be the best "weed" of all and the culture of
which has proved to be a veritable gold-mine for many
a farmer. Products of other plants of this order which
we sometimes use to stimulate a flagging appetite are
the two very warm condiments, chilies and cayenne
pepper, while the egg plant is another which supplies a
delicacy for our tables.

Deadly nightshade, _Atropa belladonna_, Jimson weed,
_Datura stramonium_, and henbane, _Hyoscyamus niger_,
are the villains of the order, each containing powerful
poisonous properties which, however, are used to ad-


(Continued on page 307)
The Making and Care of Lawns

L. P. JENSEN

There are not many subjects of more general interest than that of lawn making. The lawn is the most essential feature connected with the laying out of grounds, be they large or small. Most persons think of a lawn as consisting simply of grass, whereas from a landscape gardener's point of view, it includes trees, shrubs, herbs and flowers.

In this paper, a lawn will be considered as an open, more or less level surface of grass, closely cut and of a "carpet-like" appearance, which has been made to enjoy, and not to keep off of, as is generally the case.

A lawn which will not stand the playing of children and the walking on of numerous people, I consider a failure. It takes years of patient care to produce such a lawn, but it is well worth the effort. A lawn should, to a certain extent, constitute an outdoor living room, for the family, a large part of the year. There is nothing more beautiful and refreshing, than a perfect emerald green lawn framed with irregular plantations of trees, shrubs and flowers.

The preparation of the land before seeding is of the utmost importance and as a rule absolutely neglected. Generally the soil excavated when the building was erected is spread over the surface, covering what in many instances was good soil with the poorer subsoil, and without any other preparation, the seed is planted and good results expected.

Such a lawn can not be anything but a disappointment. The weeds will start ahead of the grasses smothering them out.

I will try to explain how to go about preparing the soil for a lawn, supposing we are working on a piece of land as we ordinarily find it.

First plow it as deeply as possible, picking out all stones, roots, large weeds and other rubbish as we go along, then harrow the land several times, continuing the removal of rocks, roots, etc., as they come to the surface. Now we should do our grading, and grading is an operation which is easier done than explained. We should aim to follow up the natural contour of the ground, and should never try to make the lawn absolutely level, except for very formal work such as terraces and tennis courts. There is no perfect level in natural ground, but the gradations consist of very gentle curving lines joining each other almost unnoticeable to the eye. This natural effect we should try to keep.

Where the soil is of such a character as to hold the water on the surface after a rain, draining is necessary. The grading finished, we must go about making the soil rich, remembering that we can not cultivate our lawns after seeding. For this purpose I prefer well decomposed stables manure. Use an abundance of it, thirty, forty or even fifty loads to the acre not being too much. Plow this under although it is liable to bring some weeds, and the soil will probably contain seeds of many more. For this reason it would be advisable to precede the lawn-making by planting the land for a season to a hoed crop. By keeping this crop absolutely clean you can do away with most of the weeds, your soil will be rich and full of humus, and you have paved the way for a good lawn. If good, thoroughly decomposed manure cannot be obtained, the same result may be obtained by sowing cow peas or crimson clover, turning the crop under and also adding about 3000 pounds to the acre of ground bone meal at the time of harrowing the ground. Chemical fertilizers are good to use as a top dressing for feeding the lawn after it is finished, but for the preparation of the land for lawn purposes, humus is what is needed in most soils. Never use chemical fertilizers on the ground just before seeding as they will as a rule destroy the seeds.

There is and has been, considerable discussion as to which is the best kind of grass to use for a lawn and whether to use one kind alone or a mixture of grasses. The Kentucky blue grass (Poa pratensis) is the grass which seems best adapted for this purpose in the northern and middle states. It is close growing with creeping underground root stocks and makes a soft carpet of a deep rich green color. Kentucky blue grass is, however, slow in growth until well established, and it takes two or three years to form a good lawn with it if used alone and in the meantime strong growing weeds are liable to take possession of the ground.

I have tried various mixtures and for general use, I think a mixture of one-fourth English rye grass (Lolium perenne, var. tenue), one-fourth fancy red top (Agrostis alba, var vulgaris), and one-half Kentucky blue grass, would prove satisfactory. The English rye and the red top germinate and grow quickly, covering the ground which would otherwise be taken up by weeds, until the slower growing blue grass takes possession of the soil. White clover is often used in lawn mixtures, the leaves being of about the same color of green as the blue grass and many persons like the sprinkling of white flowers in summer. I, however, only use it on places which are liable to be infested with crab grass, in which case it becomes very useful.

Always use the very best and cleanest seeds for lawns. Cheap seeds are full of chaff and weed seeds. Absolutely pure seeds are perhaps impossible to obtain, but much purer seeds can be obtained now than a few years ago on account of vast improvement in seed-cleaning machinery. After seeding, the soil should be harrowed or raked lightly, just enough to merely cover the seeds and then rolled with a heavy roller to bring the seeds into close contact with the soil, to prevent a too rapid evaporation of moisture, washing of the soil and also to smooth the surface.

When seeding, always use plenty of seeds—fifty or sixty pounds to the acre being about right. This will be sufficient to cover the ground quickly, thus preventing the appearance of weeds, which will quickly take advantage of any vacant spaces.

The best time of day to do the seeding is early in the morning or towards evening on a wind-still day. While practice will make it possible to seed evenly even when quite windy, it is better to do the work when the air is still.

There is much discussion of the question of what time of the year is best for seeding. I like very early spring, provided the ground had been prepared the previous fall. Having been plowed and left rough during the winter it will then be in fine condition to work very early in spring, and it will only be necessary to smooth it with a harrow or rake before seeding. If the ground is in the proper condition for seeding about the 15th of August or not later than the 15th of September, then this is an
excellent time for seeding, especially if you can give the lawn a light coat of thoroughly decomposed stable manure after seeding to act as a mulch and prevent the evaporation of moisture. Seeded at this time, the grass will generally come up and get strong enough to withstand the winter and be in fine condition the following spring. A lot of washing of the soil is prevented by seeding at this time, as we seldom have such heavy downpour of rain in fall as we have in spring.

Unusual conditions are sometimes encountered in lawn making such as places that are either too shady, too dry, too wet or too rough for the use of ordinary lawn grasses. For such places there are usually other grasses which will take their place more or less successfully. For unusually shady places such as the north side of buildings or under trees, the rough-stalked meadow grass is well adapted, but does not do well on very dry soil. It forms a fine, dense turf. Sow at the rate of 100 pounds to the acre. The best grass for very shady places such as woodland parks and plantations, is the woodland meadow grass (Poa nemoralis). It is very hardy and will stand the hot weather well. Use about thirty pounds to the acre.

On unusually wet places use the various-leaved fescue (Festuca heterophylla). Wet places can, however, generally be improved by draining. The red canary grass (Phalaris arundinacea) is also suited to wet places; it is, however, a very coarse grass.

On very sandy soil the Rhode Island bent grass (Agrostis canina) is probably the best. It makes a close, thick turf of a beautiful green color. Use about forty-five pounds to the acre.

Where the soil is unusually dry and loose or for use of banks which are very dry, use the beach grass (Ammophila arenaria). Seed about fifty pounds to the acre.

After the lawn has been seeded and established the grass must be cut. For this purpose use a very sharp and properly adjusted lawn mower. If a lawn mower is dull, or not adjusted right, it will pull up a lot of the young grass. For the first cutting a scythe is to be preferred. Cutting should be commenced as soon as the grass is a few inches long. The cutting will make the grass thick, and frequent rolling of the lawn helps the formation of a good turf.

The following are general rules that can be laid down as to when and how often a lawn should be cut. The growth of grass is dependent on weather conditions, the amount of water given, etc. Do not cut too close, never closer than one and one-half inches and do not let the grass get longer than four inches, for if allowed to grow too long, the lower parts will lose color. This holds good during spring and early summer, but during the months of July and August it is better to leave it a little longer. If possible leave the clippings of the grass lay; they will act as a mulch to the roots and will dry very quickly in the sun so that in a short time they can not be seen.

If the grass has been left too long the clippings should be raked off or better still caught by a grass carrier attached to the lawn mower. By using a grass catcher, instead of a rake, the lawn is left smooth and undisturbed. Do not discontinue cutting too early in fall, for if the grass is left too long over winter it will sometimes rot or mold.

If there are bare patches in the lawn, reseed them, remembering that by keeping the weeds out the grass is kept in. Always have some grass seed on hand for this purpose. Whenever a bare spot is found, take a sharp iron rake and rake it up deeply and loosely, seed it, rake again lightly, and roll or compact the soil with the back of a spade.

Watering is important, but I dare say that more lawns are ruined by too much water than by not watering enough. When it becomes necessary to water, apply enough to thoroughly saturate the soil to a good depth, then do not water again until the soil really needs the water. If watered too much the soil becomes sour and unfit for the growth of grasses. The general practice is to give the lawn a daily sprinkling, saturating the ground only an inch or so; this practice leaves the sub-soil in a very dry condition and the roots will naturally have a tendency to be drawn toward the moist soil near the surface, exposing them to the hot sun, which results in injury if watering should happen to be neglected for a short time.

No operation is of more importance for the making and maintaining of a lawn than rolling. The heavier the roller is, the better it is for the lawn. In early spring just as soon as the frost is out of the ground, the lawn should be rolled, to compact the ground, which has been loosened by the freezing and thawing during winter. This rolling should be continued every few weeks throughout the season.

This continued rolling will greatly help to preserve the moisture in the soil, and also make the lawn smooth and easy to mow.

All weeds should be promptly eradicated and removed as soon as they appear. If the lawn has been properly prepared and kept, the weed problems is not apt to be very serious. Such weeds as dock, the plantains, dandelions, and daisies should be cut out, care being taken to see that the roots are entirely removed. After weeding always sow a little grass seed to take their place.

All strong growing bunch, or turf grasses should be considered as weeds and cut out. The lawn mower will, as a rule, take care of most of the annual weeds, eradicating them by preventing them from producing seeds. The crab grass (Panicum sanguinale) is the worst of all weeds, as it is an annual which first becomes noticeable in the month of June. If the grass grows very rapidly and the more it is cut the more it spreads, throwing out runners which root at every node or joint and finally taking complete possession of the ground. I do not know of any method of absolutely eradicating crab grass, but it may easily be held in check by the following method:

During the month of July and the first half of August, cut the lawn as little as possible and when cutting, adjust the mower to cut as high as you possibly can. The leaves of the lawn grasses will then shade the soil sufficiently to prevent the stems of the crab grass from coming in contact with the ground, thereby preventing them from taking root. The last about the 15th to the 20th of August, cut the grass down low, rake the lawn with a toothed iron rake (sharp) to make the remaining crab grass stand up, set the mower for very low cutting, cut again, rake once more as before and now seed the lawn lightly, cut again and leave the clippings remain to protect the grass. Water the lawn thoroughly. It will now be found that most of the crab grass has been destroyed. This treatment will naturally leave the lawn somewhat yellow and unattractive for a few days but you should be amply repaid by the results obtained.

Fertilizing—All lawns should have a top dressing of well decomposed stable manure at least once every three or four years, and other fertilizers should be used whenever the lawn needs enriching. Sheep manure and wood ashes are excellent for the top dressing of lawns. They may be used mixed in equal parts, at the rate of 200 pounds to the acre. Apply just before growth commences in spring. Bone meal is a slow working but very beneficial fertilizer; use 400 pounds to the acre. Apply in fall and winter.
Nitrate of soda is one of the best and quickest working fertilizers. It should be applied early in spring just as growth commences. Use about 200 pounds to the acre. This will give wonderful results. It will make the grass grow very fast and intensify the color remarkably. This fertilizer must be used very carefully as otherwise considerable damage may be done to the lawn, by the nitrate of soda absorbing the moisture from the soil or from the plant tissues. This can, however, only occur if applied in too large quantities or when applied in dry weather. It should be sprinkled over the lawn just in advance of a rain storm.

Air slaked lime will neutralize acidity in soils and thereby make them more suitable for Kentucky blue grass, which as we have seen forms the basis of most lawn mixtures. Lime should be used as a winter dressing at the rate of thirty-five or forty bushels to the acre. The dressing of lime is especially beneficial when the lawn is infested with sour grass sorrel and moss.—Extract from article in Park Recreation.

**ANALYZING THE VARIETIES OF SOILS**

While soil is in many respects a very complex substance, it can, from a horticultural point of view, be regarded as consisting mainly of four substances, viz., sand, clay, lime, and humus, and in all soils one or other of these materials constitutes the bulk of the mass, so that the different kinds of soils may be grouped under certain generalized headings according to the amounts of these substances they contain. At the two extremes are sandy and clayey soils, but between these there are many intermediate types, including loams, both sandy and clayey, marls, calcareous marls, calcareous sand, gravelly loam, etc., while any soil containing over twenty per cent. of organic matter may be considered rich in humus.

The whole classification depends upon the predominance of the coarse-grained particles known as sand, or the very fine material known as clay. Each of the types of soils mentioned have different characteristics, and it requires a person of some experience to tell by the look and feel of soil if it is suitable and in good condition for the crops he wishes to grow. How many fruit farmers would have located their land differently had they possessed some knowledge of the texture of soil at the time they started business? Upon this texture depends some of the most important features of the soil, particularly its behavior with regard to the supply of water to crops and its amenability to cultivation.

A sandy soil, for instance, is very dry, and can only give a good return in districts of heavy rainfall, otherwise the owner has to go to much expense in the provision of an abundant supply of humus, this being most easily secured by liberal dressings of farmyard manure. A clayey soil, on the other hand, is cold and wet, and usually large sums have to be expended on an efficient drainage scheme.

For most horticultural purposes the soil that gives the best return is fairly heavy loam resting on a subsoil of gravel. While manurial substances are more liable to loss on a loam than on a clay, their action is more rapid, and, on the whole, loams allow manures of all kinds to be fully utilized.

In order to obtain some idea of the texture of the soil a cubic foot should be taken and weighed, as this sample will adequately represent the land in question. The weight of the soil multiplied by 43,560 will give the weight of the soil per acre most used by crops; if a pound of the sample is taken and thoroughly dried by heating in an oven, the loss in weight, on reweighing, will represent the amount of moisture held in a pound of soil, so that it will be an easy matter to compute the moisture held in suspension per acre.

The sample should then be thoroughly baked for some hours, and, when cool, the difference in weight represents the humus content. A very rough method of obtaining the proportion of clay and sand present in the soil is to take the sample which has been deprived of its humus content and place it in a tall glass cylinder, which should then be nearly filled with water. The contents are then thoroughly stirred with a stick until the liquid is uniformly turbid, after which the soil is allowed to settle.

Very soon the coarse sandy particles begin to collect at the bottom, and these are quickly followed by others of progressively smaller size until, finally, the clayey silt becomes deposited as the uppermost layer, leaving the water clear. In this way a very rough separation of the soil into particles of diverse sizes is obtained, and the approximate amount of each can be determined by measuring the thickness of each layer.

Any soil containing less than one part of lime in two hundred parts cannot be economically brought to a high state of fertility; therefore it is advisable to make a simple test, which may be performed by taking many small samples from different parts of the ground, mixing them together, and placing a small sample in a tumbler. Pour on to the soil a quantity of hydrochloric acid, and if the liquid effervesces and bubbles freely, the soil may be considered to contain a sufficient amount of lime, but if the action is slow or not at all, it is safe to conclude that a liberal dressing of lime in some form is not only desirable, but absolute necessary.—The Gardeners' Magazine (English).
The Wild Garden

HENRY GIBSON

The desire for less formality in the garden has led to the introduction in many places of features which are more or less reproductions of nature's methods of planting and grouping and termed wild gardening. Not wild in the sense that it is a garden left entirely to take care of itself, but one where the designs of nature are lavishly copied, though the hand of the artist is cunningly camouflaged, thus producing effects which appear quite "natural." To do this requires considerable skill, knowledge, together with a natural aptitude for creating and reproducing natural effects with such plants as one can readily find available, that are suitable for the purpose.

Unfortunately, however, there are still many people who do not appreciate natural effects and see no charm in this form of gardening, the trim lawn, path, border, and bed being in their opinion the best form of gardening. Nevertheless, "wild gardening" is increasing in favor, for in almost every walk of life today there is a tendency to get from the artificial to the natural, and as wild gardening becomes better understood it will have a place in all gardens of any pretensions.

The wild garden has nothing to do with the wilderness, though it may be carried out to it, nor is it a garden sown with annuals allowed to run wild. It should not be allowed to meddle with the flower garden proper. The idea should be kept distinct from the various important phases of hardy plant growth in beds, groups and borders, in which good culture will produce many happy effects. In the smaller class of gardens there is little room for the wild garden, but on the larger places there is ample room on the outer fringes of the lawn, in grove, park or woodland walks and drives where wonderful new and beautiful effects may be created.

A shaded wood studded with hepaticas, native aquilegias, trilliums, azaleas, kalmias, a plantation dotted with primroses, a waving sea of daffodils in copse or grove, are pictures everyone can appreciate in nature, and which have an equal charm when planted in the garden in nature's way.

There are scores of exotics that are happy and most effective when treated in this way.

The selection of plants must be according to circumstances as to position and conditions. Some knowledge of the soil is also necessary so that such plants as are chosen are only those that are likely to become permanently established. A few experiments on a small scale would be well worth while in order to ascertain what plants are likely to give the best results before putting in large quantities. In planting care to avoid any definite arrangement as to distance apart or outline of the groups is essential to a natural effect. An iron crow-bar for making holes for the bulbs or tubers is, as a rule, the best planting tool—one man to make the holes and another to follow dropping bulbs into them and filling up with easily manipulated soil. Such things as daffodils, crocus, snowdrops, fritillarias, winter aconite, colchicums are best planted in this way. Late autumn is the best time of the year to plant all bulbs and tubers.

Such plants as hardy primroses, forget-me-nots, foxglove, genethera, epilobium, violas, etc., are most conveniently raised from seeds sown in the early spring. Care will be necessary for a month or two after germination to keep the seedlings from being smothered by weeds and rival plants.

The nearby woods may be scoured for native plants, both herbaceous and woody, deciduous and evergreen, many of which abound in large quantities in all our woods. There are few more pleasing sights than a bold planting of native azaleas when they are in bloom, a bank covered with wild roses or honeysuckle, an irregular group of daphne on the outskirts of a plantation, with a generous supply of dogwoods, sumachs and viburnums as connecting links with the wilderness beyond, are easily created picturesque features worthy of any garden.

In addition to the plants named above the following list with a brief description of each will give a variety to choose from.

Asphodeline. Summer flowering bulbous plants with grass-like foliage. They will thrive in any ordinary soil, and, flower during June and July, producing stately spikes of bloom, which are very attractive. A. Lutea, with yellow flowers, and growing four feet high, and A. taurica, flowers white, 3 ft. high, are two of the best for naturalizing. Brodiaea Uniflora, is a plant growing a foot high producing white flowers with faint violet lines. It belongs to a class of plants mostly of North American origin, but uniflora is listed as being a native of Buenos Ayres. The bulbs are easy of cultivation, and when planted in well drained soil grow and multiply rapidly. B. Congesta, deep violet, and B. Grandiflora, a bright violet blue, natives of North America, are both desirable subjects, but uniflora is the best of the three.

Centranthus. (Red Valerian) is a most serviceable plant for the wild garden and produces a rather striking effect when massed in large groups.

Cimicifuga. Tall stately plants of easy culture, growing luxuriantly in rich soil, and very effective when planted in a moist sunny position in the wild garden. C. Racemosa, has white flowers, and grows 4 ft. tall. Found in a wild state in North America.

Crambe Cordifolia, is a tall large leaved, white flowering plant of the order Cruciferae, and very suitable for the wild garden.

Of Fritillarias mentioned, the well known Crown Imperialis is the best choice for the wild garden. The bulbs should be planted four inches deep. Established plantations of this subject, are greatly benefited by a top-dressing of mature after growth has commenced.

Mertensia. A beautiful genus of Borageworts, the flowers are blue or shades of blue violet produced in cymes at the ends of stems 1½ feet high. They are of a bluish green tint and are not unattractive of themselves. M. Virginica, the Virginian cowslip, thrives in moist peaty soil and naturalizes readily. M. Sibirica, lasts longer when in flower and is of as easy culture as virginica.

Genothera Frueicosa, the Evening Primrose of our woods and waste places, is another of our native plants, that is worth considering for a place in the wild garden. The flowers are delightfully fragrant.

Sanguinaria Canadensis, (Bloodroot). A native of North America, that has to be seen growing in its natural habitat, in order for one to appreciate the real effectiveness of it when massed in nature's way. It likes shade, and does well when planted under trees. Its white, anemone flowers which appear in May, upon stems about six inches high. The roots are best planted in Autumn, in a place where they can remain undisturbed.

Soapwort. Saponaria officinalis, a member of the pink family, is another valuable subject that shows to advantage in the wild garden. It grows about ½ feet high and has rosy white flowers. Verbascums, are ornamental plants of noble aspect, that lend themselves well to naturalizing. Their flowers are usually yellow, or creamy white and are produced on stems 2 to 8 feet high. The leaves form immense rosettes, and are very downy and even without the flowers form striking objects.
The Peony, The Modern Garden Flower

FRANK B. MEYER

The peony is the finest and most valuable plant for the modern garden. In pronouncing it such the writer does not refer to the old-fashioned red "piney." Nor has he in mind the many other pink and white ones that are rather abundant in some dooryards. Nor yet does he mean those that are sometimes offered for sale on store counters at ten cents a root. And he does not advocate the planting of all the named varieties that are advertised in nurserymen's catalogs, for the recent vote of the more than two hundred and seventy-five members of the American Peony Society has ranked many of these below 5% on a scale of 10, and indicates that they ought to be discarded altogether. It is not strange, however, that some growers who have a stock of them are loath to throw them away, for they please some people who do not know the more excellent sorts, and the peony is propagated by division of the root. This is a slow process and a stock of a really meritorious variety can not be worked up in a hurry to take the place of one cast aside. For this reason the superior varieties, with the exception of a few of the older ones that are not yet entirely displaced by some of the wonderful new ones, are not of low price. But they are worth their cost, even from the mercantile point of view. The writer is acquainted with a man near a large city in Ohio who, from a small tract of ground has annually realized, within a few days in June, from the sale of blooms, over $3,000 in cash. He has sold many roots also to persons who, seeing the splendid flowers, "simply must have some" growing at their own homes. He wisely planted only very choice kinds and his investment has paid well.

The peony is rapidly taking the place in popular esteem heretofore occupied by the rose. Its popularity, among those who know it, is attested by the fact that the American Peony Society holds annual conventions at which hundreds of dollars are distributed as prizes.

A citizen of Akron has in the past five years spent a fortune in gathering what is perhaps the finest private collection of this plant in the world. He has in his grounds over 600 varieties, the majority of which are represented each by ten or twelve specimens. For some of his plants he has paid as much as twenty-five dollars each. And a business man. Mr. Lee R. Bonnewitz, of Van Wert, Ohio, is so great a peony "fan" that every year, after attending the convention, he publishes and distributes, at his own expense, a large printed letter in an effort to help others to enjoy the delights that he finds in his hobby.

There are several factors that contribute to the peony's rise in popularity. Tarkington Baker, an authority on gardens, declared, "No flower is more rooted to the hearth, or the family hearth, than the herbaceous peony, and none is more easily raised by the amateur." It is not injured by freezing. The editor of the Garden Magazine, commenting upon the condition in which gardens were found in the spring of 1918, wrote, "Last winter was the greatest vindication of hardy plants, particularly peonies." Then, too, it is practically immune to injury by insects or disease. It thrives in full sunshine and in partial shade. When once planted it may be left to increase in size and beauty and profusion of bloom for a generation or more. The fragrance of many varieties almost equals that of the sweetest roses. The blooms keep in water better than perhaps any other flower of value. If cut in the bud stage it can be packed tightly into boxes and sent long distances to open as perfectly as it would have done upon the plant. In cold storage the buds may be preserved five or six weeks. By careful selection from such a list as the following it may be had in bloom in the garden for six weeks.

The list gives the best, and generally most satisfactory sorts arranged according to color and time of blossoming. None of the very new and high-priced varieties, however, are contained in the list, with the exception of the one that is very desirable on account of its remarkable dark color. Those marked ** are among the first twelve peonies, according to the vote of the American Peony Society. Those marked * rank very high. The others all have distinctively charming beauty or other value. All have strong growth and bloom freely. All except three grow tall and bear flowers upon long and strong stems. These three, Octavie Demay, Marie Lemoine and the Officinalis, are somewhat dwarf in comparison with the others.

**Festiva Maxima: rose type; paper-white; center marked crimson.

Duchess de Nemours: cup-shaped; sulphur and greenish-white. Mme. de Verneville: bomb type; pure white; tipped carmine; free-flowering.

*James Kelway: loose rose type; rose-white; very fine.

**Baroness Schroeder: rose type; flesh-white and baby-pink; rose fragrance.

*Ahatre (Avalanche): crown type; snow-white; lovely carmine pencilling.

Marie Jacquin: semi-dbl. (Water Lily); rose-white; golden stamens.

* Mons. Dupont: flat rose type; milk-white; large crimson splashes.

Couronne d'Or: rose type; tipped carmine; showy golden stamens.

* Marie Lemoine: rose type; ivory-white; cream center; massive.

*Grandiflora: flat rose type; rose-white or sea-shell-pink.

PALE AND MEDIUM PINK

Octavie Demay: flat crown type; very pale pink; dwarf; charming.

*Mme. Emile Lemoine: globular; glossy white and satiny pink; lovely.

*Asa Gray: high rose type; imbricated petals; rose and pale lilac. La Perle: globular; very light pink; blush and carmine; pretty.

* Venus: high crown type; very delicate pale pink; rose fragrance.

*Mme. Emile Galle: flat rose type; sea-shell pink, heliotrope and lavender.

* Albert Crousse: bomb type; formed like a carnation; sea-shell pink.

Dorchester: rose type; delicate hydrangea-pink.

DEEP PINK

Edulis Superba: loose rose type; even dark pink; rose fragrance.


*Claire Dubois: rose type; clear violet-rose; silvery; lacinated petals.

RED

Officinalis: brilliant crimson; good for landscape effect.

*Mons. Martin Cauzarec: semi rose type; dark garnet; back reflex; striking.

Felix Crousse: bomb type; clear brilliant red.

*Feincâlente: single; bright purplish carmine; like a Darwin tulip.

YELLOW SHADE

Philomene: soft pink with golden yellow center; distinct; good keeper.

The peony should be planted in the fall, before the end of September, if possible. The soil should be very deep and rich. But manure, if used at all, must be well rotted and thoroughly mixed with the soil some time in

(Continued on page 304.)
Growing and Pruning Berry Fruits

T. SHEWARD

RASPBERRIES, Dewberries and Blackberries will grow in almost any soil, from light sandy loam to heavy bottom land composed of decayed leaves and peat. If the soil is very light and sandy heavy manuring and mulching will improve the crop. Where just a few bushes are grown for home use these can be fastened to a single stake, or a rack support can be made. A good way to grow raspberries is shown at "Fig. 1." Posts are set into the ground 5 feet apart and 1 by 4 lumber nailed to these on each side (Fig. I). This will make a strong support. The canes are planted between the posts 2 feet apart and if a plantation is to be made 4 feet should be allowed between the rows. This way of growing raspberries, etc., makes the pruning much easier, as it is only necessary to cut the old cane and draw it up through the top of the supports, no tying is needed. In pruning Raspberries, Blackberries, and Dewberries remove the old canes after fruiting, and train in the new wood for next year's crop. "Fig. 4" shows Raspberry bush. "A" shows how the fruit is carried on wood made last season. When the fruit has been gathered this should be cut away to make more room for the young shoots that are to bear next year's crop. "C" shows a young shoot. The top should be pinched at 3 feet to make laterals form. "D" shows the shoot with top cut away and laterals forming and "B" the young shoot as it will appear in winter with the laterals shortened. Where the bush is well supplied with young wood any weak shoots as at "E" can be cut away. "F" shows an old cane as it will appear in winter if not cut. "A" and "F" were not stopped to form laterals. "Fig. 2," and "3" show pruning hooks used in cutting out old canes and brambles. When the canes have been pruned a good dressing of manure should be dug in between the rows.

THE PEONY—THE MODERN GARDEN FLOWER

(Continued from page 303)

advance of the planting; or it may be put in a thick layer in the bottom of a trench and then covered with a foot of soil in which the plants will be set. Bonemeal is most lasting and safest, for it does not injure the roots, as manure is apt to do, when it comes into immediate contact with them. The eyes should be so covered with earth that they are buried not more than two or two and a half inches when the ground has settled. During the first winter they should be overspread, after the ground has been partially frozen, with a protecting mulch to prevent their being lifted out by alternate freezing and thawing. From that time on they need no care other than the ordinary cultivation of the soil.
Self-Pruning in Plants

WILLARD N. CLUTE

The gardener frequently finds it necessary to bring his plants into shape or otherwise modify them by removing various twigs and branches. As a matter of fact a number of economic plants, such as grapes and raspberries, will not produce full crops unless subjected to an annual pruning of this kind. Opinions differ as to whether all plants are benefited by such treatment. Confers when standing alone should never be pruned, for the branches rising from the ground in pyramidal form prove one of their chief attractions, but when used for hedges, as several species are, they may be sheared into almost any form desired. Lilacs are other shrubs that need little, if any, pruning; but the great majority of our woody perennials seem all the better for an annual trimming; indeed, the plants set the example themselves and yearly throw off certain parts unless man attends to the matter for them.

One of the most interesting of the trees that prune themselves is the well known cottonwood of the Middle West, represented elsewhere by its variety the so-called Carolina poplar. In late winter and early spring one may often find the ground beneath such trees fairly covered with small branches cut off by the tree. Hasty observers may jump to the conclusion that the winds of winter have broken off the twigs, but an examination will show that they have been as neatly cut off as one could do it with a knife. The tissue that cuts off these twigs is known as a cleavage plane or abscission layer. Under certain conditions it grows across the point of attachment and, being brittle, the fall of the twig results. The interesting feature of this operation is that it is the living and not the dead twigs that are pruned, and though many twigs of the preceding season are thus removed specimens that have been growing for several years yet remain. In this case in particular it is easy to determine the age of the twig because the heavy bud scales falling off in spring leave a circular scar which plainly marks the end of a year's growth. Possibly a majority of our forest trees have this same habit of self-pruning, though in most cases it is less noticeable.

Another form of self-pruning that is practically universal is that connected with the fall of the leaf. This phenomenon is very familiar in our broad-leaved trees, which annually cast and renew their leaves. As is the case of the twigs, an abscission layer forms across the leafstalk or petiole and in compound leaves across the stalks of the leaflets as well. Frost does not cause the leaves to fall, as many people suppose, though the weight of the accumulated frost upon them may hasten the fall in some instances. That frost is really not the cause of leaf fall is shown by the behavior of tropical trees, which cast their leaves as regularly as those nearer the poles though they are never exposed to frost. Leaf fall in the tropics, however, presents a remarkable difference from the case of the twigs; the others in the twigs of the plant do not occur in all trees at the same time. It depends upon the individual. One tree may throw down its leaves just as another near by is putting on a fresh dress; indeed, the different branches of a single tree may act thus, one or more resting while others are in full leaf. It is commonly believed that the evergreen trees do not cast their leaves, or at least do not cast them annually. This in a measure is correct. Some species cast their leaves annually, but others hold them for from five to ten years. The limit in this line is a remarkable plant of West Africa known as welwitschia. This species has only two leaves, each of which is several feet long, and these are retained during the life of the plant, which may run to fifty years or more!

The most noticeable form of self-pruning in spring is that by which superfluous blossoms and young fruits are thrown off. Many plants appear to bear more flowers than could be supported by the tree if all should produce fruits, and when too many fruits set the surplus is promptly thrown down. Several parts of the flowers, the petals and stamens for instance, are temporary structures useful for only a short time to the plant. When these have finished their usefulness they are cut off in the same way that leaves and twigs are. Ripe fruits fall from the trees for the same reason, and the shedding of bark, flake by flake, or in some cases in larger particles, may be included in our category.

There are a few plants in all climates that apparently have not acquired the habit of self-pruning. Most of the palms are unable to throw off their leaves, and when these have survived their usefulness they gradually die and hang down beneath the crown of living green. Some of the oaks of more northern regions have the habit only partly developed and retain many of their leaves until spring, when they are pushed off by the springing leaves of next season's crop. Certain fruits also remain on the bare branches through the winter, though this seems to be in some way connected with seed distribution, for when spring comes these fruits are thrown down as they are in other forms.—New York Sun.

THE FERN FROND

Although popularly the foliage of a Fern is regarded as consisting of leaves, like that of plants generally, there are several fundamental differences between a frond and a leaf. As regards their functions, that of the leaf proper is nutritive. By the agency of the leaf the raw materials of the food of plants are combined to form the actual foodstuffs, carbohydrates and proteins. In this function the Fern frond is equally active, and to it we owe the main portion of our coal supply, which consists almost entirely of the carbon absorbed and utilized by the Ferns and their allies of the coal or carboniferous age. The Fern frond however, performs another function, of which leaves are only capable indirectly in their modified form of flowers, viz., reproduction by the bearing of spores upon their under-surfaces or upon specialized parts exclusively devoted to such functions. Examples can be seen in the Royal Fern, Osmunda regalis, Blechnum spicant, the Moonwort (Botrychium lunaria), and the Adder's Tongue (Ophioglossum vulgatum), while the other five species bear their spores in dots or lines, in various ways which determine their genera, upon their under-sides. A number of exotic species, and many of our varietal forms, also bear bulbils or embryo plants upon their fronds or frond stalks, but this faculty can hardly be claimed as purely characteristic, as leaves proper sometimes do the same, or at any rate are capable of doing so when some damage interferes with their normal cellular development. The Begonia leaf,
for instance, if cut across, develops bulbils on the severed edges, and many bulbous plants, like Hyacinths and Lilies, are capable of being propagated in a similar way. This, however, is very different from the production of spores upon the Fern frond, for no true leaf proper produces spores. Another peculiarity of the Fern frond is its mode of growth and development. If we open the leaf-bud, say, of a Horse Chestnut, we find within the outer protective husk the entire cluster of foliage beautifully packed, only waiting to be liberated to expand and grow to full size. In some buds, however, the same thing if we cut through the centre. The Fern frond, on the other hand, develops entirely from the point or points, and commences as a tiny knob. This knob, as it lengthens its stalk and rises into the air, shows a growing tip, and this tip divides again and again, according to its eventual simple or decomposite form, forming a mass, coiled at first tightly inwards, crozier fashion. Then as the points become more and more developed and the stalk lengthens, the coil gradually loosens, and by this time we can probably see that the frond is there in full on to the end. Further continuing, we can see the originally tiny knob expand on the same continuous lines into a frond of many feet in length and width, and with thousands of fine divisions, according to the species or variety concerned. This kind of growth is termed circinate, and is, with very few exceptions, peculiar to all Ferns, not being, we believe, seen at all in flowering plants. The spore is sometimes looked upon as the equivalent of a seed, but it is only so by virtue of its forming the means of reproduction by wide dissemination, as do the seeds of flowering plants. In itself it is not a seed, but merely a detached germ, capable of producing what to all intents and purposes is a seed. It is a general rule in nature, though with some exceptions, that offspring cannot be produced without previous fertilization of the primary germ. In flowers we know that this is done by various agencies—bees and other insects, and in many cases by the wind, these carrying the fertilizing material from one plant to the other. In Ferns the same rule applies, and we therefore find that the spore, when it falls on to congenial soil and is not disturbed, does not, as would a fertilized seed, at once project a root and throw up leaves, but merely protrudes a tiny green cell, which multiplies itself and grows into a small green heart-shaped scale, about the size of a herring scale. This adheres by means of minute rootlets to the soil, and in time produces on its under surface what are practically male and female flowers, the latter carrying several embryo plants embedded in the scale at their base. Fertilization then takes place through the medium of the dew-like moisture collected below the scale, and as a result we next see a young Fern, usually only one, but sometimes several, rising from the indentations of the heart-shaped scale, and a new generation is thus started. Toward the end of the last century the writer was fortunate enough to make the discovery that in some rare cases the Fern frond was capable of producing this heart-shaped scale direct, without the agency of the shed spore, and it was also found that it originated in some cases by extension of the growing tips of the sub-divisions. These phenomena were called respectively soral apospory and apical apospory, both involving a considerable shortening of the normal cycle of Fern life. Here, again, the Fern frond has proved itself to be fundamentally different from the leaf proper in some of its functions and capabilities.—Chas. T. Drury, V.M.H., F.L.S., Gardeners' Chronicle (English).

**NATURALIZING BULBS**

The naturalizing of bulbs in woodland glades, shady nooks, the wild garden, in grass or in any part of the pleasure grounds or park where the grass is not required to be cut before June or July is a phase of gardening that cannot be too strongly recommended. Bulbs are cheap, and the labor of planting them and their subsequent need of attention are trifling. Various kinds in endless variety are suitable for one place or another and give a long succession of bloom, commencing with the Winter Aconites in February and continuing until May with Snowdrops, Crocus, Muscaria, Scilla, Chionodoxa, Anemone, Erythronium, and Daffodils, finishing with May-flowering Tulips. Daffodils are the most popular of all, and are at home anywhere in sun or shade, though sunny positions are preferable for most, except perhaps those of the Leedse type, the flowers of which are liable to fade in strong sunshine. Scilla campanulata in various colors is a good subject for the woodland and wild garden, and should be planted in bold drifts. Anemone nemorosa, Snowdrops, Triteilia, Winter Aconites and Erythronium (Dog's Tooth Violet) are all suitable for planting in short grass in the open or in partial shade, such as around trees, while the pretty Anemone apennina and A. blanda, the brilliant A. fimbriata, and Crocus in various varieties enjoy full sunshine. To make the most of the space at command, a successional scheme on the same ground is advisable; for instance, a grassy bank may be freely planted with Crocus for an early display, to be followed by Daffodils in early and late varieties, such as Golden Spur and Emperor or Empress, or Crocuses may be associated with the old double Daffodil and Narcissus Poeticus. A late display of bloom may also be had by planting the varieties Madame de Graaff and Grandis. In planting, the different varieties may be kept slightly apart, as the objection to mixing them being the difficulty of keeping the varieties distinct and true to name when lifting. May-flowering Tulips may be planted in partial shade or sun, but unfortunately the bulbs cannot be relied upon to increase and improve yearly; perhaps the only places in which they are likely to succeed are where they are fairly dry during the winter. In planting bulbs of any kind for natural effects, form bold irregular groups, thinning off to narrower masses and isolated bulbs. Crocuses in particular require to be just covered with soil, but all other subjects should be planted at least twice as deep as their own size.—Gardeners' Chronicle (English).

**THE WESTERN AZALEA**

The Western azalea (Azalea occidentalis) is a native deciduous azalea found in the Sierra Nevada Mountains of California, at altitudes of from 3,000 to 5,000 feet above sea level. In its native home it grows along the margins of streams and in wet, moist lands partially shaded. It is easily transplanted and will give a big display of blooms the first season. I have transplanted specimens that I know were ten or twelve years of age with no great apparent set-back. When transplanting I dig a hole three feet square and about three feet deep and fill in with rotted leaves and vegetable mold; if this is not handy we use old straw. We fill the hole about half full then set the bush and fill in alternately with good soil and sand. I have in many cases transplanted these out to open sunlight and by giving them a good irrigating occasionally, they thrive and do well. Quite large bushes can be transplanted in tubs and in half barrels and smaller bushes set in
The Japanese Iris

HENRY J. MOORE

(Continued from August Number)

The Japanese iris, *I. Laevigata* (syn. *Kaempferi*), belongs to the semi-aquatic group of which it is the most noteworthy. It differs so widely from the other kinds, and its flowers so much resemble those of the large flowered *clematis* that it merits the name of the *clematis* flowered iris.

Comparatively few people grow this lovely plant, which is rather strange, as it is not at all difficult of culture. It will flourish in any good soil, and is only particular in the respect that the position must be damp and exposed to full sunshine. As the Japanese iris is really a semi-aquatic, it does best when planted at the water’s edge, near a small stream for instance. Words cannot describe the beauty of the flowers when the plants are massed in such a position, the coloring being magnificent. Many of the flowers are eight inches across, and when the plants are associated with other large flowered semi-aquatic, or with aquatic plants as the *Nelumbium* (*Egyptian lotus*) and water lilies, no combination could be more pleasing.

It is, however, not only at the water’s edge that the Japanese iris may be effectively used. When planted in a sunny border with a soil fairly retentive of moisture, it will flower beautifully, if during dry weather previous to flowering and a short time afterward water is copiously applied. A sandy or very porous soil is not suited to the culture of the plants, and it is not advisable to attempt to grow them therein, unless a depression or hollow exists in the garden. The soil may then be improved by mixing with it a quantity of clay at planting time. In such depressions moisture will remain much longer than on higher ground, and by judicious applications of water good results may be expected.

A most novel and interesting way in which to grow the Japanese irises is to sink a tub or barrel without a bottom into a hole in the garden, border, or even in any convenient and sunny position. The barrel should be about 18 inches deep; 4 inches of clay should be placed in the bottom, and upon this 12 inches of good adhesive loam, leaving 2 inches of space at the top. Plant the irises either in fall or spring, and during the second spring after planting, just before growth starts, afford weak applications of liquid cow manure occasionally. Like many garden subjects the Japanese iris has a critical time to pass through. This is from the time the flower buds form until the flowering period is past. At this season do not neglect to water, nor withhold it entirely until the resting period approaches. Varying with latitude the season of flowering of the Irises in question is from the middle of June until August. Have you ever seen them in their beauty, city dweller? You may enjoy them even if you have only room for a barrel.

Propagation.—The Japanese irises may be raised from seed. Spring, as in the case of the border types, is the best time to sow. The quickest and most popular way, however, to increase the stock is by division of the rhizomes, by simply severing them with a sharp knife, and planting the portions during October. In cold localities the divisions must be protected with a covering of leaves or litter during winter.

The reason that the Japanese irises are not more generally included in landscape gardening schemes is not evident, especially where woodland and water scenes are included. They are eminently adapted to naturalistic planting, adding a classic touch at times to that which would otherwise be commonplace. Their distinctive forms and colors and their very habit suggests an association with that which is informal. They are decidedly more attractive than other semi-aquatic irises, and for this reason will, when their culture is better understood, be more generally utilized to grace our gardens than formerly.

Many persons fail with the Japanese irises, and claim that they cannot be successfully grown in their respective localities. In conclusion the writer would ask: Did you select an open, sunny position? Did you water the plants adequately during the growing season? Did you afford weak liquid manure at this time? Failure to observe even one of these essentials was in all probability the cause of your failure.
Hilltop Manor, Sut...

Showing the beautiful home-acre country estate of Georgi...

The home grounds here illustrate 90 acres. The remaining acreage, woodland is devoted to mot...
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farming.
SEPTEMBER'S bracing air is a great aid now to ripen the wood of the pot fruit trees outdoors. Take care of these plants for next winter's work. Remove any suckers from the base and keep free from insects; also keep well watered and the sun will do the rest. The annual repotting of these plants will take place the end of this month, and to the amateur who is starting with them, it is necessary to remind him that there is no need to wait until the leaves have fallen off, providing they are ripening off nicely and have been given due care. Turn out of the pots, and take away all crows, loose soil andulls.

USpionew pots as small as possible, or old ones well scrubbed out, and place a few pieces of crock at the base. Repot into a compost of turf, 3 parts; wood ashes, 1 part; 1 pound bone meal. To a bushel of the loam (old mortar rubble is also very useful) add 1 pound of Thompson's vine manure. All thoroughly mixed will make a good compost.

Pot along slowly and firmly. Do not rush this work as it does not pay. Afterwards stand the plants on level ground on two bricks to keep them from being waterlogged.

The bulbs will need attention, and Roman hyacinths should be potted for succession. Tulips will be arriving end of the month, and it is well to place sufficient plantsthrive best in heavy loam. Do not use leaf soil.

Three parts of chopped sods, one part of well decayed cow manure with a fair sprinkling of crushed oyster shells is a fine addition, and a 5-inch pot of Thompson's vine manure to every barrow load of soil. After potting, place in a sunny position and keep outdoors until frost arrives; about 10 degrees will not hurt them. They are then best plunged into coal ashes in a protected frame or a cold cellar.

Our exhibitor friends will deride the somewhat crude methods employed by the smaller grower in the growing of bulbs, but small places have to use what presents itself, and although our friends will say that it is wrong to put pots and flats of bulbs under greenhouse benches, they are more often than not started there and with first-class results.

If we worry about the proper soil suitable for plants and are unable to find it, we must do the best that we can. Compost heaps should be prepared if possible the end of the month, and it is well to place sufficient under cover for winter and early spring use. Make the compost heaps outdoors rather narrow. They are better for two reasons—the frost permeates thoroughly and they are also sooner thawed out in spring.

Bordeaux Mixture dry is good to use under the benches of roses and other plants. Many snails and cut worms crawl indoors to make a comfortable winter's home, ready to damage our crops next year, and it is wise to make the greenhouse distasteful to these pests.

Azaleas should be houseted before Jack Frost appears. Palms and kindred plants should be well syringed, washed withaphine, and sponged free of scale. Make a clean start.

Calceolarias must be kept cool, and not on a lattice bench. The better place is on a bed of ashes. Insects will spoil these beautiful plants if one is not careful. The soil should be light and plenty of half-decayed leaves must be used in the compost.

Cinerarias and the other cool loving plants mentioned in this article can be grown together. Caladiums that are commencing to ripen off should be kept a little dry.

Amaryllis seedlings should be moved into the greenhouse from the frame. Be careful to maintain a nice condition of the soil in which these plants grow. Any worms infesting the soil must be destroyed. Let them grow until they have made a fair sized bulb and then gradually rest. The old bulbs that flowered in spring should be stored in a house by being laid on their sides to keep drip away.

Exhibitors do wonders with these plants. They watch them all winter and remove the first signs of decay. Sulphur is used around the base of the bulb and Bordeaux powder in the vicinity to keep away any fungus. In spring these bulbs will throw a flower spike up and then is the time to feed them with liquids and solids.

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for SEPTEMBER, 1919

Work for September in the Garden

JOHN JOHNSON

Much to the satisfaction of the vegetable gardener, there has been abundant rainfall during the summer season. Crops planted for late supplies have made splendid growth during what is usually a trying period, particularly where artificial watering is out of the question. As a result, weeds are troublesome, but these can and must be kept in check by frequent stirring of the surface soil. It is a well-known fact that, next to the month of May, September is the worst month for weeds getting started. If neglected but a short time, the task of eradication becomes arduous. Therefore, hoe persistently. With the end of the growing season in sight, the importance of good cultivation is often overlooked. This is partly due to the fact that during this month the vegetable grower reaps the most bounteous harvest of his earlier labors. Many crops are now maturing and must be put in storage for winter use or else be otherwise disposed of. However, the needs of the late sowings are particularly urgent, and freedom from weeds as a result of frequent cultivation is highly important even this late in the season.

Maincrop carrots, potatoes, onions, shell beans, etc., should not be left outdoors exposed to the destructive elements after growth shows signs of ripening. The potato crop should be lifted immediately the tubers have completed growth. A few days' delay often makes a vast difference in the percentage of diseased tubers, particularly if the ground is at all moist. Select, if possible, fine weather for harvesting this crop. The matter of ripeness should not be taken too seriously; a little rubbering of the skins does not impair the keeping quality of potatoes, as new skins form rapidly. What is most important is to have the crop out of the ground before disease sets in. If disease is known to be prevalent at the time of harvesting, take care to exclude every potato affected, and in storing put the potatoes in layers and sprinkle each layer lightly with fresh air-slaked lime. This treatment not only tends to dry the diseased portion of the tuber but sweetens the whole pile and thus prevents the spread of disease somewhat.

In the harvesting of onions, care should be taken not to bruise the bulbs. Commence lifting this crop as soon as the tops turn yellow, and finish the ripening process under glass if possible. To keep well, onions must be thoroughly ripened, and this can be accomplished only by full exposure to sun and air until the tops are perfectly dry and shrivelled. Extra large specimens require careful handling in order to keep them. Nothing is better than to arrange them in a single layer on excelsior in a sunny position. When well ripened, the rough outside skins should be removed so that only one perfectly smooth skin is seen.

It is advisable to commence lifting maincrop carrots as soon as the roots have attained sufficient size—which should not be too large. Store them in damp sand in a cool cellar.

Blanch endive only in sufficient quantity to meet requirements and have on hand some means of protecting plants growing in the open.

Make a sowing of parsley for winter use in a cool greenhouse if this has not already been done. Radishes and lettuce may still be sown in a cold frame. These will require protection in the event of frosty nights if the plants are to mature before severe weather puts an end to active growth. Cauliflowers forming heads should have the leaves tied together at the top with raffia.

Make a point of having all frame sashes put in order.

If mushrooms are required for winter now is the time to make up the beds. Shake out a sufficient quantity of fairly fresh horse manure for making at least one bed. This is far better than collecting the manure in driblets. A good two-horse wagon load direct from the livery stable will be enough for a fair sized bed. If this manure contains a fair amount of urine soaked litter so much the better, but if mostly clear droppings add either well-rotted manure or else garden earth to the extent of about one-fourth. The addition of decayed manure or earth prevents the bed from burning. Turn the compost every morning for about a week or until danger of over-heating is past. In making up the bed spread the manure in layers, trampling each layer before adding another until the required depth is secured. Beds anywhere from 9 to 12 inches deep will answer. The temperature of the bed usually rises a few days after making, and, when the temperature settles between 90 and 85 degrees, spawning may be done. Use pieces of spawn about the size of a hen's egg and insert so that each piece will be at least 1 inch below the surface and 8 or 9 inches apart.

The temperature of the house or cellar should range from 55 to 60 degrees with a reasonably moist atmosphere.

Orchard. Such kinds as apples and pears should be harvested when the fruit stalk separates from the twig without force. Handle with care to avoid bruises and subsequent loss from decay, and separate small and defective fruits from the finer specimens at the time of gathering. Sound preservation is only sustained by low temperature, still atmosphere and darkness. A cellar built into a bank makes a suitable storage house for the average grower. Fruit rapidly acquires the taste of anything with which it comes in contact. Therefore, avoid straw, heavy paper or similar materials in packing for storage. Shallow trays deeper at the ends than the sides make the best receptacles for the small grower storing fruit. These may be piled one upon the other, and the fruit is thus always accessible to inspection.

Flower Garden. Continue the propagation of bedding stock, geraniums, fuchsia, marguerite, shrubby veronica and desirable varieties of pentstemon, verbena, etc., not otherwise dependable from seed. Lift tuberous begonias before the frost nips them, and allow these to complete their growth in the greenhouse. Do not hurry the drying off process. Plant violets in frames or a cool greenhouse for winter flowering. Spring flowering bulbs may be planted as soon as the beds are cleared of summer bedding. Transplant seedling perennials and biennials from earlier sowings. Plant peonies without delay if the best results are looked for.
A Lesson on Winter Gardening Without Coal
Explaining The Use of Cold Frames, Essential Points to Observe, Their Construction and Most Desirable Plants to Grow

The experience gained during the past winters, by those who have, or are responsible for the care of, greenhouses, has undoubtedly proved that there are many subjects, both among flowers and vegetables, which can be just as well, and in fact better, grown at a considerably lower temperature than most people have been in the habit of giving them, and therefore they have discovered that greenhouses can be run more economically.

We do not of course allude to any of the tropical or sub-tropical plants, which, if they are grown at all, must have a temperature somewhere near that of their natural climate, but to those which will stand a few degrees of frost without injury and which will winter out of doors in many parts of the temperate zone without protection.

It goes almost without saying that it is one thing to merely keep a plant alive during the winter and another to keep it, or bring it into, a flowering or edible condition in that season. Our object is to suggest methods whereby more use can be made of cold frames and unheated structures for the production of flowers and vegetables during the winter half of the year.

Fundamentals Regarding Use of Cold Frames
The most important points in connection with the use of cold frames, etc., are, ventilation, irrigation and keeping out frost. In nine cases out of ten, failures are due to some error in practice in relation to one or all of these, some relaxation of vigilance at a critical time. Careless watering is a frequent cause of evil: water may be given at the wrong time, in too large or not large enough quantity, and it may be given by the wrong methods. The temperature of both the plants and the soil is lowered by the application of even war water. This is caused by the absorption of heat by the water itself, and because the evaporation of it is a cooling process. It is therefore best given when the change in the temperature will be the least and when it will return the quickest to the normal warmth. Care in watering is necessary in summer, and when the conditions are most favorable for the return to normal, but it must be remembered that the necessary conditions are in winter at their minimum.

It will be quite obvious that watering in the middle of a bright sunny day will cause considerable shock to the plants. If done in the afternoon, the soil will not have any chance of warming up, nor the plants drying before night, as outside temperature is then sinking for the sun at that time has lost most of its power. The absorption of as much sun heat as possible during the day is a very important factor in helping to maintain the temperature during the night. When required, watering is best done in the morning of bright days, just as the temperature is rising, when there is a certainty of a continuous sunshine, so that there will be the least possible shock to the plants, with time for them to dry off and the soil to warm up before covering up in the afternoon.

Water should not be applied with great force by a hose; it is better to use a sprinkling can so as to leave the surface of the soil as open as possible, and to avoid the danger of puddling it, and at the same time one can the more easily avoid wetting the plants, as the latter is undesirable during winter. If water is necessary it should be done thoroughly so that the soil is moistened to below the plants' roots.

As a matter of fact very little, if any, water is required in unheated structures during the winter. If the entire soil is put into a proper condition of moisture at about the end of October (in the latitude of New York) it is very rare that any more water will be required before February. So long as the plants are not suffering from the want of water, the drier the surface of the soil can be kept the better, and the entire reliance should be upon subsoil moisture, which, in properly prepared and constituted ground, will always rise to the roots of the plants. There are always periods of greater or less duration in the short days when the frames must remain covered and closed, and if the soil is very wet during these periods plants will suffer much more than if it is on the dry side.

Ventilation serves two purposes; it dries the air, and controls temperature. Too much care in connection with it can not be exercised. A close, wet atmosphere is detrimental to a plant's health, especially in winter, and if this condition continues for any length of time plants become flabby and they lack that short, dark green, stocky appearance which characterizes "fresh-air" plants.

When the atmosphere in a frame is moist enough to cause drops of water to form upon the glass, ventilation should be given if possible. Every day, when it can be done without injury to the plants, frames should be ventilated, if only a little and for a short period.

The temperature in a closed frame under the influence of a bright sun, rises very rapidly, and delay in ventilating may cause considerable harm. The thermometer is the only safe guide and should be regularly consulted. When the temperature of the frame reaches sixty degrees no time should be lost in giving air. On mild days when the temperature in the shade is above freezing point too much air cannot be given, but when cold winds are blowing and generally severe conditions prevail even when the sun is shining, caution must be exercised. It is better at all times to give air by degrees, that is, opening the sash about an inch when the outside temperature begins to rise and increase the opening towards noon; care must always be taken to open the frame in such a way as to avoid drafts of cold wind.

Protection for Cold Weather
During very severe weather the covering of mats and shutters over the sash may have to be kept on entirely for several days at a time. The uncovering after this should be done gradually by first turning...
down the mats a few inches along the back so as to accustom the plants to the daylight, as they will have become somewhat soft by being in the dark so long.

It must be borne in mind that glass radiates heat rapidly, and therefore when the sun’s rays are going off the sash the frames should be closed and mats put on so as to retain all the heat possible. The great value of shutters to use over the mats is that they keep the latter dry and snow is easily cleared off, besides, of course, they assist to keep out cold.

Proper Construction of Cold Frames

Cold frames should face due south and be protected from wind on the north-west and around to the north-east. Concrete is in the end the cheapest material for construction, although for that portion above ground it is not so warm as wood; for the latter, sound three inch planks creosoted, under pressure if possible, will last a great many years. Sometimes the part above ground is made of two planks two inches thick and arranged so that an air space of three inches is between them all around the frames; this air space keeps out more cold than a similar thickness of any material. Frames should be placed so that as little as possible is under ground, about three inches in front and a foot at the back, so that the natural heat of the earth may be made the most of. The greater the slope of the sash the more of the sun’s heat will enter the frames, but it is not desirable to have more slope than that given by having the back of the frame nine inches higher than the front, otherwise the plants towards the back will be too far from the sash. This could of course be avoided by having the soil in the frames at a similar slope to the sash, but if this were done water would be liable to run off to the front, so that it is better to have the surface of the soil level.

The distance of the soil from the sash must depend upon the kind of plants to be grown, and in all cases sufficient room must be allowed so that when the plants are fully developed, there are three or four inches at least between their tops and the glass.

During recent years sash with double glass, having an air space between, have been manufactured and their use advocated. It has been claimed that the air space will keep out a temperature of zero or lower without the use of mats. This, however, is not the case; mats must be used with them. These double glazed sash have also the disadvantage of being much heavier to handle, and dust penetrates between the layers of glass, necessitating one layer being taken out at least once a year for the purpose of cleaning. Altogether, so far as my own experience in the northern half of the country is concerned, their use is not to be recommended, at least in the colder districts.

The ground covered by the frames should be excavated at least three feet deep and the sides lined with concrete, this concrete being either carried up to form the above ground frame or finished at the ground surface for the wooden frames to rest upon. It is an advantages if the excavation and the frames are divided into units covered by two sash, that is, to have a division at every six feet, so that when hot beds are required there is no loss of heat either into the soil outside or into the adjoining frame; the divisions are also more or less necessary in dealing with plants of varying heights.

If there is not sufficient natural drainage into the subsoil, a pipe drain must run the full length of the frames along their center with sufficient fall to readily remove surplus water.

The soil for frame work cannot be too rich, that which is composed of half sandy loam and half well rotted manure or leaf mold will be suitable, and the top foot should have half a pound of pure bone meal to the square yard, mixed with it.

As early as possible in the autumn the outsides of the frames should be banked with leaves, coarse manure, or any other material that will help to keep out frost; and in addition to the latter purpose,banking up early preserves in the ground the heat it has absorbed during the hot weather, and for this reason the material should be of good width.

An Unheated Greenhouse

An extension of the idea of using cold frames during the winter half of the year is by means of what may be termed an unheated greenhouse, but it should be so constructed and covered that it will practically a cold frame into which one can enter without removing the covering. The extra expense of construction need not be very great and the greater cost will be well repaid by its greater usefulness and convenience. In connection with the ordinary cold frame, nothing can be done inside, except without uncovering, while in the other case anything can be done irrespective of weather conditions outside.

The space for the growth of plants together with the excavation, &c., will be the same as in the ordinary frame. For the glass roof the 6x5 feet sash may be used, so placed that they can slide up and down upon the rafters, the latter extending about three feet beyond the sash at the top. If there is a building against which this can be placed as a lean-to on the south side so much the better, otherwise the back must be built up in such a manner as to keep out cold, and of a height sufficient for the end of the rafters to be four feet above the ground level. The three feet extension from the end of the sash need not be glass but can be made of any good permanent roofing material and constructed so that the sash can slide under it about four inches. If placed against the side of a building provision must be made to prevent damage to the glass by snow and ice sliding from its roof. The front of the rafters should be affixed to an eaves plate and so fitted that the sash rests close to each other without the use of mats. This water plate should be two feet from the ground level and the space filled in with glazed windows, hinged for the purpose of ventilation. Shutters should be provided to use along the front and over the roof, and the ordinary hot-bed method be advisable for the latter as well. The entrance door is placed at the last end opening under the unglazed portion of the roof, and the door will have of course to be partly below the ground level. The way down to it can be the same, but less steep, as an entrance to a cellar, the steps, or inclined way, being roofed over and another door placed at the entrance outside. The inclined way is preferable to steps on account of its being more easy to use a wheel-barrow. Obviously sufficient excavation will have to be made in this structure at the back of the beds to enable the door to open and to provide head room. Some provision must be made to keep the soil of the bed where the plants are growing in its place, and also at the back of the structure and for this purpose the cheapest, because most permanent, material is a six inch concrete wall.

Maintaining Soil Heat

In connection with both this and ordinary cold frames assistance in maintaining soil heat can be rendered by means of some fermenting material underneath. It would not, however, be wise to form a hot-
bed, in the usual sense of the term, for mid-winter work as this would force the plants too much. As before mentioned, the plants for winter gardening are those which will withstand several degrees of frost and which will live out of doors all the winter when the temperature does not fall below twenty degrees. Therefore the making of a hot bed under them with a temperature of seventy or more would create extremely unnatural conditions and render the plants very susceptible to cold. What we want to bring about is a mild but prolonged heat, sufficient to keep the temperature of the soil at about forty-five degrees. The material for this purpose may be fresh, strawy, stable manure and leaves, half of each. These should be thoroughly mixed together and piled in a heap and turned over every two or three days, mixing the outside and inside material together each time. Should it be dry, sprinkling with water during the process of turning will be necessary; it should not, however, be made too wet, just thoroughly moist so that when squeezed in the hand it compacts together without any water coming from it. If the material is very wet, or very dry, fermentation or heating will not take place.

A week or ten days the fermentation will be at its maximum, and we have had satisfactory results without it. Used also for other things. Scillas, Snowdrops. Grape Hyacinths, Chinodoxa, will flower in January. Some of these bulbs do better if allowed to have a frame permanently to themselves. The Wales doing the best under these circumstances. Of these, strong field-grown plants should be obtained and planted as soon as possible, the ground covered by one sash requiring fifteen plants set out in three rows. When the clumps arrive they will generally be found to have a number of runners or long shoots growing out from the center. These runners should be removed with a sharp knife, cutting them off close to where they start from. Also all dead, or partially dead, leaves should be taken out by cutting so as not to injure the stem. Injuries to the stem, or more correctly, the crown, afford loopholes for the entrance of fungus spores.

As regards the best plants to use for our purpose, and dealing first with flowers, there is probably nothing which will give such a good account of themselves as Violets, the single variety known as Princess of Wales doing the best under these circumstances. Of these, strong field-grown plants should be obtained and planted as soon as possible, the ground covered by one sash requiring fifteen plants set out in three rows. When the clumps arrive they will generally be found to have a number of runners or long shoots growing out from the center. These runners should be removed with a sharp knife, cutting them off close to where they start from. Also all dead, or partially dead, leaves should be taken out by cutting so as not to injure the stem. Injuries to the stem, or more correctly, the crown, afford loopholes for the entrance of fungus spores.

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comparatively little known Crimson Flag, or Kaffir Lily, (Schizostylis coccinea), is excellent for cut flowers under these conditions during November and December. This has the habit of Gladiolus, but is a member of the Iris family. It is hardy in South Britain, where it flowers out of doors during November. Its winter blooming characteristic is derived from its being a native of South Africa, where midsummer is in December. Not less than two feet of space is required for it between the soil and the glass. It must always have a moist soil, and a moist atmosphere when growing; allowing it to be undisturbed is essential for the best success.

The position of the rows of subjects permanently planted should be marked so that the space between can be utilized for any plant using the place temporarily at other seasons. In a few years, however, these permanent plants will form large clumps and they will require all the ground. Annual application of food, rich in humus, that from a spent hot-bed is excellent, applied during the dormant season, and not allowing the presence of weeds at any time, are necessary for the plants’ welfare.

Of the true Irish there are several of the bulbous kinds which will flower in winter, notably I. histrioides. (I have cut flowers from this out of doors in February in Long Island.) Good results may be had from the Christmas Rose, (Helleborus nigra). There are several other less known species of Hellebore which will give a succession of flowers from October to April, but apparently they are not handled by the trade in this country.

The foliage of all bulbous and semi-bulbous plants must be allowed to die down naturally, so that the bulb or fleshy roots may be able to store food and to form flowers for the following year. The fact that this is done is proved when bulbs will flower in nothing else but pure water.

Vegetables to Be Grown in Cold Frames

While the range of species in the vegetable line is not so wide as that of flowers, there are a few things which we can grow that will afford something fresh for the table when frost and snow prevail outside.

Spinach is the most useful, as from one sowing made now it can be picked more or less frequently from November to April. (I have found the variety known as Savoy Leaved as good as any.) Rows should be nine inches apart which will give four rows to each sash. As soon as large enough to handle thin out to four inches apart in the rows. When the leaves are sufficiently grown for cooking, they should be carefully picked off without disturbing the roots, and further pickings can be taken as new growth is made.

Strong lettuce plants of the Big Boston variety for hearts and Grand Rapids for leaf, set out at once six inches apart each way, will be ready to use in a couple of months or less. Seed sown now will give plants to take the place of the former as it is used. Endive plants may also be set out, and any fully grown, which may be in the garden at this season and not immediately required, can be taken up with good balls of earth and planted in a frame, where they will keep for several months, and by darkening the sash after they have become re-established, they will become blanched.

Those who like green onions can have them in midwinter by planting the sets of Top Onions now, in rows six inches apart, with the sets two inches apart in the rows. In most gardens these onions are planted in August and September as part of the ordinary routine, as they will withstand any amount of frost, but by having some in a frame they are obtainable when outside conditions render it impossible.

Cauliflowers may be had a month or two earlier in the spring than is possible out of doors by sowing seed at this time, and as soon as the plants are large enough plant them six inches apart each way. As they will have to remain in this position until ready to cut, there must be two feet of space between the soil and the sash. Very early cabbage out of doors can only be obtained from plants wintered in a cold frame. Seed of the smaller heading variety, like Jersey Wakefield, may be sown about the middle of the month, and the plants set in the frame four inches apart each way. The seeds of this and also cauliflower can be sown out of doors. For cabbage and cauliflower the soil should have a handful of either air slaked lime or ground limestone to the square yard worked into the surface. As the principal growth of both cabbage and cauliflower is to be made in the spring they should be kept growing in the autumn as slowly as possible, keeping the sash off until there is a probability of severe frost, bearing in mind that cauliflowers are less hardy than cabbage.

While we do not claim to have exhausted our subject, there has been perhaps, enough said to show that considerable possibilities exist in the way of using unheated structures for winter gardening. Of course, results will be affected by weather conditions; they will not be so good in a winter both prolonged and severe as in one of a reverse character. But even in the most northerly states—and naturally these suggestions have little connection with the South—a month or so can be added to each end of the natural growing season, and in many years produce something in midwinter as well.

Essential Points to Observe

The main points to be borne in mind are, to conserve in the ground, in and around the frames, as much as possible of the summer heat that has been absorbed by banking up early, keeping on the sash at night and during the day as autumn advances, having regard for the actual temperature and the needs for ventilation: to make all possible use of the sun heat entering the frames during the short days by closing and covering the glass early in the afternoon. Ventilation must be attended to in such a way as to prevent the entrance of cold wind; when cold wind is blowing with a low temperature, even if sunny, ventilation is not necessary. The time during which the covering should be off the sash must be regulated according to weather conditions: with temperature below zero, an hour or two at midday; when the sun is shining all that is permissible, and sometimes the covering must be kept on entirely. If in spite of all care frost should get inside sufficiently to freeze the ground, then it is best to keep the frames covered until the weather moderates, and I have never found harm result to any plants used in this connection from the comparatively little freezing that can take place in a well covered cold frame.

A few years ago in December we had a blizzard accompanied by a temperature of twenty-four below zero, and it was two weeks before it reached as high as zero again. As soon as it rose to this the frames were uncovered and those planted with violets were full of flowers. After being covered so long light was only at first admitted for a little while, the period being gradually extended.

The amount of space devoted to this winter gardening will naturally depend upon the area at one’s disposal, as also will the number of different things planted. When there is only room for a couple of frames the two most useful things to plant would be violets and spinach, as each would give the greatest return for the space occupied, and are less trouble than anything else.
Wet Weather and Weeds

One of the invariable results of continued rainy weather such as many sections have experienced this summer, is a bumper growth of weeds. Naturally the abundant moisture causes luxuriant, rapid growth; simultaneously it prevents and impedes cultivation so that the weeds are given an unequalled opportunity to increase. Moreover there is a powerful tendency to think that since the season is more than half over, it isn't worth while to keep up the war on the troublesome plants. But woe to him who takes this mistaken viewpoint. Right now is a time when the weeds should be fought with redoubled energy. There is still time for them to rob the growing plants of valued food, to mature seed and pile up trouble for next year, to provide a hiding place for rats, rabbits and other pests, and to do all the things that are so loudly emphasized early in the season when the campaign of cultivation opens. There is plenty of wisdom in the admonition to kill weeds while they are small, but don't forget that a second or third crop is at that stage host of small ones later on.

National Botanic Garden

Extension and beautification of the National Botanic Garden, Washington, D. C., will be one of the first pieces of legislation of a general character considered by Congress, after the cost of living, railroad, league of nations and relief of soldiers have been disposed of.

Senator Moses of New Hampshire, who is a member of the committee on the library, which has jurisdiction over the Botanic Garden, introduced a bill on the opening day of the session for the extension of the garden, to take in park areas and other unimproved land to the west and south of the present site and for extensive beautification.

The fine arts commission announced the other day that the design and site in the Botanic Garden had been approved for the statue of Gen. George G. Meade, which the state of Pennsylvania is going to present to the United States government and which Congress has voted shall be erected in the Botanic Garden. Senator Moses decided that the garden already is overcrowded and that this is a desirable time to have the proposed extension made.

Senator Moses has been in conference with Senator Brandegee of Connecticut, chairman of the library committee, as to how soon this measure can have committee attention, and Senator Brandegee has assured him that the earliest possible consideration will be given to the Moses bill. Senator Brandegee is heartily in favor of improving the Botanic Garden at its present site and appreciates its cramped condition.

The entire square west of the present site is serving no useful purpose and could be improved, making it not only a beauty spot but of lasting value to the government and of incalculable educational value, Senator Moses says, by authorizing the Botanic Garden to spread over into that space. It is also proposed to have the propagating houses, the behind-the-scenes workshops of the garden, extended to take in some of the adjacent land now occupied by unsightly shacks.

French Forests and American Forestry

One of the forms of sacrifice which the war did not impose on America, and which, therefore, we tend to overlook, was the depletion of that country's forests, partly at the hands of her enemies, partly as a means of defence at the hands of her friends and allies. According to Dean H. I. P. Baker of the New York State College of Forestry, who recently completed sixteen months of Army service, the timber requirements in the war zone of the associated governments for the two years ending in December, 1918, were approximately 600,000,000 cubic feet, three quarters of which was large-size material! Moreover, the French territory temporarily occupied—and largely devastated—by the Germans included nearly 1,300,000 acres of forest land; its destruction meant an annual loss of about 17,500,000 cubic feet of saw-log timber. In short, the drain upon the French forests during the past four years is estimated to have used up the equivalent of the amount of timber which normally would have grown during the next twenty years.

Furthermore, since almost the only European country the forests of which have not been seriously depleted is Russia, which can hardly be looked to as a source of anything but trouble for some time to come, it appears that the forests of America must supply much of the timber needed for the reconstruction work in Europe, just as its farms have supplied and are supplying much of the food that has kept the people of that continent from starvation. Our national forestry methods and reforestation policies have already made great progress in response to urgent appeals and they must continue that progress with vast strides, that we may meet the obligation and answer the appeal suggested in the cold, unequivocal figures just quoted, but that are shouted aloud in pitiful detail wherever in sunny France the hun has walked and wallowed and destroyed.—Country Life.

Prayer by the Plants

JACK-IN-THE-PULPIT, in the month of May

To the plants and flowers, had this to say:

"For our destruction the men are here—
With scythes and axes, their work I fear.
The Author of all that is great and good,
Hath made our home in this beautiful wood;
Here we have lived, since time began,
Without the aid of mortal man.
From summer's heat and winter's storm,
We never yet have taken harm.
When winter's past and the spring appears,
We have grown for hundreds and thousands of years.
Could you bow the head and bend the knee,
And in silent prayer accompany me
To implore the Supreme Architect
From destructive hands this plant protect?
Lord, we feel Thy supreme power;
Save us now in this trying hour.
Here let us remain till the end of time,
And all our praise should be ever thine."

Joseph Tyson.

The Questionnaire

Subscribers are invited to make free use of this department to solve problems that may arise in their garden work. Questions on the ordinary pursuits of gardening, that can be readily answered by applying to the usual reference books should not be referred to the Questionnaire.

In the August issue of the Chronicle on page 284 there is a query by H. R. P., N. J. regarding the merging of colors of certain varieties of climbing roses. The reply by H. G. is misleading to the enquirer as it gives the idea that the growing of various plants side by side has a tendency to cause variation. This is not so.

What the enquirer had on his Silver Moon and Rambler roses was a Sport, and this must not be confused with the merging of two different varieties.

It is quite common in plants, and is especially common in the rose Dorothy Perkins, White Dorothy Perkins, being a fixed sport of the pink form. The only means of merging the Silver Moon and Crimson Rambler referred to would be by cross pollination, seed would then have to be saved, and the resulting plant providing cross fertilization had taken place would be a new variety, Silver Moon and Crimson Rambler or a hybrid between the two varieties.

W. H. Wait.

We had in our garden this year a clump of Delphiniums, the leaves of which seemed to cramp up like the closing of a hand, the buds also drew up in a similar manner. Will you please explain this condition through your Questionnaire and give me a remedy if there is one for this claimed by J. T. B., Mass.

Your Delphinium was attacked by the Delphinium rust a Fungoid disease now very prevalent on Delphiniums. A good fungicide such as Paradosh should be used in the early spring, spraying thoroughly. All affected parts should be cut off and destroyed, plants should be kept growing as vigorously as possible.

W. H. W.
The eighth annual convention of the National Association of Gardeners which was held at The Hollenden, Cleveland, Ohio, August 26, 27, 28, was a highly successful meeting. Business was transacted, affiliations entered into for co-operation and plans outlined and adopted for a broader development of the association and its aims.

The entire proceedings of the convention indicated the past efforts to make the national association the potent factor in ornamental horticulture in America are at last bearing fruit. As they publish the complete proceedings of the convention in book form to be distributed among the members of the association (which will be done as promptly as possible), only a summary of the proceedings will be published in these columns.

The Opening of the Convention

The convention was called to order Tuesday afternoon, August 26, at 2:30 o'clock by F. C. W. Brown, of Cleveland, acting as temporary chairman. Mr. Brown introduced acting Mayor J. D. Marshall of Cleveland, who welcomed the gardeners to the city, calling attention to the beautiful park systems and estates within the city's limits, adding that the heads of any of the city's departments would be glad to explain any of the operations of the city in which the gardeners might be interested.

Ex-President Thomas W. Head, of Lake Forest, Ill., fittingly responded to the address of welcome from the city's chief magistrate, remarking that he already had had the opportunity of visiting the horticultural points of interest on the previous day, and was agreeably surprised at the magnificent plantings he observed both in the public parks and private places and the wonderful vigor of such plants as azaleas, rhododendrons and other flowering plants and evergreens, bearing out what acting Mayor Marshall had to say of Cleveland's excellent climatic conditions.

Chairman Brown then introduced President Robert Weeks, of Cleveland, and after paying tribute to him for the great interest he has manifested in horticulture, he turned the convention over to him.

The President's Address

President Weeks, in his address, referred to the world's war, which has been terminated since our last convention in Chicago, and of the share that each one had in the great struggle. He paid special tribute to the young men of the profession who willingly gave up their positions to put on the uniform to go forth to fight our battles and uphold the good name of the United States. He said, in the name of the association, "We thank you. We owe you an unpayable debt of gratitude. We appreciate what you have done, the hardships you have endured, the toil, the weariness, the dangers you have gone through, and we welcome you and congratulate you for the part you have played in the war. We would not forget the noble dead, those who made the supreme sacrifice for their country and the cause of humanity. Today, we bear them in our hearts and in our last convention their work was nobly done."

In speaking of the association's progress since the last convention, Mr. Weeks referred to the moving of its headquarters from Madison, N. J., to New York City, and the advantages to the estate owners and the gardeners, who desire to avail themselves of the Service Bureau, which have been proved by the use of the estate owners and gardeners have made of the office since it has been established. "Yet, how many estate owners know that there is such an organization as the National Association of Gardeners? How many know that it has an office on Fifth avenue? How many know of its Service Bureau? I venture to say very few. True, we have done some advertising, not very much, but as far as the estate owner is concerned, the association is comparatively unknown. Yet in spite of this, as our report will show, the Service Bureau has done good work. We cannot afford to remain obscure and practically unknown if we are to make this association a power for the propagation of horticulture and an important help to the gardeners who desire to avail themselves of the Service Bureau. We must advertise it more. The Society of American Florists and Ornamental Horticulturists and the National Association of Nurserymen have their publicity funds. The National Association of Gardeners should have its publicity fund. I do not know the best way to raise such a fund, I will leave that to you to decide, but, gentlemen, you should give in this convention some earnest consideration to this matter."

Mr. Weeks spoke of the movement on foot to provide examinations for gardeners, and also to interest young men towards the gardening profession, urging that the convention give most important questions earnest consideration that some workable plans may be formulated whereby members of the association can pass examinations in the art and science of gardening and receive diplomas showing their standing in the association.

Referring to Quarantine Bill No. 37 which prohibits the importation of plants and many bulbs to this country, he asked that careful and serious thought be given by the convention to this question to secure some modifications of its provisions. (President Weeks' address will appear in full in the report to be published of the entire proceedings of the convention).

Routine Business of the Meeting

The secretary's annual report, the treasurer's financial statement, the treasurer's report and the reports of the following standing committees, Committee on National Cooperation, Committee on Meritorious Exhibits, Committee on Bird Preservation and Propagation, were read and it was in order moved that they be adopted and placed on file.

It was duly moved, seconded and carried that a vote of thanks be tendered to the various standing committees and that these committees be terminated at the end of the year and hereafter special committees be appointed by the president to be dismissed when their work is concluded.

The Service Bureau report, containing several recommendations, was referred to a committee appointed by the president to report to the convention.

Communications

A communication was received from the Newport, R. I., branch of the National Association of Gardeners, explaining the work this branch is undertaking and submitting several suggestions for the consideration of the convention. On a motion duly seconded and carried, the Newport branch was officially recognized by the association, and it was recomended that other branches on similar lines be organized by members for the purpose of closer co-operation between the national body and the members at large.

A communication from the Monmouth Co., N. J. Horticultural Society, addressed to the Board of Directors at their meeting in New York, March, 1918, calling attention to some legislation enacted in New Jersey and aimed directly at the gardeners, which communication was referred by the directors to the next annual convention for action, was referred to a committee appointed by the president, to report back to the convention.

Next Convention Meeting Place

The secretary reported that a number of invitations had been received from organizations in St. Louis, also from Harrisburg, Pa., Atlantic City, N. J., Asbury Park, N. J., and Niagara Falls, Ont., to hold the next annual convention in their cities.
George H. Pring of the Missouri Botanical Gardens, St. Louis, presented the claims of his city, why the next convention should be held there, stating that there are many gardeners in the West, (regarding Cleveland in the East) who would become interested in the national association if the convention were held there, and believed they had a local organization of 75 members, few of whom are at present members of the national organization as they believe that they could derive no benefits from it, but who undoubtedly would become members if the convention went to St. Louis. Mr. Pring pointed out that the headquarters were in the East, the secretary's office in New York City, so that the East has had practically the control of the association, and believed that the West was entitled to the convention next year. Mr. Pring was followed by a personal representative of the Mayor, Chamber of Commerce, advertising club, and retail merchants' association of St. Louis, who spoke on the advantages of holding the next convention as a convention meeting place, of the entertainment in store for visiting members, and the Missouri Botanical Gardens which contains one of the finest collections in the country, is therefore of great interest to gardeners, and endorsed the claims of Mr. Pring that the convention should go to St. Louis.

The New York and Pittsburgh members present had announced earlier in the convention that they would bid for the next convention, but after listening to the claims presented by Mr. Pring, no bids were made for the other cities, and St. Louis became the unanimous choice of the meeting place for 1920 convention. The convention then adjourned until 9 o'clock Wednesday morning.

Illustrated Lecture on "The Flora of Hawaii"

On Tuesday evening, J. Otto Thilow of Philadelphia delivered a lecture on the "Flora of Hawaii" in the ballroom of the Hollenden to a large and appreciative audience, to which the public had been invited through the press. Mr. Thilow presented some very excellent slides of the wonderful flora and the Hawaiian Islands, where, as he stated, there is constant bloom the year round. His slides on the industrial features of the islands were also most interesting and instructive, showing the wonderful and beautiful flowers and plants that one might picturing them through the periods of cultivation to the harvest. A hearty vote of thanks was tendered Mr. Thilow for his lecture.

Nomination of Officers

The Wednesday morning session was called to order by President Weeks at 9.30 o'clock and as there was no unofficed business to come before the meeting, the nomination of officers for 1920 was proceeded with. For president, L. P. Jensen, St. Louis, Mo.; for vice-president, Philip Foley, of Chicago, who requires no introduction to gardeners with his profession; that he had been teaching gardeners with his profession for fifteen years, employing an Italian for several years, and that, at the time of engaging him, he had inquired whether he was a gardener; that the Italian had assured him he was, he had learned his "jio" well, he never goes to the store for Michigan when he needs, he never goes to the store for Michigan when he needs, he never goes to the store, and the gardener who works on his "job"—in other words, a garden labourer. Dr. Wilson submitted suggestions for the gardeners to consider in undertaking a campaign to advertise their profession, and was offered a hearty vote of thanks at the conclusion of his remarks.

Cooperating with the School Garden Movement

O. M. Eastman, supervisor of the public schools of Cleveland, addressed the meeting, stating that he was attending the convention to learn what co-operation the schools could secure from the National Association of Gardeners. He spoke of the great interest that the city of Cleveland is taking in backing and promoting gardening. Up to 1919, more than $500 had ever been spent in one year for this purpose. On the day previous to the convention, an appropriation of $23,000 was presented to the city to be spent in promoting gardening during 1920, and the schools were looking for guidance on how to spend the money properly. He sought the cooperation of the association to suggest ways by which the most practical and efficient methods of gardening could be introduced into the schools, and on a motion, duly seconded and carried, President Weeks appointed a committee consisting of M. C. Ebel of New York, G. H. Pring of Missouri, and A. Smith of New Jersey, to confer with Mr. Eastman and the association's aid at the disposal of the schools of Cleveland to further the interest in gardening.

Cooperation Between Estate Owners and Association

The subject of the cooperation between the country estate owners and the national association was next taken up by Philip Foley, of Chicago, who explained the close co-operation between the gardeners and their employers, urging the men to interest the employers in the aims and efforts of the association, and whenever possible, to enlist the employers as members of the association to further their interest in the work in which the association is engaged. Mr. Foley related a number of instances of recent propaganda intended to widen the breach between employer and gardener instead of cementing a greater confidence, and in most cases each showed them due to purely selfish motives and not to acts of philanthropy.

A general discussion ensued after which adjournment was announced until Thursday morning at 9 o'clock, and the visitors became the guests of the Cleveland members at luncheon in the Hollenden.

Automobile Trip to Parks and Estates

Following the luncheon the convention party gathered at the entrance of the hotel, where they entered automobiles, and, as guests of the Cleveland metropolitan parks, proceeded along the Lake Shore Boulevard through the parkway to the beautiful estate of Mrs. F. F. Preston, which is located on the outskirts of the city and comprises about sixty acres. The party here formed small groups and visited the grounds and all of which were found under the best state of cultivation. From this estate, the party continued to the S. H. Severance estate, comprising some 300 acres. Here the farms and cattle were beautifully kept, and the magnificent evergreen plantings. The visiting members were rapt impressed with the beauty and general lay-out of both of these estates, which although planted but a few years and comparatively new places, have the appearance of estates much longer established.

Leaving the Severance estate, the party returned to headquarters through the parks, and some of the fine residential thoroughfares.

The Annual Banquet

On Wednesday evening the annual banquet was held in the ballroom of the Hollenden. (Unfortunately a flashlight photograph taken of the party did not turn out well to permit its reproduction in these columns.) A fine menu was provided and an excellent orchestra and soloists furnished entertainment, while the dinner was being served. The banquet hall was artistically draped with the national and allied colors, while palms, other potted plants and cut flowers completed the decorations.

Philip Foley, of Chicago, who requires no introduction to the gardening fraternity as a genial toast-master, presided over the banquet. Congressman M. L. Davey of Ohio, who was the association's guest of honor for the evening, made the principal address of the evening, dinner and the public meeting at the hotel, and by the great majority of people in this country to-day, and that it falls to the members of the gardening profession to correct the idea, prevalent in the minds of the public, of what a gardener is. This, Dr. Wilson declared, could be done through the organized publicity campaign, in which the public the distinction between the gardener who serves in his profession and the gardener who works on his "job"—in
The speakers following Mr. Davey included a long list of celebrities of the horticultural world, both national and local, among whom should be mentioned Mrs. Mary B. MacMachan, wife of the late James MacMachan, whom she succeeded as superintendent of the George F. Baker estate. "Inlaigh," Tuxedo Park, N. Y., and who is the only woman member of the national association.

Election of Officers

On Thursday morning the polls for the election of officers were opened from 9 to 9:30 o'clock, resulting in the following elections: President, L. P. Jensen, St. Louis, Mo.; vice-president, D. L. Mackintosh, Stillwater, Minn.; treasurer, Thomas W. Heid, Lake Forest, Ill.; secretary, Mrs. C. E. Marmion, N. J.; trustees for 1920, Peter Duff, Orange, N. J.; William Waite, Rumson, N. J.; Arthur Smith, Belmar, N. J.; Robert Weeks, Cleveland, O.; William H. Griffiths, Detroit, Mich.

Co-operation With Landscape Gardeners

M. C. Ebel reported that he had been approached by a representative of one of the foremost landscape architects of the West, on the subject of more united cooperation between the landscape architects and the practical gardeners, who realized the short-comings of his branch of the profession—that it is impossible for landscape architects, or landscape gardeners, as some choose to call themselves, to secure a thorough knowledge of their branch of gardening through a short college course, or through correspondence courses. Interlopers among the landscape men are just as detrimental to them as they are to the practical gardeners. Mr. Ebel referred to a number of instances that have been brought to his attention where practical gardeners have been put to much annoyance and inconvenience by having incapable landscape gardeners introduced on the places, but contended that if the gardeners would properly direct the attention of the employers to the inefficiency of some of these landscape gardeners, they would not long continue them. The entire subject evoked considerable discussion, but no definite action was taken in the matter.

To Assist Disabled Soldiers

Mr. Preston of the Federal Board of Vocational Education for disabled soldiers was next introduced by President Weeks to address the convention on the work of his Board to interest the members of the national association in it. Mr. Preston explained that boys disabled in the war are given every opportunity to take up a vocation for which they are fitted, and that many of them are boys who desire to enter some branch of horticulture or floriculture. The government allows the boys $80 a month if they are single and $115 if they are married, with extra if they have dependents, while they are learning a vocation. The members manifested great interest in the work of the Board as presented by Mr. Preston, and after some discussion from the floor, it was moved and carried that a special committee be appointed to consider plans to present to the next convention on which it can act. The recommendations contained in the report of the Service Bureau asked for an appropriation of $1,200—$1,500 to advertise the Bureau during the coming year; also to provide for a full-time clerk as an assistant to the superintendent to look after the details of the office, for which the present income of the association is not sufficient.

Association Opposed to Payment of Commission

President Weeks next called on the committee appointed to consider the communication received from the Monmouth County S. A. H. C. A. S. C. A. C. A. requesting the national association to do and asking the members to contribute towards a fund towards the profession of gardening today offers better inducements to the average boy than any other vocation. The members manifested great interest in the work of the Board as presented by Mr. Preston, and after some discussion from the floor, it was moved and carried that a special committee be appointed to consider plans to present to the next convention on which it can act. The recommendations contained in the report of the Service Bureau asked for an appropriation of $1,200—$1,500 to advertise the Bureau during the coming year; also to provide for a full-time clerk as an assistant to the superintendent to look after the details of the office, for which the present income of the association is not sufficient.

Suggests Slogan for Gardeners

Mrs. Ella Grant Wilson, who had charge of the convention publicity, offered the association a slogan which she supported with a short talk. Her idea was that "Make America Beautiful" offers better inducements to the average boy than any other vocation. The members manifested great interest in the work of the Board as presented by Mr. Preston, and after some discussion from the floor, it was moved and carried that a special committee be appointed to consider plans to present to the next convention on which it can act. The recommendations contained in the report of the Service Bureau asked for an appropriation of $1,200—$1,500 to advertise the Bureau during the coming year; also to provide for a full-time clerk as an assistant to the superintendent to look after the details of the office, for which the present income of the association is not sufficient.

Quarantine Bill No. 37

Quarantine Bill No. 37, relating to the prohibition of the importation of plants and bulbs to this country was severely criticized and its drastic rulings condemned. It was the consensus of opinion of those present that every effort should be
made to bring about a modification of this discriminating and undesirable law, and the appointment of practical horticulturists on the Federal Horticultural Board. It was moved and carried that the National Association of Gardeners endorse the resolution adopted by the Society of American Florists and Ornamental Horticulturists at their convention held in Detroit the previous week, which reads as follows:

"Resolved: That this convention respectfully offers the following constructive suggestions:

That Quarantine Bill No. 37 with Regulations be rescinded in its place such as may be made by correct methods of inspection will within reason, properly safeguard the country against the invasion of foreign pests and diseases, but which will not unnecessarily interfere with the horticultural interests of the country.

That at least two members of the present F. H. B. of five bureau chiefs be replaced by practical horticulturists who will not be entirely out of touch with the horticultural trade and its requirements.

Or that three practical horticulturists be added to the Board's present membership of five.

That this reorganized Board call hearings at a time when those interested can attend, giving separate hearings to each of these important classifications: (1) Orchids; (2) Bulbs and Roots; (3) Nursery Stock; (4) Roses; (5) Dracaena Canes and other similar raw materials."

Address by Congressman M. L. Davey

President Weeks announced that the convention would adjourn to the dining room, adjoining the meeting hall, to become the guest of Congressman Davey at luncheon. After luncheon was served, President Weeks introduced Congressman Davey, who said in part:

"That a modification of Quarantine Bill No. 37 could only be secure through the united co-operation of all interests concerned in having this bill modified. One way of bringing this about, Mr. Davey suggested was to have every man interested write to his Congressman, asking for a hearing before the Agricultural Committee of Congress. He most interestingly related the workings of a Congressman's official life; how he studies the interests of his constituents, and how he strives to serve his constituents to whom he feels accountable as their representative.

With regard to the subject of the gardener and his profession, Mr. Davey directed attention to the opportunity presented itself to the gardeners to promote their profession by associating themselves with the great educational movement to teach boys and girls the fundamentals of practical gardening through the school systems, and by drawing their attention to the advantages offered by the gardening profession as compared to other professions, to have young men leaving school engage in it. The great outdoors in which the gardener pursues his vocation holds inducements to many young men which should be much more attractive to them than the White Ways of the large cities.

"And his vocation recognized as a profession, said Mr. Davey, the gardener must assume the aspect of a professional man in relation to his employer and with others with whom he comes in contact. Mr. Davey commented on the action taken by the association in establishing a headquarters in New York City as a progressive step as it provides for the gardeners through their national association a clearing house through which their interests and those of their profession can be protected and advanced.

"Mr. Davey held the close attention of his hearers throughout his entire address (which will be published more fully in the complete report of the convention's proceedings) and received a hearty applause at the conclusion."

J. H. Francis, superintendent of schools of Columbus, Ohio, and former director of the United States army garden movement, followed Mr. Davey with a few timely remarks, stating that educators are commencing to realize that practical training is as essential as theoretical knowledge, and that practical training is being introduced into the schools more and more, to together with book learning. He humorously told of the student who called a young pupil to account who confessed he had lingered in the woods to observe the plants and flowers, when, as he said, she should have been in her class room taking her botany lesson. Also of an Irishman who applied to a school board for a position as janitor and was rejected because he could not read or write. Discouraged he sought to the outskirts of the city and found work on a truck farm. He soon after engaged in farming for himself, prospered in time bought up the defunct municipal water plant, and street railway system of the town. Entering the bank of the town one day to transact business, being asked to sign his name, he replied to the president of the bank that he could neither read nor write. The president, marvelling on his success without this necessary knowledge remarked: "Just think what you might be if you could read and write." "Yes," replied the Irishman, "had I known how, I probably would be the janitor of Public School No. 3."

Mr. Francis' points were thoroughly enjoyed by his hearers, and at the conclusion of his remarks, the 1919 convention was adjourned with the singing of "America."

The Committee on Final Resolutions

Whereas the National Association of Gardeners in convention assembled in the city of Cleveland, has enjoyed the generous and cordial hospitality of the local members of the association, and of the Hon. M. L. Davey, their visit to the park systems and private estates;

Resolved: That we extend our most hearty and sincere thanks of appreciation for the many courtesies and opportunities to all who in any way participated in making the convention the great success that it has been.

Respectfully submitted,

THOMAS W. HEAD,
ERNST GUTER,
D. L. MACKINTOSH,
Committee on Final Resolutions.

The Bowling Contest

The bowling contest took place Thursday afternoon at the Calumet alley and resulted in the Lake Forest team coming in first, New York second and Cleveland third.

Meeting of Trustees and Directors

An executive meeting of the board of trustees and directors was held on Tuesday morning, August 26, in the Hollenden, the following members being present, Robert Weeks, Thomas W. Head, David Fraser, Ernest Guter, Robert Williamson, Peter Duff, P. W. Popp, Arthur Jackson, Joseph Tansey, and M. C. Ebel.

The work conducted by the secretary of the various committees since the convention in Chicago, December, 1917, were reviewed and endorsed.

An auditing committee consisting of Robert Williamson, Joseph Tansey, and Arthur Jackson, was appointed by President Weeks to audit the books of the secretary and treasurer for 1918 and 1919.

Message from President-Elect Jensen

St. Louis, Mo., Sept. 1, 1919.

Sec'y. N. A. G.

Kindly convey to the members of the association my most sincere appreciation for their confidence in me, which they have expressed by honoring me to fill the important and responsible position of president. I consider it a most vital point to demonstrate that this trust has not been misplaced. I am fully determined to do all in my power to maintain my term of service as an active one, and devote all my efforts to advance the profession of gardening and the interest of the association.

L. P. JENSEN.

Of Interest to Country Estate Owners

The National Association of Gardeners takes this opportunity to place its Service Bureau at the disposal of owners of country estates when requiring competent gardeners, in the capacities of superintendents, head gardeners or assistant gardeners—thoroughly qualified in every particular to assume the responsibilities the positions call for—gardeners truly efficient in their profession.

The Bureau is maintained entirely at the expense of the association and makes no charge to the employer it may serve or to the member it may benefit.

National Association of Gardeners
M. C. EBEL, Secretary
286 Fifth Ave. New York
A REPLY TO MR. MILLER.

The criticism by Mr. Miller of the N. A. G. and the aims of this organization in offering solutions of gardeners' problems cannot be taken seriously by anyone actually acquainted with the N. A. G. Mr. Miller claims to be in sympathy with the gardeners, and asserts that he knows their problems thoroughly. Then with the next stroke of his pen he says that the one and only problem of the gardener is that of protecting himself when out of a job. A serious problem at times we are prepared to admit, but the gardener has other problems, and many of them, too, that Mr. Miller is evidently not yet cognizant of, even if he does thoroughly understand the condition of the gardening profession today.

He accuses the landscape architects of not giving the gardener a square deal, and the nurserymen for commercializing his job. Yet because we have an organization, composed of gardeners, who are finding it more and more necessary to protect their profession, he characterizes it as a "great big joke" and accuses it of evading the question. We would remind Mr. Miller, however, that the N. A. G. is prepared to face the issues that come before it fairly, and fearlessly, we are fighting a just cause for a noble profession. If our critic had a little more and more intimate knowledge of our organization he would not be so much inclined to criticize. We were so disposed ourselves at one time, but one day we ran across those noble and very practical lines of Pope's which we freely submit for Mr. Miller's consideration.

A Rite of Passage is a dangerous thing: Drink deep, or taste not the Pierian spring; There shallow draughts intoxicate the brain, And drinking largely sobers us again.

That one cannot learn to be a gardener through a college, all good men are prepared to admit, but to say that to attempt to educate the gardener is "idiocy" if not evading the question, is most certainly begging it. The proponents of the N. A. G. are accepted leaders of horticultural thought throughout this great country today; men of vision, with an eye for the future progress of horticulture, and a desire to see their profession raised to a level compatible with the intelligence and ability of those engaged in it, and not exploited by any Tom, Dick and Harry, who have worked a few years as a garden laborer.

Onlooker's reference to diplomas for gardeners is a step in the right direction, and one of the most expedient measures the N. A. G. can adopt to exterminate the interloper from our ranks. When a man chooses a profession, and studies at a recognized college or university, and is graduated, he is handed a diploma setting forth his qualifications. Now Mr. Miller agrees with us that no school save that of sightings, that is without a governing body. Now, however, thanks to the organizers of the N. A. G., we are going to have an "Alma Mater."

Protect ourselves, why certainly, every one of the professions today is doing this very thing. A veterinary surgeon, no matter how high he stood in his class, can never practice his calling without a license from the state in which he chooses to practice, more than can a doctor, and both have to show that they are bona fide grad-

But we have a wonderful lot of "Mums" this year, and this is the year to sell them. Finally, I compromised by declaring I was going to tell you we had them, and he could tell you its name, if he wanted to. So now it's up to him. But it's up to you to get yours now, if you want to have them later on.
uates from recognized schools. We are living in an age of progress, where methods of old fail to satisfy. "To verify this further one need only take the recent action of the authorities in the State of Connecticut who have the honor to be pioneers in a movement advocating a state law calling for the examination of all persons practising tree surgery. One cannot stop to question the wisdom of such a step, yet we are apt to wonder why it has not been done before, for who of us has not seen the very finest of trees butchered and mutilated beyond recovery by persons whose only claim to proficiency was their ability to hang out a shingle proclaiming themselves "Tree Surgeons." Surely Mr. Miller cannot avoid the signs of the times in which we live and the onward march of progress.

As for the question as to why should a gardener belong to an organization with nurserymen and commercial growers, surely our critic cannot be serious.

Before the inauguration of the N. A. G. such was the case, and to a certain extent is so today, because then the gardeners had no organization they could call their own and the only opportunity they had was to ally themselves with commercial growers' societies. Many gardeners are still members of these societies for purely sentimental reasons, just as many commercial men are members of the N. A. G. They are contributing their little mite to help the association to get under way, furthermore numbers of commercial men are graduates from the ranks of private gardeners, and realize the necessity of having an organization. Florists clubs are too busy with their own problems to bother about these of the gardener, and so is the S. A. F., and why should they, even if they were so inclined. Gardeners are an intelligent body of men and are able and willing to handle their own problems. If Mr. Miller reads the Gardeners' Chronicle, the official organ of the N. A. G., he will notice that the membership is slowly but surely creeping up, and in time we are going to be a factor to be recognized by allied interests.

Before closing, let us lighten a little more of the darkness with reference to the N. A. G. that is causing friend Miller to stumble so. I presume that since he is so well acquainted with the shortcomings of nursery men whom he accuses of contaminating the gardener, he knows what it means to visit their establishments in search of a job, as well as the seed stores, and allied interests. He may also know what it means to be advised in confidence of a position going. No one else has been apprised of it, and so he hurries round to ascertain whether or not he can get an interview with the prospective employer. But, Lo! and behold! when he arrives he finds oftentimes as many as a dozen others bent upon the same errand as himself. None of them knows anything about the place, the responsibilities, the qualifications of the man required, salary, or anything and very often one finds each underbidding the other, and the man securing the job reviles himself for being underpaid before he has been on the place very long. If there is dignity in drumming the seed store, or the nurserymen's establishment, in search of a job we have yet to see it, and mind you, we have played that game, too, seedsmen and nurserymen are only human, they cannot please everyone, but they do the best they can, and they want to retain the good will of the gardener.

Mr. Miller would find a very different state of affairs when the N. A. G. is applied to for a gardener. But, Mr. Secretary, you could tell better than anyone else how you proceeded, so why take up more of your valuable time. Henry Gibson.
NEWPORT (R. I. BRANCH
N. A. G.

The Newport Branch of the Association held its monthly meeting August 1. We were very pleased to have with us the several members from New Bedford, Mass., and vicinity, they are very enthusiastic members, and it was very encouraging having an exchange of ideas. Several of our members visited some of the estates where these visiting friends have charge, were well received and had a splendid time, all expressing their opinion that these exchange visits are very beneficial and helpful, as well as the fact that new friends are being made as our mutual interests draw us closer together. It was a great pleasure to our boys to be welcomed by one estate owner personally and given the glad hand, also the cigars, he expressed himself as being delighted to have them come and visit his estate, he made everyone happy by his democratic nature, and showed the right spirit as an employer. He is very interested in the work of our association and is willing to help in any way he can. Returning to our meeting, several subjects were taken up and discussed, one was a need for reorganization, the establishment of different grades such as superintendents, head gardeners, single-handed gardeners and assistants, that a complete record of every member be kept on file with the service bureau, which would be a means of getting the right man in the right place. The enclosed letter was ordered sent to our National Secretary and read before the annual convention.

FREDERIC CARTER, Secretary.

ST. LOUIS ASSOCIATION OF
GARDENERS.

The St. Louis Association of Gardeners met at the Zoological Garden, St. Louis, August 3, at 9:00 o'clock a. m.
The meeting was called to order by President L. P. Jensen, with fifty members present. The national convention being freely discussed, the club being assured of representation at Cleveland by Mr. G. H. Pring, horticulturist of the Missouri Botanical Garden, and Mr. S. M. Beer, landscape foreman for the Missouri Pacific Railway.

Mr. Muscoff, landscape architect to the Zoo, conducted the members throughout the grounds, pointing out the improvements and features undergoing development. The members were all presented with a colored plan showing the present and tentative developments.

Vice-President Moritz drew attention to the defoliation of shrubs by the ostriches, with the exception of a large bed of Tama-hix, this glaucous, covered shrub being always passed up as undesirable by both male and female.

G. H. PRING.

NASSAU COUNTY HORT. SOCIETY.

The annual basket picnic of the above society was held at Appleby's Grove, Glen Cove, on Friday, August 6. There was a large attendance and competition in the various sports was keen and exciting.

It's better to paint this fall than next spring

Better for you.
Better for your buildings.
Better for you, because it's one more thing done that won't need doing next spring when everything and everybody is so rushed.
Better for you, because the six gallons that might do now may have to be twelve after another winter of weather's wear. That means twice the paint, twice the labor.

Painting cost doubled.

Whatever the present cost of paint may be, there is one way you can substantially reduce it. Use Lowe's High Standard. Not that it costs any less than others, but that it has a way of going further and costing less to make it go.

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DUNEED, ILL.
and are already looking forward to our next. Quite a number of the old school surrounded the younger blood with their fleetness of foot, but had some satisfaction in knowing the penalty was paid the following day. The executive committee is to be congratulated on the arrangements made. Among the many features of the day the tug-of-war seemed to be the leader. John W. Everitt and Mr. Wild chose the contesting teams. There was keen, friendly rivalry. John W. Everitt, assisted by John F. Johnston and Ernest Westlake, deserve credit for the able manner in which each event was carried out.

The monthly meeting was held on Wednesday, August 13, President Joseph Adler in the chair. Five petitions for active membership were received. Next monthly meeting will be held on Wednesday, September 10.

THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY.

The regular monthly meeting of the above society was held in Greenwich, Conn., August 8. There was a good attendance for President W. Graham in the chair. One proposal for membership was received. The fall flower and vegetable show came up for a good deal of discussion; it was finally decided to leave it in the hands of the executive committee, also the matter of having an entertainment for our returned soldier members. Robert Williamson called attention to the ravages of a small caterpillar which is eating pole lima beans. This subject brought out a good discussion on the various methods of spraying. Harry Wild, president of the Stamford Horticultural Society, was present and spoke on various subjects. Mr. Wild promised to read a paper on perennials at our next meeting, which will be Friday, September 12.

The outing and games, which were held at Rye Beach, with a large delegation from the Tarrytown Horticultural Society, was a great success, the weather was fine and an enjoyable day was put in with swimming, dancing, and other amusements for which Rye Beach is noted, but the shore dinner was not up to our expectation.

JACK CONROY, Secretary.

AMONG THE GARDENERS

Robert Cameron, for the past thirty-one years head gardener of the Harvard Botanic Gardens, Cambridge, Mass., recently resigned that position to accept the position of superintendent on the C. Lewis estate, Ipswich, Mass.

A. F. Thatcher, for a number of years manager of the Mt. Desert Nurseries, Bar Harbor, Maine, has accepted the position of superintendent on the C. Lewis estate, Mahwah, N. J.
John F. Proctor, who for seven years was head gardener on the Vincent Astor estate, Rhinebeck, N. Y., has accepted the position of general manager of the B. B. M. Carpenter properties in and near Wilmington, Del., comprising the home grounds and two farms.

J. H. Francis recently resigned his position as superintendent of the A. B. Dick estate, Lake Forest, Ill., to accept a similar position with F. F. Drury, Cleveland, Ohio.

William Robertson, late of the Pepper estate, Jenkintown, Pa., has accepted the position of superintendent of the George McFadden estate, Villa Nova, Pa.

Edward Trethewey, who previous to his enlistment in the Canadian army, was superintendent on the Crane estate, Ipswich, Mass., has accepted the position of superintendent of the George McFadden estate, Villa Nova, Pa.

Robert Crighton, who has returned from service in the army, secured the position of head gardener on the Charles Bradley estate, Convent, N. J.

George H. Palmer has taken the position of gardener on the J. E. Parson estate, Lenox, Mass., succeeding Gordon Macmillan, who recently resigned.

Thomas Evans, formerly head gardener to G. C. Fuller, Fox Point, Wis., has secured a similar position with W. V. Kelly, Lake Forest, Ill.

**OF GENERAL INTEREST.**

The Morris Co., N. J., Gardeners' and Florists' Club will hold its annual fall show this year in the Armory, Morristown, N. J., on October 29 and 30. For some years past this show has been held in Madison, N. J. An attractive schedule has been arranged, copies of which can be secured from Thomas Reagan, secretary, 139 Madison avenue, Morristown, N. J.

A Dahlia exhibition will be held on Saturday and Sunday, September 20 and 21, in the Museum building, New York Botanical Garden. Schedules will be sent on application to the secretary, George V. Nash, New York Botanical Garden, Bronx Park, New York City.

In this connection attention is called to the large collection of Dahlias, located along the west border, just north of the Harlem Railroad plaza, New York Botanical Garden. A space over 400 feet long and 12 feet wide is devoted to this collection, which comprises about 300 kinds and something over 600 plants, representing all the types of this increasingly popular flower. A visit to this collection will well repay either the amateur or professional gardener. The plants of each type are grouped together, so a comparative study is readily made.

---

Blackmore & Langdon’s Delphinium Seeds

ROHALLION, Rumson, New Jersey

June 25th, 1919

John Scheepers Inc.
New York

Dear Sirs:

I am very pleased to report to you, that the Delphinium plants raised from Blackmore & Langdon's seed supplied by you are very fine indeed. In fact this is the finest strain of hybrids that I have ever seen.

Other supposed good strains that I had both in seeds and plants from other dealers, are not anywhere near in the same class.

Yours very truly,

(Signed) W. H. WAITE

Fresh seeds, just arrived from England in limited quantity, are ready for mailing in large packets at $1. each.

JOHN SCHEEPERS, Inc. Flowerbulb Specialists 2 Stone St., New York
DREER'S HARDY PERENNIAL PLANTS
SPRING FLOWERING BULBS

The Fall is an excellent time to set out Hardy Perennial Plants, Vines, Shrubs, etc. We make a specialty of these plants and grow in large assortment. A complete list will be found in our AUTUMN CATALOGUE, also Spring-flowering Bulbs which must be planted this Fall for blooming next Spring.

A copy mailed free to anyone mentioning this publication.

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FREESIAS HYACINTHS TULIPS
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They will give lasting results and are perfectly adaptable for both outside and inside growing conditions.

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Master Brand Pulverized Sheep Manure
Guaranteed Analysis 2.50% Ammonia, 1.50% Phos. Acid, 2% Potash
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The comforts and products of a country home are increased by employing a competent gardener; if you want to engage one, write us. Please give particulars regarding place and say whether married or single man is wanted. We have been supplying them for years to the best people everywhere. No fee asked.

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Specimen American Arbor Vitae
7 to 12 ft. high, the very finest quality to produce immediate effects. These trees should be seen; they are unusually good shaped and have been transplanted. They lift with fine ball of earth. Also Mugho Pines is another item which I have in unusually fine quality, 2½ to 3 ft. broad. A visit to my nurseries will pay anyone that needs to buy many evergreens. My nurseries are only 18 miles from Philadelphia.

ADOLF MULLER,
DeKalb Nurseries, Norristown, Pa.

DO you find the columns of the GARDENERS' CHRONICLE interesting? Certainly you do, or you would not be perusing them. Your gardening neighbor, were he familiar with them, would become equally interested. Why not recommend the GARDENERS' CHRONICLE to him as a guide to his garden work? He would appreciate it—and so would we.
Two Important U-Bar Improvements

We agree entirely with some of you gardeners, that at times, the wall ventilation on the usual U-Bar houses, is not enough; nor in the right location.

To meet such ideas of the gardeners, we will gladly change the gutter from the sill, and place it at the bottom of the eave curve, hingeing to it a continuous row of ventilating sash.

We did this, in the U-Bar houses, for the J. F. Dodge range at Grosse Point, near Detroit.

Another thing we did on the Dodge houses, was to stop the U-Bars at the gutter, instead of carrying them right down to the sill.

The U-Bars on the Dodge houses, likewise, all stop at the vent header, instead of continuing on to the ridge.

Built the usual U-Bar way, this continuing of the U-Bars is necessary.

Built our Semi-Curvilinear way, it is not. Send for further information about the Semi-Curvilinear way.

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Bugs, blights and plant losses due to both, rob the planters of this country of seven hundred million dollars' worth of truck and garden crops each year. The worst pests are, perhaps, the lice of many species that suck the plants' life blood. To fight them effectively, use a contact poison.

Aphine has been the standard contact remedy for use against green, black and white aphis as well as thrips, currant worms and other soft-bodied insect pests for many years. Especially adapted for home garden use since it is put up in convenient quantities, quickly diluted, and easily applied as per direction on each can.

Fungine for Fungi

A cleansing liquid sulphur spray, equally effective to combat blight on vegetables, fruits and flowers.

Vermine for Worms Completely eradicates, worms, maggots, root lice and all other pests at work beneath the soil.

Aphine, Fungine and Vermine are for Sale at all Good Seed Stores

Aphine Manufacturing Co., Madison, N. J.
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to Davey Tree Surgery

The Davey Tree Expert Co., Old Westbury, L. I.
Kent, Ohio

Gentlemen: Your request concerning conditions of the large
trees treated on Mr. Whitney's estate I gladly accede to.
Considering the bad condition you discovered after you had
started with the big ash, I certainly think you made a wonder-
fully good job of it. The same must be said of all the others
you treated, for they are now looking well and the bark is heal-
ing nicely over the cavities.
I think it is splendid achievement in Tree Surgery and gives
you great credit. While watching the work of your men, I
noticed how very careful they were, even to the smallest detail,
and feel convinced that to insure success to such important
work you must have a force of well-trained men who thor-
oughly understand their business.
Wishing you the success you deserve,
Very truly yours,
THOS. GRIFFIN, Superintendent

The saving of priceless trees is a matter of first importance on
every estate. Davey Tree Surgery is a fulfillment of the maxi-

mum expectations of those who love and value trees. A care-
ful examination of your trees will be made by appointment.

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Every real Davey Tree Surgeon is in the employ of The Davey Tree Expert Co.,
Inc., and the public is cautioned against those falsely representing themselves.
In Answer to
“What Does It Cost?”

BRIEFLY, an attractive little house like this one costs less in proportion to the present cost of building, than you would imagine.

Costs less, mainly because we have found out how to make the cost of their making less. Instead of making endless special houses to meet really unimportant personal preferences, and individual caprices; we are making a certain few standard houses, selling at certain standard prices.

They are our highest type of construction in every particular.

But instead of making up one special one; one at a time; we run literally miles of them through our plant, at a time.

Just naturally, each house is more uniformly perfect.

But quite as important to you, its cost is uniformly less than the old, make-one-at-a-time-way, which we followed before the war.

All these standard houses, please bear in mind, are sold fully equipped in every particular. There are none of those numerous extras so exasperating in connection with the usual building.

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NEW ROSES for 1920

We offer to you for 1920 these new Roses, which are not only new, but, we believe, better. They are not only distinct from each other, but are also distinct from any other varieties now in commerce. To the Montgomery Company, who raised Mrs. Charles Russell and Hadley, must go the credit for Crusader and Pilgrim. To the old rose veteran, John Cook, goes the honor of having raised the seedling which he has chosen to name Mrs. John Cook. All these Roses are growing in large quantities in Cromwell, and from Cromwell we shall disseminate these sterling novelties. We invite you here to see them.

CRUSADER. (Montgomery.) A big, strong-growing variety, robust and rugged in every characteristic. The growth is heavy and the flower stems are strong and heavy, producing very little blind wood. It is free growing and free flowering, and the blooms are truly characteristic of the variety—big and double, and, in color, a rich, velvety crimson. These large, heavily petaled blooms open perfectly and are amply supported by the strong-necked, heavy flower growths. Crusader takes water well and will keep under almost any conditions. The plant is free from canker and does not show any tendency to die at the union of scion and stock. It breaks freely from the hard wood and is a strong-growing, free-flowering red Rose.

PILGRIM. (Montgomery.) In color, a beautiful shade of bright rose-pink. The bud, which opens perfectly, is long and of ideal form. Pilgrim is a Rose of good substance and petalage, and at any stage of development is perfect in color and form of flower. Its pronounced tea fragrance will attract all rose lovers. It is prolific and highly productive of first quality blooms. The stems are straight and strong, and there is no tendency to weaken at the neck. It takes water freely, and this quality makes it a good Rose for the store man, as it will keep when cut and retain its color and fragrance. It is a wonderful grower, propagates easily, grafts nicely, grows freely, and throws strong bottom canes early, making heavy, profitable plants on the bench in a very short time. It makes little blind wood and is comparatively free from disease, resisting black-spot and mildew to a great extent. It is the pink Rose to grow.

MRS. JOHN COOK. (John Cook.) White, suffused with delicate pink, describes the color of this strong-growing, big-flowered daughter of Ophelia. The color varies with the season, the flush of pink being more pronounced during cool weather, while the Rose is almost white during the long days of bright sunshine. In bud it is nicely formed, the mature flower opening cup-shaped but expanding fully to a large and finely-formed bloom. It is a strong-growing plant on the bench, comes away quickly, and the growths are strong, making a big plant which is very prolific. To the grower who needs a white Rose, who can overlook a flush of pink, and who fails with Double White Killarney, this new Rose will prove a boon. To the grower who grows White Killarney well, Mrs. John Cook may also be welcome. It is bigger and better in summer, and, with its delicate pink in dark weather, is a very charming color.

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A large stock of Laelie Cattleyas, Hybrid Cattleyas, Brasso Cattleyas, Odontiodas, and other choice hybrids.
We specialize in supplying the private trade. Let us figure on your requirements—our quality is second to none.
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Fall catalog now ready. A postal will secure one.

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If YOU will come and see these plants, I will certainly get an order

500 double flowering pink and white JAPANESE CHERRY
10,000 BUXUS Suffruticoso, 6 in.
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10,000 EUONYMUS Radicans Vegetus, 2-4 yr., strong and bushy.
10,000 EUONYMUS Radicans Vegetus, Rooted Cuttings.
500 AZALEA Amoena, 18 in.
1,000 AZALEA Amoena, 15-18 in.
1,000 AZALEA Amoena, 12-15 in.
10,000 Hall’s HONEYSUCKLE, 2 yrs.
3,000 TAXUS Compacta, 18 in.
1,000 TAXUS Compacta, 2-3 ft.
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2,000 MUGHO PINES, Specimens, 2-3 ft.
2,000 CORNUS Florida, 4-5 ft.
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5,000 LEUCOTHOE Catsbaei, 15-18 in.
1,000 CLETHRA Alnifolia
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4,000 AMERICAN ARBOR VITAEs, 3-4 ft.
2,000 AMERICAN ARBOR VITAEs, 4-5 ft.
1,000 AMERICAN ARBOR VITAEs, 5-6 ft.
All these ARBOR VITAEs are transplanted, growing apart, and finest quality.
500 RHODODENDRON Catawbiense, Transplanted Clumps, 18-24-30 in.
5,000 HEDGEWICK CLUMPS, Finest quality.
50,000 GERMAN IRIS, in 40 varieties.
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in 20 varieties,
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THIS little curved eave greenhouse and modest workroom nestles right up against the garage so that the heating plant in the workroom supplies heat to both the greenhouse and the garage.

A layout of this size is ideal for the small place. It is compact, attractive and of ample size to supply the home with a succession of blooms as well as decorative plants.

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THE GARDENER—SPECIALIST

A specialist in any profession cannot be the efficient man he should be if he lacks the proper equipment; he cannot use his knowledge to the best advantage. Gardeners are specialists in their line and understand fully the value of an efficient greenhouse.

The Lutton V-Bar, which we feel justified in calling "the Gardeners' Greenhouse," was designed to meet their particular needs and embodies many of their best ideas. These garden specialists appreciate the light, strong V-Bar construction, which assures a maximum of sunlight, and perfect ventilation, and the scientific heating plant requiring only a minimum of attention.

We shall be glad to have the gardener drop in and see us at our New York Office and talk over his greenhouse problems or tell us when to call on him.

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SPRING FLOWERING BULBS

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Sterilized Sheep Manure
Guaranteed Analysis
Ammonia Phosphoric Acid Potash
2.0% 1.50% .1.00%

Concentrated Vine & Plant Manure
Guaranteed Analysis
Ammonia Phosphoric Acid Potash
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Precipitate Phosphatic Manure
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Master Brand Manures are thoroughly sterilized in Rotary Direct Heat Driers. Absolutely free from all Live Weed Seeds and Fungus diseases. Does not contain 15 to 30% excess moisture as is found in all air-dried manures. Will not rot out the Bags when placed in dry storage. Are adaptable for the feeding of a greater variety of crops than any other type of fertilizers.

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"A Garden for every home"

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Things and Thoughts of the Garden

THE ONLOOKER

October is the month of highly colored leaves; the time when nature puts on its gayest mantle of color and the best time of all to break away for a brief spell from the everyday routine of life and leisurely enjoy the beauties of nature. Almost before we realize the heat of midsummer days are past once more we see reminders of the near approach of autumn days. The Goldenrod, harbinger of the harvest time, has bedecked the fields and roadsides in all its splendor, while intermingling and continuing, the ubiquitous Aster in varied form and color gives unmistakable evidence of the close of another flowering season. The Red Maple, flaming up here and there in the early days of September, leads off in the grand display of brilliant autumnal foliage, then slowly but none the less surely a change goes on in all the other deciduous trees until eventually, and sometimes it seems almost as if by magic, the whole countryside appears clothed in all the colors of the rainbow, a wonderful feast of color indeed. Those fortunate people who have traveled in many lands tell how this autumn splendor of our eastern States is scarcely equalled and certainly not surpassed in any other part of the world and this we may well believe, for it is difficult to imagine that anything could be more gorgeously beautiful than the autumn foliage of the average season.

We all enjoy this brilliant display of color and like to have as much in our gardens as we can, but still perhaps not so much attention is given to the production of fine autumnal color effects and combinations as the subject deserves. With shrubs especially we are likely to pay more attention to their flowering qualities than we are to the color of their dying leaves. One shrub which has nothing at all to recommend it from a flowering point of view but which is right in the front rank for its decorative qualities at this season is the Japanese Burning Bush, _Euonymus alatus_. Seldom we see it under conditions permitting of the fullest development. In an open position and fairly good soil it will grow into a shapely bush about eight feet high and ten or twelve feet through, interesting at all times because of the distinctive corky wings on the branches, but when the leaves take on that deep rose color, quite unlike that of any other plant we know of, it is indeed an object of great beauty. A particularly valuable shrub, especially for large places where space permits of mass planting for bold effects, is the native High Bush Blueberry, _Vaccinium corymbosum_, which makes a wonderful splash of bright scarlet late in the month. While this shrub is often found growing in wet places in the wild it succeeds in any good garden soil and is very attractive at the flowering season in early summer. _Aronia abutilifolia_, one of the native Chokeberries, is another excellent plant for grouping in the shrub border, being particularly beautiful at this season with the bright red leaves and clusters of small red fruits. Two shrubs very well adapted for planting on banks are the aromatic Sumach, _Rhus canadensis_, and the Japanese Barberry, both of which end up the season in a blaze of color. Another plant which may be permitted to ramble over a bank or any other rough place to excellent advantage is the Woodbine or Virginia Creeper, _Ampelopsis quinquifolia_, and at this time of year we often see it hanging in festoons from tree trunks and trellises making very lovely effects. Highly colored autumn leaves must also be counted as one of the good qualities of that incomparable and well-known vine, the Japanese or Boston Ivy, _Ampelopsis Veitchii_, to give its best known though not most up-to-date scientific name, which according to the latest ruling on the subject is _Parthenocissus Tricuspidata_. We may be scientifically incorrect when we call this plant by the former name, but truth to tell we never mention the latter except on very special occasions.

* * *

Of trees which are prominent in this autumnal pageant there is a wide choice of variety from which to make a selection for lawn plantings, but let it suffice at this time to mention just a few of the most notable. _Liriodendron tulipifera_, the Tulip Tree, a tree of majestic appearance, is unsurpassed amongst the trees whose leaves take on a clear yellow color. Planters find this not one of the easiest trees to transplant and do not recommend fall planting for this highly desirable lawn tree. The leaves of the Maidenhair Tree and the Japanese (Cevcidiphylum) also turn yellow, both are in the front rank as specimen trees, the latter especially well suited for smaller gardens. Among the Oaks the most brilliant is the Scarlet, _Quercus coccinea_, a shapely specimen of which stands out as an object of great beauty as the highly colored leaves shimmer in the sunlight of an ideal October day. The Sugar Maple, _Acer Saccharum_ develops into a specimen tree of noble proportion, and as the leaves assume
of the most striking features of the New England hill-sides at this season. Very select is the Sweet Gum, Liquidambar Styracifolia, a medium size tree very striking indeed when the star-pointed leaves take on their rich coloring of crimson and orange. A group planting of Flowering Dogwood Cornus fibrida can usually be depended upon as a showy feature with tints of glowing red predominating and oftentimes augmented by the presence of scarlet fruits. An exceptionally beautiful small tree is the Chinese Sumach, Rhus javanica, better known perhaps as R. Osbeckii or R. Semialata, the latter name derived from the winged leaf stems, a distinguishing feature. The leaves assume a deep glowing red making it very prominent in the shrubbery, where it is also attractive in mid-summer when bearing showy clusters of white flowers.

While these beautiful autumn leaves are most pleasing to the eye they have a far greater practical value when they have been fully decayed. The crying need of much of our garden soil is humus, and in the abundance of fallen leaves we have the raw material free at hand. It is a shame to see so much of this raked into the roadways and burned when there is such need of preserving it for future use in the enrichment of the soil. True, it is a little more work to collect and save the leaves, and a rotted leaf-pile is not exactly attractive to look upon but in most places it would be possible to obviate any objection along this line by screening with a hedge or similar planting. A pile of three-year old leaf-mold is a good thing to dig into and I doubt if any of us have ever had enough of it to use as freely as we would wish. When in this advanced state of decay it is fine to use as top-dressing on the lawn, and now that the mowing has been finished for the season there is no better time to apply it. Careful gardeners save all the old soil from plant benches and pots; this being sweetened by exposure to air and the assistance of lime can then be used to fine advantage for the same purpose. A fifty-fifty mixture of this and leaf-mold can be recommended as an excellent stimulant for a run down lawn.

Speaking of top-dressing, how little we care for our lawn trees in this respect. I mean in a general way, for some there are of course who give timely thought and attention to tree requirements. We prepare a station with good soil for them at planting time perhaps, then think we have done our full duty by them in this respect when we have thus helped them to a good start. A good start is an advantage in any undertaking but its value is lost if we fail to follow it up. In the case of trees the need of this is not immediately apparent. They become established and make good progress in the years that they are young and at the height of their vigor. We prune and spray in our endeavor to obtain perfect specimens but seldom do we undertake to feed the trees sufficiently to enable them to maintain the best possible condition. As with human beings so it is with plants, both in a well nourished condition can better withstand the diseases to which each are liable. Applications of wood-ashes or bone-meal applied in early spring will work wonders as a stimulant in many cases, but the most satisfactory method of restoring undernourished trees back to a healthful condition is to provide some fresh soil for the encouragement of new roots. Here is where we find the value of a good leaf-pile again and we can restore to the tree its natural food. Mixed with loam and spread as a top-dressing round about the tree, after first loosening the old hard surface, it will invigorate the tree with new life and materially prolong its years. It is well to remember that most of the active roots are near the outer spread of the branches. In extreme cases it may be advisable to dig out a trench around the outer edge of the tree and fill in with good compost. One of the finest specimens of an American Elm that I know of was treated by this method a few years ago, and restored from a semi-starved condition to its present state of vigorous health. This is a good month to undertake such work and we can rest assured that work of this nature is not wasted effort. A tree that is always maintained in well nourished condition is less likely to need the expensive operations of a tree surgeon in its declining years.

Trees growing in the woods have their food supply maintained not by applications of wood-ashes, bone-meal or stable manure, but from their own annual leaf-fall which accumulates over their roots and by gradual decay provides them with the most suitable food, at the same time conserving the soil moisture, a most important consideration. During the past few years I have witnessed a striking demonstration of what happens if these conditions are suddenly changed. Several acres of fairly open woodland have been covered into the well-kept grounds of a private estate. Expensive drives and walks have been laid, all undergrowth and the poorest of the trees cleared away, thousands of ornamental shrubs planted and all open spaces nicely graded and seeded for lawn. Everything is satisfactory but the old established trees, and these consisting mostly of Pines, Oaks and Maples of different kinds, have shown and are still showing signs of serious decline. Some Maples have died entirely and many others are now but mutilated wrecks of their former selves. There is little doubt but what this bad state of affairs has been brought about by the extreme and sudden change of conditions under which they had grown up, and the trees have shown their resentment at being robbed of their food in no uncertain manner.

Another abuse to which trees are sometimes subjected is when a change of grade is made around them and the old level has to be raised. Just what effect this will have on the trees depends on the depth of the fill and the kind of material used. Anything under one foot in depth will probably have no bad effect providing clay is not used for filling. Clay is not desirable by reason of its impervious nature. The chief reason why so many trees die after their roots have been covered to any great extent is because of the exclusion of the necessary supply of water and air. Once this fact is thoroughly understood such work can be done with more than an even chance of success. I have seen an Elm which has survived a fill of five or six feet of ashes, and in another instance a more recent filling of less than half that depth of compact soil caused the death of a giant. Success depends on the proper aeration of the soil and this may be brought about by covering the ground over the roots with a layer of rubble or coarse cinders before putting on the soil, which should preferably be of a porous nature. It is a good plan to leave a small space clear about the trunk and in the case of a deep fill it may be advisable to lay some aerating pipes. Before undertaking to save a tree under such conditions it is well to thoroughly decide whether it is really worth it or not, for unless the work is carefully done nothing much but vexation and disappointment may result.
Hardy Shrubs That Can Be Forced

HENRY GIBSON

Many of our hardy early-flowering shrubs, which produce such a wealth of bloom during the spring months, can be used to serve a useful purpose, when grown specially for forcing, either for the supply of cut flowers they afford, or to be used as pot-plants for furnishing conservatories, or for the decoration of halls or large rooms. The gorgeous flowers of the Tree Paeonies; Lilacs, in variety of color, and always fragrant; Roses doubly valuable, in color, and in perfume; the Pyrus, and Thorn, Rhododendrons, fill the conservatory, or room with beauty and interest during winter’s long dull days.

The shrubs for forcing can be purchased at a reasonable rate, and at the outset we would say for the beginner purchased shrubs are undoubtedly the best to start with, yet for those who intend to force hardy shrubs year by year it is more economical to set aside a piece of ground at home for their culture, and work up a supply at home. In this way healthy young plants may be kept on hand to replace those worn out, and exhausted under the process of forcing, and which can be rejuvenated by giving them a year or two of rest in the nursery.

In addition to the ground for planting purposes, a plunging ground must also be provided, for although some shrubs require planting out every other year there are others that must always be grown in pots.

To obtain good well-ripened wood, the ground selected for the nursery should be exposed to full sun. For the majority of plants a rich medium loam will be found most suitable, though peat and leaf mold is necessary for Ericaceous plants. Gardeners as a rule prefer to raise their plants from cuttings, seeds or grafting, but where this is not considered expedient, small plants should be purchased from the nurserymen who make a specialty of plants for forcing, and planted out in the nursery.

The time they occupy in the nursery should be spent in laying a good foundation for the future, consequently all weak useless wood should be removed, so that the whole strength of the plants may go to the permanent parts, and the maximum amount of light and air be admitted to all parts. At the end of the third year most shrubs are in first class condition for forcing. Those that are planted out should be lifted in October, potted and plunged in ashes, or light soil, in a deep cold frame until required for use.

If one has ample means at disposal such shrubs as Lilac, Staphlea, and Rhododendrons may be had in flower for Christmas, if given good care during the previous summer, and during the forcing period. Rhododendrons have been popular evergreen shrubs to have in flower at Christmas, but owing to the action of the Federal Horticultural Board none of these beautiful plants are likely to be imported in future, at least until the ban is lifted, and the present stock in the country is at a very low ebb.

February, March and April are the three months in which forced shrubs are at their best, and for this they do not require excessive heat. It is better to place shrubs in a temperature not exceeding 50 degrees F., for the first two weeks, afterwards raising it gradually to 60 degrees or more with sun heat as the buds begin to swell. Much greater heat can be used than this but it is better to take a week or two longer than to use great heat to the detriment of many plants.

When the plants are grown cooler they are not so much exhausted and develop healthy foliage with the flowers, which is better than when leaves are absent. A moist atmosphere should be maintained and the plants well syringed several times daily. As the flowers begin to open the plants should be removed to a cool house. To get plants into flower for the earlier date mentioned requires from four to six weeks; for March and April from two to four weeks. Any that require special treatment are noted in the list given below, and are to be treated accordingly.

After the flowers are over, the plants must be pruned, cutting out all weak and worthless and old flowering wood to encourage new growth. Throughout the summer weak useless shoots should be taken out. Plants that have been forced should be placed in a cool house until all danger of frost is past, kept growing and given an abundance of air. Towards the middle or end of May those that require a year’s rest should be planted in the nursery, others that may be used another year being plunged, well fed and watered until growth is completed.

Acer. The three most useful plants when small for decorative purposes are A. japonicum; A. palmatum; or A. negundo. The great variations in form and color of the dainty foliage of A. palmatum, are rarely, if ever, equalled in any other species. A. japonicum has also a number of fine leaved forms showing great diversity of character. A. negundo, variegata, is bright green and milk white when forced. All may be grown in pots and successfully forced for a number of years in succession. Feeding is necessary when growth is active.

Amelanchier canadensis oblongifolia. A dwarf and shrubby plant, with white flowers in great profusion. It may be flowered in February, and forced two successive years, when it should have a year in the nursery. Very little pruning is necessary.

Ceanthus. Several are valuable for their bright blue flowers. They require to be grown in pots, in rich soil and pruned hard after flowering. The protection of a cold house or frame should be given on the approach of winter. C. divaricatus, of thick bushy growth, and C. papillosus, pale blue, are two of the best.

Chionanthus virginica (The Fringe Tree) has loose panicles of flowers by Easter if not forced too hard.

Choisya ternata may be had in flower at Christmas, when its bright glossy leaves, and numerous fragrant white flowers are very welcome.

Corokia. The catkin-like inflorescences of C. parviflora, primrose yellow, and C. coccinea, yellow with conspicuous red anthers may be had in flower in February. Both are twiggy bushes, and require no other pruning than an occasional thinning.

Crataegus. Red and white hawthorn, both double and single, are easily forced, and make charming plants for decorative purposes. While it is possible to force specimens of considerable dimensions, the neatest and most suitable are those grown as bushes from 4 to 6 feet high. During summer the shoots should be pinched back to form spurs from which the flowers are produced. They may be flowered in the same pots for several years, but require an occasional rest in the nursery. All useless shoots should be removed to prevent the plants from becoming a thicket.

Cytisus. Favorites with all gardeners. Standards are usually worked on Laburnum stocks, but require frequent renewal. When bush plants are used they are best when on their own roots. After flowering they require to be hard cut back to
prevent them becoming leggy. They usually bloom round Easter time with very little forcing.

Daphne. The fragrant flowers of several species may be had from December on through January and February with very little heat. Alternate years in the nursery is a necessity. D. mezereum, of small red flowers on every shoot. D. arvense has fragrant white flowers shaded purple. D. Mezereum has flowers either deep red, pink, or white, and is sweetly scented.

Deutzia. Another of the old standbys of the gardener, and a really fine forcer. When subjected to excessive heat they require to be rested alternate years. Moderately forced they will last three successive years. D. crenata flowers in racemes 6 inches long. D. gracilis is most floriferous, and useful either as plants for decorative purposes, or for cutting. D. Lemoine, a cross between gracilis, and parviflora, is as free as the former, and with the upright panicles of the place. Propagation is by soft wood cuttings in spring, rooted in sand, and grown on either in pots or planted outside and lifted as danger from frost approaches. During the winter there is to be a somewhat dry in airy house until needed for forcing, when plenty of water should be given. As the flower trusses develop weak solutions of liquid manure may be given, but should be discontinued when the flowers show color. Hydrangea paniculata while not forced to the extent as are the other types, yet it makes a desirable subject for forcing, though it requires different treatment. Strong plants in pots should be pruned to within three eyes of the base, and placed in an intermediate house where the eyes will soon break into growths which will bear the trusses of blooms. As the growths increase the plants may be given more heat, yet by far the best results are obtained when only moderate forcing is resorted to.

Itea virginica, when forced slowly so that the leaves develop with the flowers, is a very pretty plant. The flowers are white, and are sweetly scented. Prunus. Some of our most beautiful, useful and easily managed plants for early forcing belong to this genus. They may be had in flower from January until outside. The double forms are the most popular, though the single forms are very desirable. The plants may be potted from the open border into pots or tubs, and grown on the same as fruit trees in the greenhouse. Some of the species are: P. Pissardi, purple leaves and white flowers. P. Rhiix, a double white flowered cherry, flowers very free and forces well in an intermediate house. P. Japonica, double white, 4 feet high, may be forced into bloom soon after Christmas. P. Nana, dwarf, with almond-like flowers. P. Persica has double flowers ranging from white to deep red. P. triflora produces double rose colored flowers on shoots 2 to 3 feet long.

Pyrus floribunda and Pyrus spectabilis when grown on dwarfing stock are useful for forcing.

Ribes. The most serviceable are: R. Auricom, with fragrant yellow flowers, and R. sanguineum (Var. Atrosanguineum) Red, both easily forced.

Robinia Hispida has dropping racemes of rose colored flowers, which can be readily forced into bloom if established in the greenhouse and not subjected to much heat.

Rhododendrons. For forcing purposes we have to look to Europe for our early flowering Hybrid Rhododendrons, and as they are affected by the recent ruling of the Federal Horticultural Board, in its Quarantine 37, there is some doubt as to whether or not these plants will be available in the immediate future or not for forcing purposes. Among the best varieties for early use are: R. Pink Pearl and R. Evcrestianum, both easily forced.

Spirea. Some of the species force readily in an intermediate temperature to flower in February. By attention to pruning and feeding they may be used three successive years.

Syringa (Lilacs). Large quantities of Lilac blooms are to be seen in our florists' stores during the winter which are obtained from plants specially prepared and grown for forcing. The best varieties are: S. Arguta, small star-shaped flowers in great profusion. S. prunifolium flore pleno, white, long wand-like shoots. S. thunbergii, small starry flowers in abundance. These in hands of the late Mr. S. van houte, white, and feeding they may be used three successive years.

Laburnum is a useful and beautiful plant when forced for conservatory decoration. They should be potted a year ahead of the time needed for forcing.

Lonicera, fragrantissima and Standishii, have small and very fragrant flowers which are acceptable in midwinter. They require no special forcing.

Magnolia. Plants are lifted from the open ground with care and planted into pots may be had in flower very early. The best forcers are: M. conspicua, and the several hybrids between it and M. Obovata, particularly M. soulangiana, and M. cacabata. The pink flowered M. obovata and the pure white stellata are excellent when forced. The flowers of the latter are blushing white, starlike and so abundantly produced that they completely hide the plant.

Peony. Mountain Peonies are a desirable subject for forcing if grown in pots and well established before being placed in heat. There are many varieties, their flowers varying in color from pink, white, crimson, to deep purple, and latterly to dusky crimson. They will stand hard forcing and may be had in flower in February.

Philadelphia. The fragrance of the flowers of the various mock Oranges makes them acceptable as forcers. They will not stand very hard forcing. The pretty little Lemoine variety should have all the old flowering wood removed as soon as the flowers are over. The others require thinning rather than severe cutting back.
Forcing Hyacinths for Winter Bloom

BERTHA B. HAMMOND

The bulbs of the Roman Hyacinth planted in a flower pot.

Press soil gently around the rim of the pot.

When the first shoots make their appearance.

Hyacinths purple and white and blue
Flung from their bells sweet peals anew
Of music, so delicate, soft and intense
It seemed an odor within the sense. — Shelley.

While the fragrant hyacinths are quite widely and successfully grown as out-door spring-blooming flowers, their culture for indoor winter blooming is to some amateurs, still veiled in mystery.

The large flowering single and double varieties of Dutch Hyacinths, so called because the skillful bulb growers of Holland, have specialized in their development are unexcelled for use either as early spring garden flowers that like the daffodils mentioned by Shakespeare, “come before the swallow dares” or for indoor winter forcing.

For bedding out, the inexpensive, medium-sized disease-resistant, old varieties of Dutch Hyacinths, will give complete satisfaction, as they produce showy spikes of fragrant bloom the first season and will continue to bloom for several successive seasons, but for forcing, where one season of gorgeous display is the goal, the best developed bulbs of the choicest, early-flowering varieties are essential. To be certain of securing strong spikes of finest bloom, buy only the extra well-developed, selected bulbs. As the quality of the trusses is determined by the quality of the bulbs, there is no economy in the purchase of weak, undersized, or inferior stock for the purpose of forcing. Only large, strong, vigorous bulbs will assure the large magnificent flowers that Dutch Hyacinths can produce. The single varieties of hyacinths, that are particularly graceful and fragrant, are considered the most desirable for pot culture. They are easier to force than most of the double sorts, and send up superb trusses of flowers in a wide range of beautiful colors. One who has successfully grown these hyacinths, can readily appreciate the sentiment of Mahomet expressed in the stanza.—

One flower stalk has opened.

Gradually more flowers develop.

The Roman Hyacinth in full bloom.
The forcing in bloom of Dutch Hyacinths, is quite simple they can be successfully forced in water, potted soil, or in prepared Holland fibre, the latter a commercial substitute for potting soil. This fibre, which can be purchased of florists, has the advantage of being, clean, odorless, and easy to handle. As with its use, a pot with a drainage-hole is not required, any fancy bowl, deep dish, urn or jardiniere may be employed to hold the bulbs. It is a very neat, interesting and convenient way of forcing bulbs, and one that will appeal to the city dweller, who has difficulty insecuring proper potting soil. To grow the bulbs in this way, fill the receptacle selected nearly full of moistened fibre, embed the bulbs in it, allowing the top of each bulb to protrude. Place receptacle containing the bulbs into a dark well-ventilated closet or cellar, until the bulbs have made ample root growth in the meantime keeping the fibre uniformly moist (not wet) then bring them gradually into light and warmth, avoiding direct sunlight.

For the purpose of forcing the bulbs in water, there are obtainable special hyacinth glasses, that hold the bulb nicely. Fill the hyacinth glass with rain water until it nearly touches the base of the bulbs. Put the glass containing the bulb and water away in a dark cool place until the bulbs are well-rooted. Do not disturb the roots by changing the water, but carefully add water as required. A piece of charcoal in each glass to purify the water may be used to advantage. After the hyacinth bulbs show sufficient root growth, they may be brought to light and heat. Hyacinths may also be grown in water in the same way the Chinese Sacred Lily is treated viz.: the bulbs placed in a deep dish of water and held in place by pebbles or small stones.

To force in soil, put each bulb in a four inch pot (or a larger pot or pan if a group of a kind is desired). So that a good drainage is provided fill the pot nearly full of rich earth, scout out a shallow hole, and set the bulb into the place so prepared for it, firming the soil around the sides of the bulb and leaving the neck exposed above the surface of the soil. By this means, the earth underneath the bulb will be left soft and porous, permitting the rootlets, as formed, to penetrate the soil easily. After the bulbs have been properly potted, water them thoroughly and place in a dark cool storage place to root. This will require from six to eight weeks.

By bringing a few bulbs from the storage place at intervals, a succession of bloom may be had from Christmas until after Easter. The flowers will last a long time if kept in a cool room (about 60°,) and away from direct sunlight.

After the bulbs have ceased to bloom and the foliage has died down, withhold water, place bulbs in the cellar and leave them until Autumn, then plant out in a permanent bed. Though useless for forcing, out of doors these bulbs will regain vigor and in time will bloom.

In conclusion, I wish to emphasize the fact, that the forcing of bulbs is a simple operation, the great secret in the culture being to use only the best “top root” bulbs, and to secure thorough root growth before bringing the bulbs gradually into light and warmth. Observing these precautions, success is certain.

LIFTING AND STORING DAHLIA ROOTS

After the Dahlia plants are cut down by frost in the Autumn, it is customary to allow them to stand for a week or two, on the theory that the roots may thereby perfect their ripening for the winter and that they are better off in the ground than they would be in any cellar. However, if there is much tendency to throw up suckers or new shoots, it is probably better to dig the roots at once, as the new shoots are likely to weaken the roots by drawing away more than they give back. And one must remember that it is from the crown or the stem-base rather than from the roots that the shoots for the next year are to come and that this crown might be damaged by a freeze that would not injure the lower-lying roots themselves.

When the lifting time comes, or a few days before, the stalks should be cut close to the ground, using a large knife, sickle, or bush scythe, and making a smooth clean cut. As a root with a broken neck is commonly useless, much care should be exercised in lifting the roots. It is best to use a spade and to drive it down for twelve inches or so all the way around at a distance of twelve inches from stalk, and then lift the whole mass carefully by forcing the spade deeply under the center. It is an advantage if two persons can work together and lift at the same time from opposite sides. Though not so important as the preservation of the neck, it is also advisable not to cut off the tip of the fleshy root, as it is from this end that the first and most vigorous fine roots are likely to come the next spring. Moreover, cuts and abrasions of the surface give the rot-producing fungi a better chance for attack.

After lifting, it is well to let the roots dry off for a few hours, with a view especially of removing any excess of sap or moisture from the pith or hollow of the stump, as this loose fluid might prove a culture medium for the spores of moulds and perhaps might prove injurious in other ways. Some dahlia experts, in packing away roots for the winter, turn the stump downwards so that any excess moisture can drain out. This seems to work well, though in turning the clumps upside down, there is more danger of breaking the necks of the roots than in leaving the clumps in the more natural upright position. It is not necessary or desirable to shake off all the adhering soil before carrying the roots to the cellar, as any readily adherent earth will help prevent drying out and shriveling during the winter.

In a cellar without furnace heat, dahlia roots usually keep all right when stored away on shelves or in boxes or barrels without any special covering. In cellars with a furnace it is usually better to wrap the clumps in newspapers or to cover them with sand, coal ashes, or with fairly clean soil from the field or garden, but soil containing much decaying organic matter is to be avoided for this purpose. When the roots are covered in this way and when the containers are placed as far away from the furnace as is consistent with safety from freezing, the roots commonly come through the winter in a vigorous and plump condition. However, roots that have shrunken much and show no buds or sprouts at planting time are often viable, as may be determined by test. If sprouts have started and are more than two inches long, it is usually best to break them off and depend upon new buds for the future plant. Long cellar-shoots commonly develop into weak hide-bound stems.


SEE OUR NOTICE ON PAGE 343
Work for October in the Garden

JOHN JOHNSON

It is not sufficient to merely harvest the crops which are now ready, or to remove decaying vegetable matter from the vegetable garden. Much can now be accomplished to facilitate the work of the busier spring season. Take advantage of the few weeks’ open weather ahead by turning new ground or digging vacant plots. The deeper the ground is worked at this season the better will it be by next spring. We firmly believe in sub-soil plowing and double digging. In regard to deep cultivation, it might be well to confess that it is a matter of individual opinion as to whether or not the process known as “bastard” trenching should be given preference to double digging at the outset. In both instances the ground is dug two spits deep but in the former instance the lower spit is left in its original position while in double digging the sub-soil is brought to the top. Personally, I prefer the latter method. My experience in double digging has proven that while no great depth of unwieldy sub-soil is thus brought to the surface, that same amount is in the right position to be dealt with and can be greatly improved during the following season by judiciously planting such crops as Peas, Beans, Celery, Leeks and Onions from sowings made under glass. None but excellent results have followed this method and within a year, what was previously inert “hard pan,” had been converted into good garden soil.

Garden appliances as plant supports, seed drills, cultivators, etc., which are not likely to be needed until spring should be put safely away for the winter. Stakes should be painted on wet days and tied in neat bundles, which are not likely to be needed until spring, lose no time in getting the work done. The fall season offers advantages over spring planting which should not be lost sight of. What is transplanted now will be established before winter sets in, thus eliminating the check given to growth by spring planting. Stock from the summer sowings of hardy perennials and biennials must be in permanent quarters this month. It is quite unnecessary to give this young stock frame protection if well grown and there will be just so much more frame room available early next spring. Moreover, during the process of rearrangement space for planting this young stock will be found in the borders and it can now be utilized to the very best advantage when everything is still fresh in the memory and defects being remedied.

As soon as frost blackens the tops of Dahlias, Cannas and Lilies cut them down, lift and store them for winter. Clear beds of summer bedding stock and plant protection if well grown and there will be just so much more frame room available early next spring. Moreover, during the process of rearrangement space for planting this young stock will be found in the borders and it can now be utilized to the very best advantage when everything is still fresh in the memory and defects being remedied. As soon as frost blackens the tops of Dahlias, Cannas and Lilies cut them down, lift and store them for winter. Clear beds of summer bedding stock and plant protection if well grown and there will be just so much more frame room available early next spring. Moreover, during the process of rearrangement space for planting this young stock will be found in the borders and it can now be utilized to the very best advantage when everything is still fresh in the memory and defects being remedied.
OCTOBER air is most beneficial for our in-door plants. Roses show an improvement in foliage and color of bloom. More even temperatures can be maintained, and by carefully regulating the top ventilators at night, fungus disease can be kept at bay. Less syringing is necessary, but continue to syringe underneath the foliage once daily, unless the weather is dull or damp. Be careful with the watering. The heat in the pipes will dry out the bottom of the bench. The additional heavy leaves will require a lot of support. Red spider will make a winter's home if not disturbed. Give a light feed of bone meal.

Chrysantheums of many varieties will expand their lovely blooms this month, but be careful to shade the pink and crimson varieties. Yellow and white do not require shade, although a light shade will materially aid the length of blooming. Fertilizers should not be given when the color is developing in the bud. Decay will ensue if feeding is carried too far. Let the soil do the work now, and be more particular to keep insects away. Only water when necessary and in the forenoon, if possible.

Dendrobium Phalaenopsis will bloom this month, and should have more water now that the spikes are prominent. Cattleya Labiata Autumnalis is ready to burst its sheath, and needs careful watering. When in bloom, keep a little dry. This is all the rest it needs. Cattleya gigas are finishing up their bulbs, and starting again, which must be encouraged. This variety will be better suspended from the roof and will often give two crops of flowers within a year.

Gardenias in pots, and a few plants are useful for cutting, should be well watered and syringed in the morning. Do not allow water on the foliage at night or loss of buds will result.

Mignonette requires staking. Remove all side shoots to develop a strong spike of bloom. Cool temperature is necessary.

Sweet peas are coming on. Cut daily in order to maintain a daily supply. Give water when dry and then plenty of it.

Geraniums for next year's bedding out will need a little attention. Take all old plants and strip off all foliage and place close together in pots of soil about three inches. Keep dry most of the winter. They can also be kept fairly well by tying in bundles and suspending from the ceiling, where dampness, heat, or frost, cannot enter.

Begonias for winter blooming will need feeding and a good watering of cow manure liquid twice weekly will greatly assist in developing these beautiful plants.

Cold nights must now be watched, but there will not be much trouble if the heating apparatus is in good condition, and if the temperature is controlled by a thermostat, as all small houses should be. They are in fact indispensable in the small house and they take the place of a night man in the larger establishments.

Remove Caladiums from the benches to complete growth. Their usefulness is now past and they will do underneath the bench, only give sufficient water to keep from shrivelling.

Bring in bulbs, that have filled their receptacles with roots, from the cold frames and place under the bench in a cool house. It will be denied by some men who have acres of glass at their disposal, but the space named has accommodated bulbs for years with the best results and exhibition bulbs have been started in this way.

Campanulas are fine plants for the cool house and the variety Pyramidalis, and Alba, should be dug from the herbaceous border, and placed in eight or nine inch pots. They require ordinary soil and cool treatment, almost neglect will suffice for these beautiful pyramid plants, and by Easter they will throw up massive stems eight feet high, which arranged with lilacs and other plants in spring, make a gorgeous array.

Be careful with the orchids. Less water is necessary and less spraying of the plants and floors. When blooms expand, remove the plants to the conservatory of the rooms of the house. These plants usually enjoy the home treatment. I have had Cattleyas in the drawing rooms for six weeks, greatly improved in appearance and with healthy white roots, growing all over the pots. The moral is, therefore, not to overwater in dull weather.

Most of the shading can be removed from the roof by the end of the month.

This is the month of the mum show, and many vegetables are included, chiefly out-door kinds, but the person who intends to perpetuate his vegetable garden all winter on a small scale can be accommodated in the greenhouse. Potatoes, Early Bliss, is a fine variety for house culture. Plant medium sized tubers in 10 inch pots in light soil, and start on the floor in the cool house. They can be brought to maturity by a temperature of 50° to 60°.

Pot fruit trees that were repotted recently can be kept out-doors for a few weeks. See that they are free from a water-logged condition. They will ripen the wood and begin to rest for next year's work. Give them a thorough syringing with Scalecide to eradicate scale or other insects.

Hydrangeas should not be left out too long or the buds formed for next year's bloom, will be injured. It is better to place them in an out-house or barn. They need sufficient water to prevent shrivelling of the wood.

Nerines should be put on a shelf and kept dry, and they will rest and show blooms later.

WORK FOR OCTOBER IN THE GARDEN

(Continued from page 339)

answered the purpose of low hedge effects, but this must sooner or later make way for the exclusive planting of the newer type which is naturally dwarfer, more compact, and will thrive under similar conditions. This new plant bears a striking resemblance to the old border box excepting the latter's evergreen nature. Anyone desirous of getting a perfect low hedge plant where border box will not thrive should procure stock and plant box-barberry forthwith.
A Lesson on Fall Preparation of the Ground for Spring Planting

Explaning Its Requirements, Treatment and Advantages
The Fourth of a Series of Lessons of a Home Study Course on Gardening, to Appear Regularly in the Gardeners' Chronicle Under the Direction of ARTHUR SMITH

THERE is perhaps no art in which cause and effect are more closely connected and follow one another more faithfully than gardening. The effects of bad treatment, or want of treatment in any respect, during the whole or part of one season are sometimes felt for several years after; and it is equally true that the benefits which accrue from the best all-round methods in one year will last for several subsequent seasons.

But while it is always a work of time to create a first-class garden, as it has to be built up by successive years of manuring and cultivation, it is astonishing—from one point of view—how much one year of neglect will undo the cumulative effect of many years' good work.

A properly cared for vegetable garden—and it is to this which our remarks refer—will have been kept free from weeds and the ground religiously cultivated between the plants at least after every rain. This cultivation not only prevents the existence of weeds, as the proper time to kill them is before they are visible on the surface, but, by keeping the soil aerated for the encouragement of soil bacteria, it assists in bringing plant food into an available condition; besides these, frequent stirring of the ground does away with much of the need for watering.

Like all other living organisms, plants require for their sustenance food containing several ingredients, but as plants (with some botanically interesting exceptions) have no digestive organs their food must be in a condition suitable for them to make use of it; in other words, it must be digested for them. Therefore, so far as a plant at present growing upon the soil is concerned, unless a sufficiency of ingredients exist in the soil in an available condition, they might just as well not be there at all. It is this important distinction between available and unavailable plant food that renders a chemical analysis of a soil no criterion as to its actual fertility, although it does afford evidence of potential possibilities in that direction.

Not only do plants require several different elements for their growth, but these elements are required in certain proportions, and an excess of one or more in the soil will not compensate for any deficiency in respect of others. Every species of plant has for all practical purposes a uniform composition, wherever it may be grown; and from this we know how much a given weight of a plant removes from a given area of ground. For instance, a medium crop (150 bushels) of potatoes, removes (among other elements) twenty pounds of phosphoric acid from an acre, but as the roots do not come into contact with all the soil, it follows that there must be considerably more than twenty pounds of available phosphoric acid in an acre to enable this crop of potatoes to be produced. From this we learn that at the end of the growing season, or at the time any crop is removed, there must be a great deal of available plant food left unused, and we also learn with equal certainty that the larger the crop the greater is the amount of available fertility left behind.

It follows, therefore, that good treatment of the soil is not only a benefit to the crop growing upon it, but it will also be of considerable advantage to the succeeding one the same year and in the year following. How great the latter advantage may be depends upon whether the garden is totally neglected, or the reverse, after the growing season is over.

There are far too many garden owners who think that when summer is passed there is nothing to do in a garden until spring comes again. This idea is a fallacy, for there is much which can be done in the fall, and good gardeners find it no easy task to accomplish all they wish before the ground freezes up. Autumn gardening not only enables one to start the spring with work well ahead, but it enables better results to be obtained at less cost. It is invariably more economical, measured by dollars and cents, as well as in every other direction, to keep labor going as long as possible rather than to make the ending of summer an excuse for laying off. As a part illustration of this point: if a place is large enough to require five extra men for its care and cultivation, when they are taken on in March and layed off at the end of September, only three would be required if they were kept on throughout the year, causing a distinct saving in money and the production of better results all round. This, however, opens up the question of scientific efficiency, which it is our present purpose to deal with. What it is desired to emphasize is the great benefit connected with making every possible use of the autumn and winter months in a garden, as there are many things which can be better done then both for the advantage of the soil and for the relief of the spring rush.

The first and most important point is the conservation of the above mentioned unused available plant food. The high cost of living affects the food we buy for plants as well as that for ourselves. To reduce this cost to ourselves is one incentive in producing the maximum quantity in our gardens. Obviously, anything which will reduce the cost of garden produce, or, what amounts to the same thing, increase the production at the same cost, will tend to reduce the cost of living. To this end the prevention of waste in plant food will go a long way.

For the latter purpose seed for the production of a crop for spading under, otherwise known as a cover crop, should be sown upon all ground immediately the crop for consumption is off and there is no more time to grow another for that purpose.

When ground is bare in the autumn the rains wash out the available plant food and it becomes lost. This loss takes place more quickly in a sandy soil than in one of a clayey nature and nitrates are lost easier than anything else.

A commencement in the way of putting in cover crops may be made as early as August in some sections. If there should be only a narrow strip vacant it should be sown and other strips from time to time until the entire unused ground in the vegetable garden is covered. Sowing crimson clover, rape and buckwheat mixed together are suitable; as the two latter are good foragers, they are...
suitable for poor soil. From September onwards, winter vetch and rye will prove satisfactory, as they will go through severe winters.

The value of the rye and vetch combination as a soil renovator is very great, especially upon sand. The winter vetch will frequently grow where clover and other legumes will not, and as a nitrogen gatherer it is at least equal to them. It has the further qualification of being extremely hardy and succeeds in northern latitudes. It may be sown later in the fall than crimson or other clovers, and will furnish a greater quantity of matter for the production of humus after being turned under the soil than anything else. The crimson clover combination is, however, preferable for the earliest sowings, as it will produce more for spading under before winter. Sometimes rye and vetch succeed if sown in November, but it is not advisable to delay sowing so late in the year, except in districts having a more or less open winter.

As clovers and vetch belong to the leguminous order of plants they will gather nitrogen from the air and add it to the soil. It is not known how much of the available nitrogen already in the soil this class of plants will make use of, but we know that they can, through the agency of bacteria, make use of atmospheric nitrogen, and we also know that even if the entire crop is removed they leave the soil richer in nitrogen than it was before; so by spading it all in the soil is greatly enriched by the addition of this, the most important and expensive of plant foods, at practically no cost.

The soil has the power of "fixing" unused phosphates and potash; that is, the soil content of these which is available is changed into unavailable; this power being greater in the case of clay than in that of sand. Soils have not, however, the power of fixing nitrogen, therefore for this reason alone part of the cover crops should be composed of plants, like rye, that will use up any available nitrogen which may exist so that it will not be wasted. This nitrogen and other elements taken up by the plants become part of their structure, and when these plants are turned under into the soil they decompose and the food they have absorbed can again be brought into an available condition the following year through the agency of bacteria, the work of the latter being facilitated if the soil is kept loose and aerated by means of cultivation. Spading in cover crops also increases the organic matter of the soil, which is a condition greatly to be desired. This organic matter is sometimes known as humus, a rather vague term chemically, as what are known as humates differ considerably in composition, but, these humates, being compounds of humic acid and some base, prove the value of decaying vegetable matter in unlocking inert minerals, like potash and phosphates, which may exist in the soil. About fifty per cent of vegetable humus is carbon, and the whole of this carbon is obtained by the growing plant from the atmosphere. Altogether, the turning under of green crops in many directions, of great value, and this, otherwise known as green manuring, is the cheapest and best method of changing a poor soil into a rich one, and the process may be carried out at any period of the growing season.

If one has a poor, thin soil which has only been a short while under cultivation, or which has not previously had much attention in the way of manuring and cultivating and which is also efficient in humus, it will under these circumstances pay to use some extra plant food in connection with the cover crop, with a view of helping it to grow quicker and become more bulky. For this purpose sheep manure is as good as anything, it being a complete fertilizer; that is, it contains nitrogen, phosphate and potash; for an autumn cover crop a quarter of a pound to the square yard is sufficient.

Plants of the leguminous order, clover and vetch, are assisted by a slight application, three ounces to the square yard, of lime, which may be either in the form of slaked or hydrated lime, ground limestone, or wood ashes; the latter contains forty per cent of pure lime. Neither of these should, however, be applied at the same time as any kind of animal manure, as in that case the lime would liberate ammonia into the atmosphere.

Spading the soil for autumn cover crops is not necessary when the ground has been previously cultivated all the summer; in fact, it is undesirable, as the richest soil is at the surface, and by burying it the available plant food would not only be out of the cover crop's reach but it would be more easily lost into the subsoil. If cultivation has been properly carried on throughout the summer a sufficiency of loose soil can be obtained with a rake to cover the seed; any ground which may be too hard can be broken up with a hoe.

If any one has a piece of land which has hitherto been practically waste and should contemplate bringing it into cultivation for productive purposes, now is the time to take the work in hand. Leaving it until spring would be entirely too late to produce much next year. After clearing away everything which it is not desirable to bury, the ground should be spaded. If very dry and a considerable amount of weeds have been turned under, rolling is beneficial, as it will hasten the decay of anything buried and assist moisture to rise to the surface. Apply half a pound of lime to the square yard and seed it down to rye and winter vetch. Land which has not been under cropping generally contains considerable unavailable plant food; the lime will bring some of this into a condition for the cover crop to make use of.

The advantages which are brought about by spading the ground late in the fall or early winter cannot be over-estimated, and the use of cover crops during the fall need not prevent this. The spading should be left as late as possible, but weather probabilities must be watched so as to get a sufficiently large area done before the ground freezes hard enough to prevent the work, so as to have at least enough for the earliest crops that will be sown during March and April. The earliest sown cover crops should be the first to be spaded in, and care must be taken that the growth is not completely buried; if any is left for spring spading it should be that where the least growth has been made.

Ground spaded early in the winter will not require any further treatment in the spring, excepting breaking down with the hoe or rake. The action of frost will mellow the soil so that it will be in a considerably better state for the reception of seed than if the spading had been left until the spring; also the seeds will germinate better than if sown in fresh, raw soil turned up just before sowing. Another advantage is that the green material will have decomposed more or less completely by the time the soil in freezing weather will expose a number of insects, and in this way possibilities of either they or their progeny giving trouble the following summer will be considerably reduced. Another important point is that by getting at least a portion of the garden spaded up before winter there is so much less to do after the ground thaws out in the spring.

Those who have given any time to the question of how soils originated are aware that their formation was fundamentally brought about by the disintegration of the solid rock, which at one time existed all over the surface of the earth. This disintegration was carried on over long periods of time by various means, but principally by the action of frost, heat and water; the operation is therefore also known as "weathering." This
weathering goes on today. By exposing as much as possible of the soil to the action of the weather during the winter, the rock particles, or stones, are made smaller, and the freezing of the wet lumps of earth expands them so that they crumble into dust; all together bringing the soil into a condition which will enable the acids in it and the acidi exuded by the roots of plants, together with lime, to bring each year more of the mineral matter into an available state. The quantity in any one year may be only comparatively infinitesimal, but after all only a little is required. This will be the more readily understood when we realize that a quantity represented by one-tenth of one per cent represents three thousand five hundred tons to the acre in the first foot of soil.

Let us take one item of plant food, potash, as an illustration.

All soils contain practically inexhaustible supplies of potash. It is almost impossible to find any with as little as one-tenth of one per cent. But at this one would have the mentioned quantity per acre. The average content of potash in two hundred samples of soil from different localities analyzed by Snyder, gave over ten thousand pounds per acre to the depth of one foot; many good soils contain as much as fifty thousand pounds of potash to the acre. As a rule the subsoil is richer in this than the first foot, which gives a still further greater reserve which it is possible to make use of. It is therefore no mere figure of speech to say that the potash content of soils is practically inexhaustible, especially when we remember that a medium crop of potatoes, a crop which requires more potash than any other, only removes seventy pounds of potash from an acre. As a rule the subsoil is richer in this than the first foot, which gives a still further greater reserve which it is possible to make use of. It is therefore no mere figure of speech to say that the potash content of soils is practically inexhaustible, especially when we remember that a medium crop of potatoes, a crop which requires more potash than any other, only removes seventy pounds of potash from an acre.

Doubtless, it is generally understood that remarks under this and other headings connected with this department refer primarily to conditions which exist in the more northern states. As we go south there is an increasing number of crops that can be sown in the fall and, with more or less protection by means of straw, carried over through the winter for spring use; until we reach climatic conditions where one crop follows another all the year round and there is never any bare ground, therefore cover crops for prevention of waste of plant food are not required. But even under these latter conditions, when a soil is deficient in humus and stable manure can not be obtained in sufficient quantity, it may frequently be a paying procedure to periodically, or at periodic intervals, plant a portion of the vegetable garden by devoting it to a crop to ultimately cause them to cease their activities, will have to be corrected, otherwise there will be a decrease in crop production, especially in certain directions; spinach and celery will thrive in a more acid soil than peas and beans.

When by the frequent addition of humic acid forming material in the shape of green crops to the soil a condition of considerable acidity is produced, a corrective to that acidity is necessary, for which purpose the use of some form of lime is indicated. Lime will not only act as a base for the humic acid to combine with, thereby forming humate of lime (calcium) and so reduce, or do away with, acid in a free state, but it also oxidizes vegetable matter, causing it to decay more rapidly, and in other ways brings dormant plant food into an active condition.

An old saying has it that "lime is a good servant but a bad master." The use of lime in small quantities always has a good effect, but when used to excess it is likely to cause harm, either by oxidizing or burning up the organic matter too rapidly, thereby causing a waste of plant food, or, in the case of the frequent use of large quantities, by bringing about a state of alkalinity, which is as harmful as the opposite condition of extreme acidity.

An annual application of six hundred pounds to the acre, which is the same as two ounces to the square yard, is sufficient for the requirements of a vegetable garden. If not put on when a cover crop is sown, it may be applied in the spring or summer at the time the ground is being prepared for the reception of either seed or plants. As lime sinks into the soil with considerable rapidity it should always be worked into the surface and not spaded under.

There are numerous other items of necessary work about a garden which can be just as well done during fall and winter as at any other season. It always appears to be a sign of want of forethought or bad management on the part of some one when work is seen being done in spring and summer that could have been easily accomplished between the end of one growing season and the commencement of the next. It is certain that the better use we make of the latter period the better will be the results.

OUR OCTOBER NUMBER

WE present the October issue to our subscribers with many apologies for its shortcomings, due to conditions that have been beyond our control.

The situation in the printers' trade, which has seriously affected the publishers of New York for the past ten weeks, is gradually adjusting itself, and we trust to be able to produce the November number in the usual form and size immediately following the October issue.

We want to take this opportunity to thank our subscribers and advertisers for their indulgence in the delay in publishing recent numbers.

The Chronicle Press, Inc.
THE shortening of the days and the approach of autumn, recalls to us the necessity of preparing for the feeding and protection of our winter birds. The planting season is at hand in many parts of the country, and we should not forget to include a liberal amount of berry-bearing plants for the benefit of our feathered friends, as well as for the value of these plants as objects of beauty. We should also, as far as possible, avoid the destruction native fruit-bearing plants in the wilder parts of the properties under our charge, as they not only feed the birds, but also protect our orchards and small fruit gardens, as the birds seem to prefer the native fruit if provided in abundance. Some of the plants particular value for this purpose are: Red Cedar (Juniperus), Hackberry (Celtis), Mulberry (Morus), Sassafras (Sassafras), Mountain Ash (Sorbus), Chokeberry (Aronia), Red Haw (Crataegus), Juneberry (Amelanchier), Wild Cherry and Plum (Prunus), Sour Gum (Nyssa), Holly (Ilex), Green-Brier (Smilax), Bayberry (Myrica), Barberry (Berberis), Spicebush (Benzoin), Currant and Gooseberries (Ribes), Raspberry and Blackberry (Rubus), Wild Roses (Rosa), Sumach (Rhus), Buckthorn (Rhamnus), Grape (Vitis), Virginia Creeper (Ampelopsis), Buffalo-Berry (Shepherdia), Dogwood (Cornus), Huckleberry (Gaylussacia), Blueberry (Vaccinium), Elder (Sambucus), Snowberry (Symphoricarpos), Black Haw (Viburnum), and Honeysuckle (Lonicera).

Coniferous and broadleaf evergreens are valuable as shelter and nesting places for birds and should be planted for this purpose, an abundance of such plantations will invariably attract the birds. Bird boxes also serve as shelter for many winter birds. Feeding places should be established early, as this will induce many birds to remain over winter, which would otherwise migrate to places of more abundant food supply. A supply of fresh water should be constantly on hand, and where this is not naturally the case, suitable shallow basins should be provided for this purpose. Not only is the presence of numerous birds interesting and cheerful during the more or less dreary winter months, but their work of destroying pupa, larva and hibernating adult predaceous insects is of the utmost economic importance to the parks and gardens.

The following authentic publications on bird conservation should be of interest and value to the readers of this article and can be obtained free from the Division of Publications, U. S. Department of Agriculture, Washington, D. C.


“Some Common Game, Aquatic, and Rapacious Birds in Relation to Man,” (Department Bulletin No. 497).


“Some Common Birds Useful to the Farmer,” (Farmers' Bulletin No. 630).


“Food Habits of the Mallard Ducks of the United States,” (Department Bulletin No. 720).

“Common Birds of the Southeastern United States in Relation to Agriculture,” (Farmers' Bulletin No. 755).


For sale by the Superintendent of Documents, Government Printing Office, Washington, D. C.

“Grosbeaks and Their Value to Agriculture,” (Farmers' Bulletin No. 456). Price 5 cents.


“Food Habits of the Thrushes of the United States,” (Department Bulletin No. 280). 5 cents.

“How Birds Affect the Orchard,” (Yearbook separate 197). 5 cents.

“The Relation of Sparrows to Agriculture,” (Biological Survey Bulletin No. 15). 10 cents.

“Birds of a Maryland Farm,” (Biological Survey Bulletin No. 17). 20 cents.

“The Bobolite and Other Quals of the United States and Their Economic Relations,” (Biological Survey Bulletin No. 21). 15 cents.

“The Horned Larks and Their Relation to Agriculture,” (Biological Survey Bulletin No. 23). 5 cents.


“Hawks and Owls from the Standpoint of the Farmer,” (Biological Survey Circular No. 61). 5 cents.

L. P. JENSEN

Mass. Price, $1.00 net. One of the most useful volumes on the subject.

Remember The Birds

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Farr's Lilacs for Fall Planting

Lilac-time is spring-time at its best, and one can scarcely conceive of a garden without the plants "loved by Washington and set by him in the garden at Mt. Vernon." For more than a century the Lilacs planted on Bussey Hill (at the Arnold Arboretum) have bloomed every year, filling the air with fragrance, and proving their worth as permanent features of the gardens. Among the beautiful Lilacs growing at Wyomissing Nurseries are: Ellen Willmott, snowy white, with a truss nearly a foot long; Leon Gambette, a giant-flowering variety, with blooms almost as large as tuberoses; Belle de Nancy, soft lilac-pink. These are only a few of the Lilacs I grow at Wyomissing; there are varieties early and varieties late, new colors and glorified forms, with individual flowers and trusses more than doubled in size. All my Lilacs are grown on their own roots, the only safe way to produce good plants.

BERTRAND H. FARR
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111 Garfield Avenue
Wyomissing, Penna.
National Association of Gardeners

Office: 286 FIFTH AVE., NEW YORK.

ROBERT WEEKS, President, Cleveland, Ohio.
P. W. Popp, Vice-President, Mamaroneck, N. Y.

ERSKINE EBEL, Secretary, Madison, N. J.

Trustees for 1919

Peter Duff, Orange, N. J.; Robert Tyson, Madison, N. J.; Anthony Bauer, Deal, N. J.; Theodore Wirth, Minneapolis, Minn.; Arthur Jackson, Detroit, Mich.

Directors


Echos of the Convention

The success that attended the Cleveland convention and the general publicity given to it by the horticultural press of the country, has aroused an interest on the part of many gardeners who heretofore showed little concern for the association and its aims, with the result that quite a number of new members have recently been enrolled.

The complete report of the proceedings of the convention are now being mailed to the members at large. There has been some delay in getting the report out owing to the unsettled industrial conditions. It is hoped that members will carefully study the report and acquaint themselves with the activities the association is engaged in and what it is endeavoring to undertake.

The St. Louis gardeners on learning that the 1920 convention is to go to that city, lost no time in making preparations for it. The St. Louis Association of Gardeners at a recent meeting appointed the following chairmen of convention committees, with power to select their own committees: Program, George H. Pring; Reception, Hugo M. Schaff; Decoration, John Moritz; Publicity, H. C. Irish. On October 8, the St. Louis Association of Gardeners held a National Association of Gardeners night to interest the gardening profession.

At the Cleveland convention the young men towards the gardening profession. Even before definite action has been taken, a check for $100 was received from Francis E. Drury, Cleveland, O., through his superintendent, J. H. Francis, who writes that Mr. Drury regards the undertaking as the right direction. The estate owners will be appealed to soon to subscribe to such a fund. In the meantime, the secretary's office will be glad to hear from members who believe their employers will be interested to contribute, as it is essential to the estate owner as it is to the gardening profession to arouse the interest of the young men in gardening to provide capable men for the future.

Sustaining Members

Mrs. L. A. Herman, Long Beach, L. I. (G. H. Beckman, gardener); C. Lewis, Mahwah, N. J. (A. E. Thatcher, superintendent); E. A. Woods, Sewickley, Pa. (A. Etherington, gardener); George H. Hendee, Suffield, Conn. (H. W. Bryant, gardener); P. E. Drury, Cleveland, O. (J. H. Francis, superintendent), have become sustaining members of the association.

New Members

The following new members have been added to our membership roll during the last few months: Albert Fenton, Princeton, N. J.; Robert Lovdahl, Brooklyn, N. Y.; Raoul C. Lund, Ravinia, Ill.; Robert Melrose, Southampton, L. I.; Frederick Lagers, Greenwich, Conn.; J. O. Orr, New York, N. Y.; Simon J. Derwin, Chicago, Ill.; Howard H. Ebell, Detroit, Mich.; James MacAlister, Cedar Hill, N. Y.; P. H. Bridge, Troy, O.; William Mulliss, Kennett Square, Pa.; Edward C. Hansen, Akron, O.;

Of Interest to Country

Estate Owners

The National Association of Gardeners takes this opportunity to place its Service Bureau at the disposal of owners of country estates when requiring competent gardeners, in the capacities of superintendents, head gardeners or assistant gardeners—thoroughly qualified in every particular to assume the responsibilities the positions call for—gardeners truly efficient in their profession.

The Bureau is maintained entirely at the expense of the association and makes no charge to the employer it may serve or to the member it may benefit.

National Association of Gardeners

M. C. EBEL, Secretary

286 Fifth Ave.

New York
REPORT OF COMMITTEE ON SCHOOL GARDENS.

The National Association of Gardeners of America at their convention at Cleveland welcomed Mr. E. M. Eastman of Cleveland Board of Education. His request for cooperation, advice with regards broader ideas and other helpful suggestions in extending the school garden work among children of Cleveland was given due consideration.

It was indicated by the gardeners from all parts of the United States that the time had come when some action was necessary on the part of the national organization to present the possibilities of instruction in floriculture, vegetable gardening, etc., before the coming generation. The lack of competent help in the various branches of the gardening profession is a matter calling for immediate action. The appeal of the Supervisor of School Gardens on behalf of the Board of Education came at the psychological moment to lead the discussion into that channel. A committee was immediately appointed by the president consisting of G. H. Pring, Floriculturist, Missouri Botanical Garden, St. Louis; Martin C. Ebcl, Editor, Gardner's Chronicle, New York, N. Y.; Mr. Arthur Smith, Belmar, N. J., to cooperate with Mr. Eastman in furthering greater development of the work. After a thorough investigation of the present operations, including the different plots assigned to the children, the committee was greatly impressed by the fact that facilities were even offered to the blind and that the general organization of the work was very efficient. This efficiency was further demonstrated by the manner in which the records and the work of the children was tabulated and recorded in the office of the Supervisor.

Possibilities of Improvement.—The practical details of the existing system are so well taken care of as to require but little criticism, but we deem it advisable to suggest other means whereby the children may receive information of a theoretical nature in a simple rudimentary way, which will arouse them to a greater appreciation of the study of Nature and all its accruing benefits. With this idea in mind we offer the following suggestions:

Soils and Fertilizers.—The success in crop production is largely dependent upon the condition and constituents of various soils. The failures are caused by the lack of knowledge on the part of the grower as to the requirements and adaptability of the various crops. It is a well-known fact that certain types of plants will not succeed upon unfavorable soils, although in a large measure a properly prepared medium will produce desirable results. In order to incorporate this knowledge into the children a course of study should be prepared and given in such a way as to make it attractive and interesting to the youthful mind.

Floriculture.—In such a course the children would be brought in contact with the ornamental and beautiful part of the plant world irrespective of their utilitarian uses. To a certain extent this subject is brought to their attention through the medium of their home gardens, grounds and parks, but there is no reason why the children should not be brought into closer contact with the work of Nature through proper lectures during the winter months on plant propagation, germination of seeds, perpetuation of plant life by a sexual means, etc. The actual work should be performed by the children in school greenhouses, thus preparing them for experimental gardens during the summer. An inclusion of this work in school garden work will no doubt in time help to develop the spirit and love of the Nature Beautiful and in that way help to ameliorate and beautify our cities of the future.

Vegetables and Fruits.—Growing of vegetables at the present time is the basis of the general plan of school garden work. Fruits, however, hold an important place
What We Mean by “Choice but Restricted”

There are plenty of nurseries with acres and acres of the usual things. Then there are a lot more that have a few of the unusual—but so few, they are not worth mention.

Then again, there are a few—a very few—nurseries that have goodly quantities of the choicer, less usual things; as well as plenty of the usual. In which class, our Nursery comes.

We never have striven to be the biggest on earth. But we have endeavored to be one of the finest, when it came to variety and quality.

If this sounds like the kind of nursery, where you will find just the kind of choice things you have been looking for; we should, indeed, be glad to hear from you; or be favored with a visit.

---

French and Dutch Narcissus, Darwin and Early Tulips, Dutch Hyacinths

FOR forty years, in peace or in war, our prompt deliveries of highest grade Bulbs have always satisfied the whims of the most critical private and professional growers.

PRICES (always reasonable) are generally forgotten when quality brings the desired results.

52-page Autumn Catalog mailed free everywhere.

Write today.

VAUGHAN'S SEED STORE
43 Barclay St., New York
31 W. Randolph St., Chicago, Ill.

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THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY.

The regular monthly meeting was held in Hubbard's Hall, Greenwich, Conn., Friday evening, Sept. 12. Pres. W. Graham in the chair. Two new members were admitted and four proposals for membership received. Robert Williamson and P. W. Popp gave an interesting account of their trip to the convention of the National Association of Gardeners at Cleveland. Harry Wild read a paper on perennials which brought forth a good deal of discussion on planting for effect, color blending, etc.

It was decided to have an entertainment for our returned soldier members, and an exhibition of fruit and vegetables at our next meeting, on Friday evening, October 10.

JACK CONROY, Cor. Sec.

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TUXEDO HORT. SOCIETY.

A regular monthly meeting of the Tuxedo Horticultural Society was held on Wednesday evening, Sept. 3. President Lyons in the chair; a large attendance of members being present. After officers' reports were disposed of, Mr. Tomsey gave a talk on the National Association of Gardeners' convention at Cleveland.

The following were elected to active membership: Wm. Ward, A. D. Hutchinson, Carl Swanson, Jos. Ferguson. Very instructive lecture was given by Mr. L. D. Green, manager of the Orange County Farm Bureau Association, on the various kinds of insect pests that infest fruit trees, illustrated by lantern slides. After adjournment light refreshments were served.

JAMES DAVIDSON, Sec.
Instruction in Gardening

Practical instruction is offered in vegetable, flower and fruit gardening, greenhouse and nursery practice, together with lectures, laboratory, field and shop work in garden botany, zoology, pathology, landscape design, soils, plant chemistry and related subjects.

The curriculum is planned for the education of any persons who would become trained gardeners or fitted to be superintendents of estates or parks. Students may be admitted at any time.

Circulars and other information will be mailed on application.

The New York Botanical Garden
Bronx Park, New York City

NASSAU COUNTY HORT. SOCIETY.

The regular monthly meeting of the above society was held in Pembroke Hall, Glen Cove, on Wednesday, Sept. 10, President Joseph Adler presiding. Fred Hewlett, Ed. Martin, John Nevin, John McPhee, and Peter Smith were elected to active membership. Five petitions were received.

Wm. Noonan was appointed manager of the Dahlia Show to be held at the Matinecock Neighborhood House, Locust Valley, on Thursday and Friday, Oct. 2 and 3. Harry Goodband was appointed manager of the Fall Show, to be held on Oct. 30-31.

A letter of sympathy was ordered sent to the family of our late member, James Emslie. Mr. Emslie was a charter member of this society and the passing away of so old a member was received with deep regret by all.

Our next meeting, which will be held on Wednesday, Oct. 8, will be known as Dahlia Night. At the conclusion of this meeting a Welcome Home party will be given in honor of our members who gave their services in the World War.

HARRY GOODBAND, Cor. Sec.

LET'S GET TOGETHER

We're glad to have met you at the Convention, and we want to ripen the acquaintance. You'll find us at the home place always, ready to chat about your interest.

May we discuss with you now any of the planting projects you may have under consideration?

Our nurseries are well stocked, but if we don't happen to have exactly what you want, our knowledge of stocks in other nurseries will very likely put you on the right track.

“Meehan's Garden Message”

A frequently published letter carrying important planting suggestions and special opportunities for the buyer who is on the lookout for "out-of-the-ordinary" stock. Ask to have your name put on the mailing list. Send in your list of wants and let us quote prices.

Gordon S. Macmillan, who recently resigned his position as gardener of Interval Gardens, Lenox, Mass., has accepted the position in charge of the greenhouse fruit range at Duke's Farm, Somerville, N. J.

Donald MacRae, recently of the E. H. Bedford estate, Green Farms, Conn., secured the position of head gardener on the George W. Carr estate of the same place.

George Brown, who for several years was manager of the estate of the late Joseph T. Gilbert, Gilbertville, N. Y., has accepted the position of superintendent of the estate...
OF GENERAL INTEREST

John Morrison, for the past fourteen years connected with Weeber and Don as traveling sales man, has severed his connection with that firm to become a partner of the Muller-Sealey Co., Inc. Mr. Morrison, who is well known among the gardening fraternity, will have charge of the seed and bulb department of his firm.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., required by the Act of August 24, 1912, Title III,§ 1010, of Cong., 27th Sess., published monthly at New York, N. Y., for October 1, 1919.

Statement filed October 24, 1919.


2. That the owners are (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning 1 per cent. or more of the total amount of stock."

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state). There are no bondholders, mortgagees or other security holders.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting. is given; also that the said two paragraphs contain statements embracing affiants and information and belief as to the circumstances and conditions under which stockholders and security holders hold stock and securities in the company as trustees, hold stock and securities in any other capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other persons, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Sworn to and subscribed before me this 3rd day of October, 1919.

M. C. Ebel, Editor.

[C. J. KELLER]

My commission expires March 30, 1921.

THE LEADING AMERICAN SEED CATALOG

Burpee's Annual is a complete guide for the Flower and Vegetable garden.

It contains an entire chapter on Edible Seeds, Root Crops and Greens and Salad, and last, but most delicious of all, the Vegetables Fruits.

Burpee's Annual is considered the Leading American Seed catalog. It will be mailed to you free upon request. Write for your copy today.

W. ATLEE BURPEE CO., Seed Growers, Philadelphia
Some U-Bar Greenhouse Changes

A good many of you gardeners have liked the U-Bar house better than any other, excepting the matter of side ventilation. You preferred it over the benches, instead of in the wall, as we do it in our Semi-Curvilinear Construction. Some of you have also expressed a wish for more head room on the side benches. You will be glad to learn, therefore, that in the J. F. Dodge range, now being erected at Detroit, we have modified the U-Bar houses, so that there is a continuous line of ventilation hinged to the gutter. Also, the eave curve has been increased, giving more head room. Now that you have this bit of news, no doubt you would like to know all the particulars. To which end, we would, indeed, be glad to hear from you.

U-BAR GREENHOUSES
Hitchings & Company
General Offices and Factory: Elizabethtown, N. J.
1190 Broadway  201 Devonshire St.
New York  Boston

The Insecticide of Recognized Merit for Greenhouse and Garden

APHINE is a concentrated material—mixes readily in water—efficient in its action—easily applied—free of the disagreeable odors and features of most insecticides—excellent as a wash for decorative plants.

FOR THE GARDEN—As a remedy against all sap sucking insects infesting flowers, fruits and vegetables APHINE is most effective.

FUNGINE—For mildew, rust and other blights affecting flowers, fruits and vegetables.

VERMINE—For worms and insects infesting the soil.

APHINE MANUFACTURING COMPANY
Manufacturers of Agricultural Chemicals
MADISON, N. J.
If you had been on the Arizona

HERE she comes, homeward bound, with "a bone in her teeth," and a record for looking into many strange ports in six short months.

If you had been one of her proud sailors you would have left New York City in January, been at Guantanamo, Cuba, in February, gone ashore at Port of Spain, Trinidad, in March and stopped at Brest, France, in April to bring the President home. In May the Arizona swung at her anchor in the harbor of Smyrna, Turkey. In June she rested under the shadow of Gibraltar and in July she was back in New York harbor.

Her crew boasts that no millionaire tourist ever globe-trotted like this. There was one period of four weeks in which the crew saw the coasts of North America, South America, Europe, Asia and Africa.

An enlistment in the navy gives you a chance at the education of travel. Your mind is quickened by contact with new people, new places, new ways of doing things.

Pay begins the day you join. On board ship a man is always learning. There is work to be done and he is taught to do it well. Trade schools develop skill, industry end business ability. Work and play are planned by experts. Thirty days furlough each year with full pay. The food is fine. A full outfit of clothing is provided free. Promotion is unlimited for men of brains. You can enlist for two years and come out broader, stronger, able. "The Navy made a man of me" is an expression often heard.

Apply at any recruiting station if you are over 17. There you will get full information. If you can't find the recruiting station, ask your Postmaster. He knows.

Shove off!

Join the U. S. Navy
The tribute of George Wyness to Davey Tree Surgery

The Davey Tree Expert Company, Inc., Kent, Ohio.

Gentlemen:

In 1912 Mr. Frick gave you authority to have all the trees on his estate here at Prides Crossing looked over so that all cavities should be cleaned and filled by your system of Tree Surgery.

Eagle Rock cannot boast of many fine specimen trees, as the woodlands in general, and beauty of the North Shore, is the feature.

However, all imperfect trees should be looked after so that they may in time add to the beauty which the North Shore possesses.

Therefore, it is the duty and should be the desire of every landowner to see that the trees on his estate are carefully preserved.

Seven years ago your men did this work at Eagle Rock. It was carefully and well done. Since then all the wounds are healed over and have never shown any signs of leaking or the work cracking.

Your men were all very attentive to their duties, and although we had as many as eighteen of them here at one time they went about their work so carefully and quietly we were apt to forget they were on the place.

Yours truly,

George Wyness, Gardener,
H. C. Frick Estate.

The saving of specimen trees is a matter of first importance on every estate.

Davey Tree Surgery is a fulfillment of the maximum expectations of those who love and value trees. A careful examination of your trees will be made by appointment.

THE DAVEY TREE EXPERT CO., Inc. 310 Elm St., Kent, Ohio


Every real Davey Tree Surgeon is in the employ of The Davey Tree Expert Co., Inc., and the public is cautioned against those falsely representing themselves.
GARDENERS' CHRONICLE (OF AMERICA) ILLUSTRATED

A HORTICULTURAL DIGEST

$1.50 A YEAR 15c. A COPY
In Answer to

"What Does It Cost?"

BRIEFLY, an attractive little house like this one costs less in proportion to the present cost of building, than you would imagine.

Costs less, mainly because we have found out how to make the cost of their making less. Instead of making endless special houses to meet really unimportant personal preferences, and individual caprices; we are making a certain few standard houses, selling at certain standard prices.

They are our highest type of construction in every particular.

But instead of making up one special one; one at a time; we run literally miles of them through our plant, at a time.

Just naturally, each house is more uniformly perfect.

But quite as important to you, its cost is uniformly less than the old, make-one-at-a-time-way, which we followed before the war.

All these standard houses, please bear in mind, are sold fully equipped in every particular. There are none of those numerous extras so exasperating in connection with the usual building.

We will be only too glad to send you special circulars describing our standard greenhouses and work rooms. Also prices for each in lengths of, say: 25, 33 or 50 feet.
New Roses :: FOR 1920 ::

The New Roses which we are offering this season are the very best novelties we have ever offered for the PRIVATE TRADE. Crusader is all alone in its class, the best red Rose we have ever grown or seen. Pilgrim is wonderful. We wish you could see these Roses growing and we invite you to come to Cromwell at any time.

CRUSADER
(Montgomery)
A big, strong-growing variety, robust and rugged in every characteristic. The growth is heavy and the flower stems are strong and heavy, producing very little blind wood. It is free growing and free flowering, and the blooms are truly characteristic of the variety—big and double and, in color, a rich, velvety crimson. These large, heavily petaled blooms open perfectly and are amply supported by the strong-necked, heavy flower growths. Crusader takes water well and will keep under almost any conditions. The plant is free from canker and does not show any tendency to die at the union of scion and stock. It breaks freely from the hard wood and is a strong-growing, free-flowering red Rose.

PILGRIM
(Montgomery)
In color, a beautiful shade of bright rose-pink. The bud, which opens perfectly, is long and of ideal form. Pilgrim is a Rose of good substance and petalage, and at any stage of development is perfect in color and form of flower. Its pronounced tea fragrance will attract all Rose lovers. It is prolific and highly productive of first quality blooms. The stems are straight and strong, and there is no tendency to weaken at the neck. It takes water freely and this quality makes it a good Rose for the private grower, as it will keep when cut and retain its color and fragrance. It is a wonderful grower, propagates easily, grafts nicely, grows freely and throws strong bottom canes early, making heavy, profitable plants on the bench in a very short time. It makes little blind wood and is comparatively free from disease, resisting black-spot and mildew to a great extent. It is the pink Rose to grow.
MICHELL'S SEEDS

mean an early, prolific, satisfactory garden and lawn, an attractive conservatory or greenhouse.
Our mammoth ware-
rooms are teeming with the best in the greatest variety of Seeds, Bulbs and horti-
cultural requisites.

MICHELL’S CATALOG FOR 1920

WILL BE READY JAN. 1st.

An authentic guide to successful gardening and lawn making, and also brimful of interesting farm and other facts. It will help you to grow bigger and better crops.

WRITE TODAY FOR A COPY, which will be mailed as soon as issued.

MICHELL’S SEED HOUSE
514 MARKET ST., PHILA. PA.

Early Tulips

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Darwins and Cottage

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Double

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Narcissus

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If you can use any speak quick!

CHARLES H. TOTTY CO.
MADISON NEW JERSEY
DREER'S
GARDEN BOOK
FOR 1920

Will be ready in January and a copy will be mailed to all customers without their asking for it, but we want all who are interested in gardening to have a copy and will mail it free to those who mention this publication when writing.

DREER'S GARDEN BOOK FOR 1920 contains 224 pages, six color plates featuring Choice Vegetables and Flowers, also hundreds of photo-engravings, together with cultural notes written by experts, making it a dependable guide on all matters relating to Vegetable and Flower growing. Write today and we will gladly send a copy when it is ready.

HENRY A. DREER
714-716 Chestnut Street, Philadelphia, Pa.

"A Garden for Every Home"

We Wish One and All

A Merry Christmas
and
A Happy New Year

Muller-Sealey Co., Inc.
Horticultural Specialists
145 West 45th St.
New York City
Phone Bryant 9161

(Note our change of address.)
Our Spring Catalogue on Seeds, Bulbs, and Garden Requisites will be mailed about December 20.

THE GARDENER—SCIENTIST

Most of the finest varieties of flowers, fruits and vegetables owe their development to a greenhouse. It is the gardener's laboratory in which he works out his theories, and shows nature something new.

The V-Bar is known as the Gardener's Greenhouse because it is the kind of laboratory that sustains his every effort, that assures him of success.

And as for looks, who ever saw a more beautiful greenhouse than the V-Bar?

Come in and talk it over with us, or tell us when to call on you.

WILLIAM H. LUTTON
COMPANY
512 FIFTH AVENUE
NEW YORK
GLOXINIAS
We have just received a fine lot of bulbs in the following varieties:
DUCHESS OF YORK—Purple, white border.
HER MAJESTY—Pure white.
KING GEORGE V—Red.
METEOR—Flesh color, deep pink border.
READING PURPLE—Deep purple.
READING SCARLET—Scarlet.
$3.50 per Doz. $25.00 per 100.
Extra selected bulbs, 50c. each, $5.00 per doz.

W. E. MARSHALL & CO., Inc.
166 West 23rd St., New York

Orchids
If you contemplate buying semi-established, established or imported orchids, consult us first.
We carry in stock about 25,000 species.
A large stock of Laeli Cattleyas, Hybrid Cattleyas, Brasso Cattleyas, Odontiodas, and other choice hybrids.
We specialize in supplying the private trade. Let us figure on your requirements—our quality is second to none.
Orchid peat, live Sphagnum Moss, baskets, pot hangers, always on hand.

Send for our price list.

G. E. BALDWIN & COMPANY
Orchid Collectors, Growers and Importers
MAMARONECK Box 98 NEW YORK

THE Season's Greeting
To Our
Gardening Friends

The 1920 edition of our Seed, Bulb and Plant Catalog will be mailed to our customers on January first.

If you are not on our mailing list send us your name. We will be pleased to mail you a copy.

Wm. M. Hunt & Company
Seeds, Bulbs, Plants, Garden Supplies
148 Chambers St. New York

HOME GROWN
NURSERY STOCK
BETTER THAN IMPORTED
If YOU will come and see these plants, I will certainly get an order

Norristown is 17 miles west of Philadelphia

ADOLF MULLER
DE KALB NURSERIES
Norristown, Pa.
Burnett Bros.

EXTEND

THE SEASON'S GREETINGS

To their many Friends

and take this opportunity of stating that their "Novelty List" for 1920 is now ready, and a copy will be mailed upon application.

Our Annual Spring Catalogue will be mailed early in January.

Burnett Brothers

SEEDSMEN

92 Chambers Street :: New York
Between Broadway and Church Street

FOR RESULTS USE

MASTER BRAND

Sterilized Sheep Manure
Guaranteed Analysis
Ammonia Phosphoric Acid Potash
2.25% 1.50% .150%

Concentrated Vine & Plant Manure
Guaranteed Analysis
Ammonia Phosphoric Acid Pota
5.00% 2.00% 1.00%

Precipitate Phosphatic Manure
Available Phosphoric Acid 25%

NATURE'S MASTER SOIL BUILDERS

Master Brand Manures are thoroughly sterilized in Rotary Direct Heat Driers. Absolutely free from all Live Weed Seeds and Fungus diseases. Does not contain 15 to 30% excess moisture as is found in all air-dried manures. Will not rot out the Bags when placed in dry storage. Are adaptable for the feeding of a greater variety of crops than any other type of fertilizers.

Full information and prices furnished on application.

The Proto-Feed and Guano Co.
4121 S. La Salle Street CHICAGO
The Contents for November-December, 1919

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Stumpp & Walter Co.
30-32 Barclay St.
New York
Things and Thoughts of the Garden
THE ONLOOKER

WHILE yet we mourn the untimely passing of the Dahlias, cut off by frost while still in the prime of life and whose limp and blackened leaves and stems give such an air of melancholy that we are tempted to cut them down with undue haste; when all the summer splendor of the garden has become a thing of the past; when our minds are busy planning and our hands are busy planting bulbs and other things to brighten up the garden in the early days of spring; then is the time we welcome with joy the arrival of the Chrysanthemum season in all its glory. Essentially the flower of autumn, not alone in our own country but wherever flowers are cultivated, it is hailed as Autumn Queen, with no near rival to dispute the title, and thousands of admirers throughout the world devote time and space and the exercise of considerable skill to the cultivation of this lovely flower just for the sake of its beauty of form and diversity of coloring alone, while as a flower of commerce it is indeed a “flower of gold” and in this connection ranks as one of the “Big Four” of the floral world. At the same time it is not altogether such an aristocrat that it can only be found in the gardens of the very well-to-do and of those cultivators who aspire by its assistance to reach that happy state. True it is that the aid of glass is necessary to bring the more highly developed forms and varieties to perfection, and not everyone can grow such massive and well finished flowers as shown by Chas. H. Totty for instance, or such imposing and wonderfully grown specimen plants as those for which John Canning has become famous. But still there are varieties which succeed in the garden outside the greenhouse that call for neither expert care nor elaborate soil preparation, and although these may not be very well represented in our New England gardens there are other and more highly favored garden spots where these hardy Chrysanthemums contribute largely to the brightness of the autumn days.

Although the Chrysanthemum genus is very extensive and widespread throughout the world it is the Japanese and Chinese Chrysanthemum that is so widely known and grown. This is indeed a flower of ancient history, and it may not be amiss at this time to direct attention to some of the more salient features of the introduction of this Oriental flower into European gardens, where it was destined to undergo such wonderful change and development at the hands of French and English growers, which work in more recent times has been shared by raisers in far off Australia as well as in our own country. Even a slight acquaintance with the early history of any plant we grow tends to the stimulation of greater enjoyment than comes from just cultivating. The literature pertaining to the Chrysanthemum is voluminous, as represented by scores of books, many catalogues and countless writings both historical and practical scattered in different magazines. We are told that Confucius, the noted Chinese philosopher, who was born in the year 551 B.C., makes reference to the Chrysanthemum in one of his works, and more than one celebrated Chinese poet sang its praises hundreds of years ago. Both in China and Japan there was an old superstition that a drink made from the chrysanthemum would ensure long life and preservation from evil. On the occasion of the Great Chrysanthemum Festival of Japan it was customary for the guests to partake of this beverage and to give expression to the wish that the Emperor might live to see the chrysanthemum cup go round autumn after autumn for a thousand years. In both countries it has long been largely used as a decorative subject in art work such as lacquer ware, fabrics, pottery and bronzes. An Emperor of the 12th century had his sword hilt decorated with figures of the flower and the sixteen-petalled chrysanthemum has been for centuries the imperial emblem of the Mikado.

According to the Hortus Kewensis the Chinese chrysanthemum was unknown in English gardens prior to 1764, but in that year it was growing in the Apothecaries Botanic Garden at Chelsea. It is interesting to note that this garden is still in existence, and also the original plant as a dried specimen. But this rather weedy looking plant with small, single, yellow flowers was not looked upon with favor and was lost to English gardens for some years. This is the C. Indicum of Linnaeus and the Anthemis grandiflora, Matricaria japonica, and Pyrethrum indicum of other botanists. It has a great many fanciful names in the Orient, such as “star-like flower,” “old man’s flower,” and “flower of a thousand generations,” while some of the varieties were blessed with such fantastic names as “The White Waves of Autumn,” “The Purple Peasant’s Tail,” and “The Yellow Tiger’s Claw.”

The next appearance of the flower in Europe according to the records was in 1789, when an enterprising French merchant named Pierre Blancard returned from China with three varieties of which only
one, however, survived. Soon after it made its appearance in England and was known for many years there as the "Old Purple." John Salter describes the flower as semi-double, about the size of a carnation and regarded as a most valuable acquisition. It aroused the interest of English gardeners and from time to time other varieties were introduced, not at the rate to which we in our day are accustomed, however, as we learn that only twelve distinct varieties were known in England in 1820. Soon after this date the Horticultural Society of London despatched a collector to China, and several new varieties were added, so that in 1826 the gardens of the Horticultural Society at Chiswick boasted the largest collection in Europe, some forty-eight varieties in all, a few of which we are told were vegetative sports which had occurred in England.

By this time a good deal of interest was aroused in the new flower which was rapidly becoming a great favorite, but thus far no seedlings had been raised in Europe. To Captain Bernet, a retired French army officer, belongs the honor of having raised the first European seedlings. This was in 1830 according to John Salter, but later authorities state it was a year or three years previous that this important event took place. But whatever year it was all agree that Bernet raised the first seedling in Europe and continued the work with success for many years. Other growers soon joined in with the result that the importation of new varieties from China was practically discontinued. The first English raised seedlings were shown at a meeting of the Horticultural Society in 1832, and the exhibitor was awarded a silver Banksian medal. Four years later a London florist purchased some five hundred seedlings from an amateur grower in one of the Channel Islands. These showed such a marked advance in form and color that they were received with the greatest enthusiasm when placed on exhibition.

In the next period of progress we come across one of the most famous names in connection with the development of the flower, John Salter, who has been called in England the "father" of the chrysanthemum. Having been engaged in its culture for some time he left England in 1838 for France, and finding the French climate particularly suited to the cultivation of the chrysanthemum he proceeded to get together a collection which some two years later numbered between three and four hundred varieties. These comprised all the Chinese varieties then in England and the best of the English and French seedlings. He stayed in France about ten years and then returned to England, establishing a nursery in the outskirts of London. In both countries his work in the raising of seedlings was attended with great success, and when he retired in 1869 his collection is said to have contained about two thousand named varieties, very many of his own raising.

After the work of raising seedlings in Europe had become established it seems that special effort to secure new varieties from China and Japan was discontinued, but there were still some varieties to come from those countries which were to play a prominent part in the development of fresh types. Robert Fortune, a noted plant collector, made his first visit to China in 1843, and sent back to England two small flowered varieties called "Chusan Daisy" and "Chinese minimum." These were exhibited in 1846, but the English growers being by this time so much interested in the larger flowered varieties failed to appreciate the possibilities of these new comers and cast them aside as being too small and insignificant.

The following year they were grown by Salter in France, where they were at once well received. Seeds were freely produced and the results are declared as having "surpassed the most sanguine expectations." So originated the Pompon section, which advanced rapidly in favor and has proved to be the hardiest type of all. In 1861 Fortune was again in the Far East and this time sent from Japan seven varieties totally distinct from those grown in Europe. In the light of after events this was a most important happening in the history of the flower, for these varieties were the fore-runners of the Japanese section which was to eventually revolutionize the ideals of the florist. In this case again history repeated itself, we find the English growers despised by new comers while the French took them in hand and set about their improvement in real earnest. In 1892 the famous French raiser, Calvat, caused quite a sensation in London when he made his debut as an exhibitor in England with some of his seedlings. These aroused the greatest enthusiasm in England and for several years after many of the most popular exhibition varieties were the productions of this noted Frenchman. No doubt the French took them in hand and set about their improvement in real earnest. In 1892 the famous French raiser, Calvat, caused quite a sensation in London when he made his debut as an exhibitor in England with some of his seedlings. These aroused the greatest enthusiasm in England and for several years after many of the most popular exhibition varieties were the productions of this noted Frenchman. No doubt the French raised seedlings were freely produced and the results are described as having "surpassed the most sanguine expectations."
Forcing Herbaceous Plants and Bulbs for Winter Flowers

HENRY GIBSON

The preparation of herbaceous plants for forcing, requires that the plants be induced to make early growth, subsequent early and thorough referring of the roots and tubers the season before needed for forcing. In case of some other subjects used for winter flowering plants, such as Marguerites and Mignonette, it is early preparation rather than hard forcing that is essential to success. The term ripening with reference to such hardy plants as Iris, or Delytra, for instance, means that the plants have completed their season of growth, and a period of rest, or dormant state must be had before they can be forced with any degree of success. The same principle applies to Gladiolus. One may lift the corms of the varieties that force easily, as America, when the tops have died down in the fall, as soon as the corms are thoroughly ripened by keeping them in a cool cellar they may be replanted. In the case of hardy plants many growers dig them, and allow them to become severely frozen, before forcing, thus making doubly sure of the growth having been checked.

Many of these plants when potted may be placed under the benches of the greenhouse, or in out of the way corners until they show signs of renewed action when they should receive all the sun and light possible.

CHIONODOXAS.—The clear blue flowers of this bulbous plant are very effective and are useful when grown in small pots for adding color to plant groups. A sunny position in a cool greenhouse is most satisfactory. CHRISMAS ROSE (Helleborus Niger).—The variety Maximus is the best for pots or for cutting. The clumps should be potted as they are taken from the ground, or if purchased from the nurseryman as soon as received. If the weather should be mild the protection of a cold frame is all that is necessary until the flowers begin to show up, when they may be removed to a warm house, shaded and liberally supplied with water. It is oftentimes difficult to get stock that will force well. Those that have been forced should have care after they are through flowering, and if divided up carefully, taking care not to damage the points of the roots, and planted in deep loamy ground they will make strong growth. The crown should be kept well below the ground surface when planting.

CROCUS.—Strong bulbs should be selected and potted as early as possible. Any ordinary compost will do for them. They may be placed outside and covered with ashes until they are rooted through, when they may be given a little heat to start them. Liquid manure gives strength to the flowers.

DIEVYTRA.—Plants intended for forcing should be lifted in the Fall, potted and kept in a cold frame until required for starting. The first batch may be put into warmth in January, under a stage in an intermediate house being suitable. A covering of refuse will keep them moist and dark. When the growths show up they may be placed in a light sunny position. If started too early or in too high a temperature, leaves are developed instead of flowers. When the plants are in active growth liquid manure may be freely used. A light airy position in the house is essential.

FREESIA.—These gracefully branched fragrant flowers, are of long duration and freely produced. Well ripened bulbs planted at the beginning of August and placed outside, watered sparingly, will flower by Christmas if placed in a greenhouse in October. They respond to a good growing medium, consisting of leaf-mold, stable manure and good loam. The bulbs should be set an inch below the surface.

FRITILLARIA.—When well established in pots these may be started early in the year in an intermediate house, where they should be afforded a light sunny position. Liquid manure may be used after they are making growth freely. Overwatering must be guarded against, while on the other hand dryness at the roots must be avoided. F. Liliaceum (Crown Imperial) and F. Meleagris (Snakes’ Head, or Plovers’ eggs) are the two generally used for forcing.

FUNKIAS.—Several of these plants if established a season in pots, may be started in a warm house and made useful pot plants, the foliage alone being most effective. They require a strong light for a compost; the protection of a cold frame and ample water. F. Grandiflora, with large pure white flowers is one of the best, as is F. Seiboldii and the variety varigata. F. undulata media picta, green and white foliage and purple flowers, and F. undulata cartaginensis, varieties or both plants when forced, the foliage of both being much prettier than when growing outside.

GLADIOLUS.—Several sorts are useful for early forcing. Early in the Fall the corms should be potted in good loamy compost, either in pots or boxes as the circumstances permit. They may be placed in a cool pit or frame where frost cannot reach them. It is a common practice with some to place them under the greenhouse bench until growth is visible above the soil, when they are removed to a warmer position to flower early in the year. The sorts that force well are Colvillii, and the white form alba. This, The Bride, is one seen in Europe, and is a great favorite. It is a succession of bloom a batch of the earliest flowering varieties should be potted as soon as they are available, preferably in December, putting in the main batch in February. Gentle protection is all that is necessary until the flowers begin to show. In the case of many growers for hardy plants many growers dig them, and allow them to become severely frozen, before forcing, thus making doubly sure of the growth having been checked.

HYACINTHS.—For forcing a great deal depends upon securing firm well matured bulbs. The treatment afforded them cannot increase the number of flowers, but the size and strength of the spikes may be materially increased by good culture. To ensure a succession of bloom a batch of the earliest flowering varieties should be potted as soon as they are available, preferably in December, putting in the main batch in February. Gentle protection is all that is necessary until the flowers begin to show. In the case of many growers for hardy plants many growers dig them, and allow them to become severely frozen, before forcing, thus making doubly sure of the growth having been checked.

LIRIUM.—Early on the winter bulbous flower list are the Lilies, generally used for forcing.

MARGUERITES.—These are now almost as popular as winter flowering plants as they are as summer bedding. In fact, we believe they are now more used for winter flowering than they are as summer flowering plants. Cuttings struck early in spring as for bedding plants are grown on in a cool house or frame until July. They are then cut back close and all old leaves removed. As soon as they have started to make growth again they should be potted into pots one size larger, in somewhat poor soil to check excessive growth. When they begin to flower a little weak liquid manure may be given. They should be well set with bloom in September to flower well during the Winter. A light airy house with a temperature never below 40 degrees at any time. A lilyation house suits these subjects very well.

Plants are sometimes attacked by maggots which can be controlled by sprinkling with a weak solution of kerosene, but it has to be done with care and kept well stirred up during the application. The Iris, as well as all the other bulbs are used, and the ones to be used are: L. Harrisii (the Ber. Easter Lily), L. Longiforum, both the Giganetum and Formosum types, L. Candidum (the Ascension or old fashioned English Lent Lilly), L. Speciosum and the variety album.

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THE forcing of fruit trees and bushes in winter is part of the usual routine in large establishments where the orchard house supplies fresh apples, pears, peaches, nectarines, gooseberries, etc., in the early spring. The growing and forcing of fruit trees in pots is very simple and any one with an ordinary greenhouse can do this, if the same attention is given as to other greenhouse plants.

These dwarf trees are grafted on to slow growing stock and are covered with fruit spurs. This is accomplished by "stopping" the growing shoots by pinching, and by spurring back hard in pruning. These trees are grown in various forms but the Pyramid is most generally adopted as the plants can be placed closer together under glass where space is valuable.

The dormant trees are taken into the greenhouse in batches as required for forcing. The earliest batches are taken inside in November and syringed every day. When the fruit has "set," feeding should be attended to. This can be supplied by liquid manure or fertilizer when watering. A top dressing of rich soil will be very beneficial. If the trees should set more fruit than they can carry, part of the crop should be removed. Remove any small or deformed fruit in thinning.

In the accompanying sketches the "stopping" and pruning of pot grown trees is explained.

Fig. "8" is a pot grown apple after thinning. Fig. "6" shows an apple tree: "F" side shoots stopped at 6 leaves, "G" stopped at 3 leaves, "I" laterals starting after the first pinching and "stopped" on two leaves. Fig. "2" shows the branch "G" (Fig. "6") enlarged.

"B" young shoot stopped 6 leaves, "A" side shoots stopped at 4 leaves. Any laterals starting after the first pinching back should be stopped at two leaves, sublaterals stop at one leaf "CC" Fig. "3." Spurs and short stubby shoots, Fig. "11," must not be pinched. Stop the "leader" "H," Fig. "6," at 8 leaves. Fig. "7" shows how to cut back the new wood at winter pruning. Spur this back to 3 or 4 buds as at "J" and "K" the "leader" "L" to 6 buds. Fig. "5" is branch "I," Fig. "7" enlarged showing how to "spur" back "E" to 4 buds, "D" to 3. Very old trees do not make much wood and can be cut back to 2 buds. Fig. "10," "M" is in fruit spur, "N" buds on the new wood.

Fig. "18" shows a cherry tree, "W" the summer pruning, "V" winter pruning, Fig. "13" cherry shoot stopped at 6 leaves, laterals and sublaterals at one leaf. Fig. "14" winter pruning of the same branch spurred back to 2 new buds. Fig. "15," "RR." Fig. "17" shows a pot grown gooseberry, "T" summer pruning by stopping at 6 leaves, Fig. "19," "S" before winter pruning, "U" spurred back in winter pruning to 2 or 3 buds. Fig "16" "U" enlarged. Fig. "12" shows this also, "PP," old buds, "OO" spurred back to 2 buds on the new wood.

GROWTH

When I was young I was sure of everything; in a few years, having been mistaken a thousand times, I was not half so sure of most things as I was before; at present, I am hardly sure of anything but what God has revealed to me.—John Wesley.
This article is intended more especially for folks who do not grow roses than those who are skilled in the work. If, however, from anything of value may be gleaned by the latter, it will be more fully justified. Those who grow roses will have so learned to love them as to always grow them. Those who do not should be encouraged to make a start. If the most beautiful spots on God’s earth are rose gardens, let us have an army of rose lovers, for nothing will so inspire and raise the human standard as that which is surpassingly beautiful. Perhaps even yet some folks need an inspiration.

During October and November the rose garden may be laid out and the beds prepared. The shape and size of the beds will necessarily be governed by the size and shape of the area at the grower’s disposal. There are two important points to be observed in the making of a rose garden: (1) The soil should be fairly heavy and well drained; (2) the position must be open and sunny, and in cold localities be sheltered on the north and east.

The Soil—A clay loam is the proper soil for roses. If blue in color it should be exposed for at least a year to the atmosphere before the planting is done. A red clay loam is usually fertile, a blue clay, however, may contain poisonous iron (ferrous) oxide on being first broken. When the oxygen of the air acts upon this oxide it converts it into ferric oxide, which is a plant food. Choose, if possible, a red clay loam for immediate planting, or if the planting is to be deferred, an aerated blue clay loam may be equally fertile. By the addition of fifty to seventy-five per cent of clay loam, light sandy soils may be rendered satisfactory for roses.

It is a mistake to heavily manure rose beds when preparing the soil for planting. Many roses are annually killed by the practice. Unless the plants are thoroughly established, that is, after new feeding roots have been formed, they cannot absorb the solutions which are formed as a result of the decay of the manure, consequently this food is lost as drainage. Stable manure should not be allowed to come in contact with the roots of roses during the first year, unless in small quantities, and in an advanced state of decay, otherwise it will prevent the formation of a fibrous root system. A light application of rotted cow manure may be given when preparing the beds, about one barrow load to fifty square feet.

The Position—Discouragement comes through the fall of roses to grow satisfactorily is often caused by the injudicious choice of positions; only open and sunny ones should be chosen. Roses are often planted under trees by the novice. In these positions the growth does not properly ripen during summer and fall, consequently abundant flowers are not produced the following year. Unripened growth will not stand our severe winters, thus we have two reasons for choosing an open position. It is better to select a high position than a low one for the rose garden, that is, a position where water cannot possibly stand for a long time, especially during winter as a saturated soil is harmful to roses. If only a single bed is to be made a position high enough to be well drained should be chosen.

City folks have not the choice of positions that pertain in the country. They may, however, grow roses equally as well as the more fortunate country people if thought is given to the selection of a proper position in which to plant. In the case of small city lots, the boundaries of which are often defined by walls or fences, advantage may be taken of these structures for winter’s protection, and if the roses are planted near the northerly borders a proper southerly or southwesterly aspect will be afforded the plants. It is not wise to plant bush roses, hybrid teas and hybrid perpetuals very close to the walls or fences of a small enclosed city garden which in summer is likely to become unbearably hot, rather, plant at some distance from these structures, so that the roses may enjoy the benefits of any breezes (which may cause a circulation of air), of showers, and of full light, benefits which might otherwise not be possible. In small enclosed gardens even the climbing roses will do better when growing at some distance from the boundaries, as, for instance, on pillars, trellis or arches. They enjoy the forementioned benefits, are not so liable to the attacks of insects, such as red spider, and if attacked they may be more readily sprayed. If for purposes of beautification it is desired to cover walls with climbing roses, they should be trained to trellis, which is supported a few inches from the actual wall, so that a circulation of air is possible between the foliage and wall, and so that there is sufficient room for the use of the hose or for the application of insecticides. It should be borne in mind that dark walls absorb and retain heat during summer, some even to the extent of seriously affecting the growths of the roses. Another disadvantage is that the heat from the walls and the cover afforded by the foliage afford ideal conditions for the red spider and thrips to multiply. Do not, then, nail climbing roses directly to walls.

Selecting the Roses—When selecting roses for even a small garden the grower is apt to overlook everything in his or her desire to obtain vigorous and hardy kinds. While these characters in themselves are indispensable to the person who makes an initial attempt, there are other factors of equal importance which should not be overlooked. These factors are color, fragrance and duration of the flowering period, points which unfortunately may only be touched upon briefly in this article.

Were the writer making a small rose garden he would plant chiefly hybrid teas, and for hardiness, general vigor and color, he would select J. B. Clark, Gruss an Teplitz, Prince de Bulgarie (rather a pity the last two have such names) and Willowmere, roses which in Canada appear to have given general satisfaction. Who can imagine a rose garden without fragrance? To the forementioned selection would be added any or all of the following scented kinds, and which with ordinary care during winter would be sufficiently hardy: Edward Mawley, General McArthur, La France and Richmond. Were there room for a few hybrid perpetuals the factor of fragrance would be found in Alfred Colomb, Dupuy Jamain, Fisher Holmes, General Jacqueminot, Hugh Dickson, Mrs. John Laing and Ulrich Brunner. These also being of good color and hardy. For exceptional vigor and color Frau Karl Druschki (Snow Queen), Coronation and Baroness Rothschild would be included.

When roses are grown in hot positions where during summer, as in the crowded heart of a city, little
The manner in which roses are arranged in the rose garden will depend entirely upon the number of beds at the grower's disposal. Where only one or two small beds exist as in the majority of city rose gardens, the roses should be mixed in the beds, mixed hybrid teas in one bed, and if the grower desires hybrid perpetuals these might be mixed in another bed. Hybrid teas and hybrid perpetuals, however, should not be mixed in a bed. The forementioned arrangement will allow the grower to enjoy the beauty of many varieties, not merely one or two, as would be the case were the bed planted with one variety.

In the case of gardens where several beds are to be devoted to roses, the varieties should be arranged separately therein, thus we might have a bed each of Richmond, J. B. Clark, La France, General Jacqueminot or others for which we have preference. By this method a very pleasing general effect may be created because the grower has the opportunity of choosing suitable colors. Between the beds of hybrid teas and hybrid perpetuals, beds of the baby ramblers, as Maman Levavasseur, Gloire des Polyanthes, Jessie, Snowstorm and others could be interspersed. These will flower a few weeks later than the hybrid perpetuals, and will greatly augment the hybrid teas when the first blaze of beauty of the latter has declined.

Planting.—Roses may be planted during spring or fall, and in all but the very coldest localities the work may be done this month (November). Experiments in the Queen Victoria Park at Niagara Falls, Ontario, where the winter's temperature occasionally falls to ten below zero, have repeatedly shown that not only may the hybrid perpetuals be safely planted during November, but the hybrid teas equally so, and with as much success as those planted in the spring. The plants of course were protected by a mulch of litter.

When planting, space the hybrid teas eighteen to twenty-four inches apart, and the hybrid perpetuals twenty-four to thirty inches. Dig the holes wide enough to allow of the full spread of the roots, making these radiate from the stock, and so deep that when the plants are placed in position the "bud" (the point of union of stock and scion) will be two inches below the surface. Do not make the mistake of allowing the bud to remain above ground. Remove the broken roots with a clean cut, and plant the roses very firmly. A few of the longest growths may be shortened, but proper pruning should not be attempted until spring. Do not protect newly planted roses until frost permanently encrusts the soil. Those who do not intend planting until April or May should at least prepare the beds at this time.

Pruning.—A good rule to follow when pruning roses is to prune the weak growing ones, the hybrid teas, severely, and the strong growing and more vigorous ones, the hybrid perpetuals and climbers, lightly. The reason of this is obvious. Severe pruning induces stronger growth. There are of course strong growers among the hybrid teas, notably J. B. Clark and Gruss and Teplitz. These should be pruned more like the hybrid perpetuals, these exceptions, however, do not alter the rule.

Prune your roses after the last heavy frost of early spring. This will be in April or early May, according to locality. Cut the newly planted hybrid teas back to four inches above the "bud" and the hybrid perpetuals six to eight inches. In both cases remove entirely all weak growths, leave three or four growths on the hybrid teas, and four or five on the hybrid perpetuals, if this is possible. During the second and subsequent years, when pruning, cut the growths the forementioned distances above the previous season's growth, and remove all dead branches. Always prune the growths immediately above a bad or close to a branch, so that no stub will remain.

The pruning of climbers differs greatly from the previously suggested method and consists really more in thinning. Remove the flower trusses as soon as the flowers fade in autumn. Do not attempt to prune until Spring, when remove all dead growths, thin out the weakly ones, and train all strong, young growths of the previous season in position. It is these growths that you will depend upon for flowers, to take the place of the old ones. If necessary to shorten the growths of climbers, cut them back to a sound bud, simply removing the weak ends.

Manuring.—Roses do not require continual heavy applications of manure. It is the best practice to afford medium dressings annually. Cow manure is the best general one to apply. Should, however, rank flowerless growth be produced as a result of too much nitrogen from the manure, or should the beds become sour through its continued use, phosphates in some form should be applied. Superphosphate is excellent. It will aid greatly in the production of flowers, and in thinning. Remove the flower trusses as soon as they may be applied during the spring. Bone flour or meal also excellent phosphatic manures may be applied during the fall. They decompose slowly, and may be relied upon to be of great value to the plants when flowers are forming during the following season. Two ounces to the square yard is about the proper amount to apply. Weak growing roses may often be stimulated by applications of diluted urine from the stables. It is good to apply this to all roses which are not vigorous, only, however, during their growing period.

Propagation.—The amateur rose grower usually does not care to practice the budding of roses as the process though simple entails certain facilities which he does not always possess. There is, however, a very easy way of raising roses from cuttings, one which anyone may practice, but which is not generally known. When roses with fairly vigorous stems (not coarse) are cut for home decoration as soon as the petals fall make cuttines of the stems about eight inches long. Cut them directly below a joint at the bottom. Insert these firmly to a depth of about four inches in a shaded position of the garden in groups of four or five. Cover them with a one-half gallon or larger glass pickle jar, and water them occasionally. By fall many cuttings will have rooted, and the plants may be transferred to other positions during spring.

The man whose life is cast among the flowers is indeed fortunate. He deals with God's masterpiece. Conscious, or unconsciously, he lives a finer life because of his association with the flowers and his love for them. He is a bigger man and a better man because of this association. He spends his life developing the things of beauty which please the world and make brighter the lives of mankind. It is in very truth a noble profession — worthy of earnest thought and effort and of a fine degree of consecration. In order to make the most out of your life work, it is necessary that you look upon it with a feeling of utmost respect and personal satisfaction. I mean by this that you must consider it in every sense a real profession.—Hon. M. L. Davey.
November is a dull month, though never to the wide-awake gardener. Jack Frost is supposed to have performed his usual work and in-door favorites are now appreciated.

This is the time when the mums are in their glory and make a bright array between the usual row of carnations and roses. The mums in flower now require a fairly cool and dry position, and in this way they will be useful for a much longer period. When the plants are cut down remove them to a cold frame, protected with strawy manure at night.

Palms and Dracenas, many of them old favorites, should be repotted if necessary as Palms root during the winter and more time can now be spared for this work. Avoid large pots. Shake off all old sour earth and repot very firmly in a compost of three parts turf, one part sand and a little pure bone meal.

Bulbs of early hyacinths, intended for winter, should not be allowed to suffer through dryness at the root. Keep fairly cool. They can be brought along in carnation temperature with paper white Narcissi. When the buds are showing up, feed with liquid manure.

Sweet Peas to take the place of early mums which were started in pots, can be planted in the benches. We grow a few half benches of Sweet Peas and they are no trouble whatever. Plant Oxalis bulbs in baskets lined with moss and light soil. Suspend over the walks and they will adorn the place in the midst of winter.

Spray carnations each week with a nicotine solution for red spider, and keep them at an even temperature. The roses also require an even temperature. 60 degrees at night with air is necessary. Cut now lower than the past two months into the firm wood and syringe every clear morning so that the plants will dry before night.

Lily of the Valley from cold storage can be forced easily. Immerse the crowns over night in water, and stand where the leaves will dry before night.

Do not forget to transplant lettuce into disused frames and it will thrive alright for several weeks. Then, if given protection, it will survive the winter nicely.

Tomato plants should be potted now into nine inch pots for winter work. Use heavy soil, no leaf mold, but rough pieces of sod and a little well rotted manure and bone meal. Pot very firmly and do everything possible to induce a stocky, steady growth. Avoid a lanky plant and all foliage. If a light position is at hand, a foot from the glass, it is ideal.

Place the pot fruit trees in doors the end of the month in a cool spot where they can rest, and protect these pots from frost by covering well with straw and old mats. Frost will not harm the plants but it is better to keep the roots moist and not to allow the pots to be broken.

Dig up clumps of Solomon’s Seal and keep in a root cellar ready for forcing. Put Bay Trees and Hydrangeas away in winter quarters. Water if dry but do not maintain a sodden soil. Remember that they are at rest. This is a very good time to repot Hydrangeas. Use half barrels for large specimens. Oil barrels, burnt out with excelsior or shavings to cleanse the oil from the sides, cut into two parts, well painted, with holes made for drainage, will answer well. Use any good soil, and mix in a little bone meal. Pot very firmly, and stand where water will not interfere with the drainage.

Buddleya Asiatica should be coming on nicely and makes a fitting companion in the conservatory to arrange with single mums and other decorative plants. The light feather sprays are always attractive with cut flowers.

December is here and this is the month in which to plan for another year’s work. ‘Mums are over with the exception of late varieties and we are ready to prepare for another bright array. Old plants of the tested varieties should be removed to frames in a cool place and the space utilized for other subjects.

The ‘Mum house can and should be used by the fruit grower, for the Nectarines can be placed here and kept cool. Bulbs of all kinds will also be in order in this house, and on the side benches the Primulas; on the north side the Cyclamen, Lilacs, and Standard Roses.

Tausendschoen is a fine rose as a standard. We have several of this unique variety, which we have just brought indoors, and have firmly the soil well, and pruned out the dead twiggy wood. They will root nicely now and should be kept on the dry side, and by Christmas will be starting to grow. Mildew will not disturb them unless a draught is allowed to strike them. That beautiful American rose we are growing likewise, not in standards, but in the ordinary hybrid teas; Los Angeles last year made a great hit in our district and many a lady was charmed with its color. Roses in pots are indeed charming and along with the other named subjects can be grown easily. Keep Bordeaux powder thrown around the damp corners of a rose house, and you will not have to worry so much about mildew.
Place a few asparagus roots (vegetable) under a bench in the rose house and in any kind of soil. They will give a few tasty dishes for the table, and later on their fern like foliage will be valuable for decoration.

Keep the Mignonette cool and staked up nicely. Do not apply any fertilizer until the fruit is well advanced in growth. White fly is the greatest detriment to the successful culture of tomatoes.

Orchids need less spraying but avoid dry conditions where these lovely aristocrats grow. Calanthes are deciduous and when in bloom require no water. Being without foliage they do not appear to advantage, so arrange them between Adiantums or other ferns. They are sometimes used as cut flowers but do not drink water.

Start a few early Gloxinias in flats of moss and sand, and you will be rewarded at Easter time.

Poinsettias are the Christmas plants and these bright subjects are of easy culture, but must be very carefully watered. Any change in temperature or a chill resulting from too much or too little water, mars their usefulness. Have as many plants as possible in fine condition for the holiday season.

Roses and carnations are the staple flowers for cutting; they must not be neglected. It is a common mistake with small growers to let these plants take their own chance, as it were, from now on. But every dead leaf must be picked off and all weeds removed. Syringe only on bright mornings. Do not use too much liquid food, for solids are better at this time of the year. Car

Do not neglect the Liliums for Christmas, nor those wanted for Easter and be careful not to over-feed. I saw a few several days ago which were looking fine some time before, but an inexperienced man gave a good spray dose of Nitrate of Soda, and the lilies are all destroyed. Liliums are supposed to need a lot of water, but it is the careful application of water that tells, and food is not required unless the pots are well filled with roots. When the small buds are visible, sot water and Clay’s fertilizers are the best.

Keep Freesias cool. Nerines should be dormant on the shelf near the glass and no water should be applied until the buds being apt to go blind if hurried too much. The Double 'Soleil d'Or' is the best of those enumerated for early use making a good succession to the paper white narcissus. Th

SPIREA.—Imported roots are best for forcing and should be potted up as soon as received, and placed in a cool place until needed for starting. The crowns should be covered and kept quite moist, but not too wet or the roots will rot. When they are started they should have a light position in an intermediate temperature. Too much heat causes the flowers to become weak. As the plants develop they should be spaced properly and arranged so that air can circulate freely among the foliage, and care taken when watering not to wet the foliage too much as it has a tendency to damp off easily. Spirea Spur and Pinkie force well if placed in a higher temperature than that of an ordinary greenhouse, and does better if not started before February. Besides the one mentioned and S. Saponica, Queen Alexander, and Peach Blossom, are good forcers.

TULIPS.—These are particularly appreciated early in the year. The bulbs should be potted as advised for Hyacinths, and treated in the same way. For early use they may be started as soon as the roots are well round the sides of the pots. For cut flowers they may be grown in a shady part of the house, but for pot plants they should be given more light so as to develop sturdy stems that will stand upright. Heat may be given as circumstances determine; those grown in a high temperature come on quickly, but the flowers are not so large as those grown cooler. Liquid manure may be given, which will add greatly to the size and quality of the flowers.

To be glad of life because it gives you the chance to love and to work and to play and to look up at the stars; to be satisfied with your possessions but not contented with yourself until you have made the best of them; to despise nothing in the world except falsehood and meanness, and to fear nothing except cowardice; to be governed by your admirations rather than by your disgusts; to covet nothing that is your neighbor’s except his kindness of heart and gentleness of manner; to think seldom of your enemies, often of your friends, and every day of God, and to spend as much time as you can, with body and spirit, in God's out-of-doors; these are little guide posts on the footpath to peace.—Henry Van Dyke.
Already we have experienced a foretaste of winter and were thus reminded of the urgent need of making various vegetable crops safe before too severe weather sets in. After a cold snap in November, such as we have recently experienced, a few days of mild weather known as Indian Summer may be looked for. An excellent opportunity is then afforded for harvesting such kinds as cabbage, celery, turnips, salsify, etc. Any of the foregoing may be lifted and laid in trenches out-of-doors, particularly when, as often happens, cellar space is limited. There are several methods of storing the vegetables we have mentioned and each grower almost invariably resorts to some scheme which meets his particular requirement. As a winter vegetable celery is probably the most important, and to keep celery in perfect condition throughout the winter is sometimes a problem. It has been said that the edible quality is greatly impaired when the stalks are lifted and stored in the ordinary root cellar, the contention being that when the plants are moved the tissue becomes pithy instead of being firm and crisp. How true this might be we are not prepared to say, but one thing is certain, if the plants are to remain undisturbed until required for use, they must be given ample protection against rain and frost. Where celery is grown extensively the most practicable scheme is to lift the roots and pack the stalks upright in a shallow trench. This trench should not be deeper than the length of the celery and 18 inches is a convenient width. Over the trench nail boards together to shed water, then cover with litter and soil to a depth sufficient to exclude frost. It is important to select a well-drained site; if water is allowed to settle in the trench untold injury may result.

While parsnips and salsify suffer no harm but on the contrary are somewhat improved by frosts, it is just as well to have a quantity of roots dug to carry through the winter. The balance, if need be, can be left without disturbance until the ground thaws out in the spring.

The simplest way of storing cabbage is to draw the plants and bury them heads down out-of-doors in a dry and convenient place. Pile in a conical heap, cover with straw and soil to shed water, then throw a heavy coating of litter over the mound so that the contents will be accessible in frosty weather. Carrots and beets should be stored in a frost-proof cellar. In fairly dry and these root crops well, it is probable that overdryness causes the roots to shrivel, and on the other hand superfluous heat and moisture induces rot.

If the asparagus plot has not yet been cleaned, give the matter attention forthwith. Cut down the stems and burn them and during frosty weather give the rows a heavy dressing of short stable litter. Crowns required for forcing must be lifted before the ground is hard frozen. Select only the strongest crowns for this purpose and plant them in a fairly rich porous compost. Leaf mold makes excellent covering material. The crowns should be set very thickly together and about 4 inches deep. Begin with a temperature of 50 degrees and give a gradual rise until a maximum of 60 degrees is reached. Create atmospheric moisture by spraying the bed twice daily and admit air when the heads appear. Asparagus forced in a temperature of 60 degrees is of the highest quality, greater heat impairs the flavor.

Plant successional batches of rhubarb, chicory and seakale under the greenhouse bench or in a corner of the mushroom house. Seakale requires a brisk bottom heat together with top ventilation until growth commences. Afterwards less air will be needed but the plants must be kept in absolute darkness to ensure perfect blanching. Salt-hay is good material for protecting strawberry plants, failing this use dry seaweed, straw, or light litter. When all vegetables are housed clear the ground of rubbish either by burning or otherwise digging under. Push the work of spading or plowing and leave the surface rough so that frost can penetrate, sweeten and pulverize the soil thoroughly.

Toward the end of the month raspberry canes should be given some protection in the colder districts. The easiest method is to lay them down and bury them with soil from between the rows.

Flower Gardens.—Draw soil up around the base of the less hardy roses as teas and hybrid teas or else peg the bushes down with stout wires and apply light protection. It is best to defer the final covering until the frost has penetrated several inches deep. Finish planting operations in this department at the earliest possible moment and see that plenty of covering material is on hand and ready for use when wanted. Newly transplanted hardy herbaceous perennials and choice shrubs should be given a light mulch to prevent excessive evaporation of soil moisture. Leaves collected in cleaning the grounds should be piled away for future use as leaf-mold. As a component of hotbeds leaves are also valuable. They not only generate certain heat when decomposing but when mixed with manure steady the heating process and thus prolong the lasting quality of the bed.

See that a supply of compost is on hand for use during the winter. The top spit, or soil from well-drained pasture land should be stacked in a position convenient to the greenhouse or potting house. Spread the soil in successive layers and between each layer put a liberal dressing of cow manure and a dusting of bone meal, so that when chopped down for use the fertilizing ingredients will be thoroughly incorporated.

Take advantage of the next few weeks for remodeling or remaking drives and pathways or renovation of shrubberies or other such work which might be contemplated.

See that all tools and implements are put away clean and that metal parts are smeared with oil to prevent rust. In well ordered tool houses this is the daily routine and although a commendable practice is not often put into effect.

In December, except in the more favored districts little can be done in the vegetable garden further than giving such kinds as celery, spinach,
covering of salt-hay, straw, or pine needles is the best material for this purpose. While a sure and simple method of treating cane fruits, raspberries and blackberries, is to lay them down and bury them with soil from between the rows. It is generally understood by gardeners that plants growing in the open are given protection against the sun’s rays to prevent alternate freezing and thawing, and only in very exceptional cases to exclude frost. Therefore, the common sense method of covering is that which admits of a free circulation of air and which at the same time reduces the freezing and thawing process to a minimum. This same theory applies to the flower garden and shrubbery. A loose covering is best for the beds which have been planted with spring flowering bulbs, the herbaceous border, roses, and the choicer evergreens which sometimes scorch during late winter and early spring. Evergreens which are known to suffer should be screened with burlaps, straw, cornstalks, spruce or pine branches, in fact, any material that will make an effective screen and yet allow free circulation of air may be used. See that these specimen evergreens are not allowed to become heavily weighted with snow, the close growing kinds like Arborvitae and Retinosporas should be given the support of stout poles set in the ground to prevent their tops being weighted and broken.

Beds of Rhododendrons should be heavily mulched with leaves, and if planted in an exposed position, erect a screen about the plants.

The earliest winter spray may be applied in the orchard against scale and fungoid pests. There are many advertised and well known proprietary articles now in commerce so that effective remedies are not far to seek. Many materials are manufactured and answer a dual purpose, eradicating both insect pests and fungoid diseases. Of these the Lime and Sulphur spray is probably the most popular. Use 20 lbs. of Quick Lime and 15 lbs. of Flowers of Sulphur in 50 gallons of water. At first add only enough water to the lime to slake, and when slaking pour in the sulphur. The mixture should then be stirred and boiled for nearly an hour, or until the sulphur is dissolved. Water may then be added to the required amount. It is advisable to strain the mixture before use. Lime sulphur is procurable in prepared form.

Fruit trees do not alone suffer from the ravages of insect and disease pests, ornamental trees and shrubs should not be overlooked when spraying is being done, and if not all are sprayed, certainly those affected with scale should be given attention forthwith.

Mulch any newly transplanted trees and shrubs, and make further preparations if necessary for the removal of any large deciduous trees, by digging around them before the ground freezes solid and impedes satisfactory progress. When dug around, the ball of earth may be allowed to freeze through before the actual moving is done. This is an old fashioned way and yet very practicable and inexpensive when a limited number of trees are being moved short distances.

A stock of good potting compost for use during winter should be on hand and protected if possible from frost. Nothing gives greater annoyance than having to use a pick ax to get a wheelbarrow load of soil. Therefore, make provision now for future requirements by having a quantity of good soil not only convenient to the work room but at the same time accessible no matter what the weather conditions might be. Air pits and frames whenever weather conditions permit and remove snow from the tops of these when newly fallen if the soil within the frames is yet unfrozen. Remove decayed foliage from all stock particularly lettuce, endive, parsley and violets. Bank hot manure around the sides of frames if not already done to protect the occupants from severe frosts. See that the stock of flats is replete and make good any deficit of tools. Now is the time to procure bean poles and pea brush for next year, and it is not too early to overhaul the lawn mowers. These are jobs for the slack time but so often left until the busier season.

Inspect both fruit and vegetables in storage at regular intervals and remove any decayed specimens to prevent contamination and further loss. Tuberous begonias, Gladioli, Dahlias and their kind should be examined occasionally for shrivelling and dry rot, or any other form of deterioration.

THE POINSETTIA

ADDISON H. GIBSON

From November until February the Poinsettia makes the lawns of Southern California and Mexico bright and cheery with flaming banners. For decorative beauty and attractiveness, in its mature season, no plant outrivals the Poinsettia. In the well-kept yards of Los Angeles, Hollywood, and Pasadena this brilliant shrub is seen at its best. Flanked against the sides of houses, or interspersed with plants of sober green foliage, it keeps up the effect of Christmas cheer for weeks. No plant is more popular for decorative purposes than the Poinsettia. During the Christmas season it is seen on festal occasions, where bright effects are desired.

The Poinsettia was first discovered in Mexico in 1828, by Joel R. Poinsett, American Minister to that country. Soon after it began to be introduced into the United States, more on account of its novelty at first than for its seasonal beauty and brilliancy in the plant world.

The Poinsettia belongs to a small genus of evergreen shrubs which produce large terminal bracts of flaming red leaves. What seems to be the large showy blossom at the end of the spike is merely the crimsoned leaves of the shrub, giving it its appearance of flaming splendor.

When a shrub has reached its blossoming stage its beauty may be retained for weeks if properly cared for. By nature the Poinsettia is accustomed to a warm temperature, tempered with a moist atmosphere. If best results in “blooming” are desired in the winter months the most careful treatment is required. In changing from a high temperature the plants should be gradually hardened by placing in a cool place at night, and during the day put or used only in positions which are free from draught.

The Poinsettia is grown from cuttings about four inches in length, and containing an “eye.” The most suitable compost is a mixture of sand and leaf mould, firmly pressed round each cutting, which should be planted in a warm place. The greenhouse is usually chosen for starting the plants, and a glass covering greatly expedites the rooting process.

To cultivate the Poinsettia successfully the soil should be kept only reasonably moist. Overwatering the plants causes the leaves to drop off, just the opposite of the usual rule with most plants. When the flowering bracts are cut off the stalks “bleed” profusely, and injury should be prevented by sprinkling finely powdered charcoal or sand on the exposed parts. To preserve the cuttings the ends also ought to be dipped at once into the charcoal. It is often customary, however, to decorate with the entire plant, artistically set in large jars or in ornamented boxes. Under favorable conditions the plant is of rapid growth.
THE NEW RASPBERRY "LA FRANCE"

Fanciers of raspberries will find in the new Giant Everbearing Raspberry, La France, a great acquisition. The owner of a few rows of this variety, will still picking raspberries and see all over young wood forming trusses of flowers and berries.

The culture of La France is the same as other raspberries—cutting out the old canes, when they are through producing berries in summer, to make room and give light and air for the new young canes. As this variety is a strong grower, allow plenty room. Of course good deep ground, liberal use of manure and fertilizer, besides good, thorough watering in dry weather are essential to produce continuous growth and well developed berries.

Experts who have watched the development of the plants in the field, where they are being grown by the introducer, John Scheepers, who says they will be offered to the public in the early season of 1920, praise La France Raspberry qualities most highly.

Experts who have watched the development of the plants in the field, where they are being grown by the introducer, John Scheepers, who says they will be offered to the public in the early season of 1920, praise La France Raspberry qualities most highly.

A Gassiz used to say to his students: "Study to know what is; be courageous enough to say, 'I do not know;'" and Disraeli wrote, "To be conscious that you are ignorant is a great step to knowledge." Not everyone is brave enough to say, "I do not know." I once knew a botanist of considerable reputation, and I frequently consulted him for information which he, like most learned men, was always glad to impart to an interested student. One day I asked him a question and was surprised when he quickly answered, "I do not know." Many a man knowing less than he, would not hesitate to venture an answer to my question. It is wisdom to know that you do not know. The wiseacre has an opinion on every subject, and always states it with that emphatic positiveness that characterizes the ignoramus and unmistakingly brands the charlatan. Selected.
Putting the Garden to Bed for the Winter

The Fifth of a Series of Lessons of a Home Study Course on Gardening, to Appear Regularly in the Gardeners' Chronicle Under the Direction of ARTHUR SMITH

It is sometimes remarked, especially with reference to herbaceous perennials, "Why, if these plants are really hardy, is it necessary to have them covered, or mulched, through the winter?"

Nature always mulches.

If, during the winter, we go to any part of nature's garden where flowers are always in evidence throughout the season, we shall find about them all the debris of the season's growth in the shape of flower stalks, leaves, both those of the plant and others which have dropped upon, or have been blown in from trees, together with the remains of grass which may have been growing among the flowering plants. This debris, especially the old stalks, holds snow for a longer period than in the open; its decay year after year continually adds something in the way of food, and increases the covering over the crowns and roots so that the latter are deeply in the soil.

In a garden, tidiness must always exist. The ground between the plants is kept clean by hoeing and raking; the latter, in unskilful hands, brings about the not uncommon sight of clumps of herbaceous perennials standing upon hillocks, owing to the soil between them having been removed a little at a time by the removal of what has been raked up. At any rate the dead stems and foliage are removed at the end of each season, and therefore, as it is not possible to adopt nature's plan and leave the debris, we have to supply it by artificial means.

A good material for covering the hardy perennial border is coarse horse manure, but not that from a heap before applying, or leaves put on first and the manure over them which will keep them from blowing away. Salt or marsh hay is sometimes used for the purpose, but either of the other materials are preferable inasmuch as they keep out more cold and are better for the plants.

Mulching not only keeps out cold, but its value is just as great in keeping out heat. The alternation of frost and thaw tends to lift shallow rooting plants out of the ground, this is prevented by the mulch obstructing the penetration of heat into the soil, so that, when once frozen it does not thaw out so quickly, in fact does not readily thaw out at all until the advent of permanently warm weather. This keeping out heat is also an advantage in preventing plants from starting growth that, not being mulched, are in a position to get warmed up and awakened from their dormant state. Growing in a natural way, the above mentioned natural accumulation of dead material would be sufficient to prevent the early warmth having any effect, and the same thing is secured by artificial mulching.

In certain cases amongst perennials special treatment is required with regard to covering up. Plants like Sweet Williams, Pinks, Foxgloves, Hollyhocks, and others with evergreen foliage should not have a covering of heavy material that will hold a quantity of moisture as it would be liable to cause plants of this nature to rot, and the milder the winter the more likely is this rotting to occur. Under conditions of continual frost from the time the mulch is put on until taken off in the spring no harm would be done as the plants would always be practically dry, but these conditions are not to be relied upon to exist, and in the most severe districts the above mentioned plants are usually wintered in a cold frame. Out of doors the ground between evergreen perennials should be well covered with mulch, for which purpose rotted manure or leaves in a similar condition may be used, but the actual plant itself should only have something light, like straw or pine boughs, or a combination of the two may be used. These materials will allow rain to freely pass through them and will give sufficient protection from sun.

The comparatively little known but very desirable, Eremurus also requires something different which, having regard to the high merits of the plant, is certainly worth while. Its characters may be described as magnificent and distinctive, but it is rare to see it doing really well. It will produce stalks eight feet tall with a flower spike four feet long, which remains in bloom for a month. Want of success with it is doubtless sometimes caused by its being weakened or destroyed by the ignorant laborer, and also by failure to give it proper treatment between the time its flowers are over and the following spring. Its foliage dies away immediately after blooming, and unless the spot where it grew is permanently marked its roots are liable to receive harm from forking, or otherwise cultivating, the ground. Also, like all other members of the lily family to which it belongs, the flower stalk should be allowed to die naturally, as this plan assists its fleshy roots in storing food for the following year. Another point is that cutting off the flower stalk whether dead or not—pulling it up is worse—allows water from rain to run down into the crown and frequently causes decay. It is true that the tall, bare, flower stalks present an unsightly appearance, but this can be avoided, while at the same time we need not entirely frustrate nature's methods, by taking off that portion of the stalk which bears the seed vessels; this will generally reduce the height sufficiently to enable other plants growing around to hide it, if not, then the stalk may be bent over behind something else.

In the autumn the Eremurus should have a mound of coal ashes placed over the spot where it is planted, which prevents the soil around the roots from getting too wet; later on, after a little frost, a box or barrel
should be put over the ashes and filled with dry leaves. The box or other receptacle must have a waterproof cover to keep the rain out. In its native home, on the more elevated and very dry regions of Western Asia, spring starts in February and has no set back. The plant therefore commences to grow here at about the same time, and unless it has protection like that advised, the early growth is invariably killed. As with all matters connected with gardening, some patience must be exercised in connection with this plant, because, unless large flowering clumps are obtained, two or three years may elapse before it blooms, but the longer it is left in one place, under cover, the greater will be the grandeur of its flowers. We have dwelt at perhaps an inordinate length upon this plant to illustrate and emphasize the fact that in many cases the maximum results can only be obtained in gardening by giving extra care, taking more trouble, and spending more time in connection with them.

Another illustration of this in a comparatively minor degree may be offered in the case of Montbretia, (to give its trade name, although botanically it is Tritonia), which is a bulbous plant native to flowers and for garden decoration, but its dying out often takes place, which may be the effect of several causes. Like all bulbous plants, there is nothing in the spring to show where it is planted, unless the position is securely marked, and some or all of its bulbs may be thrown out in forking the ground. It also, is liable to have its bulbs rotted by water running down the hollow stalks if these are cut off when they die in the fall; and the bulbs will be killed if frozen. The latter is easily prevented by heavy mulching and allowing the roots to remain will avoid the possibility of the bulbs rotting from the above cause; but they may be bent over as soon as the green color has disappeared. In districts where heavy mulching does not keep the frost from the bulbs they may be taken up when the tops have ripened, like Gladioli, but the bulbs must not be allowed to dry out, and the best plan in this case is to store them in boxes of moist, not wet, earth and place the boxes where the frost cannot get at them, but the temperature should not go above forty degrees, otherwise they will start into growth.

In addition to its protective value, mulching, according to the character of the material, adds more or less plant food to the soil during the months it is in position; also during the period a considerable amount of fibrous material works into the ground which assists in keeping it open and mellow, and prevents heavy rains from causing the soil to run together and become hard and compact. In these connections it is advisable to loosen up the ground between the plants with a fork before applying the mulch. It is better to put it on after the frost has penetrated an inch or two, as then the ground can be trodden on without harm and mice or other rodents will not be likely to nest in it and damage the plants during the winter, or in the spring before the mulch is removed.

Those who know anything about the natural conditions under which Rhododendrons and other plants of the same family live and thrive, often wonder how they exist at all under the absolutely unnatural treatment meted out to them in some gardens. We see the ground between them raked practically all through the year, not a leaf being allowed to remain. After a few years of this treatment, the hybrids die out and the natives which remain have a sickly, ugly appearance. In addition to the detrimental effect of the bare ground around them, they are too often planted in ungenial soil or position with the result that complaints are heard that it is useless planting things of this kind.

When autumn leaves begin to fall there are some places about a garden, such as the drives and lawns, from which they must be removed with more or less frequency. There are some advantages in piling them in a heap as gathered and placing them where required later on, inasmuch as some fermentation will be started which will hasten their decay. It, however, saves the extra handling if they can be placed in a position for mulch as they are from time to time gathered and a commencement may be made with Rhododendrons by scattering the leaves all over the ground among them. This should be continued until the leaves are at least a foot in thickness. These leaves should never be removed. After continuing this practice for a few years an increasing quantity of leaf-mould will be formed and the Rhododendron roots will not only be kept cool and moist all the summer, but they will gain in growth through the food supplied by the decayed and decaying leaves. By this means and to this extent we reproduce the conditions in which they grow so luxuriantly in a stateless forest.

All other shrubs and trees planted in the garden are greatly benefited by a winter mulch, not only on account of its feeding value but by the protection it gives to the roots which are never dormant even in deciduous subjects, while in the case of evergreens it is of still more consequence by reason of the fact that the living foliage must be supported and kept alive, as evaporation from the latter goes on all through the year, and which is naturally of greater volume in the case of what are known as "broad-leaved" evergreens, than in those which bear leaves and not needles, as in the case of the conifers.

If the ground becomes so deeply and thoroughly frozen that the roots cannot obtain moisture, death is likely to ensue in the case of evergreens.

Mulching not only prevents frost penetrating so deeply and therefore assists the roots in carrying on their functions, but it prevents the evaporation of moisture from the surface of the ground.

It is always a wise procedure to ascertain the condition of the soil as regards moisture just before winter begins. This is especially necessary after a dry fall and where evergreens are planted near a building which prevents rain from reaching the ground. If the soil is not moist down to the bottom of the roots, water sufficient to wet the soil to at least that depth should be given before applying the mulch; loosening the ground will facilitate the water soaking in, which loosening is advisable in any case.

Under conditions of considerable exposure, especially, Rhododendrons and Box evergreens are the better for some protection in winter against sun and wind, so that the evaporation of moisture from the foliage may be kept as low as possible. Small specimens may be separately enveloped in straw; burlap may also be used; for taller groups a kind of fence can be put up against which corn stalks may be tied; when wild cedars can be easily obtained they afford excellent protection, as do also pine boughs; boards affixed to rails are frequently used, and if taken care of will last for many years. The use of screws instead of nails will enable the taking down to be accomplished without damage to the lumber.

It is not the low temperature which kills outdoor plants so much as the evaporation of moisture from them going on at a greater rate than the roots can replace it. A tree or shrub growing in a state of nature has been in that position all its life. It started from
seed, and each year its roots have penetrated more deeply into the soil. Doubtless the soil was in the loose, friable condition which characterizes woods’ earth. Each year of its life there has been an addition to the covering over its roots by means of fallen leaves, etc., the effect of which has not been nullified by man’s raking them away. There is also in nature the mutual protection which trees, etc., afford to each other.

In a garden, perhaps the initial planting was not done as well as it might have been. Sometimes the holes, in which trees and shrubs are placed, are barely large enough to tightly cram the roots into, and the soil around and under the hedges is hard and compact. If the plant lives it takes a very long time before the roots can penetrate very far. If clayed the compact soil causes the holes to be liable to contain stagnant moisture after prolonged rains and this would cause some of the roots to be killed. In dry periods moisture does not rise readily through the compact soil, and as it is rare for any mulch to be alloyed during the summer the conditions are such that the plants suffer ten times more from all extremes of weather than they would do if growing under the care of nature entirely.

We, therefore, have to protect their roots by mulching and their tops in such a way as to moderate the combined detrimental effects of cold winds and hot sun.

Non-evergreen subjects, known as deciduous, on account of their leaves falling off in the autumn, while not affected by extremes of winter weather in the same degree as evergreens, are greatly benefited by the winter mulch, especially anything which has been planted during the current year. An additional insurance in the case of newly planted shade trees, particularly Oaks, is secured by tying straw around their trunks. This should not be placed in position until there has been frost enough to drive mice into winter quarters, so as to avoid their nesting in the straw in which case they would probably eat into the bark and destroy the trees.

Dwarf roses are generally grown in a border by themselves and may have special treatment. Considerable winter protection is afforded by planting them more deeply than is usually the case. The junction of the graft with the stock should not be less than three inches below the surface of the ground. This deeper planting is also better for the rose, and in addition to prevent such suckerings arising from the stock which are frequently seen growing in amateur’s gardens side by side with the rose proper. Some stocks sucker more freely in any case than others, the multiflora stock giving scarcely any trouble in this respect. The difference between growth from the briar or stock is easily distinguished, as the rose only has five leaflets, while the briar upon which it is grafted has seven, and in the case of multiflora, nine leaflets, while the thorns on the stock are generally small and very numerous.

While the class of roses known as hybrid perpetual, or remontant, are the most hardy, and there are many varieties of this which we would not like to see absent from rose gardens, yet the hybrid teas are now being more largely planted on account of their giving a more constant succession of flowers throughout the season. The latter, however, are less hardy than the former, although with deep planting and plenty of protection they may be grown further north than is usually the case.

For roses, the manure used for the mulch may be more rotted than that used for herbaceous perennials. It should not be less than a foot thick all over the ground after allowing a few inches for settling. If sufficient partially rotted manure cannot be obtained for the purpose, then a few inches of this may be put on first and the remainder made up with that which is fresh. Failing enough manure, or none at all, leaves may be used to make up, or entirely. When leaves are used, wire netting a couple of feet wide should be placed all round the bed eighteen inches from the outside of the roses, and the space enclosed entirely filled with leaves. Something light should be placed over them to prevent their blowing away; such as wire netting the width of the bed; a few corn stalks, old pea sticks, or anything that will answer the purpose without compacting the leaves, as the air spaces between the leaves keeps out as much frost as the leaves themselves. In extremely cold districts a foot of leaves may be put on in addition to the foot of manure.

While the results from tree, or standard, roses are rarely in this climate such as to make them worth planting, but if they have been, the entire plant should be enveloped in straw after mulching the roots. Another method of dealing with these is to loosen the roots and bend the rose over to the ground, cover it with soil and put manure on the top. These remarks refer to standards upon which the remontant or hybrid teas have been budded. In recent years some of the hardy Rambler class have been worked upon standards, and they are more hardy and effective than the former. While it may not be necessary to bury the latter in the soil, wrapping the standard in straw after mulching the roots. Another method of dealing with these is to loosen the roots and bend the rose over to the ground, cover it with soil and put manure on the top. These remarks refer to standards upon which the remontant or hybrid teas have been budded. In recent years some of the hardy Rambler class have been worked upon standards, and they are more hardy and effective than the former. While it may not be necessary to bury the latter in the soil, wrapping the standard in straw after mulching the roots.

Obviously gardens differ in their relation to cold winds. Some may have the protection of a wooded hill on the side from which the biting blasts come in the winter; or there may be a wind-break of trees; probably may be rendered by the residence or other buildings and so on. Those who have been handling a certain garden for a number of years will be familiar with the necessity or otherwise for giving protection above ground. Sometimes an evergreen growing in a wind swept position will receive more or less damage when another of the same species a few yards away will never be injured however severe the winter. In both cases the degree of cold would be practically the same, but that which received the full force of the wind could not circulate its sap fast enough to supply evaporation and keep its foliage alive.

But however much sheltered a garden may be, and however mild the winters, mulching should never be omitted. All other things being equal mulched plants, irrespective of frost, will always give better results both in growth and flowers than those to which mulch has not been applied. Newly planted things should be kept mulched throughout the entire summer as well. A tree that is not making much or any growth, and which has the appearance of being undecided as to whether it intends to live or die, may frequently be brought round into a flourishing condition by keeping it mulched.
Frequent mention has been made of using leaves for covering purposes and as they are among the most valuable and useful of garden products, the burning of them may be truly called sacrilege. Their value as an element of plant food is great as in a dry state they contain eleven per cent of actual plant food. All soils benefit both chemically and physically by their decay, while when reduced to the form of leaf-mould they are invaluable for potting and frame work in making up rich soil.

The strawberry patch requires mulching in most districts; but while for winter protective purposes it is not necessary in the south and along the west coast, yet food may in all cases be supplied by this means if stable manure is used. In the warmer localities the mulch need not be put over the plants but only over the ground between them. Strawberries require the heaviest mulching in districts where frost and thaw frequently alternate, as, if left unmulched, the changes from one to the other will lift the plants partly or entirely out of the ground. When applying stable manure in the colder districts where the plants themselves require covering, it is a good plan to shake out from the manure the heavier and finer portion and use this between the plants and the coarser, strawy part over them. Where salt or marsh hay can be obtained it answers for protective purposes very well, as do also pine needles which have the advantage of being clean and free from weed seeds, but neither of the latter are beneficial in the way of supplying plant-food.

Where a good covering of snow persists all the winter the covering should be thin, so as to prevent the possibility of the crown of the plants rotting, which sometimes happens when a thick mulch is compacted over them by deep snow. As with other plants, the mulch is better put on after there has been some frost. By leaving the mulch on late in the spring blossoming may be delayed, and by this means damage to the flowers by later spring frosts can be sometimes avoided.

All other berries and bush fruits should have their roots mulched with manure. In the more northern districts, red and white raspberries require more or less protection to their canes. To this end they may be bent over and covered with soil, straw or corn stalks; or corn stalks can be set up along both sides of the rows and fixed in position so that they cannot blow down.

While raspberry canes will withstand severe winters without injury, still, wherever the temperature remains at twenty or more degrees below zero for any length of time, those canes which have been protected will invariably produce more fruit than others.

At this season of the year we must not forget the lawn. It having been kept closely cut up to the time of cutting time enough to allow a couple of inches to remain for winter protection—there is little left to naturally protect the roots of the grasses. While the various species which go into the making of a good lawn are not likely to be killed by cold, yet the alternations of frost and thaw have with them, as with other small unprotected plants, a tendency to lift the roots more or less out of the ground; this is obviously more likely to occur in connection with a young lawn than with a well established one.

Stable manure of a strawy character supplies both protection and food, but it has two drawbacks; it is offensive when the residence is occupied during the winter, and, there is danger of introducing weed seeds. The first objection does not hold good with salt hay, and the plant species which may be introduced by any seeds it contains are not likely to thrive upon a lawn. In applying these only a light covering should be used as heavy lumps of mulch might possibly kill some of the grass. When a couple of inches or so of uncut grass has been left this mulching is not so important.

In connection with lawns there are one or two other matters which it may not be out of place to mention here, especially as November is the best month to carry them out.

Weak lawns upon thin soil are greatly benefited by the application of half an inch of light, rich soil which has been screened and which is known to be free from weed seeds. This top-dressing would also act as protection and about fifty tons would be required to cover an acre half an inch. Other food may be given now, unshredded cattle manure that can be obtained in bags being good applied at the rate of one pound to the square yard upon poor soil. If a lawn should require liming now is a good time to apply it. A sign of this requirement is seen when moss, chickweed or sorrel are prevalent upon it. Slaked lime or ground limestone should not however be applied at the same time as animal manures, as these forms of lime would cause loss of ammonia by liberating it from the manure and dissipating into the air, but sulphate of lime—otherwise known as gypsum or land plaster—may be used with manure as this form of lime absorbs ammonia, it is not, however, quite so active in eradicating moss as slaked lime. A half pound to the square yard of either form of lime is sufficient.

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**OUR**

**November December NUMBER**

Owing to the delay that has been encountered in getting out the publications which were held up by the printers' trade strike, we have found it necessary to combine the November-December numbers to enable us to publish our future issues so that they may again reach our subscribers in time to be of service to them.

While much of the contents, when this number reaches our subscribers will be too late to be of value for the season for which they are intended, we have included them, however, that they may be preserved for future reference.

Subscribers will not suffer through the combining of the November and December issues into one as all present subscriptions will be extended one month.
The Care and Culture of House Plants

Many people, having looked beneath the surface of things, who are cognizant of the numerous analogies which are to be found between plant and animal life, are aware that the conditions which generally prevail in modern homes are such as to render them the worst possible for plants.

The average dwelling house today is over-heated, ventilation is conspicuous by its absence, and practically every drop of moisture is dried out of the air. Under the system of heating in vogue a generation ago house plants did not have so many difficulties to contend with, but at the same time it is no doubt true that an increasing number of people are becoming wise to the advantages to the health in maintaining a lower temperature and of allowing fresh air to daily enter their homes, with the consequence that the air is always moist and a state is created under which plants thrive better and last longer.

The health of plants is considerably affected by the method of lighting the rooms; that derived from coal gas having the worst effect, as it not only dries up the moisture from the air, but the fumes given off from it are very deleterious. The nearest approach to the ideal is when the dwelling is heated by a system which is continuously changing the air and when it is lighted by electricity; but as ideals are rarely possible of attainment, one has to make the best of existing conditions.

It is of course one thing to be continually obtaining fresh plants from a florist, which last in the house a few days or a few weeks, according to species and to the care given them, and afterwards throwing them away; and quite another to keep them all the winter in good condition and to grow them on year after year until they become practically members of the family. With reservations in connection with certain species which are more or less ephemeral in their flowering stage, like bulbs for instance, to succeed in this latter direction one must treat their plants as household pets. To get this point of view we must realize that plants are living, feeling organisms, which respond to loving care, and which soon show the results of neglect.

It is no uncommon thing to hear people remark that their mother "was always successful with her house plants and everything seemed to grow for her, while nothing does well with me." It is true that old fashioned houses were, as above mentioned, more suitable for plant life than the majority of the more modern homes, but all the trouble is not connected with this point. The habits of previous generations caused them to devote more time to their plants; their spirits were more in harmony with plant life, and plants grew for them because they loved them and treated them as fellow creatures.

While we are prepared to credit plants with considerably higher attributes than is generally given to them, we do not of course concede them the power of either personal antipathy or affection, nor will the psychological side of the question carry one very far; still, if people will get the same mental outlook towards their plants that their mothers' had, and give their plants the same regular care and attention, they will obtain the same measure of success.

No point connected with the care of plants in a dwelling house is of greater importance than that of watering, and its importance is the greater because it is in this relation that failures are most frequently due. Success with plants is not possible when they are flooded with water at one time and parched with thirst at another.

In considering more in detail the various points which together make for success we must again emphasize the value of fresh air, but in giving this to plants we must be careful to avoid cold drafts during freezing weather. Opening the windows at the top will allow the air of the room to be changed and the ingress of fresh air always brings in more or less moisture. The size of the opening should obviously depend upon outside temperature and whether it is calm or windy.

While some species of plants will do more or less well where they do not get any direct sunlight, yet most of them like all the sun they can get and we should keep the room as light as possible, and for our own sake as well as for the plants', we should allow the sun to shine in to the greatest extent. The more sunlight a plant receives the greater its power of assimilating food, which assimilation is brought about by the action of light upon the leaves. Light is the source of plant energy and without light the absorption of carbon from the air—a peculiar characteristic of plant life,—cannot go on. As about three-fourths of the dry matter of plants is carbon, it follows that a plant does not thrive unless the conditions are such that it can obtain this carbon.

Although, as above mentioned, there are some species than can do with less direct sunlight than others, still those which require the least make more growth during the long days than they do in the shorter ones, even when other things such as temperature, etc., are equal. As a matter of fact there are scarcely any species which will live for any length of time under conditions of absolute and continual shade; this is apparent when one goes through a dense coniferous forest. The action of light upon leaves and the chemical changes thereby brought about are an interesting study, but which we cannot at this time go into more fully.

The leaves of a healthy plant are constantly evaporating moisture, and this evaporation is naturally greatest in a hot, dry atmosphere. The loss to the plant of water by this can only be supplied through its roots. Also a plant can only take up its food in a dissolved state. Consequently an ample supply of water must be maintained for all growing plants, but this soil moisture must not be in a free state, or stagnant, and the soil, whether in a pot or elsewhere, must be sufficiently well drained so that all surplus water the soil cannot absorb may drain away. The difference between absorbed water and that in a free or stagnant condition may be exemplified by a sponge. If we place a sponge in water it will take up a quantity of the liquid and upon lifting the sponge out of the water a large amount will be held suspended in its interstices, but the actual material of the sponge absorbs very little, which is easily seen when we squeeze it. The water which is squeezed out is that which is in a free state. Leaving out of consideration aquatic and sub-aquatic species, water in a free
state is more or less poison to plants, and they are liable to suffer more from this when growing in pots than in the open ground.

The soil condition which allows considerable water to exist for any time in a free state is known as waterlogged, and the manner in which the plant has been potted has much to do with possibilities in this direction. If the soil in the pot has not been sufficiently formed down it is slow to drain because the interstices left in the manner it does a sponge, and if it remains saturated for a long time the fine rootlets and the root hairs decay, thereby bringing about a condition which not only prevents a plant from thriving but which may kill it. Even if the water-logged state is not sufficiently bad to kill roots it will invariably prevent the proper exercise of their functions.

Over-potting, having the pot too large for the requirements of the plant, will also increase the possibilities of a water-logged condition, with the consequent souring of the soil, being maintained for a sufficient length of time to be detrimental to a plant's health; and however well a pot may be drained, this drainage has a minimum effect under the circumstances of a loose, spongy soil and too large a pot.

For the purpose of cleanliness to floors and tables pots are stood in saucers which hold the water draining from the pot and the evaporation of this water does good in the way of moistening the air of a room, but if the saucers remain full of water for a considerable time harm to the plant is likely to result as the roots at the bottom of the pot will be in stagnant water. This harm is likely to be intensified when pots are stood in jardinieres. In the latter, surplus water accumulates from day to day so that the pot may be continually in two or three inches of water. This can be avoided by frequently emptying the jardiniere, but it should also have an inverted saucer or piece of brick placed at the bottom for the pot to stand upon; but even in the latter case water should not be allowed to accumulate for long, as fermentation may take place and foul gases be produced.

While the standing of pots in saucers is necessary in the case of plants in a window individuals saucers may be used away with by the use of a water-tight zinc, galvanized iron, or copper tray, two inches deep, made to fit the position. In such a tray one inch of small pebbles should be placed and the pots stood thereon. If this means pots can freely drain themselves, while at the same time a little water may be allowed to remain in the tray for the purpose of increasing the moisture content of the air surrounding the plants, while the pots standing upon the pebbles will prevent the bottom of them being in water.

Keeping plants clean has an important bearing upon their health. Dust will always accumulate upon them, which will decrease, if it does not absolutely prevent, the power of leaves to carry on their functions. Plants must breathe, this they do through openings in their leaves known as stomata. To a great extent plants breathe in the opposite manner to ourselves, inasmuch as they inhale carbon dioxide, which is always exhaled by members of the animal kingdom, and this fact renders healthy growing plants capable of assisting to keep the air of a room pure by reducing the carbon dioxide content. If the stomata are full of dust this work cannot go on and the plant does not get sufficient carbon to build up its structure, nor can the leaves properly carry on their other functions.

Plants with broad foliage can be freed from dust by a sponge moistened with tepid water containing a tablespoonful of household ammonia to the gallon; this ammonia softens the water and renders the leaves fresher and cleaner than pure water and also does not leave a stickiness upon their surface like soap; both the upper and under sides of the leaves should be cleaned. The bath tub can be well utilized for the purpose by nearly filling it, taking the pot in both hands, keeping one hand over the soil to prevent the plant from coming out of the pot, and move the entire plant about in the water. This is really the most effective way of keeping plants clean if they are not too large to be handled in this manner.

The pots in which plants are growing should be frequently scrubbed so as to keep the green fungus from growing upon them, which fills up the pores of the pot and prevents the benefits of the natural porosity of an unglazed pot from being felt by the roots. When saucers are used they should also be frequently scrubbed and kept clean.

Dead and decaying leaves should be removed without delay, and watch kept for the initial stages of insect or fungus pests. Insects invariably attack weak plants first, but plants which are frequently cleaned as suggested above are rarely troubled with them. The almost invisible red spider finds the dry atmosphere of a dwelling room very congenial and will multiply with great rapidity. Keeping plants clean as above mentioned will largely prevent insect attacks, but when they exist in quantity, laying the plant on its side and giving it a sharp spray of cold water will remove red spiders; with aphids or thrips present the cleansing bath should be medicated with some standard insecticide. In the case of scale insects appearing they may be removed by a sponge and strong soap-suds, the soap being washed off with clear water shortly after.

In the case of plants with which the method is practicable, an effective way is to mix a pailful of insecticide or soap suds (preferably the suds should be made with whale oil soap) and dip the entire plant, excepting the roots, into it, moving the plant about so that the insects will be thoroughly washed off. Both hands should be used, one to hold the pot and the other to keep the soil and roots from dropping out of it. It is not always possible to get rid of all the eggs of insects from off the plants when they are first washed, and one or two applications of insecticide are necessary before complete extermination is effected.

Worms are occasionally found in pots. They do no harm to the plants' roots, but they create soil conditions in pots that are inimical to a plant's health, inasmuch as they destroy the pot's drainage and by working in the soil reduce it to a consistency of mud. The use of lime water will cause them to come to the surface, when they can be removed. Lime water can be obtained from druggists, but it is easily made by stirring a pound of builder's lime into two gallons of water. After settling, thoroughly water the pot with the clear water. Any surplus may be bottled for future use. A teaspoonful of pure mustard in a half a pint of water is also effective for the purpose.

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house plants unless the pots in which they are expected to grow were in the first instance properly "crocked."

In a complete sense, crocking a pot can only be taught through experience, but the underlying principle is, that the crocks are so placed that there is a hollow space, or spaces, between the soil and the hole at the bottom of the pot, the crocks preventing this hole from becoming stopped up; obviously the larger the pot the greater the quantity of crocks required. The concave side of the crocks should face downwards; over them a layer of charcoal about the size of beans, which not only helps to keep the drainage open but also has a sweetening effect. To further prevent the drainage from becoming closed up it is advisable, especially with the larger sized pots, to place a little sphagnum moss over the charcoal and crocks, before putting in the soil.

Pots which have been used should be thoroughly cleaned, by scrubbing inside and out previously to use; the material of the pot possesses a certain amount of porosity and if clean it absorbs moisture and also allows some air to get to the plant's roots. On account of their deficiencies in these respects, glazed pots are not desirable to grow plants in.

 Trouble in connection with the growth and health of pot plants is frequently caused by using pots too large for the plant, whereby there is more soil than the roots can occupy until perhaps many months after potting, during which period the unused soil becomes sour and the roots refuse to penetrate it. The actual size to use will of course depend upon the amount of healthy roots a plant has, but in the case of repotting being necessary on account of the pot being quite full of roots and in the condition known as "pot-bound," it is usually sufficient to use a pot of an inch greater in diameter than the one previously occupied by the plant.

It sometimes happens that a plant requires repotting by reason of the soil becoming water-logged and sour through bad drainage or too large a pot; in these cases it will invariably be found that there are comparatively few healthy roots and therefore it will be better to use a pot one or more sizes smaller, according to circumstances.

Soil for plant culture in pots should be mainly composed of sweet fibrous loam formed from the decay of turf, from an old upland pasture, which has been piled up in a heap for six months or more and chopped up and turned over once or twice during that period. This should be sifted through a sieve of three-quarter inch mesh and the powdered decayed grass and other fibrous material only the stones being discarded. To this should be added about one-third of leaf mold, that is leaves which have decayed into powder. In the case of ferns the leaf mold may be one-half or even more. The leaf mold should be sifted through a sieve with half an inch mesh to take out sticks and stones. If the loam is at all clayey ten or fifteen per cent of sharp, fine sand should be added. Soil from low lying, marshy situations, or black humus, should never be used for potting purposes.

Potting soil and leaf mold can be obtained in bags through the seed house where the soil is thoroughly firm between and around the roots and that there are no vacant spaces among the latter, continue firming the soil into its place until it has reached half an inch from the top of the pot and resists any further pressure from the thumb. Water should then be given and the plant placed in the position it is to occupy.

In the case of those that have exhausted the soil and have practically filled the pot with roots, they can have the repotting postponed by taking away half an inch of the top soil, loosening it up by means of a pointed
For November, 1919

Stick, and adding new soil with which a desert-spoonful of pure bone meal has been mixed. Bone meal is a good and safe food for all pot plants, but any kind of plant food should only be given when the soil is more or less exhausted and the pot contains plenty of roots. It is a practically sure sign that something is wrong when a plant is not making good root growth, and it does more harm than good to add extra food to soil in bad condition.

Species of plants which will continue thrifty under the conditions generally prevailing in modern houses are not very numerous, but there are some available ones which are not only handsome in form, but which will prove satisfactory under somewhat adverse circumstances, and it is not of much use trying to grow for any length of time soft-wooded plants, begonias for instance, as few, if any, of this class thrive or survive dwelling house atmosphere.

Among the palms, Kentia belmoreana and K. fosteriana, are the hardiest, while Areca lutescens is more hardy and graceful, it is slightly more susceptible to living room conditions. While palms are slow to show strong roots when growing down push the stem up and adding new soil with which a desert-spoonful of water is added, practically sure sign that something is wrong when a plant is not making good root growth, and it does more harm than good to add extra food to soil in bad condition.

The Rubber plant, Ficus elastica and the Aspidistras are well known to withstand the most adverse house conditions and will survive almost any amount of neglect. These traits have made them so common that many people will not have them in their houses. The newer rubber plant, Ficus pandurata, is, however, less common and equally as hardy in the house as the former. It has larger cabbage-like foliage and can certainly be said to be very decorative.

English ivy does better in the house than many would imagine and can be trained upon sticks to festoon the window. It requires plenty of water. Asparagus plumosus may be used in the same way as suggested for the Ivy. Asparagus sprengeri, while doing fairly well in the house, can only be grown effectively when the pot stands upon a bracket, which may be placed about half-way up the side of the window, so that the growth can hang down. Both these Asparagus are heavy eaters and require good feeding.

Among ferns, the numerous varieties of Nephrolepis, among which is the well known Boston fern, invariably do well in the house, but they should not be relegated as is too often the case to dark corners. They may be placed in any window except those facing south. After these the Holly fern, Cyrtomium, is the only other species of this family which will amount to much under dwelling house conditions.

The above species are all known as foliage plants, as their decorative value consists in keeping their leaves in the best possible condition.

There are very few species that derive their decorative value from the flowers they produce which can be grown in a house, as the production of a good plant covered with flowers requires many months of care under conditions which do not exist in a dwelling house. About the only one which can be grown and flowered comparatively well is the Geranium. For this purpose it is of little use to take up plants which have flowered all summer in the outside border. For winter bloomings, cuttings should be taken in May and grown on. They should never have a pot larger than four inch, as too large a pot causes them to continually produce wood and not flowers. According to locality, as regards date, they should be placed in position early in the fall, close to the glass of the most sunny window and kept moderately moist so that the soil is more on the dry, than on the wet, side. The number of flowers will depend upon the amount of sunshine the plant receives.

For the production of flowers during the winter in a house it is best to depend upon bulbs, such as Narcissus and Hyacinths. These can be grown in pots, pans, bowls, or glasses, which may contain in the order stated, soil, special fiber sold for the purpose, pebbles and water. The Chinese Narcissus, or Lily as it is termed, can be grown in pebbles or fiber kept wet, these materials being for the purpose of keeping the growing bulb from falling down; this species can also be grown in soil. All other Narcissi are best grown in soil, which can be placed either in pots or shallow pans. Hyacinths can be grown in any of these ways so long as they are never allowed to get dry. Success with these bulbs, no matter in which manner they are planted, is only obtained by causing the bulbs to first fill the vessel in which they are placed with roots before they commence to make top growth. This is achieved by placing them in the dark in a cool place, such as a corner in the cellar that is the greatest distance from the heater; if it is not perfectly dark, the pots or pans of soil should be covered with ashes, after thoroughly watering them and they must never be allowed to dry out. Sufficient roots will be produced in three or four weeks, when, to keep up a succession of flowers, one or two pots at a time may be brought into a lighter place which should not be too hot, 50 degrees should be the maximum, especially for the first week or two; afterwards placing them in the coolest room in a window that does not get direct sunlight until flowering buds appear, when they can be put into their flowering position.

Bulbs planted in fiber, pebbles, or hyacinths in glasses are best placed in a dark cupboard until root growth is made, and they can then be taken out as required.

We have often wondered why there are so comparatively few people who have their veranda so constructed that it can be heated and used as a winter garden and sun-parlor. Those who have this can grow almost anything, because the conditions of the ordinary greenhouse are, or can be, to a great extent reproduced.

Advance in Subscription Price

Due to the greatly increased cost of production of everything that enters into the make-up of a publication, we are compelled to advance the subscription price of the Gardeners' Chronicle to $2.00 a year beginning with the January 1920 number. Subscribers who desire to renew their subscriptions, which expire during 1920, will have the privilege of doing so at the present rate ($1.50) from date of expiration of present subscription, by forwarding their subscription renewal before February 1, 1920.

Dear Fellow Member:

In order that the Service Bureau can carry out the plans outlined for it at the convention in Cleveland in August last, it must first be assured of the necessary financial resources to meet the expense of the work to be undertaken. Though the appeal for a contribution to the Service Bureau Publicity Fund received to the latter part of October, the response to it so far has fallen far short of what we expected. This is, no doubt, due to oversight on the part of most of our members, rather than lack of interest in what the association is attempting to accomplish for the gardening profession.

If you have not sent in your contribution, do so now that we may know what we may count on to work with. No amount is stipulated that a member should contribute—just do the best you can. The time to prepare for the 1920 campaign can no longer be delayed.

Send your contribution to Alexander Michie, Chairman, National Association of Gardeners, 286 Fifth Ave., New York City.

Yours very truly,

ALEXANDER MICHIE,
Chairman.

The following is a list of contributors to the Service Bureau Publicity Fund received to December 10th.

George C. Smith, Rapidan, Va. $10.00
L. P. Jensen, St. Louis, Mo. 5.00
John C. Hesse, Smithtown, L. I. 5.00
Fred Boote, Truckville, Pa. 2.00
C. Oscar Carlson, Fairfield, Conn. 10.00
Alexander Michie, Oyster Bay, L. I. 20.00
John G. Walker, Gladstone, N. J. 2.00
Frank Wallington, Oyster Bay, L. I. 5.00
George W. Thomson, Wicktunk, N. J. 10.00
Frederick Schultz, New York City 2.00
Harry S. Suffield, Conn. 2.00
Thomas Proctor, Oyster Bay, L. I. 20.00
Charles Schrall, Shell Lake, Wis. 2.00
John Baumgartner, New Rochelle, N. Y. 5.00
Herbert Stuart, Larchmont, N. Y. 2.00
George Palmer, Lenox, Mass. 2.00
George McMahon, Des Moines, Iowa 5.00
John Buckingham, Wilmington, Del. 2.00
Donald Shepherd, Duluth, Minn. 5.00
Herman Y. Schollee, Evanston, Ill. 2.00
Roy E. Michelson, Hibbing, Mont. 5.00
James Stuart, Mamaroneck, N. Y. 2.00
John Alcock, New Bedford, Mass. 2.00
John Downing, Reading, Pa. 10.00
Lewis Barnet, Elmsford, N. Y. 2.00
John Alexander, Glen Cove, L. I. 2.00
John C. Taylor, Bar Harbor, Me. 10.00
Peter Murray, Manomet, Mass. 10.00
James Gardiner, Sewickley, Pa. 5.00
Alexander Fleming, Deal Beach, N. J. 20.00
Thomas Leyden, Port Washington, L. I. 5.00
Duncan Finlayson, Brookline, Mass. 2.00
M. R. MacMahan, Tuxedo Park, N. Y. 5.00
John McIntyre, Simsbury, Conn. 5.00
Robert Allen, Tarrytown, N. Y. 15.00
Robert Chalmers, Lake Forest, Ill. 10.00
Robert Crighton, Convert, N. J. 30.00

$262.00

Alfred Lundon of Reading, Pa., has pledged himself to contribute $25 a year beginning with Jan., 1920, for five years.

THE SERVICE BUREAU'S WIDE FIELD.

In time past there has been more or less criticism from members of the association that the scope of the Service Bureau could never be more than local, that it could not serve its purpose which is national. Those who studied this situation carefully, however, did not agree with these critics but believed that if the Service Bureau was advertised, its field would be an extensive one. That this latter contention is correct was made evident during the first week of December when the secretary's office was visited by an estate owner from Illinois, one from Florida, one from Georgia, and from the more local section, one each from Connecticut and Massachusetts. During this same period inquiries were received by mail from Texas, Arkansas, and Louisiiana. Both the visits to the office and the inquiries by mail desired to consult the Service Bureau on the subject of securing more efficient gardeners than they now employ. This activity of the Service Bureau is the outcome of the advertising campaign, very modest up to the present time due to the lack of necessary funds, but proving without a doubt that if the Service Bureau were operated as outlined at the Cleveland convention, which can only be possible through the more united co-operation and support of the members, its field is unlimited.

ESTATE OWNERS INTERESTED IN ASSOCIATION AIDS.

Following a meeting in New York City early in December of an organization which is an influential factor among estate owners throughout the country, two of its officers called on the office of the secretary of our association to discuss with him ways and means whereby there might be closer co-operation between the two organizations. This activity of the Service Bureau is the outcome of the first referred to organization was aroused by the more extensive one. That this latter contention is correct was made known to the gardeners' convention held in Cleveland last August, which made the aims and purposes of the association more widely known. In the January issue of the CHRONICLE more definite plans of co-operation will be announced.

CONFOUNDING THE GARDENER WITH THE LABORER.

In a recent issue of a horticultural publication an announcement was made that a prominent local gardeners' society had established a labor bureau to assist in securing positions for superintendents, gardeners and assistant gardeners who may be out of work; also to assist in obtaining good men for private estates. Such action at a time when many estate owners make little distinction between the professional gardener and the laborer, and when in many instances the estate owner who recently visited the secretary's office termed the gardener as a professional gardener and the laborer as a "digger," it is most unfortunate. No opportunity should be lost to impress upon the public that there is a wide distinction between those who follow the vocation of gardening as a profession, and the mere garden laborer or "digger" as an estate owner who recently visited the secretary's office termed him. The idea of establishing a reliable source of supply of estate workers who can turn with confidence to secure efficient and trustworthy gardeners is an excellent one, and local societies can undertake this work successfully, but they should avoid confusing the gardener with the laborer. Employment bureaus would certainly be more appropriate than "labor bureau."
NOTICE TO SECRETARIES OF LOCAL SOCIETIES

Owing to the constantly increasing cost of production, making it necessary to conserve space and publish only such matters as are of interest to the greatest number of our readers, secretaries of local societies are requested to report only such news of their meetings as will be of general interest to the field at large, and not merely of purely local importance. After this issue, only such reports can be accepted which will be of national rather than local interest.

CONNECTICUT HORT. SOCIETY

A very fine display of vegetables was staged at the meeting of this society on Friday, October 10. Mr. John F. Huss, superintendent of the James J. Goodwin Estate, exhibited some sixty varieties of vegetables, many of which were very fine specimens. Mr. R. Hurd, superintendent of the Vine Hill Farms, Elmwood, also made a very fine display. Several ears of Long-fellow corn measured 14½ inches long. Mr. Hurd spoke very highly of White Evergreen corn, it ripening much earlier than Stowell's Evergreen. He exhibited a bunch of Perpetual Spinach, stating that the more it is cut, the better it grows, and is appropriately named, it furnishing a supply of greens up to November.

It was voted at this meeting to award three premiums: a first, a second, and a third, for both professionals and amateurs. These prizes are for the exhibitor who wins the most certificates during the year. Many exhibits are staged at the meetings of the society during the year, and it is for the purpose of creating more rivalry between the members that the plan above mentioned is inaugurated.

Suggestions from the secretaries of other societies as to methods employed to interest lovers of gardens and flowers to attend the meetings will be very much appreciated.

ALFRED DIXON,
Secretary.

HOLYOKE AND NORTHAMPTON FLORISTS' AND GARDENERS' CLUB

The annual meeting of the club was held Tuesday, December 2, 1919, at E. J. Canning's, Northampton, Mass. The president, Harold Keyes, presiding. The election of new officers followed the general business proceedings.


A. HAESLER, Cor. Sec.

THE WESTCHESTER AND FAIRFIELD HORT. SOCIETY

One of the greatest nights in the history of the society was held in Hubbard's Hall, Greenwich, Conn., Friday evening, October 10. The occasion was the welcoming home of our boys that fought and won. President Graham, in a few choice and

Palming Off
That Palm Fiction

While Rudy and I have been trying our best to smoke a couple of cigars a pot, some snafus in the mail have kept us from the latest in palms. We are Specialists in Orchids, we cultivate and sell orchids. If you are interested, please write to us.

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New durable hardy low border
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touching words, introduced the warriors. After the regular business of the society was gone through, President Graham called on John Troy, of New Rochelle, to act as toastmaster. Mr. Troy spoke on the crisis that we have come through and the present labor unrest. In a very appropriate speech each of our soldier members with a book, entitled "What Great Britain Can Teach Us About Gardening," which was gracefully accepted by each of the recipients. Fred Freund and Alex. Clarkson described their thrilling experience on the battlefields and thanked the society for the cigars and tobacco which they received a few days before going into action. Some good violin solos and songs were rendered and some excellent orations were delivered. Refreshments were furnished by the committee in charge. There was a fine display of fruit, flowers and vegetables.

The regular monthly meeting of the above society was held in Greenwich, Conn., Friday evening, November 14. President W. Graham in the chair. There was a very fine exhibition of chrysanthemums. The principal prize winners were: Messrs. Wright, Williamson, Stuart, Linane, Seeley, Graham, Geddes, Grunnert and Harry Jones. John Burns and W. J. Quirk had some very good exhibits of roses and carnations. James Stuart opened up a very good discussion on perennials. The secretary was instructed to write a letter of condolence to the family of the late John Shore. Mr. Shore was one of the organizers of this society, and his good humor and kindly words made him a universal favorite. He had been ill for a long time. Officers were nominated for the ensuing year and their election will take place at the annual meeting on December 12.

Jack Conroy, Cor. Sec.

NORTH SHORE (ILL.) HORT. SOC.

The second annual Chrysanthemum Exhibition of the North Shore Horticultural Society was held at the Durand Art Institute, Lake Forest, Ill., and was considered to be the best show ever held by the society.

The effective placing of the groups (sixteen in all), which added greatly to the attractiveness of the exhibition, was due to the able management of J. Newboro, E. Kuehne, A. Nielsen and others, to whom great credit is due.

Following are the prize winners in the principal classes:

Group of Chrysanthemums with Foliage Plants—1st, A. B. Dick; 2nd, E. S. Moore; 3rd, Louis F. Swift, superintendent.

Group of Pompons—1st, J. Ogden Armour; 2nd, E. S. Moore; 3rd, Louis F. Swift, superintendent.

Group of Anemones—1st, J. Ogden Armour; 2nd, E. S. Moore; 3rd, Mrs. C. H. McCormick, Sr., superintendent.

Group of Singles—1st, J. Ogden Armour; 2nd, E. S. Moore; 3rd, T. Clarke, superintendent.


Best Specimen Plant—E. S. Moore.


Best Cut Flower Classes—18 blooms, 6 varieties, 3 of each: 1st, E. S. Moore; 2nd, J. Ogden Armour; 3rd, Louis F. Swift.


Considering the dry season just passed, the vegetables were of fine quality, the principal winners being J. Ogden Armour, Mrs. C. H. McCormick, Sr., C. H. McCormick, R. J. Thorne, L. F. Swift, P. L. Coonley, and A. B. Dick. Particularly noticeable were some very fine potatoes in the C. H. McCormick exhibits—William Fisher, superintendent.

Seven silver cups and numerous other prizes were given by the ladies of Lake Forest, and the trade in general, for which the North Shore Society tenders its hearty thanks.

J. R. Clarke, Cor. Sec.
for NOVEMBER, 1919

SAINT LOUIS ASS'N OF GARDENERS.

The association met in the lecture room at Forest Park, Wednesday evening, October 3.

President L. P. Jensen called the meeting to order, with 60 members present; this represented a record attendance for the season.

The first of the winter lectures was given by G. H. Pring, Floriculturist of the Mo. Bot. Garden, on "The Evolution of the Cultivated Chrysanthemum." Stereopticon slides were shown on the screen to illustrate the early types introduced by M. Blancard, Cunningham, Fortune, etc., up to the present-day hybrids. The cultivation was taken up jointly by Mr. Schuelle, foreman of the Municipal Greenhouses, and Mr. Ulrich, charge of Floral Displays of the Mo. Bot. Garden.

At the close of the lecture the members viewed the chrysanthemum exhibit in the Park Display House.

The following lectures will be given:

November 5—Evolution of the Chrysanthemum, G. H. Pring; Cultivation of the Chrysanthemum, Messrs. Schuelle and Ulrich.


February — Native Plants; Messrs. Kellogg and Jensen.

March — Geographical distribution and cultivation of Orchids; Messrs. Miller and Huber.

April Garden Design, Flowering and Foliage Plants; Messrs. Bowmann and Schaff.

May—Injurious and Beneficial Insects, Dr. Herman Schwartz.

SEWICKLEY (PA.) HORT. SOC.

The third annual Chrysanthemum Show of the Sewickley Horticultural Society was staged in the Public School Pavilion on Thursday, Friday and Saturday, November 6, 7, and 8.

Wm. Thomson, Jr., gardener to Mrs. W. P. Snyder, first for 12 blooms in 4 varieties; 3 of each, all Winter Rose, carried off chief honors; 12 blooms in 12 varieties in one vase. J. Barnet, gardener to Mrs. T. D. Lyons, was an easy first place for 3 whites.

George Shaw, gardener to R. H. Boggs, first for 3 yellows; James Wiseman, gardener to D. M. Clemenson, first for 2 pinks, with superb flowers of Wells' Late Pink. J. Barnet first for 3 any other color.

Alex. Davidson, gardener to Mrs. R. H. Rea, Farmhill, first for 4 blooms in 5 varieties. The same exhibitor staged an effective non-competitive group, which was a feature of the show.

J. Barnet was winner in class calling for 18 blooms for effect, using fine flowers of William Turner, with autumn foliage.

Manus Curran, gardener to Mrs. E. M. Horne, was first for display of cut Chrysanthemums, covering 24 square feet.

George Shaw was the winner of the silver cup donated by John Jones for the largest bloom in the show.

Herman Rapp, gardener for the D. T. Watson Home, was awarded first for the circular group of Chrysanthemum plants in flower with foliage plants, and Francis R. Reig, gardener to Mrs. J. H. Oliver, for group of stove and greenhouse plants.

Herman Rapp took first honors for a trained Chrysanthemum plant, and the specimen bush plant.

J. Barnet won first for 6 bush plants in 8-inch pots, and again for 6 bush in 7-inch pots, and yet again for 6 bush Pompons. George Shaw was the winner of most firsts for Carnations and Roses, with Thos. Tyler, gardener to C. D. Armstrong. Thos. Sturgis, gardener to Mrs. Alex. J. Laughlin, Jr., and James Stewart, gardener for A. W. Mellon, sharing the honors. Frank Crook, first for specimens Palm; also for 6 foliage plants.

Thos. Tyler had no competition in the Orchid class, but his 6 Hybrid Cattleyas would have been hard to beat.

Decorated dinner tables, Chrysanthemums only, Manus Curran was first; Wm. Thomson, Jr., second; T. Sturgis, third.

The dinner table decoration on Saturday for flowers other than Chrysanthemums was again won by Manus Curran, with an effective combination of Roses and Nemesis.

Competition was keen in the vegetable classes. In the collection of 12 kinds, J. Barnet was placed first, but A. H. Etherington, gardener to E. A. Woods, was a very close second.

JOHN CARMAN, Secretary.
The Tuxedo Horticultural Society held a Fall show on October 31 and November 1 and 2. The quality was up to the regular Tuxedo standard, many of the residents pronouncing it to be one of the best exhibitions the society ever gave.

Perhaps the sensation of the show was a large vase of the new rose, "Frank W. Dunlop," it was admired by all for its large blooms, fine texture, and beautiful color. Madame Butterfly was also favorably commented on. Both of these roses were awarded a certificate of merit. A table of Cynoglossum insigne Sanderi, exhibited by Joseph Manda, was also awarded a certificate.

The exhibits from the J. J. Blair Estate, David S. Miller, gardener, were extensive and of high quality.

Mr. Miller got first for group of Chrysanthemums, 16 blooms, distinct varieties; 6 yellows, 6 pink, 6 bronze, 6 any other color Chrysanthemums; also for single anemones, 18 white roses, 18 red roses, 18 light pink carnations, 18 any color, carnations and a number of firsts in the fruit and vegetable classes; he also won out on the largest bloom in the show.

The H. M. Tilford place, Mr. Joseph Tansey, gardener, had many entries, getting first for miscellaneous group of plants, table of Orchids, table of plants, yellow and any color roses; red and dark pink carnations; also vase arranged for effect.

G. G. Mason, Esq., Mr. Duncan MacGregor, gardener, first for a very fine specimen bush chrysanthemum, 18 white carnations, 18 variegated, an exhibit of apples and outdoor grapes; also in some vegetable classes.

David Wagstaff, Thos. Lyons, gardener, got first for a group of ferns, specimen ferns, 6 foliage plants, 9 blooms, chrysanthemums, and some single chrysanthemums.

The Geo. F. Baker Estate, Mrs. F. B. MacMclan, received first for table decorations, specimen orchid plants and 12 variegated carnations.

The Tuxedo Horticultural Society held its annual meeting on Wednesday, Dec. 10, at 7 P.M. President Joseph Adler occupied the chair.

The annual meeting of the Nassau County Horticultural Society was held at Pembroke Hall, Glen Cove, on Wednesday, Dec. 10, at 7 P.M. President Joseph Adler occupied the chair.

Price only $3.50 and $5.00 each.

NASSAU COUNTY HORT. SOCIETY

The 15th annual Mum show of the above society was held on Oct. 30-31st at Pembroke Hall, Glen Cove. Competition was unusually keen in all the 53 classes, the number of entries being the largest on record. The chrysanthemum and vegetable classes were exceptionally fine as were the roses, carnations, violets and decorative work. The special class for canned fruit and vegetables put up by the wives of the active members proved quite a feature, Mrs. Ben. Sutherland being award first prize with a fine collection. Mrs. F. L. Hine, Mrs. F. B. Pratt and Mrs. Paul Dana, who are honorary members, were the judges in this class as well as the table decorations.

Particularly deserving of notice was a large anemone bush chrysanthemum named "Emma," shown by Robt. Marshall, not for competition. The prize award of this and the N. A. G. gold medal for the most meritorious exhibit in the show. An award of merit was also given a new rose shown by Chas. Totty, named "Emma." This attraction made much attention. The table decorations were one of the features on the second day of the show. The judges were Mrs. H. L. Pratt silver cup as 1st prize to Geo. Ferguson; Wm. Milstead, 2nd; Harry Goodband, 3rd. Special mention is also due to Mrs. Percy Chubb (Peter Smith, gardener) for a and group of chrysanthemums covering 60 square feet; Wm. R. Cole (Thos. Proctor, gardener), for the fine display in the chrysanthemum classes; Mrs. Payne Whitney (Geo. Ferguson, gardener) for a beautifully arranged group of carnations and a basket of white flowers arranged for effect; Mrs. Chas. E. F. McCauley (Mrs. H. B. White, gardener); Misses, Irving Cox (Frank Petroccia, gardener) for violets; Mrs. J. C. Smart (Mrs. McCarthy, gardener) for vegetables; H. I. Pratt (F. O. Johnson, gardener) for a group of flowering and foliage plants; also a fine collection of rare orchids; A. V. Davis (Alex. McKenzie, gardener) for a collection of 6 varieties of apples; Mrs. John T. Pratt (John W. Everitt, gardener) for an extensive display of hardy chrysanthemums which was awarded the Mrs. F. B. Pratt silver cup; C. F. Cartridge for a group of chrysanthemums. Other prize winners were: Mrs. Arthur Gibb (Ben. Sutherland, gardener), Mrs. S. D. Brewster (Chas. Young, gardener), J. E. Aldred (Thos. Twigg, gardener), Mrs. W. E. Kimball (W. E. Frampton, gardener), A. C. Bedford (Thos. Henderson, gardener), Harvey S. Ladew (Joe. Adler, gardener), H. C. Phipps (F. Plumh, gardener), Mrs. F. I. Johnson (H. Hayden, gardener), Mrs. S. Eddy (L. Hubbard, gardener), S. Aldrich (W. J. Gray, gardener), M. W. Daboll (A. Stanloe, gardener), Mrs. Andrew Fletcher (Ed. Harris, gardener).

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FOR WINTER PLANTING

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AMONG THE GARDENERS

Robert Allan, formerly of Elberon, N. J., secured the position of superintendent of the Mrs. Finlay Shepard estate, Tarrytown, N. Y.

Andrew Crombie, formerly of Locust Valley, L. I., has accepted the position of superintendent of the Maurice Bril estate, Mt. Kisco, N. Y.

Thomas Glennon secured the position of superintendent of the E. S. Bayer estate, Mt. Kisco, N. Y.

William Fischer has resigned his position as superintendent of the E. S. Bayer estate, Mt. Kisco, N. Y.

Neil T. Foryth, of Pittsburgh, has obtained the position of gardener on the General Richard Coulter estate, Greensburg, Pa.

George W. Wyatt, recently of Glen Cove, has taken the position of gardener on Farmee Farm, Painesville, Ohio.

William R. Seymour, recently of West End, N. J., accepted the position of superintendent on the Daniel L. Smith estate, Sheffield, Mass.

Ernest Guter, for the past eighteen years superintendent of the R. B. Mellon estate, Pittsburgh, Pa., has resigned his position to accept that of superintendent of grounds of St. Vincent College, Beauty, Pa.

Edward J. Hass secured the position of head gardener on the J. Francis A. Clark estate, "Indian Spring," Newport, R. I.

OF GENERAL INTEREST

James W. Sterling, recently with Burnett Brothers, has accepted a position with Muller-Sealey Co., Inc., in charge of their seed and bulb warehouse, Jersey City. Previous to coming to this country, Mr. Sterling was store manager of Dicksons & Co., Edinburgh, Scotland.

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