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AMERICAN GARDENING
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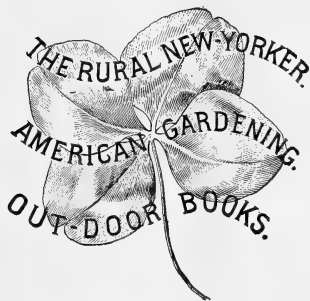
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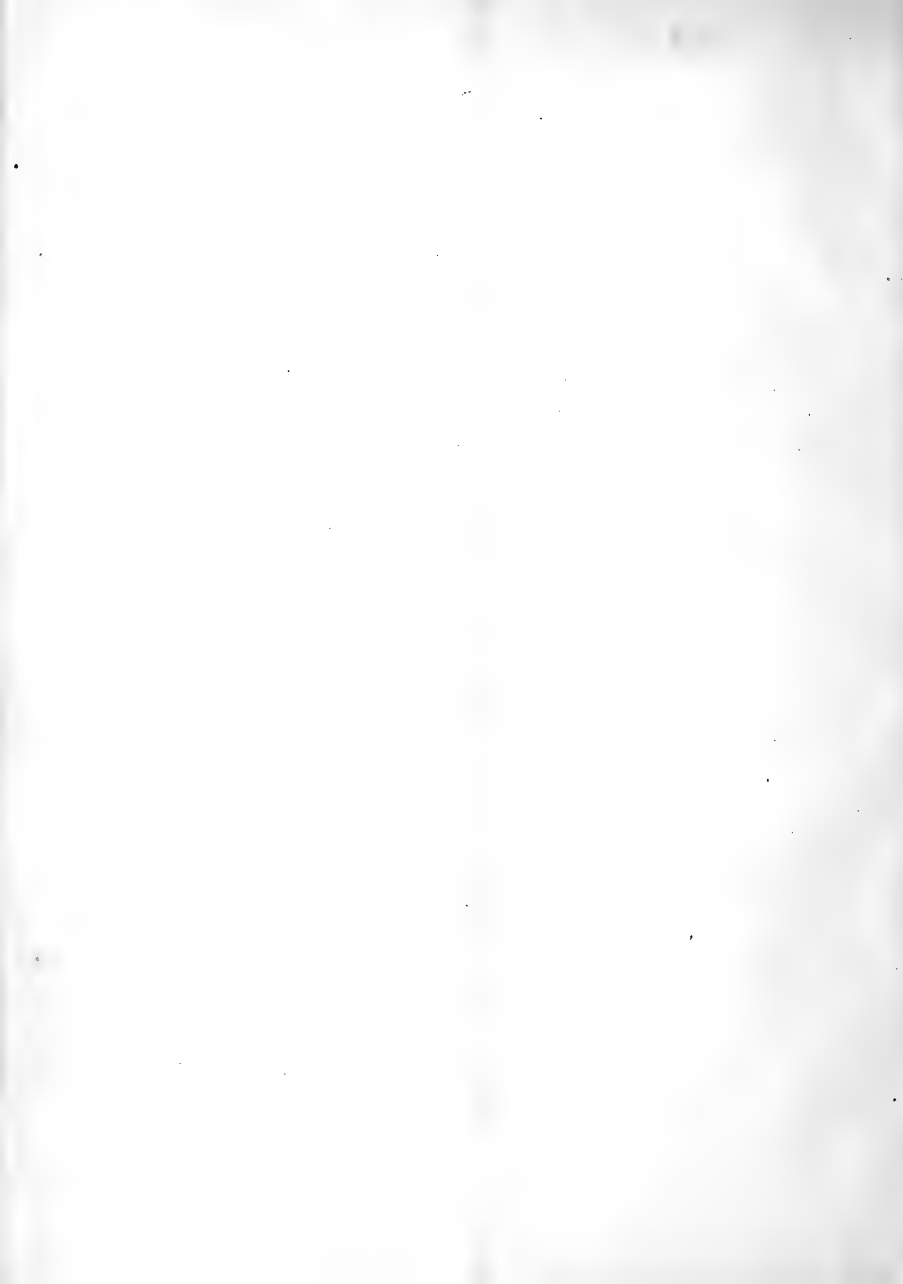
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THE NATIVE WHITE PINE. (*Pinus Strobus.*)

American Gardening.

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{ POPULAR GARDENING. }


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No. 1.

RATIONAL GARDEN WALKS.

A PLEA FOR EASY PATHS.



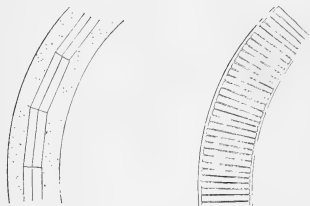
WHAT could tell more plainly than the "Don't" boards placed in parks and gardens to prevent walking on the lawn, that greensward is pleasant to walk upon? Recently I visited a public garden whose pathways were ridiculous. Gravel walks had been provided, but they were poor as regards smoothness, firmness and size of the surface gravel used. The pebbles were large, uneven in size and loose, making a most uncomfortable walk. About four feet back from the margin was a line of boards inscribed, "Don't Walk on the Grass." Between the gravel and the boards was a smoothly-beaten dirt path where grass had once grown, but had long since been trampled to death. The pedestrians certainly did not "walk on the grass," for there was no grass on which they could walk.

This park is a fair illustration of the most of public and home grounds in one respect at least. Its walks may be reduced to two common kinds; to wit, such as extend between certain points and are much used, and such as are designed simply to give access to the more remote parts of the area, and which are used comparatively little. Among the former may be mentioned certain cross-paths from street to street, giving people a chance to run directly across the garden. These might be considered analogous to the much-used walks between house and street, house and stable, etc., in private grounds.

Now, it has been my practice in garden-making to preserve a clear distinction between these two

kinds of walks. I believe in constructing the much-used walks of the best material that can be afforded for easy and agreeable travel, and also think they should be quite direct, so that there will be little temptation to deviate from them in going from point to point. For superfluous, little-used walks leading to remote parts of the garden, I have no liking, preferring instead to dispense with "Don't" boards and make of all the parts outside the cultivated borders, etc., a common of closely-clipped, velvety lawn—the pleasantest thing in the world to walk on. Pleasure is then combined with cheapness and beauty.

I have long been satisfied that this is the rational view of the walk question in private grounds, and it applies equally well to public parks. In the incident cited, I am positive that were the much-used cross-paths made of asphalt or some other superior material for walks, and were other walks omitted, all being left a common of greensward, the results would be vastly more gratifying. Not the



INEXPENSIVE GARDEN WALKS.

least gain would be the getting rid of an inconsistent combination of gravel walks (on which no one treads



A PLEASANT GARDEN WALK—PARSLEY-EDGED.

unless a police officer is in sight), with unsightly "Don't" boards, and the cow-paths along the sides.

That the grass walk is quite as suitable for the less-frequented parts of public grounds as of private gardens, is apparent from the fact that most of the fine landscape cemeteries of our cities are without any other kind of walks—the areas of grass being treated as commons, with no injurious consequences. The truth is, that a greensward will bear a great amount of tramping without a particle of injury, unless the tramping be along regular lines—a thing not likely to occur where the utmost liberty as to the place of walking is encouraged.

Stone, asphalt and well-made gravel paths are too expensive for the average garden-maker, even where used a good deal. In the illustration (on preceding page) appear two kinds of neat and effective walks, much less costly than the kinds named. The one to the right is made of planed pine slats about

three inches wide, of $1\frac{1}{4}$ -inch lumber, resting on stringers running lengthwise. The other consists of plank laid on cross-stringers along the center of the walk, the gravel being filled in on both sides. The former is well adapted to curves. When so employed, one end of the slats should be wider than the other. Any carpenter can make them without loss of material.

In conclusion it may be said, that two general principles, one of art and the other of morals, are involved in a rational treatment of even so simple a theme as the laying out of garden walks. Firstly: since Art is Fitness, if a public path be not adapted to—that is, fit for—public use, it is not artistic, however perfect be the curves of that walk which it is a weariness to tread on. Secondly: it should never be forgotten that the public is made up of separate human beings, whose comfort and convenience, not their bare necessities, demand regard.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XV.



THE SUBJECT of our study this month is a hillside home in New Haven county, Connecticut. The garden is somewhat less than an acre in extent, the street frontage on the two angles being 265 feet. The further part of the place (at the top in the engravings, pages 4 and 5) is the highest and is quite rocky; otherwise the soil is somewhat heavy, but not too heavy to be good when fairly tilled. The general features of this place are set forth in Fig. 1, and certain improvements of which it would be susceptible in Fig. 2. Let us note these diagrams, with a view to drawing certain lessons therefrom, while suggesting aid to our correspondent in his laudable effort to make his home surroundings more beautiful.

The present fault of the place, as the owner perceives, is the lack of interesting garden features, with a corresponding poverty of embellishing materials. When nature has been so lavish in providing beautiful hardy trees, shrubs, vines and plants suitable for introduction into our home grounds, who could feel content that his home should be so bare of handsome garden qualities? Having only one life to live, why should not every one desire to render home the dearest spot on earth—home, a veritable Paradise, so far as in him lies, when nature is so free with her offerings to such an end.

That our correspondent appreciates the effects which easy curves in the walks may impart to a garden, is evident from his having introduced some of them in his own original plan of the place. That the effect created is not all he desired, may be explained on the ground that he did not duly appreciate the fact that the several arms of the main forked walk should vary somewhat in their relative strength and courses. It will be noticed that the change from Fig. 1 to Fig. 2 in this particular is not very marked, and yet it is sufficient entirely to change for the better the aspect of the paths directly in the rear of the house. A more striking example of the fine effect of slight variations in the course of garden lines could hardly be desired. If it be claimed that the improved walk will suffer somewhat in the directions of its course from the dwelling to the rear buildings, it may be answered that such loss is extremely slight, and is much more than compensated for in the increased beauty of this portion of the garden. It would be unreasonable to expect so much beauty without some trifling cost, either in the way of indirectness of course or otherwise.

In the continuation of the walk system to the front of the house and to the street, the improvement from the original arrangement to the one suggested may be equally marked. And yet how simple is the change indicated! It would be the mere introduction of a greater distance between the extremes at the street (2 2), and giving up the straight right-hand walk of Fig. 1, for the gracefully curved walk of Fig. 2, with the effect of imparting an air of breadth to the small lawn in front of the house, where, of all places, it counts the most for general good appearance. The getting rid of the angles in the walk immediately back of the house, substituting rounded turns therefor, impresses one as a decided gain. It would be changing a stiff, cramped, angular style for one marked by grace and beauty.

The improved appearance to be effected in front of the house is equally true of other parts of the tract, outside of the fruit and vegetable garden. By swinging the walk in the rear of the house but slightly to the left, the encroachment thereby on the parts about the outhouse (11) can cause no loss in appearance here, while such change of course may lead to the creation of what would at once be the boldest and handsomest single grass-plot on the place—that lying northerly from the dwelling. This plot may possess an air of dignity and freedom that will contribute character to the entire garden. It would be the one feature that would forever free the place from the charge of fustiness or lack of repose, consequent on the introduction of a large variety of garden materials within a one-acre tract. If that part towards the street from the poultry-house is somewhat limited by the walk and the plantations, the extension northwards is marked by a strong degree of freedom and naturalness.

It is the principle of introducing certain bold lawn areas, involving some extended vistas and coupling with them considerable elaborateness in the working out of minor details of planting trees, shrubs and flowers in large variety, which brings about that always surprising quality of a fine garden—namely, the appearance of greatly increased size. Were our correspondent to adopt this plan even gradually, no one thing would give greater satisfaction than the agreeable deceit presented by a garden seemingly several times its actual size.

Let us now consider the introduction of trees and other embellishing materials somewhat in detail, as set forth by the diagram, Fig. 2. In this, 1 represents the dwelling; 2-2 the walks from the street; 3 the front lawn. Suppose that for trees on this conspicuous lawn two lindens of the same kind, say the European linden, and two sugar or Norway maples, be planted. In the same area some masses of shrubbery might be set towards

each of the entrances from the street, one to include, say three plants of the golden bell (*Forsythia viridissima*), and the other three of the plumed hydrangea (*H. paniculata grandiflora*).

In plat 4, along the street, there might be the same kind of shade-trees as suggested for plat 3, while the continuation of these at other points indicated along the entire highway front, would meet with our approval. At 5 in this plat, a short branch from the walk leading to the vegetable-garden appears, the assumption being that there are to be several shade-trees, with a seat to which the walk leads. For these trees, a weeping poplar or a Camperdown weeping elm would be suitable near the walk, with such a tree as the pin oak, a European bird-cherry, or a royal willow back of it, towards the vegetable garden. In the flower borders near the house it would be well to introduce some choice hardy perennials, giving a long succession of bloom, with tender flowers added for brightness in midsummer and later. If, among hardy flowers included here, the Japan anemones in several colors, *Aquilegia curvula* and *A. chrysantha*, perennial phloxes, day-lilies, tiger and Japan lilies, tulips and hyacinths, should be the chief, then the borders would never be without interest.

At 6, in the large plat, would be a good place for an assortment of roses and other fine hardy flowering shrubs, the idea being that the beds containing these are to be cut out in the greensward, and kept cultivated. The shape and position of these beds are such that a grass walk leading from the vegetable-garden walk is provided—a delightful spot for sauntering in the midst of blooming roses and handsome shrubs.

For roses, the hybrid perpetual class is recommended in the main; if the elongated bed to the left of this grass walk was to be devoted wholly to these, and a few be carried also into other beds across the walk, the effect could not be otherwise than pleasing.

The selection of shrubs for this group of borders (including the one across the walk towards the highway) might be the following, which includes only the choice kinds, such as together would give flowers almost perpetually the season through:

Flowering almonds, rose and white; golden bell, deutzias, Japan quince, lilacs in variety, plum-leaved spiræa, viburnums (snowballs) in several species and varieties, spice bush (calycanthus), summer-flowering spiræas, including Billard, Reeves, Douglas and mountain-leaved; weigelia in variety, mist-tree (*Rhus cotinus*), althæa or rose of Sharon, blood-leaved plum, snowberry and Indian currant, strawberry-bush (euonymus), *Stuartia pentagyna*. The small bed nearest the house, laid out somewhat alone, would be well located for a geranium

bed, or to be planted with other bright-colored flowers. Such an arrangement of trees and flowers would not fail to enhance decidedly the general landscape effect.

In the original diagram, Fig. 1, there is a stone wall running crosswise of the back walk, at a point corresponding with 7, in Fig. 2, which our correspondent informs us was built to keep the water that flows from the higher land, away from the house. This appears in the new plan at 7, together with some steps in the walk. Such a break in the surface had better be marked by masses of shrubs at and about the ends of the wall; placing at the right-hand end, say, an irregular clump of weigelias (both the green and the variegated-leaved, the former predominating), and at the other end a similar group of lilacs, with a mass of various viburnums, bush honeysuckles and mock-oranges above the wall to the left of the walk. If these plants were introduced, adding their harmonious combinations of color and outline, would not the effect be excellent?

In the portion of the grounds marked 8, some elms, lindens or maples might be planted at the highway, with a few choicer trees, such as Wier's cut-leaved maple, golden-leaved oak, *Magnolia speciosa*, ring-leaved willow, ginkgo, or yellow-wood, farther back. A shrub border is indicated in this part, across the drive from the house.

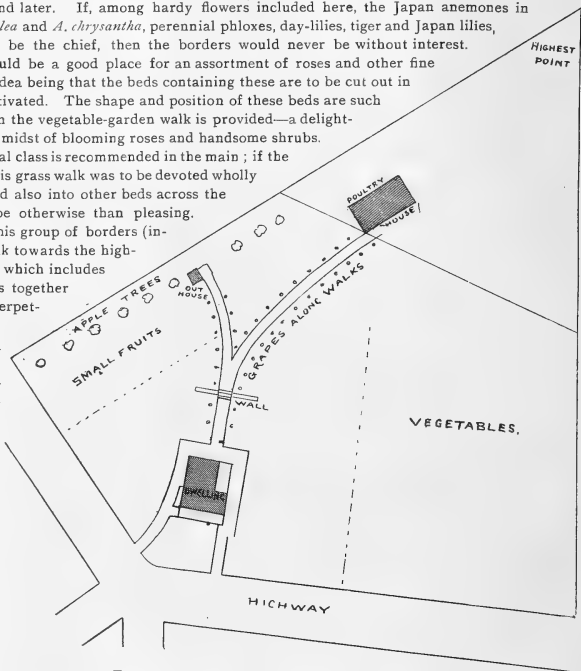


FIG. 1.—A PLACE IN NEW HAVEN COUNTY, CONN.

It would be a good place in which to set such choice things as European and purple barberries, mahonia, and that most lovely hardy shrub, the variegated-leaved corchorus.

The parts 9 and 10 are devoted to fruits in the original plan, and here we see no changes to suggest, especially as the fruit-trees are well established.

At 11 is the outhouse, which should be surrounded by heavy masses of evergreens and coarse shrubs. Were we to make out a list for the place, it might include Norway spruce, American arbor-vitæ, hemlock and the white pine among conifers; and pinnate-leaved bladdernut (staphylea), tamarisk, silver-leaved cleaster, purple-leaved filbert, *Forsythia suspensa*, flowering currant, Tatarian honeysuckles, snow-drop-tree, colutea or bladder-senna, bush cranberry (viburnum), alder-leaved clethra, witch-hazel, purple bramble, *Deutzia scabra*, etc., among flowering shrubs. Opposite the shrub masses referred to, in the large central lawn area are shown two masses of shrubs standing somewhat apart; for the larger of these we would name the hardy plumed hydrangea; for the other, several plants of the Japanese aralia, to be cut close to the ground annually. Towards 7, from this point, are shown two trees overhanging the walk; these might consist one each of scarlet oak and double-flowering horse-chestnut.

Instead of having grape-vines set along both sides of the rear walk, we advise that there be a regular vineyard at 12. The two trees shown, located close to the poultry-house, may be a tulip tree and a white mulberry tree, according to taste.

It is recommended that some hardy evergreens be planted at 17, including Austrian pine, dwarf mountain pine, Alcock's spruce, Blue Colorado spruce, white spruce and Norway spruce, tapering off with thorn trees, cork-barked maples, variegated cornelian cherry, and similar growths, towards the house.

The triangular area back of the vegetable-garden and the poultry-house is rather wild in its present state. We propose that the central part (14) of this be cleared up into lawn to connect with the large lawn towards the house, extending the clearing also in various directions. At 15 a vine-clad arbor might be located, around to the rear of which could be a rock-garden. The borders might be defined by lines of rocks partly embedded, the soil being thrown inwards to form mound-like borders. Thin rocks or stones might be embedded in the borders. In the intervening soil hardy perennial and Alpine plants, and small evergreens, shrubs, annual flowers, etc., would thrive. For plants for rock-garden, see catalogues of hardy plant growers. The spire-headed Irish and other junipers might find places, also the trailing species, the dwarf species, and arbor-vitæ, pines, yews, retinosporas, etc. In other parts of this rear triangle may be set some forest and evergreen trees, native shrubs, vines and flowers.

The vegetable plat (18) may be laid out with rows lengthwise. Parallel rows toward the right-hand side might be devoted to small fruits or the smaller tree fruits, such as dwarf pears and cherries, quinces, etc.

One feature remains to be mentioned: It is the terminus of the cross garden walk, which we recommend should be treated as a vine arbor, however rudely constructed, with a garden seat within. If the vegetable garden be well made and neatly tilled, it, too, becomes a pleasure-garden, in which an inviting seat is wholly appropriate.

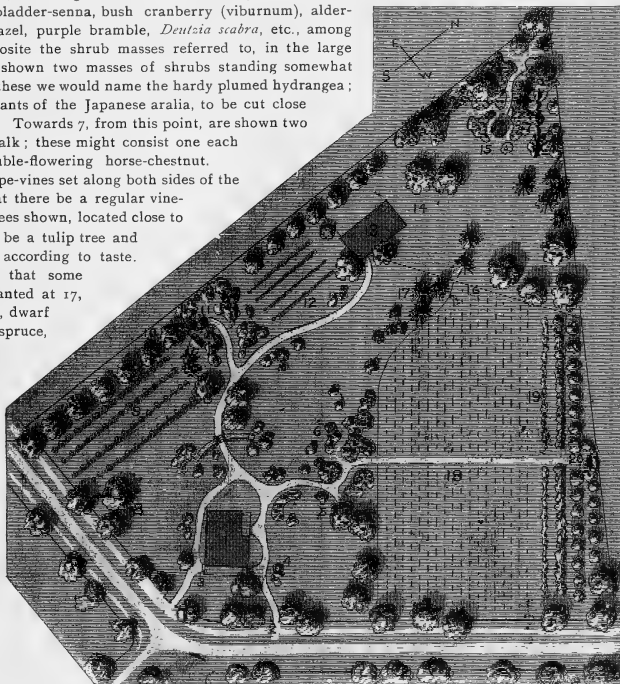


FIG. 2.—IMPROVED PLAN FOR PLACE IN NEW HAVEN COUNTY, CONN.

THE ECONOMIC PLANTS OF JAPAN—XI.*

PLANTS USED FOR SALADS AND GREENS (CONTINUED).

ARALIA CORDATA, Thunb. (*A. edulis*, Sieb. and Zucc.); Jap., *Udo*. The young shoots are highly popular, and a really good spring vegetable. The plant grows wild all over Japan, and prefers a dry, porous soil. I have seen it grow in abundance on the elevated plain about the volcano Asama-yama, where the soil consists of volcanic ash and disintegrated scoria. It is a coarse perennial, four to six feet tall, with cylindrical stem and large, compound (sometimes opposite) leaves, rather rough; leaflets dentate, or doubly dentate. The flowers are small, greenish-white, in little umbels forming part of large branching panicles, which terminate the branches. Flowers five-parted. Fruit a black berry, which ripens in October. The illustration shows a single leaflet, natural size; leaf and flower-stalk reduced; single flower enlarged.

It is cultivated extensively, but there are no improved varieties. The growers hold that the seed from wild

to care for themselves during three years. In the spring of the fourth year the plants are replanted a foot apart in rows two and one-half feet apart, this time in good soil, and their growth is encouraged as much as possible. At the end of November the asparagus-like roots are dug and transferred to a sheltered pit two or three feet deep, packed close. They are first covered with a thin layer of soil, then with night-soil, and finally loose earth is poured in till level with the surface. In eight to twelve weeks, according to the latitude, the shoots appear at the surface, when they are cut close to the roots, a portion of the bed being torn away each day. They are then tied in small bundles and marketed. The second illustration shows these shoots reduced in size. As found at the greengrocers, well-grown shoots are about two feet long, as thick as a man's thumb, perfectly white, succulent, quite tender. For table they are stewed and served with sauce, or otherwise prepared by the Japanese cook in an agreeable and palatable dish.

Foreigners sometimes call them Japanese asparagus. While they have no pronounced taste, they have a flavor that is not easily prescribed. The hardiness and ready culture of this plant commend it for trial here. Coming early in the spring, it may prove acceptable. In its native land the shoots are cut in lengths of four or five inches, and served somewhat as asparagus is served here.

ARALIA SPINOSA, L., var. *CANESCENS*, Fran. and Sav. (*A. canescens*, Sieb. and Zucc.); Jap. *Tava-no-ki*. This species is also wild in Japan. Though it cannot be classed as an important economic plant, the fact



FIG. I.—*ARALIA CORDATA* (Udo).

plants produce more vigorous shoots than the seed from plants under culture. Every spring wild seed is sown in some out-of-the-way corner, and the seedlings are left

that the young leaves are gathered and used as greens by poor people, being boiled and served with vinegar and *shoyu*, entitles it to mention here, as among the means of life which necessity has shown to the needy Japanese.

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HELWINGIA JAPONICA, Dietr. (*H. rusciflora*, Willd.; *Osisiris Japonica*, Thunb.); Jap., *Hana-ikada*. This shrub belongs to the same family as the preceding. Its value as food is not great, the leaves being used only occasionally. The bush grows six to eight feet tall. It is wild in the mountains, and I have seen it in abundance in the pass at Usui Toge. It has a stiff and angular growth and smooth green bark; leaves partly scattered, partly opposite, with short petioles, blade ovate to oval pointed, three inches long and two inches broad, margin serrate. The bush is remarkable in that it bears the fruit on the middle of the leaf. Fig. 3, page 8, represents a leaf with a cluster of flowers attached to the midrib. The small figure by the side is a flower enlarged. The flower is small, greenish, four-parted; corolla wanting, pistil; four-cleft. Fruit a small black berry. The young leaves are eaten as greens.

EURYALE FEROX, Salisbury; Jap., *Oni-basu*, *Midzu-buki*. The seeds of this ornamental water-plant are edible, and they are quite generally gathered for food. The leaf is orbicular, peltate, with a slit at the base; dark-green with brown nerves, and a little rough. Flower purplish; calyx and stem covered with stiff prickles.

BOLTONIA CANTONIENSIS, Fran. and Sav. (*Aster Cantoniensis*, Bl.; *A. indicus*, Thunb.); Jap., *Yomena*, *Miyama-yomena*. In this we have a pretty annual, wild everywhere in neglected places; sparingly cultivated for greens. Seed is sown in rows, thickly, early in spring. When some three inches tall, the young plants are cut and boiled, and served with *shoyu* and vinegar. Thus prepared, the dish is called *yomena-hidashi*. They are also served with a preparation in which the soja bean forms the basis, being a kind of sauce called *miso*. The lower leaves on the plant are cut, the upper ones entire. Left to itself it produces single bluish purple flowers with yellow center, in the fall. Our picture of it (Fig. 4, page 8) shows a flowering branch.

BUPLEURUM FALCATUM, L.; Jap., *Mishima-saigo*. A member of the parsley family. Like the foregoing, it is cultivated for greens, though not extensively, and in the same manner. The radical leaves are cut while young, and made part of various dishes. This plant grows some three feet high when left to itself, terminating in umbels of small yellow flowers. A branch, reduced in size, is shown in Fig. 5, on page 9.

GLEDITSCHIA JAPONICA, Miq.; Jap., *Saikachi*. A Japanese author, Ito Keisuke, in "Nippon Sanbutsushi," mentions that the young shoots of this tree are occasionally used for greens. It has another use of no small importance. The pods are used as a substitute for soap, and in many villages they are generally found on sale for that purpose.

HEMEROCALLIS FULVA, L.; Jap., *Yabu-kanzo*. A handsome plant of the lily family, which grows wild on grassy

plains at the bases of the mountains. The stem reaches some three or four feet, bearing large, bright red flowers, which are edible. On the plains of Karuizawa, I have seen men, women and children busily engaged in collecting the flowers. Those not used at once were spread on mats in the sun to dry for future use. In certain districts of China, it is said, the tough fibers in the leaves are used for the manufacture of cloth.

NUPHAR JAPONICUM, De C. (*Nymphaea lutea*, Thunb.);



FIG. 2.—ARALIA CORDATA: EDIBLE ROOT.

Jap., *Kawahone*. (Yellow Pond-lily.) Of economic value only when its young shoots are used for salad. It is grown in the ponds and basins commonly found in Japanese gardens; but it is cultivated for ornament rather than for the shoots, though it is occasionally grown exclusively as a food-plant.

ENANTHE STOLONIFERA, De C. (*Enanthe javanica*, Miq.; *Dasyloina subbipinnatum*, Miq.); Jap., *Seri*. This umbelliferous water-plant, one of their best vegetables, is indigenous, and runs wild in shallow streams and irrigating ditches. It is largely cultivated on rice land, and

has been in use as a vegetable from ancient times. In spring and early summer it appears in market, tied in little handfuls, each bundle selling for a fraction of a cent. Only the young leaves are used, but commonly the whole plant is pulled and bundled, roots and all. The seed is sown thickly early in spring; and when up, a thin sheet of water is kept on the bed all the time.



FIG. 3.—HELWINGIA JAPONICA.

The stem is diffused, and ridged or furrowed. The leaf resembles that of the parsnip, and has a long, hollow petiole. It is used for greens, salad, and as a condiment for flavoring, being somewhat aromatic and of a pungent flavor.

PETASITES JAPONICUS, Miq. (*P. spurius*, Miq.; *Tussilago petasites*, Thunb.; *Nardosmia japonica*, Sieb. and Zucc.); Jap., *Fuki*, *Yesso-buki*, *Shibuki*. A giant species of petasites, wild in shaded moist places, especially in the north, and cultivated about as we grow rhubarb. The leaf-stalks, the very young leaves, and the flower-buds are all used as vegetables. The yellow flowers appear before the leaves, on short, bracted scapes six inches tall. The buds are used for salad. They have a bitter though not unpleasant taste. In the same way the very young leaves, before they unfold, are some-

times picked and eaten. The leaf-stalks constitute the most important part. These are gathered from wild plants wherever found, and quantities may be seen in market during the early summer. They are not unlike rhubarb, but larger, of a dull green, and covered with a white down. The plant has been cultivated for centuries, and several varieties have been developed, which are classed in three groups after the color of the stalks—green, red and white—the white-stalked being the best. I was assured that in certain cool, shady places, with rich moist soil, the leaves reach a height of fifteen feet. I have seen leaf-stalks six feet tall and four and one-half inches in diameter. A common mode of cooking is to peel and boil them, when they are served with *shoyu* (sauce made from the soja bean) and eaten with rice. They are also sliced and candied, when they are said to be good for colds. I was treated to some excellent candied *fuki* of this description at a farm-house.

It might be worth somebody's while to try their culture in the north, and then induce the *chef de cuisine* of some fashionable eating-house to experiment in cooking them. If successful, they would soon become popular.

SENECIO KÄMPFERI, De C. (*Tussilago japonica*, Lin.; *Farfugium Kämpferi*, Benth.; *F. grande*, Lindl.; *Ligularia Kämpferi*, S.

and Z.); Jap., *Tsuwabuki*. A coarse perennial plant with stiff, radical leaves, blade broad, orbicular, shining above, rusty below; leaf-stalk round and thick. Wild in central and southern Japan. It is occasionally cultivated for its leaf-stalks, which are used like those of *fuki*. They are best when taken before the leaves unfold, while tender, and should be steeped in water for a couple of hours before using, to remove a disagreeable odor. It is a rather striking scenic plant, growing three feet high, and is sometimes cultivated for that purpose.

SIUM NINSI, L.; Jap., *Mukgo-ninjin*. A perennial plant of rather stiff upright growth, with a round stem, attaining a height of three or four feet. The plant has a pleasant aromatic odor and taste, reminding one of celery, though the odor is not strong. The upper leaves are trifoliate, the lower ones often pinnately five-foliate. Leaflets narrow, one or two inches long, with serrate margin; petioles long, with a deep groove on the upper

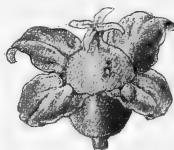


FIG. 4.—BOLTONIA CANTONIENSIS.
(YOMENA.)

side, and completely clasping the stem. Bulblets form in the axils of the leaves, by which the plant is propagated. The leaves and bulblets are used for salads and greens, for which purpose the plant is occasionally cultivated.

TETRAGONIA EXPANSA, Ait. (*T. Japonica*, Thunb.); Jap., *Tsuru-na*. (New Zealand Spinach.) It seems that

this plant is not peculiar to New Zealand, as is generally stated. Thunberg named it as a Japanese species, and, according to a native work (Shiutei-Tomoku-Zusetsu), it is wild along the sea-coast of central Japan. It is also cultivated, though not extensively. It thrives on the lightest sand, and is even useful in binding drift-sand. Kansas Agricultural College. C. C. GEORGESEN.

RUTHLESS FELLING OF OUR FORESTS.

MEANS FOR THEIR PROTECTION URGENTLY NEEDED.

DURING a recent trip of about 200 miles through the heart of the lumber region of northern Wisconsin, I was more strongly than ever impressed with the necessity of instituting measures for the protection of our remaining forests. The havoc being made is something frightful. The modern lumberman, like a demon of destruction, is sweeping through our rich virgin forests, in his insatiate greed cutting out the finest portions, and letting the fire-fend at his heels lick up the remainder.

Hundreds of sawmills are in operation along the new lines of railroad that intersect the pine regions. Hundreds more are in process of erection. New branch roads are constantly being projected and built—mainly for the purpose of stripping Wisconsin of her forests in the most expeditious manner. Night and day, in an almost continuous stream, the huge trains rumble up and down these roads. The stream of immigration into these regions is astonishing. Long trains packed with living freight of men, women and children, of all nationalities and trades, are constantly in motion. Yet, in spite of this great influx of population, the cry of the lumbermen is for more help. The work of destruction is not yet rapid enough to suit them.

Well, we are all selfish and inclined to reach out for what we want; but it has often been found necessary to protect people against their own selfishness and improvidence. If ever such interference was needed, it is now in this forestry question. It is a matter of too great public import to be longer disregarded. All thinking men admit this.

The question, then, arises as to how the matter may be remedied. I would suggest first, that all tariff be taken off Canadian lumber, even if we do not build up quite so many millionaires in our own country; secondly, that all public forest domain be withheld from entry and purchase, at least until suitable regulations for the preservation of a portion of the timber thereon can be made and enforced; thirdly, that lumbermen be stringently obliged to pile and burn the brush-tops and other



debris scattered over the ground in cutting the timber. In no other way can these terribly destructive forest fires be checked. The tops, boughs and foliage of the pines, being of a very resinous character, are highly inflammable, and should be disposed of while green,

when they burn rapidly, but not dangerously, or forest fires are sure to follow the lumber crew. It will cost a few more cents on each thousand feet of logs to dispose of this material, but better this than the total destruction of our country's forests.

The lumberman cares but little for the land and tim-

ber after he has taken off the cream of the latter. In most cases he then lets it go back to the state for taxes. But he has no right, in the true sense of that word, to imperil the rights of others by such loose methods and sadly wasteful negligence as we see so generally manifested in modern lumber woods. W. D. BOYNTON.

COLOR FOR WINTER'S RELIEF.

CHEER AND BRIGHTNESS OUTDOORS AND IN.



EVERYBODY that is normal loves bright colors. Nature revels in color. I am glad we have got by the fad of neutral tints, which was only the deification of dust. There was no bottom to the fashion. It created so far as possible a dull uniformity about our homes. We have a right to whatever makes our emotions cheerful and bright. Red is delightful to old age, and yellow to young life; and there is no reason why our houses should not be painted or colored with what is adapted to their occupants.

When a resident of Chicago, a few years ago, I visited the kindergartens, and inquired which color was first chosen by small children. In every case it was yellow, with but one exception. The relation of color to us is far more intimate than is generally supposed. The blue ray predominates in the sunlight of spring; the yellow in that of summer; the red in that of autumn. This corresponds exactly with the relation of colors to our ages; blue for the mother and babe, yellow for the rapidly growing child, and red for the mature adult. Experiments in European retreats show that color has so vast an influence on the mind that excitably insane persons cannot endure red; but the melancholy need red and cannot endure blue; so there is something in the expression, "I feel blue."

Horticulture has more to do with color than any other art except painting. Our plantings should look not only to flower and foliage, and grouping, but also to the colors that are possible, and their right adjustment to the seasons. Nature gives us the cue in making a specialty of brightness as the year falls into decay. But man has needs beyond those of the rest of creation. It is especially desirable that we shall be able to brighten up November and December, and even secure cheering nooks all winter, and this we can do. There are trees and shrubs that are inspiring and joyous all through November, and others that do not fail us till spring.

The most superb glory of November in America is the euonymus, an inconspicuous affair, without a suggestion of unusual loveliness all summer. In October its seed-pods color a lovely pink. When we have begun to say that these can hardly be surpassed, lo,

they burst open and show us a heart of brilliant scarlet. It is the purest, warmest color in the American woodlands. The shrub does admirably well on our lawns, in all sorts of soil, and either on upland or lowland. It stands, when full-grown, about eight feet high, and in November hangs loaded, like a cherry tree, with fruit. The color is not unlike that of a Morello cherry. The flower comes in June, and, while delicate and deliciously sweet, is inconspicuous. I can hardly overpraise the euonymus. It should be very liberally planted in all directions from our windows. Alike on dull and dripping or on sunny November and December days, it stands full of cheer and brightness.

The European sort has yellow berries and is not so happy a shrub; besides, it is infested with lice and must be syringed with kerosene emulsion, or it will become unsightly. All through the northern states and far south our American sort grows wild in rich lands bordering on swamps. The effect is superb. It can be obtained of all good nurserymen, but I wish they would talk more about it.

Its noble companion—they are *par nobile fratrum*—is the European barberry—now adopted by our own woods, and found freely growing everywhere in the northern states. In many ways this shrub is so useful as to merit a place very near the head of all we can select for our lawns. In flower it is superbly graceful and sweet—too sweet for some persons. It is eminently a bee-feeding, honey-making flower. The long tresses hang for three weeks in June, covering the bushes. But the glory of the plant comes, after all, in October and November. The berries color as early as August, but are not conspicuously bright until the leaves fall and bright spots are specially needed. Then bursts forth the blaze of crimson scarlet. It is literally a burning bush. I have one standing ten feet high, and ten feet in diameter through the spread of the limbs, which weep until they touch the ground.

For natural green this barberry surpasses all the so-called weepers. The berries are also useful for jelly and marmalade, if you have so many that you can afford to strip a few bushes. For my part, I prefer the color on the lawn. The taste is delicious to an irritated stomach, and some dyspeptics claim much benefit from using the fruit. I do not intend to overpraise the barberry, but it cannot easily have too much said for it. Our wild shrubs are our best, but are thought less of

than inferior sorts brought at much greater expense from far off countries.

The third bush that deserves great prominence, also a native and found over a vast range of territory, is the red-barked dogwood. The peculiarity of this is that the bark colors a vivid crimson in autumn, and remains bright red all winter until the leaves unfold in spring. The change of color begins with the ripening of the berries, but is not always completed at that season. This fall the color was dull for a month after the foliage fell. But all through the cold season this dogwood sits on the snowbanks like a glowing fire. Of course no extreme cold affects it. The euonymus passes its prime color by or before Christmas, often by the first of December. The barberry and dogwood are fine through the whole winter. This bush grows naturally in lowlands, and revels in wet places; but it grows fairly well on uplands. It may be planted in sun or shade. In wet soil it spreads by layering its limbs, which droop over and readily catch roots in the soil. The barberry also adapts itself to shade as well as sun.

I have standing before my window a superb mountain-ash, which has been glorious with its load of clustered berries for three months. Do our people realize what a superb affair this may be? It likes a cool spot, but grows well in poor and rich soil. It should be trimmed with care so that it will not become too bushy, and then there will be such a revelation of the beautiful in color as no other tree gives. I do not think we have its equal in that respect. Some years the robins will take all the fruit, but we have no right to undertake fine lawns and gardens without counting in the birds and preparing food for them. Hedges of Tatarian honeysuckles delight them; and we can save our favorite mountain-ash trees from spoliation by syringing them with kerosene emulsion. In this way I got rid of damage from the robins in August; but the flocks in October, as they passed south, stopped and took a meal—quite to my satisfaction, for the tree was so loaded that a bushel could be spared from the top before the snows weighed it down. I have other trees that I leave to the birds cheerfully. The mountain-ash is subject to borers, but these can easily be destroyed by a wire and sharp knife. The foliage as well as the fruit is elegant, and the flower gives a vast amount of honey and bee-food.

We may add to our list the high or bush cranberry (*Viburnum oxycoccos*). This bush, rather homely while in bloom, deserves a chance in late autumn. I like it best where the others are least valuable, in clumps and under hedge-rows, and by stone walls—in all odd and out-of-the-way places. It is a good bush for mixed groups. Birds seldom meddle with the fruit, and it is frequently conspicuous all winter; but its finest show is before Christmas. The berries are soft and not so enduring as those of the barberry.

One special use of all the berries I have enumerated is home decoration. Branches of the mountain-ash are truly superb in large vases, or fastened elsewhere about

our rooms. The barberry holds its color and richness for many weeks indoors. The euonymus is especially fine for a shorter time.

We have in the above list all that are needed to brighten our yards and lawns in the dull days of late autumn, and to counteract the winter's chill. We have two more colors to care for to complete our planting. The green of summer can be retained by having plenty of hemlock trees, bushes and hedges. This is the finest of our winter evergreens. Savin or junipers in general give us good clippings for winter bouquets; while the mahonia should be always on hand for Christmas. In my judgment, the chief use of evergreens is to secure green for the brown months; and I have planted my own lawn with this object in view.

Among the browns we may also get great delight from a few trees and bushes that have rich tints and persistent foliage. Among them are the scarlet oak, first scarlet and then rich brown through November, and often till Christmas; while the beeches, more especially the purple and copper varieties, are charming all winter. What can be finer in winter than an oak forest or a beech grove? Americans have so far generally failed to appreciate these two trees. In our western states I have seen the most complete homesteads in the middle of great oak groves—trees of the aboriginal forest. I know only one beech park in America; and only a few fine beech groves. But apart from its exquisite sweetness and wholesomeness, the beech is eminently fine for the purpose I have specified.

Our winters are so long that it is irrational to plant for summer only. The foliage begins to drop in the northern states generally by the first of October. Ash and butternut trees are bare early in that month. By November the general aspect is that of defoliation. We have then five months or more without relief of color, unless we plant specially to supply the lack.

PLANTS FOR THE HOUSE.

I do not think our people generally understand the art of enlivening winter with plants and flowers at the least expense and trouble. I was long accustomed to pot a quantity of bedding-plants, and had more work than flowers. Geraniums and common bedding-plants can be so cheaply bought in quantity of greenhouse-men in the spring, that it does not pay to keep them through winter. If something rare is in our beds, it may be advisable to pot it; otherwise let all freeze in winter and buy anew. Of course, if one has a light and dry cellar or a plant-pit, the plants can be easily lifted and stored. But to lumber a small conservatory or our windows with cheap plants is a mistake.

For a while I adopted the plan of filling my windows and conservatory with caladiums, begonias, and other fine foliage-plants. These were charming, and gave, of course, as much good bloom as foliage. I will not say that I won't return some day to my semi-tropical pots; but they cost a good deal in the long run, and one must know how to take care of them. Dwarf oranges in

bloom and fruit, with jessamines, noyas, etc., fill a house with delicious and healthful odors; but you can do quite as well without the expense, as follows:

Lift in October or November as many short stocky lilacs, syringas or mock-oranges, deutzias, bush or Tatarian honeysuckles, *Spiraea prunifolia*, and other early-flowering common shrubs, as you can care for; place them in your cellar in cheap boxes or in half kegs; water very little. About three weeks before you desire a blooming of either sort of shrubs, bring up to your kitchen window, or conservatory if you have one, as many as you choose. As the buds start, simply water profusely, and give all the light you can. You will shortly have May in January or February. Nothing can be more delightful. The lilac is the best of all forcing-shrubs, and is quite as sweet as when blossoming out-of-doors. *Deutzia gracilis* is very pretty in clouds of white, but it is not sweet. Mock-orange is liable to drop some buds, but is very sweet and lovely. The yellow currant or native ribes is another first-rate shrub for the purpose.

When they have finished flowering, set the bushes back in the cellar till spring, only do not let them dry up nor over-water them. In April or May set them in the ground, and in two years they can again be used for forcing. In order to have short, stocky bushes one should take suckers from established shrubs and set them in a row in his garden, and trim them down. Of course a full-grown lilac tree will not serve our purpose; nor will shoots without flower-buds. A three-year-old bush will have flower-buds as a rule. How can you be sure about it? By the shape of the buds; they are rounder and larger than leaf-buds.

My next plan for winter flowers is to make for indoors window-boxes that just fit into the windows, and are seven or eight inches deep and ten or twelve wide. These are filled with good soil and sand, and planted with tulips, freesias, etc. I do not prefer hyacinths for windows, because as soon as the tip-flower begins to fade it sends out a rotten odor which is unwholesome. But the tulip is not a sensuous flower at any stage; and there are just as sweet tulips as there are hyacinths. The freesia is simply a noble flower. Its fragrance is delicious. Its bulbs are small and can be planted with the tulips. I am far from being captivated with the sacred narcissus, or Chinese flower, that so many are growing just now. It is not pretty; but there are pretty jonquils, and not one is finer than our common daffodil, Von Sion. It is easily forced. So is our lily-of-the-

valley. Window-boxes will do for all of these. They must have plenty of light and water. They will fail if set back from the glass.

I do not feel quite content without a few pots of lilies. *Candidum* will do; and there is nothing in the garden better than the common tuberous-rooted or lemon lily. This sort sends up stem after stem of fine, delicate yellow flowers that fill the house with perfume. The orange-colored is a less handsome sort, and less sweet. These I place in pots in the cellar for a few weeks, and bring forward as wanted. *Lilium longiflorum* and *L. Harrisii*, or Easter lily, or Bermuda, should also be freely potted. You can buy them at wholesale in lots of fifty or twenty-five so cheap that you can afford to plant all you have room for or care to have. Plant one bulb in a six-inch pot. Get them well-rooted in the cellar before they are brought to the light. This will require from three to four or five weeks. They can stay longer in the cellar if you desire. Bring up a few at a time and then water them freely and regularly. In the cellar water sparingly. I also pot a dozen or so of *Lilium auratum*, but they are not so sure of giving invariably good results.

If you do not desire to spend any money on winter plants, you will, of course, take the lemon lily, which almost all people have in their gardens. Dig up a big bunch and cut it into pieces small enough for twelve-inch pots. Do not crowd too much. Most people have also the little white *candidum* lily. This can be forced very nicely with care, but should be near the glass. Other sorts do quite as well.

When bulbs or tubers are through blooming, they can be replanted in the garden, and will recuperate in a couple of years, but must not be kept in pots two successive years.

A very charming winter flower, apart from these, is the double-flowering rubus or blueberry, which some call the bridal rose. Another is the white hellebore or Christmas rose. This, however, will blossom out-of-doors until heavy snows, and may be dug out of the snow for Christmas. Then, if you intend to keep a few pots, keep sweet flowers in preference to showy ones. They generate ozone and help to purify the atmosphere of your rooms. I prefer tropæolums, heliotropes, and the old-fashioned rose- and apple-scented and pennyroyal geraniums. These are out of style, but ought to come back; they have never gone from those who love real merit.

Oncida Co., N. Y.

E. P. POWELL.



THE OLIVE IN CALIFORNIA.

A MARVELOUS FRUIT INDUSTRY.



THE yearly olive crop of Southern Europe is said to represent a value of nearly fifty million dollars. If California becomes in the course of time the Italy of America, supplying olives for the continent, the annual crop will be worth

more money than the present output of all the gold and silver mines of the Pacific coast. No other horticultural industry is capable of greater financial returns, and none promises to add more to the food resources of California.

The olive will amply reward all planters, from peasant to millionaire. In fact, it is peculiarly the poor man's fruit, supplying the place of butter and meats, and enabling the laborer to perform hard work upon a diet of "bread and olives."

Considering the peculiar fitness of the olive to the California region, it is not surprising that the subject has been one of constant interest ever since the first settlement of the land west of the Sierras and south of the Siskiyou. Spanish priests, as writers have often explained, transplanted the olive and many other fruits to the warmer districts of Alta California, and established most beautiful avenues and orchards near the old missions, and in some of the pueblos. The leading variety that they planted was a hardy and excellent sort, the Cornizuelo of Spain, now locally known as the Mission and long thought to be a seedling. It is excellent for oil, and makes a rich pickled olive. In the southern parts of the state there are few orchard sorts that equal it in profit or productiveness. Its drawbacks are two: it is rooted with difficulty from cuttings, even under favorable circumstances; and in point of ripening, there are many earlier varieties than this.

The cultivated olive, however, comprises many choice varieties, each of which is adapted to a different dis-

trict, and every effort is now being made to import and test them all. Some promise to extend the culture of the olive much further than was thought possible; others give finer fruit, bear earlier, or are of easier growth than the older sorts. A rapid increase of plantations is now going on in the leading orchard districts of the state, and in a few years more the olive industry will attract fully as much attention as the grape, prune, orange or lemon industries do now.

Nomenclature, long in confusion, is slowly advancing as importations from the olive centers of the Mediterranean countries begin to come into bearing. Growers are discovering better and more efficient methods of culture, and of preparation of the olive products for market. For thirty years past an increasing number of writers continued urging the planting of the olive, until men's pulses were somewhat stirred, and in due season those who were actually making plantations began to report results in horticultural meetings, and through daily, weekly and monthly publications.

Every warm valley and windless hillside will have its orchards of ripening olives, and every child will carry a handful of olives to school for lunch-hour. The sacred old-world tree will come at last to occupy as large a part of Californian life as it does of the life of Italy or Spain.

Nothing in the more recent history of the olive in California is more encouraging than the way in which



FIG. 1.—A CALIFORNIA OLIVE:
THE MANZANILLO. (LIFE SIZE.)

wild lands, lately thought worthless, are being utilized. A lady, Gessima Leigh, of Butte county, writes as follows to the *Rural Press*: "Three years ago we decided to transform our very poor grain-field of seven

acres into an olive orchard. The soil is red, sandy loam—lava formation, not more than eight or ten inches to three feet in depth, underlaid with rotten sandstone, and originally covered with a thick growth of chaparral and manzanita. After seeding for hay about ten years, it really no longer paid for seed and labor. We could not afford to buy many olive trees, so we began with 200 very small ones—one-year-old cuttings—none of

Another characteristic account of a hillside orchard comes from the *Napa Reporter*, which says: "In 1884, Adolph Flamant planted sixty acres of the most uninviting and barren portion of what was then known as the Simonton Ranch, six miles west of Napa, to olives. Among boulders and rocks, wherever he could find a little pocket of soil, he put in young olive plants. But all was not smooth sailing. In subsequent seasons the fire got into the dry grass on the hillsides and twice swept over a large part of his plantation. Another year the grasshopper turned loose among his treasured trees and did destructive work. These agencies lost for Mr. Flamant 1,400 trees out of the 6,000 originally set out, but they were promptly replaced. 'Now come and see for yourself what I have,' said the persevering owner of the plantation to us the other day, and with two other gentlemen we gladly permitted ourself to be piloted over the place. What did we see? On rough hillsides where no plough can ever run, and no sickle can ever cut, because of protruding boulders and plateaus of bed-rock, clean and thrifty olive trees, from four to six years old, are growing, the largest of them eleven inches in circumference at the base, eight feet high and almost as many feet broad, loaded with blossoms. Some of them promise a yield this year of three or four gallons of berries to the tree."

In fact, one may reckon the hillside land fit for olives and for hardly any other fruit except, perhaps, the carob, on millions of acres in the Coast Range, and other millions in the Sierras. These vast areas of mountains are covered with dwarf oaks, "grease wood," manzanita, digger pines (*P. Torreyana*), and various kinds of vegetation that is of little or no value. In the opens are fair extents of pasturage, but the "bush" encroaches upon them, and over cropping has destroyed some of the best native species of grasses. The olive is the most available tree for these mountain lands. It does not need irrigation; trees can be obtained cheaply, grown easily and cared for at little expense. With these advantages it is not strange that the olive acreage increases every year; and the fancy grocers can not long beguile the public into paying exorbitant prices for pickled olives—most toothsome of relishes—under the deceptive Italian label, for California is filling the demand for fine olives at prices profitable to the grower and moderate to the consumer.



FIG. 2.—THE PRÆCOX, AN EARLY CALIFORNIA OLIVE. (LIFE SIZE.)

them a foot high, and the stems scarcely as large as a slate-pencil. These were planted out in March of 1887. In July only three or four had died, the rest making a most vigorous growth. The second year they made an astonishing growth, and now most of them are over seven feet high, with stems from two to three inches in diameter. About ten of them bloomed the latter part of April, and now have fruit."

L. Paparelli, of the University of California, in a recent report classifies olives from the Mission San José district as follows:

According to time of ripening.

1. Nevadillo Blanco.
2. Atro-violeacea.
3. Pendoulier.
4. Pendulina.
5. Redding Picholine.
6. Manzanillo.
7. Mission.
8. Polymorpha.
9. Oblonga.
10. Regalis.
11. Columbella.
12. Uvaria.

According to productiveness.

1. Mission.
2. Nevadillo Blanco.
3. Columbella.
4. Uvaria.
5. Atro-violeacea.
6. Redding Picholine.
7. Oblonga.
8. Regalis.
9. Pendoulier.
10. Pendulina.
11. Manzanillo.
12. Polymorpha.

The oils made from Fresno olives were darker in color and slower in clarifying than from the same varieties

In respect to smallness of pit and large amount of flesh, the leading varieties tested range as follows: Manzanillo, Pendulina, Nevadillo Blanco, Rubra, Mission, Atro-violeacea. In respect to quantity of oil, the best from Fresno were Manzanillo, Nevadillo Blanco, and Rubra; the best from Mission San José were Nevadillo Blanco and Mission; the best from Berkeley were Nevadillo Blanco, Manzanillo, and a seedling olive of promise grown by the late W. G. Klee.

After the Nevadillo Blanco, perhaps even superior, comes the Manzanillo, a widely distributed variety that is now in bearing in many groves. It is most excellent for pickles and also for oil. Rubra, one of the best oil-olives, bears regular and large crops. Uvaria, a cluster olive, most prolific, and fruiting, like Rubra, at a very early age, is another of the leading commercial kinds. Columbella has a large fruit, of clear yellow just before maturity, and then used for pickling, though it is a good oil variety also. It is one of the largest bearers yet imported. Pendulina, an extremely beautiful tree, ripening its fruit very early, sometimes in October, is being planted near the Bay of San Francisco, and so is Præcox, another very early sort. The Pendoulier, imported from France and Italy about 1875, ripened fruit by the first week of October in the Vacaville region. In Sonoma this variety ripens in November.

The general requirements of olive culture are extremely simple. A foreign grape-vine, such as the Black Hamburg or the Muscat of Alexandria, needs a moderate climate without great extremes, and one that gives, during the ripening season, 10,800 degrees Fahrenheit. A few varieties of the olive will mature with this amount of total heat during the season, but for the most part nothing can be expected unless the district aggregates about 12,800 degrees. This requirement will be met by a mean temperature of 61° between March 1 and December 31. Indeed, this average

from the time the flowers appear in May until the berries are ripe is sufficient. Marvin declares that a mean of 56° in spring, 70° in summer, and 58° in autumn, with a minimum of 20° in winter, make a successful olive district. When the total heat of the year fails to reach 21,000 degrees Fahrenheit, the olive ripens badly.

The climatic conditions of mild winters, and a mean annual temperature that averages between the 57° of Bologna and the 65° of Catania, can be obtained over the large part of the arable area of California. I have seen olive trees so near the Pacific that the spray in



FIG. 3.—COLUMBELLA OLIVE.
(NATURAL SIZE.)

in the hill regions. But if the Fresno growers would gather their olives when only just beginning to change color, the oil would be of better quality.

winter dashed on their leaves, and I have seen men planting the olive four thousand feet above the sea-level, in the heart of the Sierras. There are extensive olive orchards in Shasta, where the Sacramento leaves the mountains to enter the broad valley; other orchards are near the Mexican boundary in the extreme southwestern

corner of the state. The hot interior valleys will grow the strong, rich, Spanish varieties; the Coast Range and the Sierra foothills will prove best for the French and Italian sorts. All are at home somewhere in the golden land of the Argonauts of '49.

CHARLES HOWARD SHINN.



CLAY IN HORTICULTURE.

ITS VALUE IN SUNDRY OPERATIONS.



THE conditions essential to the germination of fine seeds are not so easily met as those essential to the germination of larger seeds, which push up smilingly through obstacles fatal to finer ones. All seeds ought to be sown according to

their requirements—fine seeds *must* be.

If covered too deep—sometimes if covered at all—they will not push up. Watered too freely they are liable to be carried down into the soil, or to perish by rot. The opposite extreme is followed by equally bad results.

My remarks apply especially to the very minute, such as spores of ferns, seeds of begonia, lobelia, etc. Such are usually sown directly upon the smooth surface of a finely sifted mold, which has been saturated with water before the seeds were sprinkled. The chief difficulty afterwards is to keep the soil uniformly moist, since overhead watering must be avoided. To meet this difficulty, instead of velvety mold I use the yellowest and stiffest of clay, which when thoroughly wet retains moisture for a long time. My method is to get the clay dry, pulverize it, then mix it with water, and work it into a stiff mud. It is then placed in a shallow box or seed-pan about three or four inches deep, and spread and pressed over the bottom in a layer about two and a half inches deep. The surface is smoothed off, and shallow indentations are made with the finger or the handle of a trowel. A very thin layer of fine mold is then sifted over it; the whole is sprinkled with water, and the seeds are sown on the still wet surface. The box is then set away under a bench in the green-

house, where, in winter, it will need no covering; or if on the bench, it should be covered with a glass and shaded on bright days. The seeds have here a uniform moisture, and will require no watering until pricked out, or able to bear sprinkling.

Secondly, in the spring planting of young trees from the nursery—especially in light soils—a few lumps of clay mixed with the lighter soil and among the roots are an excellent safeguard against the effects of drought. In a short time the roots penetrate them, and as they remain moist when the more porous soil is quite dry, the tree does not suffer as it otherwise would during an untimely "dry spell."

Again, I have often used clay to advantage among roses on the bench in the greenhouse by mixing lumps of it with the soil; and I have used it also as a thin mulch. On examination I have always found the roots penetrating the lumps in quite a thick network.

Winter-blooming roses are most successfully grown in a rather dry soil. Should it become too dry, it is easy to see how the clay would be of benefit. While clay will never prove injurious unless used too freely, it is especially to be recommended where the soil for roses is very light. All florists speak of mixing sand with their artificial soils, but some have fully as much need of clay as of a sand-pile.

I have grown good geranium plants in sand and clay—the latter coming from a depth of fourteen feet below the surface. The two ingredients were mixed in the proportion of about one part of sand to two of clay. In a soil that is one-half clay, one-fourth sharp sand and one-fourth rotten manure, a geranium grows about as well as in any ordinary greenhouse soil. The noticeable effect is that a more stocky growth is made.

Indiana.

ERNEST WALKER.

FRUIT NOTES FROM VARIOUS SOURCES.

PRACTICAL HINTS BY PRACTICAL MEN.

○ MY twenty-acre fruit-patch I am trying to develop the highest quality in fruits that can be obtained by heavy manuring, and frequent and thorough cultivation. The Bartlett pear orchard set ten years ago has produced seven heavy crops. Duchess dwarfs also bear regularly, and the fruit of both sells from 30 to 40 per cent. above the market price. The plum orchard set eight years ago has borne six heavy crops, and all the trees have made enough growth to insure a crop next year.

PEARS AND PLUMS FOR MARKET.

Some people, seeing the labor bestowed on my trees and the manure carted on to the lot from the village, think it could not possibly pay me, but it does. My plums bear at the rate of six tons per acre, and sell at a net price of twenty-two cents per ten-pound basket. This gives about \$250 per acre. Last year the fruit from this orchard brought a little over \$350 per acre. I manure this plum orchard with fifty loads of stable dung brought from the village, and fifty to seventy-five bushels of ashes or hen manure per acre each year; I apply the stable manure in fall and spring, and the ashes in June or July. My bearing pear orchard receives about as much. The pruning consists in cutting back about one-half of each year's growth, and removing black-knot and blighted limbs. I have obtained permission to cut all the black-knot out of my neighbors' trees. In some instances I have cut down whole trees and burned them up. I am suffering now but little from this disease. I have tried painting with oxide of iron, pure linseed-oil, and turpentine, but think it had little effect. I find the Lombard, Reine Claude, Smith's Prune and American Damson the most profitable. We picked the Lombard thirteen times over, commencing August 27 and finishing September 30; the other varieties from three to six times. It was not until we commenced to pick the Lombard the sixth time that the limbs appeared to be any lighter.

The land is plowed early in spring and late in fall with a two-horse plow, and six or seven times in the summer with a one-horse plow, and kept well dragged. The trees hold their leaves nearly as well as the apples or pears, unlike any other plum orchard in this vicinity.

The fruit crop here was larger and fairer than it has been for many years. Insect enemies have nearly all disappeared. Nearly all growers are disappointed by having more apples than they expected. The foliage never looked better than it has this season. I believe we may look for a large crop next year.

I am building a cold-storage fruit-house near the rail-

road for my cherries and other summer fruits, intending to ship hereafter in car-lots and thus to save the express charges, which are altogether too high on fruit.

Orleans Co., N. Y.

VIRGIL BOGUE.

THE INSECTS OF 1891.

The insect crop of 1891 in this locality has been a general failure. The turnip-fly, which usually destroys many young cabbages and turnips, was absent. The gooseberry saw-fly, which produces the worms that destroy the leaves of currants and gooseberries, operated so feebly that I still have my stock of hellebore. The raspberry saw-fly, which is a near relative of the preceding, but which produces worms of the same color as the leaves, operated severely upon my young Gregg. These were planted where Cuthbert had recently been grown, and this accounts for the difficulty. It would be better to use land which has not recently grown raspberries of any kind.

The Colorado potato-beetle appears to have lost its grip. The curculio, which usually thins the plums, forgot his work this year. The consequence was an enormous crop of plums, at ruinously low prices.

There seems to have been an unusually short crop of white grubs, which at midsummer eat off the roots of strawberry plants. These grubs produce the June beetles, and they too were scarce. The codlin-moth does not seem very obstreperous hereabouts.

□ In looking over hundreds of bushels of swede turnips, I find no signs of worms. The inconspicuous cabbage-worm as well as the conspicuous ones were conspicuous by their absence. This lack of insects, combined with favorable weather, has given us a plethora of fruits and vegetables. This is fine for the nation, but it is death to the hopes of many of the over-sanguine who were satisfied that without experience they could make a heap of money by truck-farming.

Welland Co., Ontario,

E. WORDEN.

THE BANANA INDUSTRY.

South American people do not regard the banana as a luxury. There is a "banana patch" in every garden just as surely as you find a potato-patch near every little cabin in the United States. Some kinds grow wild in the woods, but the fruit of such plants is almost always too bitter to eat.

A growing banana plant looks, from a little distance, somewhat like an immense calla lily. The rows are started from young shoots, which are cut off and set in the ground just as we set geraniums. Soon they send up two long leaves, which are curled so tightly together that they look just like a round stick. After a time the

leaves uncurl and hang down like branches, and others, curled quite as tightly, take their places. This the plant keeps up until, with a dozen or more great leaves spread out, it begins to look quite tree-like. But the trunk is not hard wood like the oak or pine; it is nothing but leaf-stems, so sheathed and folded and hardened together as to sustain the great weight above.

At the end of nine months a deep purple bud appears in the center of the leaves. As it lengthens and droops downward, it looks like a great purple heart. When this opens, it shows within a number of rings of bright little buds arranged around the stem, and by and by each little bud bursts into a yellow blossom. Gradually the fruit develops, from the cluster of tiny green pods to the bunch frequently weighing one hundred pounds.

After bearing fruit the old plant dies, and from the new shoots which spring up from its roots, young plants are started.

At Trinidad, in the West Indies, bananas are dried and shipped in large quantities.

The variety which yields the best result in drying is the "Gros Michel." There is every reason to believe that dried bananas will soon be an important item in the trade of the West Indies. This article can be conveyed to market from remote districts over bad roads without injury, and the risks of handling and sea voyages are small.

The banana is one of the most productive of fruits. Its yield is estimated at 44 times that of the potato, or 131 times that of wheat.

There are almost as many kinds of bananas as there are of apples: big ones, a foot long; thick ones, almost like small muskmelons; and little "fig" bananas that are the best in quality.

For cooking, bananas are taken while yet green, and may be fried, roasted, baked, or broiled. If taken when fully ripe, they are too soft and sweet for cooking. In whatever way they may be cooked, be sure and serve them hot, for as soon as they begin to cool they become tough. A common sight along the Amazon river is the camp-fire surrounded by groups of half-clad natives roasting bananas among the embers; this is really the most delightful way in which to cook them.

North Carolina.

L. GREENLEE.

A SPECIAL USE FOR THE BUFFUM PEAR.

I wish everyone could know how very fine the Buffum pear tree is for special planting. It is not valuable as an orchard pear to compete with such varieties as Sheldon, Bartlett, Anjou, or Bosc, but it has two peculiar qualities: (1) it is nearly as upright and spirally in growth as an erect arbor-vitæ, or an erect juniper; (2) it takes on in October incomparably the finest shade of purplish-crimson that is ever seen on the lawns or in the orchards. It is, therefore, almost invaluable as an upright-growing tree, to be interspersed among spreading trees, or to form a small group. It serves equally well as an avenue tree to border a drive. The trees can be set ten feet apart, and then will only

touch each other when well grown. The pear also is fairly good, and admirable for pickling. It bears enormously and annually. But the chief glory of the Buffum is its autumn coloring. I wish all lovers of fine color would plant a few of these trees.

Oneida, Co., N. Y.

E. P. POWELL.

TRICKS OF THE TRADE.

Some years ago I purchased a dozen Early Harvest blackberry plants. When the bushes had attained bearing age, the thermometer one winter went down to seven below zero, and in the spring the bushes appeared to be killed to the ground and were thus reported to the nurseryman. But afterwards some of them put forth leaves and buds, and something of a crop was secured. In a fit of remorse I sent another note to the nurseryman, stating the more favorable facts. Much to my surprise, my last note appears in his last two catalogues. The variety is not one which pleases me, but how many people have been induced to buy it through my agency would be hard to tell. My note was put to a use for which it was not intended, and I take the present opportunity to put the matter in its proper light.

On another occasion I ordered 2,000 Wilson strawberry plants, as my neighbors wanted that variety for canning. I had plenty of others for them, but none would suit but Wilson. Moreover, I had been told that the Triomphe de Gand would always do its best when fertilized by the Wilson, and I wished to try the experiment. After I had waited two weeks the plants came, in poor condition. Having heeled them in preparatory to planting, I found a label showing that I had 2,000 Crescents. I had already discarded that variety for several reasons. Thus my plan for supplying berries for canning was frustrated. I stated my objections to the nurseryman, but there was no redress. The plants had been paid for and they are rotting where they were heeled in, as I preferred to get Wilson elsewhere rather than to use the Crescent. Of course the nurseryman has protected himself against all claims by the "substitution" clause in his catalogue, which reads: "It is our custom should the supply of a variety be exhausted (which will occasionally occur in all nurseries) to substitute in its stead a sort of the same season of ripening, and similar in other respects, or to give the value of another grade of the variety named. When it is desired that we should not do this, it should be stated in the order."

Having lost, we will say, \$5, by the adverse working of this rule, I am naturally tempted to object to it, which I do, most emphatically.

I think this rule of substitution is merely a trap to catch the unwary. Among these thousands of customers, one-half are not looking out for traps, and in the hurry of planting-time most likely forget the "substitution clause." In these and many other respects the ways of the nursery trade need mending, and I hope my suggestions may do their part toward hastening the remedy.

Ontario, Canada.

W. J. SEYMOUR.

SOME FLOWERS AND VEGETABLES

IN THE EDITORS' GARDENS.

IT IS a pleasure to invite attention to the beautiful variety of China pink, "Fire-ball." Seed was sown in April in open ground, and by August there was a clump of plants, several feet across, bearing scores of glowing, velvety red, double flowers. For doubleness, we confess that our artist has not done the variety fair justice. The bloom shown at the right is only partly open, while that to the left, although it shows a flower at its handsomest stage perhaps, is far from the full and rounding form which all the flowers reach in time. It is a most useful biennial, blooming quickly after seed-sowing, and valuable either for adorning the border, for pot-culture, or for cut flowers.

We feel high appreciation of the entire class of Chinese pinks for garden culture. Because of the ease of raising them from seed, the fine form, texture and colors of their bloom, their general neatness, their continuous flowering habit, and their brightness even after frost has destroyed many of their companions, we place them in the front rank of easily grown flowers. The fact that they seed freely—hence that the seeds are cheap and that a very small outlay is sufficient to produce a magnificent display of bloom—is also greatly in their favor. When an inexperienced amateur asks advice in making a selection of flower-seeds, we never hesitate to recommend the Chinese pink, even if the list of kinds is not to go beyond a half dozen. It is one of the flowers that a child can raise from the seed.

Some general facts about this valuable class may

be of interest. For the original species, *Dianthus Sinensis* or Chinese pink, we are indebted to Asia. This species has been known to cultivation since 1713. The varieties, both single and double, are now numerous and beautiful. They may be classed under *D. S. Hedderwigii* and *D. S. laciniatus*. The

former is a variety of Japanese origin, the habit of which is dwarfed than the species. The laciniated sections have the petals of the flowers very deeply cut into a fine fringe. Both of these strains have single and double forms. The colors are extremely varied, including striped crimson and white sorts. A form of the species is known as *Diadematus*,

the flowers of which are remarkably large and double. There is also a dwarf class, growing scarcely more than six inches high, that is also desirable, although less useful for cut flowers.

THE CLETHRAS.—Some shrubs and flowers that would attract little special attention in flowery June, when our borders are rich with a large variety of bloom, are conspicuous at other seasons. Among such may be classed a hardy native shrub, the alder-leaved clethra (*Clethra alnifolia*) and its varieties. The species is a low shrub reaching a height of

from three to eight feet and of equal or greater breadth, that is covered in July or later with a mass of sweet white flowers in racemes or spikes, with sometimes a little second bloom in September. The flowers are followed by seeds that give the shrub an ornamental appearance. It is perfectly hardy, being found in a



IMPROVED CHINESE PINK, "FIRE-BALL."

wild state here and there in low lands from Canada to Georgia. It is a desirable addition to every considerable collection of shrubs. Occupying a range of latitude, in the main south of Washington, are several varieties of no special superiority. The large clethra (*C. acuminata*), a shrub or tree from 10 to 18 feet high, native of Kentucky and of the region between Virginia and South Carolina, is classed as a distinct species. The flowers are much like the first named.

A VALUABLE ROSE.—Another season's trial with the new polyantha rose, Clothilde Soupert, confirms the former good opinion expressed regarding its behavior on our grounds. During the winter, a year ago, the only protection given our plant was to bend it over and cover it lightly with earth, the same as we did the hybrid perpetuals in the same bed. The plant came through safely and did remarkably well all through the season, giving forth its crop of very double rose-tinted flowers with scarcely an intermission from June to October. When the bloom of the hybrid perpetuals was at low ebb in August and September, the Clothilde Soupert was throwing off large crops of its delightful flowers.

THE SCARLET CLEMATIS (*C. coccinea*) is one of the decidedly good things introduced in recent years. It is quite distinct from any other of our well-known clematises. The flowers have thick, fleshy urn-shaped petals of a bright red color, and are produced in great profusion throughout the summer. The shoots die back in winter, but new ones spring from the root the next season. It is an interesting and handsome plant.

NEW POINTS IN ONION-GROWING.—We had intended to grow an acre of Prize-taker onions on the system termed "the new onion culture." Changes in the general plan of the work, however, made it desirable to cut this area down to one-third or less; and even this scale proved large enough to develop a good many "new points," and to show the real merits of the new way.

We are experimenters rather than market-growers, and aim for the largest amount of knowledge rather than for the largest amount of cash from a given piece of ground. This makes it necessary to sow seed in various ways, in hotbed and in coldframe, and at various times, and set the plants at various stages of growth, some earlier and some later, some closer and some wider apart, and in land variously prepared. All this again accounts for great lack of uniformity in the crop, and for the fact that different parts of the patch varied in yield, through every stage, from almost nothing to fully 2,000 bushels per acre. With good plants, set early in rich, well-prepared ground, and in an average fair season, the latter figure is easily reached.

One of the most important of the new points developed this season is that we can not safely dispense with at least moderate artificial heat in growing the plants, if we wish to have them as early and as large as needed for full success. Sometimes the weather in February and March is warm and bright enough to give us good plants even in a coldframe, but the moderate hotbed or greenhouse alone can insure this essential point.

Stocky plants of from one-eighth to three-sixteenths of an inch in diameter, set early, with ordinary care (say by May first, or at any rate not more than a week later) will be pretty sure to give you an even stand, without gap in the row, that will bear a uniform crop of good marketable bulbs. If you set small; poor, yellowish-appearing plants in June, and the weather is otherwise favorable, you may expect a good crop of immense scallions. After this season's experience, we believe that the character of the plants and the time they are planted, and not the character of the soil, is what determines whether the resulting onions are well-ripened sound bulbs, or worthless scallions, although the pedigree of the seed undoubtedly has also a great influence in this direction. It was good, indeed, to see a row of Prize-takers just before harvesting, as grown from these A No. 1 plants set early in May—every bulb perfect, weighing a pound apiece and upwards, some of them reaching a pound and a half. It was also a sight to behold—the mass of enormous scallions grown from small plants set in June.

As to distance between plants in the row, we find that Prize-taker, Spanish King, and the White Victoria (an excellent variety, by the way) do not require, under ordinary circumstances, more than three inches or three and one-half at the outside. The old standard sorts, Yellow Danvers, White Globe, Yellow Dutch, etc., should be set as close as two or two and one-half inches in the row. All onions can stand crowding pretty well. A foot distance between the rows is ample, and should not be exceeded if the largest yield is aimed at.

We like uniformity in the distances between the plants in each row. Bulbs of uniform size and the largest acre rate can not be expected, if plants are set promiscuously from two to six inches apart. The eye of the average youngster is but a poor device for measuring off these small distances. Something to aid him in this task is needed. We get over the difficulty by marking the ground, a foot apart each way, and by telling our hands to set one plant in each cross-mark, and three (for Prize-taker, White Victoria, etc.) or four (for other varieties) between each two cross-marks.

Another good way is to let a person having a good eye for small distances go ahead of the planters, and with a long-handled dibber (hoe-handle with lower end sharpened to point) mark a hole for each plant. The latter method is probably the best and most expeditious that could be devised. The planters can then do their work with the fingers alone, and dispense with dibbers.

The cultivation between the rows, as in former seasons, was all done with Gregory's finger-weeder and the "Planet Jr." hand-wheel hoe. In running it we had some trouble with half-rotten tomato-stalks and other stringy rubbish, which had been carelessly left on the ground from the previous year's crop. Everything of a coarse, stringy nature that we can not get entirely out of the way by plowing under deeply should be raked up and taken off the ground before plowing.

NEW POINTS IN MARKETING ONIONS.—The ordinary

standard onions, of whatever kind, can be marketed only as such, and extraordinary size usually has little influence upon the price. The time of marketing, however, is of the utmost importance. If we put our crop on the market in the fall, when the bulk of the crop is marketed, we must expect the ordinary (usually lowest) prices of that season. Our experience this year shows us this one great advantage of our new method with ordinary varieties, that we can get them ready for market at a time when we have next to no competition in our local market.

We grew a little patch of Large Yellow Puget Sound (a handsome solid variety of the Yellow Dutch type), White Globe, etc., and these, being ready for market in August, met with ready sale at \$1 per bushel. Onions of the same quality in October and November sold at only 50 or 60 cents a bushel. Even if it were true, as some claim, that the transplanting method involves more labor than the old way, we would still find it to be labor that pays exceedingly well. As it nearly doubles the proceeds from the crop, we could afford to pay out quite a good deal for the slight extra work necessary. Our experience this year, however, only confirms that of last year, namely, that the additional labor of transplanting the onions is more than offset by the smaller amount of weeding and of cultivation required in the new method as compared with the old one.

This feature of the new onion culture is of advantage in another respect. It extends the season of onion consumption, and therefore widens the entire field for the onion-grower's operations. Even the grower who concludes that it would be best for him to stick to the "good old way" for his general crop must find it a good thing to grow at least a portion of his crop to be marketed in midsummer, when prices are high.

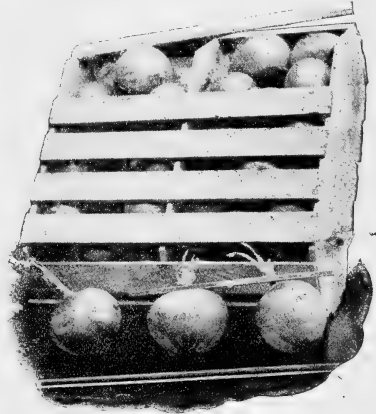
The Prize-taker onion requires a rather long season. In some cases, if planted extra early, the crop may be ready for market in advance of the general crop of the country. But whenever ready, we still have it in our power to put good bulbs upon the market in such a shape that we are sure of an extra price. Our experience fully proves this, and makes us confident that it will be possible to crowd the imported Spanish onions out of our markets to quite an extent by means of Prize-takers put up in a similar style.

We have had a crate of Prize-takers photographed. The crate is similar to the one in which the imported Spanish onions are put up. End and middle pieces are 7 inches wide and 19½ inches long; the slats which form the sides, as shown, are 19½ inches long and 2 inches wide, and there are 16 of them required for each crate. We put up a large share of our crop in such crates, the smaller and more imperfect bulbs only being shipped in sugar barrels of four bushels each. The former sold readily at \$1 per crate, the latter more slowly at \$2.50 per barrel. In other words, a bushel shipped in crates brought about \$1.25, a bushel shipped in barrels about 60 cents. The crates cost us about 15 cents apiece; but we think that by substituting split stuff, such as the

orange-growers use for their orange boxes, instead of sawed slats, we will be able to have a large number made for us, this winter, at not over 10 cents apiece. Marketing his crop in this way, the grower may with some degree of safety count on receiving nearly or fully \$1 per bushel for well-grown Prize-taker onions, and this when ordinary onions are 50 cents per bushel.

It will give an idea of the size of our onions to state that the number of specimens contained in each crate ranged from 52 to 60, only in rare cases reaching the latter figure. The few large specimens in front of the crate (see illustration) weighed about one and one-fourth pounds apiece. A foot-rule appears lying across the two at the right to show their diameter.

PICKLING ONIONS IN MARKET.—"First in market" is an excellent principle, not only in managing the ordinary onion crop, as already mentioned, but also in handling the pickling crop. Our patch contained the Adriatic Barletta, New Queen, Round Pickling, and Extra Early Pearl. Of these the Barletta is the smallest and the earliest, ripening at the very beginning of July. It must be sown thickly in the row, and the rows can be quite close. The largest bulbs only reach an inch in diameter. When well-cleaned and graded, a lot of the Barletta presents a very attractive appearance, and we found the demand for them much in excess of the supply, and consequently prices all in the grower's favor. We believe that on clean sandy soil this crop can be made a profitable one. The New Queen, Round Pickling and Extra Early Pearl appeared to be very similar on our grounds, all ripening about two weeks



PRIZE-TAKER ONIONS CRATED FOR MARKET.

later than Barletta. They also sold readily, although much larger than the Barletta and giving a larger yield. *La-Salle-on-Niagara, N. Y.*

TUBEROUS BEGONIAS AGAIN.

WHAT PRACTICAL GROWERS HAVE TO SAY ABOUT THEIR CHARACTER, CULTURE AND VALUE IN AMERICA.

[See also THE AMERICAN GARDEN for January and February, 1891, for much valuable matter on this interesting class of plants.—Ed.]



WE MEAN by tuberous-rooted begonias those whose roots are bulb-like tubers like the roots of gloxinias. Sweet potatoes, Madeira vines and dahlias have tuberous roots. Begonias that have tuberous roots have decided periods of rest and growth,

and are herbaceous—that is, when their growth is ended they die down as completely as does a caladium or common garden lily. In this they differ completely from the rex, odorata or manicata begonias, which are evergreen. And they are the most accommodating and easiest to grow of all begonias.

Begonia Bolivensis was introduced from South America about 35 years ago, and *B. Veitchii* from Peru about 25 years since, and these species have given rise to the flood of varieties now so popular in our gardens. True, other tuberous-rooted species have been used in the amalgamation, for instance, *B. Davisii*, for brilliant coloring and compact habit, *B. Pearcei* for its leaf-markings and yellow flowers, and so on, till now species, hybrids, crosses and varieties have all been interbred so much that the identity of the original species is almost lost among them.

For convenience' sake tuberous-rooted begonias may be divided into two sets, namely, summer and winter-blooming. The summer-flowering sorts are the ones now becoming so popular—the progeny above referred to; the winter bloomers are mostly *B. Frabelii* and its varieties from Ecuador.

There is a current idea that some species of begonias are hardy here in our gardens; my experience, however, is to the contrary. I have never found any begonia hardy on Long Island, and certainly not in Boston, where I cultivated many species. *Begonia Evansiana*, or *B. discolor*, by which name also it is widely known, from China and Japan, is an old-fashioned species in our gardens, and the hardiest of the genus, so far as I know. Under a mulching or in a warm, sheltered place, as at the foot of a wall on its south-facing side, it has lived year after year with me, but in the ordinary sense of hardy plants, as a lily-of-the-valley is hardy, it is not hardy. Not only does it bear tubers under ground, but at the joints of its branches and leaf-axils all up its stems little tubers or bulblets are produced in much the same fashion as are the bulblets on the cinnamon vine (*Dioscorea batatas*). Persons that have not this old

favorite begonia should get it by all means, and plant it out in the garden in summer, where it will grow thriftily and bloom beautifully and continuously.

We propagate the tuberous-rooted begonias from seed. The seedlings may not be the counterpart of the seed-parent, but they are apt to turn in that direction so far as color, form and habit go. In Europe the finer varieties are named as we name geraniums or dahlias, and to insure the identical purity of the young plants, these have to be raised from cuttings of their parents, which is a tedious process and never likely to be widely adopted here. In fact, with us, in case of these begonias it is the same as with gloxinias or perennial larkspurs—we can get such splendid varieties from seed of a good strain that we cannot be bothered with names for individuals. But we may keep them apart in colors, say white, rose, yellow or orange, as the case may be.

The seed is very fine, but possessed of great vitality, and, with any kind of fair treatment, sure to grow. The interval between the time of germination, however, and when the seedlings are three or four weeks old, is the critical period, on account of their liability then to damp-off. Sown indoors, say in a warm window, frame or greenhouse in spring, and kept evenly moist and shaded from the sunshine, and pricked off singly into other pots or flats as soon as they are big enough to handle, they should make nice plants two or three inches high by the middle or end of May, when they will be ready for growing on in pots or for planting out, as desired. In either case plants four months old from seed should begin to bloom, and continue improving in growth and blossom till the end of the season, say October or November.

As outdoor plants in the flower-garden there is a bright future ahead of these tuberous-rooted begonias. They grow well in the shade or open sunshine. They are neat, bushy and compact in growth, and brilliant in blossom without being harsh, garish or obtrusive. Indeed, they fill a place unoccupied by any other fine-flowering plant we cultivate in being rain-proof—rains don't knock off or injure their flowers. And they afford us such a variety of color—white, yellow, rose, scarlet and crimson in many shades. Some have drooping and others erect flowers; some have long narrowish petals; others round and massive ones, and now double-flowered varieties are as abundant as we wish to make them. The single flowers run from three to six inches across, and the doubles from two and one-half to four or five inches. And these double flowers are as solid as a pom-pom zinnia or a hen-and-chickens daisy. Under the

thin shade of trees observe how sprawly geraniums get, also how sparsely they bloom, and how badly. What flowers they have get knocked off every time it rains. Now this does not occur with tuberous-rooted begonias.

Although these begonias grow so luxuriantly and blossom so generously out of doors, they seldom ripen seed. If you wish to save seed, about the first of September select the very finest-flowered varieties you have, and lift and pot them and bring them indoors, and while you give them plenty of water at the roots keep them dry overhead. They won't wilt at all, but keep on

together; they are covered with ordinarily moist sand. These flat boxes are piled up, one above the other, with a three-inch open space between them. If any of these dormant tubers start to grow in winter they are taken out and potted into rather small pots or placed in a cool greenhouse, where, notwithstanding their seeming hurry, they seldom make much progress before April. About the end of March or first of April, however, they are all boxed or potted off and allowed to grow at will till the middle of May, when they are planted out of doors and afterwards treated as if they were seedlings



A SEEDLING TUBEROUS BEGONIA, GROWN BY THOMAS GRIFFIN, WESTBURY, L. I., N. Y.

blooming, making very beautiful plants, and ripening lots of seed. This will give you a fine start next spring.

When frost comes and kills the tops as it does those of dahlias (without in the least degree injuring the tubers), cut off the stems near the ground, and lift and bring the tubers indoors. Winter them in a cool and moderately dry place, where frost cannot reach them or a high temperature induce them to start prematurely into fresh growth or kill them by dry rot. Between 40° and 50° is a safe temperature. I winter them in flats, in which they are put one deep, heads up, and quite close

In the matter of outdoor cultivation, here are a few points worth noting: Always start begonias into growth before planting them out, so as to be able to get those of the same kind, size and habit together; planted miscellaneously they are apt to come up unequally. Do not plant dormant tubers in the flower-garden, for so late in the season some of them may be slow to start and thus render the beds patchy and ill-appearing. Begonias are not cactuses—they must have moisture at the root. A mulching of light chaffy material, as cut-straw, cocoanut-fiber or spent-mushroom manure, spread over

the ground in open, dry, sunny situations in early summer helps them greatly. Don't let them become overcrowded in the beds, else they will cause one another to rot, particularly in wet weather. Have a few plants always in reserve to fill up gaps in the beds, that may occur by accident; they can be lifted with good balls, and transplant well, no matter how far advanced in growth they may be or what the time of year is.

As pot-plants for summer or fall use they are superb, but save them from wind! In fall they are particularly fine, at least up to, yes, even to the end of, the chrysanthemum season.

As winter decorative plants, either in the house or greenhouse, this class of tuberous-rooted begonias are not a success, for they insist upon resting at that time. For cut-flowers for home use they are splendid; there is a rareness, richness and elegance about their blossoms peculiarly their own. But they are so fleshy, and when bruised so easily tarnished, that like the camellia they are of no use for shipping, and hence are not likely to be grown for cut-flowers by commercial florists.—*WM. FALCONER, Queens Co., N. Y.*

TUBEROUS BEGONIAS AS POT-PLANTS FOR AMATEURS.

I consider these the coming plants for amateur floriculture, because—first, they are plants of wonderful beauty in form and color; second, they are so easy of cultivation that any one who can grow a geranium can grow them to perfection; third, they are profuse bloomers all through the summer and well into the fall; fourth, they can be carried through the winter with little care.

I have grown tuberous begonias for two years. The first season, though ignorant of their requirements, I had pretty fair success. Last year I "studied up," and my success was satisfactory. How do I manage them? Well, in the first place, I prepare a compost made of one part turfy matter, one of leaf-mold and one of sand. You may think this too much sand, but in my experience begonias of the rex and tuberous classes do better in such a soil. I start the tubers in March, in three-inch pots, simply crowding the tubers into the soil, water well, and set away in a dark corner until sprouts show, say a week or ten days. As soon as growth has fairly set in, I bring the pots to the light and put on just enough soil to cover lightly the tubers. At no time should much water be given. I find that rex begonias, which many consider almost semi-aquatic, do much the best when kept pretty dry at the roots. They like a moist atmosphere, however, and in these respects the tuberous section resembles them.

I let the plants grow along for a month or six weeks in the three-inch pots, without forcing. By that time examination will generally show that their roots have reached the sides of the pot, and then I shift to five-inch pots, which are quite large enough to enable them to bloom well. If but one or two sprouts start at first, I pinch them off until at least four or five show, in order to induce a bushy growth. Pinching back, as a general thing, forces two shoots where there was one to begin

with. As fast as the stalks elongate, tie them to small stakes, as they are tender and easily broken. At no time give more than enough water to keep the soil just moist all through. Provide at least an inch of drainage.

Late in May, if started in March, the plants will begin to flower. Do not let the first buds develop. The result will be more satisfactory if the flowering energies are restrained until a good top is secured. Then let them bloom to suit themselves.

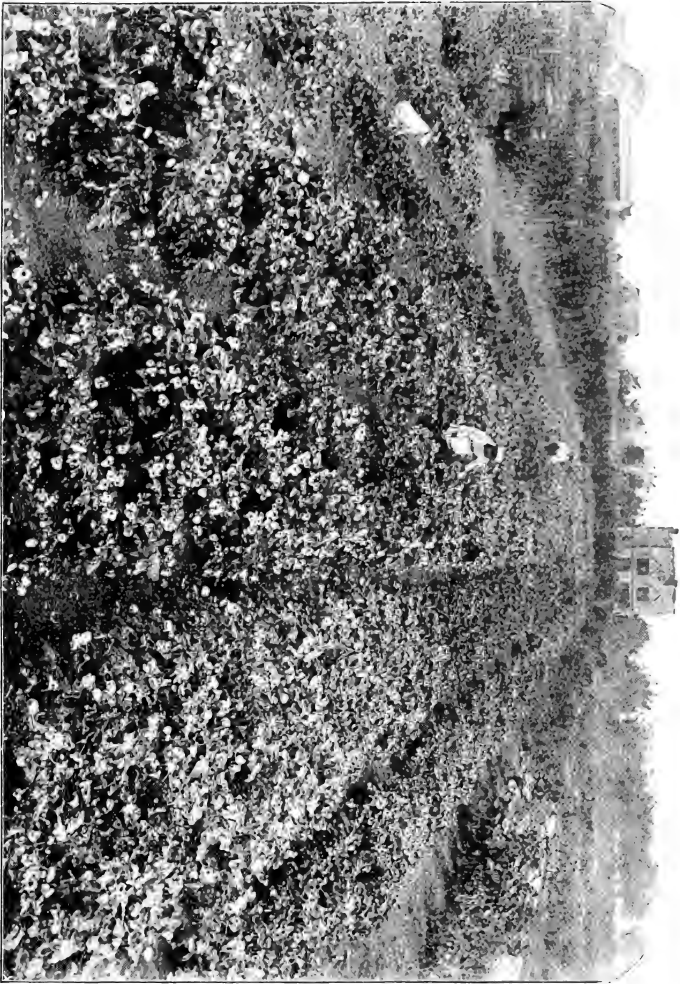
It is difficult to imagine a finer show of color than a good collection of these begonias affords. I have them in purest white, scarlet, crimson, Indian red, cinnabar, salmon, rose and golden-yellow. The range of color is wider than in the chrysanthemum, and more brilliant. With the exception of yellow, we have no very brilliant color among chrysanthemums, but the reverse is true with these begonias. And those colors that are not intense are of the most extreme delicacy. I have one pale rose-colored variety that rivals a *La France* rose in beauty of tint. The yellows are extremely vivid, and one good plant will light up a large collection like a burst of sunshine.

They continue to bloom until October. Then the leaves turn yellow, which is the plant's way of telling you that it is tired, and wants rest. Then gradually withhold water until the top has all fallen. Set the pots where they will be safe from frost until spring. In March the tubers are to be shaken out of the old soil and put in small pots to start on their second summer's work of beauty-giving.—*EBEN E. REXFORD, Wisconsin.*

AS BEDDING-PLANTS.

Perhaps no class of plants has ever made so much stir amongst the florists, or become so popular in so short a time, as the tuberous begonias; and no wonder, for all who see for the first time their profusion of large, magnificently colored flowers, are captivated with their beauty. Though the most successful method of cultivating them is not yet fully understood by the people generally, they are of such pleasing habit that any lover of plants can grow them, and have an abundance of bloom. My begonias last summer were planted in a bed along the east side of the house, and were a source of delight to all our visitors. The sun shone directly upon them during the forenoon, and did not injure them in the least—the foliage remaining healthy and green, while the flowers were produced in the greatest profusion. Many of the blooms measured four or five inches across. The soil is a heavy limestone, in which is mixed a large amount of well-rotted stable manure and sand. I do not think they would have been so luxuriant, or the flowers so large, had they been planted out in full exposure to the sun, as a few of the exposed plants indicated. They give the best results if partially shaded all day, or planted where they are shaded in the afternoon only. The flowers of pot-grown plants are not quite so large as of those bedded out.

Though tuberous begonias are sometimes propagated by cuttings and division of the tubers, they are easily



A FIELD OF SEEDLING TUBEROUS BEGONIAS. FROM A PHOTOGRAPH SENT BY THOS. GIFFIN, GARDENER TO ADOLPH LADENBURG, WESTBURY, LONG ISLAND.

and more rapidly increased by seed, if the conditions of heat, moisture and shade are just right. I have found the greatest difficulty in maintaining the proper degree of moisture for the seed-pans until the plants are large enough to be pricked out.

I believe that an expert who can handle the seedlings in the first stage can grow the finest plants as cheaply as geraniums, and, without doubt, the day is not far distant when the wholesale prices will be as low. Then they will become the flower for the million, both for summer pot-culture and for bedding.—JOHN F. RUPP, *Cumberland Co., Pa.*

THEY BEAR EXPOSURE WELL.

Last spring I planted out several dozen choice tuberous begonias, and they did well in a perfectly open ex-

posure of the begonia as a summer-flowering plant for dwelling-house and conservatory, viz., the gloxinia. I have seen plants that bloomed continuously this summer, from May to October, in an amateur's greenhouse. While possibly they never can supplant such showy flowers as the different varieties of geraniums, when better known they will, I think, be planted largely by all classes of people, and the prices will soon be within the reach of all. I filled two iron vases with tuberous begonias this summer, and they have been entirely satisfactory.—WILLIAM SCOTT, *Eric Co., N. Y.*

TWO SIDES TO THE QUESTION.

I have grown from 50 to 200 tuberous begonias for five years, and while I have had some good plants I have had more poor ones, that would not grow indoors or out.

Last season I tired of them and disposed of my bulbs. I never tried growing from seed, but grew many from cuttings, by removing the surplus shoots, and, potted independently, these grew right along.

In my observations in the parks and among florists, I have noticed more failures than successes. In July and August the sun is too hot for them, and wind-storms soon destroy them when exposed.

A lady friend near Lockport, Ill., succeeds better than any one else I have seen in growing large plants full of fine flowers. I saw them September 20 in full glory, and, in answer to my question, she said: "I gathered the soil for them in the woods under the north side



TYPE OF THE NEW SEEDLING DOUBLE TUBEROUS BEGONIAS. (From a Photograph.)

posure, and greatly pleased all who saw them. I think our ordinary summer weather suits them well. They are not particular about soil, but the best for them is a light loam with a good addition, say one-fourth, of rotten cow manure, and the bed should be well drained. I have not grown any named varieties yet, but my experience is, that the single sorts are the most showy and effective. Begonias are so easily raised, and occupy the greenhouse but so few months in the spring, that I think they will soon be sold at the same price as good geraniums. I can think of only one plant that is a rival

of a fallen tree which was rotting down—a mixture of leaf-mold and rotten wood, with light and heavy soil. With it I mixed some sand from the river and some old manure from the hen-roost. Three years ago last spring I potted them into the pots in which you now see them (eight-inch). They were more than half full of drainage material, and then filled to overflowing with soil. The bulbs were barely covered on top of the center. I do not replot each year, but top-dress with the same soil and keep the pots full. They are plunged out during the summer, and kept in the cellar in the winter. No, I

could not grow them so well on the east or south side of the house—there the sun is too hot, and they would be too much exposed to the storms and winds; here on the north side they do not get the midday sun, and tall trees, with shrubbery, protect them from storms.”—
JOHN LANE, *Cook county, Ill.*

AN AMATEUR'S SUCCESS.

Everyone has a "fad," and mine is to collect all the different begonias can lay hands on. Most of mine are raised from slips, and flourish on their own roots; but last spring I tried the tuberous varieties. I received them about the middle of May, and soon afterwards planted them out in a shady corner, screened from the wind. I used meadow soil from just under the turf. They grew nicely all summer, and September 1 I potted them in the same kind of soil, with broken potsherds for drainage. They bloomed through September and October in the window. The flowers were brilliant in color, and about as large as a half-dollar; and I consider them very valuable, as the blossoms came when the conservatory was rather bare, and they were all through before the 'Mums came on. November 1, as the leaves began to fade, I put the pots in the cellar, and shall bring them up in February. Perhaps by starting them earlier I can get them to bloom in July or August. I have never raised any from seeds, but think they can be propagated as easily as geraniums.

I never have had any trouble with my other begonias, keeping them in shady corners through the summer. They take care of themselves, for I don't care to encourage their growth until it is time to put them in the conservatory.

Certainly they are the coming window-garden plants "for the people," and they deserve a place in the heart and home of every family, in palace or cottage. They are not so troublesome as geraniums, and when not in bloom are beautiful. They do not need sunny windows, and therefore are well adapted for city homes. This month (January) I have the *B. metallica*, *B. rubra*, *B. semperflorens*, *B. Weltoniensis* and *B. zebрина*. The rex varieties do not grow well in stove-heated sitting-rooms, as I know to my sorrow. I now have a large glass box in a cool room; the air inside is kept moist by two large sponges kept constantly wet. They flourish very well in the box, and I have some small ones grown from a leaf, put down on the sand.—SISTER GRACIOUS.

EXPERIENCE AND OBSERVATION.

I was first attracted by tuberous begonias in Europe six years ago. Several nurserymen had large stocks that were attracting great admiration, and many American tourists abroad last summer came home with glowing accounts of the magnificent beds of tuberous begonias they saw all over Europe. I am confident these plants will soon obtain a popularity in this country far beyond that of any bedding-plant now grown. It is true that many failures have been made, but there have been successes in all parts of the country, and there is no reason why all should not succeed if one does. Climatic

conditions have nothing to do with these successes and failures, as I have seen them equally well grown in a dozen states. Failures have been caused by improper treatment. As a rule the tubers have been started early in a warm greenhouse, and when set out were tall, weakly plants that could not bear the transition. It has also been generally considered that they need shade. They will do very well in a partial shade, but many were planted under trees where it would be impossible to grow any plant well.

That they require shade is a mistaken idea, and that they fairly revel in the sun has been fully demonstrated by Thomas Griffin, who has grown over 20,000 plants in full exposure to the sun. They went through without flagging one of the most trying drouths ever experienced on Long Island, although the shrubbery in adjacent borders showed every sign of distress. This field of begonias made a display that I have never seen equaled; every plant examined was in perfect condition. It is quite probable that a strain like Griffin's, produced and grown in full exposure to the sun in our climate, would give better results than imported tubers; but I think that with proper handling any vigorous strain can be successfully grown outdoors.

From my experience and observation I commend the following treatment: The most important point is to have stalky, well-hardened plants to set out June 1, in this latitude (New York). The tubers may be started not sooner than May 1, in greenhouse, hotbed or cold-frame. The coldframe is preferred, as in it they are less liable to become drawn and weakened, and on pleasant days the sash can be removed for hardening the plants, which should not be over four or five inches high when planted out. But it makes little difference how the tubers are started if the plants are kept well ventilated when in growth and not given too much heat. Use three or four-inch pots or flats, such as are used for forcing bulbs. Soil, light and rich. Water sparingly until the tubers start into growth to avoid rot.

The bed must be very rich—indeed, I know of no plant that will stand more manure, provided it be well-rotted; and if the soil is heavy, it should be lightened up with sand or leaf-mold, or both. Set the plants about 10 or 12 inches apart in the bed, and apply a mulching of two inches of manure after planting. And although they will stand any amount of drouth they like moisture, and frequent watering in a dry time will secure flowers of greatly increased size. The tubers can be planted directly in the beds without starting, but will be longer coming into bloom. When dry tubers are set, the planting should be done about May 10.

About the beauty of a good strain of tuberous begonias, there is an undivided opinion. No flower, not excepting orchids, attracts more admiration, and they are so free-flowering that a large bed of them will give an abundant supply of flowers for cutting, without detracting from the bed's picturesqueness; and they are in bloom from June until frost, when the tubers can be taken up and stored for another season.—J. W. E.

NOTES ON SOME AMERICAN WILD-FLOWERS :

BEAUTIES THAT WE HAVE AT HOME.



AMONG native flowers in our gardens I notice catalogued with other favorite annuals, representatives of twenty native genera. One species of verbena (*V. Aubletia*), and the two species of convolvulus from which spring our choice morning-glories, are natives of the southeastern states. *Phlox Drummondii* and two gaillardias are native on both sides of the lower Mississippi. The evening primroses are found east and west. All the other genera are western—California contributing at least five. The Alleghany vine (*Adlumia cirrhosa*) is an eastern biennial.

Choice native perennials are *Verbena Montana*, phloxes, *Baptisia australis*, cardinal flowers, spider-wort (*Tradescantia Virginica*), amaryllis, pancratium, columbines, yuccas, lilies, Dutchman's-pipe (*Aristolochia sipo*), the trumpet-vine, Virginia creeper, bittersweet, clematis and passion-flower.

Among our choice garden shrubs, eight eastern genera are represented—including the azalea, rhododendron, false syringa, sweet-scented shrub (calycanthus), etc. The golden currant and other species of this genus are western.

Few states possess a larger native flora than my own state of Michigan. A journey of a few miles reveals astonishing changes. Many of the Michigan natives are worthy of culture. Among annuals are the following :

Gerardia tenuifolia (Narrow-leaved Gerardia).—A slender plant, eight or ten inches high, bearing pretty white or rosy purple flowers. August.

Gerardia purpurea (Purple Gerardia).—Larger and handsomer than the last variety. August and September.

Polygala sanguinea.—Slender, six to twelve inches, bearing curious bud-like heads of purple flowers. A pretty plant. August.

Bidens cernua (Nodding Burr Marigold).—Nodding, radiant heads of bright yellow flowers. August and September.

Bidens chrysanthemoides (Burr Marigold).—Larger and handsomer than the preceding. It is a fine bee plant. The achenia of both species will stick in one's clothing. September.

Impatiens pallida (Pale Jewel-weed).—Two to four feet; flowers nearly one inch long, pale yellow, with a few red spots. Rich, wet lands.

Impatiens fulva (Tawny Jewel-weed).—Tall; flowers deep orange, with brownish spots. Like the pre-

ceding, the seed-pods burst at the slightest touch. Of the same genus as the balsams of the flower-gardens.

The biennials include some brilliant flowers worthy of cultivation.

Gentiana quinqueflora (Five-flowered Gentian).—From one to three feet high, branching. Flowers rather small, pale blue or light purple, borne on long stems, in September and October.

Gentiana cristata (Larger Blue-fringed Gentian).—Ten to twenty inches high, bearing bright blue, bell-shaped, fringed flowers nearly two inches long. They open only in the sunshine. Found on wet, mucky lands; desirable for borders of artificial ponds. September and October.

Gentiana detonsa (Smaller Fringed Gentian).—Even handsomer than the preceding, and among our seven species only excelled by *G. puberula*. It has large, bell-shaped flowers on long stalks. Corolla dark-blue, the lobes fringed. Leaves long, narrow, lanceolate, the frost changing them to crimson.

Coreopsis aristosa (Awned Coreopsis).—Most showy Michigan biennial; three to six feet; very branching, bearing brilliant orange-yellow heads, $1\frac{1}{2}$ inches in diameter, on long slender stalks. Open only in the sunshine, but handsome when closed, like golden balls. In moist, rich, mucky lands. September. When this flower is in its glory, many of our Michigan swamps are surpassingly beautiful.

Corydalis glauca.—From one to two feet high. The handsome, finely-divided, glaucous leaves resembling some cinerarias. Flowers small, curiously-shaped, red with yellow tips, in paniculate cymes.

Corydalis aurea.—One-year-old plants strikingly resemble cinerarias, except that the handsome, silvery, finely-divided leaves are smooth. The second year the stems become from eight to twelve inches long, bearing one-sided racemes of yellowish flowers. Sandy loam. Rare.

Among bulbs we find :

Erythronium maculatum (Yellow Erythronium).—This well-known handsome native flower ought to be in every collection of spring-flowering bulbs. It grows from three inches to one foot high, bearing two broad leaves at the surface of the ground—one always twice the width of the other—and at the summit of the long stalk a solitary, nodding, bell-shaped, yellow flower. There are many varieties in the same forest; some have short and very broad leaves, thickly clouded with brown spots; others are longer, narrower and less clouded; while those of still another variety are entirely spotless. It usually grows on sand, mixed with leaf-mold and innumerable rounded boulders ranging from

the size of a pea to tons in weight, very close together; or in the midst of a tangled mass of forest-tree roots. Remembering the small bulb deep in the soil, with its slender and brittle stem, it is not surprising that two-thirds of the bulbs are lost in digging. They will, however, flourish where other garden bulbs will, and with the same treatment. They grow in partial shade or sunshine, flowering in late April or early March.

Erythronium albidum (White Erythronium).—This is said to be found in southeastern Michigan. I have not seen this handsome species except in herbariums.

Lilies.—In early childhood, I could gather lilies in this state by the armful, but the plow has long since turned over the land upon which they grew, and one does well to find a small handful. *Lilium Canadense* and *L. superbum* grow in heavy soil, beneath a tough sod largely composed of sedges, and have thick roots about as tough as binder's twine. The brittleness of the stems and the impossibility of exactly locating the roots from the surface, add to the difficulty of getting them, so that to obtain one out of four or five found is a good average. Our native lilies seed freely and grow readily from seed, flowering in about four years.

Lilium Canadense.—Two to four feet; is exceedingly variable, some forms approaching *L. superbum*, described next below. The bulbs are composed of coarse, loosely

spreading, sharp-pointed, often yellowish scales, more than twice the size of those of *L. superbum*.

Lilium superbum (Superb Lily).—Four to six feet, leaves narrower and longer, long-pointed, the lower whorled, the upper scattered; flowers in a large terminal pyramidal panicle-like raceme—usually more than five in number. It is magnificent in cultivation. Both of these lilies have nodding flowers in July. They prefer a heavy clay soil, or moist but heavy muck.

L. Philadelphicum is usually found upon high, sandy hills, in a light, poor loam, sometimes upon sandy plains, and, once in a while, in wet, sandy places. It grows 15 to 20 inches high, bearing one, sometimes two or three flowers. Leaves narrow and numerous, scattered; flowers broad, bell-shaped, erect, deep orange, spotted at the base. Very handsome. June.

Hypoxis erecta (Star Grass). Leaves grass-like; flowers bright yellow, five-sixths of an inch in diameter, in a sort of umbel. About four inches high. What could be prettier than a lawn sprinkled with these golden stars? June.

Zygadenus glaucus. The bulb is the shape and size of a small onion; poisonous; bears many long glaucous leaves on a tall (one to four feet) branching panicle of curious, pretty flowers.

Michigan.

WILFRED A. BROTHERTON.

SUCCESS IN SMALL SPECIALTIES.

LESSONS FROM GRAND RAPIDS AND KALAMAZOO.



THE WARNING by horticultural authorities, "not to put all of our eggs into one basket," is meant more for the fruit-grower than for the vegetable-gardener, and still more for the novice than for the expert. In many cases this

warning has no especial significance or value.

Specialty farming is only for the grower who is acquainted with the special demands of his available markets, the special adaptabilities of his soil, and even with his own special energies and special points of strength. Successful specialty farming is seldom the result of premeditated effort, but almost invariably the spontaneous outgrowth of favorable environments.

Strict confinement to a single branch of fruit-growing is seldom advisable. The single crop, whether it be strawberries, pears, or apples, depends so much on accident and the fickleness of the season that we are never certain of it; and a complete failure leaves the strict specialist nothing to fall back on. A combination of several lines of fruit-growing, or of one line with other branches of farming, is the only safe resource. Even our neighbor, whom we once called a "Bartlett man on a Bartlett farm in a Bartlett

locality," and whose Bartlett crop has not failed to give him a pretty fair revenue (up to \$2,700 from two acres in a single season) in many years, thinks so, and grows many other things besides Bartlett pears.

Vegetable-growing presents an altogether different aspect. Here the crops are far less dependent on the whims of the season; and a complete failure should never occur, when the production of a special crop is based (as it should be) upon a combination of the right man and the right conditions of soil and locality. Indeed, we are quite sure that the right environments for special crop production are present in thousands of yet undeveloped cases, and only wait for the appearance of the right man to take hold of them, and make a grand success in a special line.

What great things may often be accomplished in the production of seemingly unimportant crops, is illustrated in two prominent instances—that of the lettuce-growers in Grand Rapids, Mich., and that of the celery-men in Kalamazoo, in the same state.

LETTUCE-FORCING.

The pioneer lettuce-grower of Grand Rapids is Mr. Eugene Davis, known as introducer of the Grand Rapids lettuce. The success achieved by him in building up a great industry—the production and sale of greenhouse lettuce—is almost entirely due to the "right man," who

happened to find his right specialty, and is only in a small measure the result of special environments.

"It seems a little funny," says Mr. A. I. Root, who a few weeks ago made a visit to the Grand Rapids lettuce-houses, "but nowhere else on the face of the earth do they grow lettuce equal to the product of Grand Rapids. Even away down in Cincinnati they must send to Grand Rapids for their choice lettuce. Now, the cause of this cannot be in the soil and climate, as it is with the Kalamazoo celery, for the lettuce is all grown under glass, or nearly all. Friend Davis found out how to do it, and his neighbors all around are copying him. He took me around to so many different places where new greenhouses have recently been put up, or are just going up, that I was really bewildered. Although it was a cool November day, quite a number were handling putty and setting glass. Perhaps there are now something like a hundred houses, solely for lettuce-growing, in the vicinity of Grand Rapids. These are usually 100 feet long by 20 or more broad. Some men have one house, others three or four, some half a dozen."

The mere fact that Mr. Davis' neighbors, by copying him, have learned the trade, proves the possibility of our learning the very same thing by copying his methods.

GREENHOUSE CONSTRUCTION.

Mr. Davis prefers that the house should face the south with a long slope fronting the midday sun, rather than that it should stand north and south, with slopes alike on both sides, although a great many new houses are put up on the latter plan. Butting the glass is the usual practice with Mr. Davis, but he thinks there is not much difference in favor of it as against lapping.

Where one has two or more houses the query is, how to place them—whether close together, or with a driveway between them. Of course, there is economy in the former method, especially if the middle wall is omitted so that the two houses are virtually one. This will do for houses standing north and south on level ground. With the Henderson style (a long slope facing south), they must either be on the hillside, or else have a roadway between them; otherwise the house further south will shade the one behind it. On a hillside with a gentle slope, where close houses are permissible, they must not communicate; for if they do, the hot air, being lighter than the cold, will rush into the house standing highest. Another objection to having the houses stand close together is the snow that would come down into the gutter. Unless the houses are made unnecessarily strong, a great weight might break in the sash. Of course, the snow can be shoveled out, but this is a cold and disagreeable job, and somewhat dangerous, both to the glass and to the operator.

HEATING THE HOUSES.

Mr. Davis' houses are heated by flues, and wood is used for fuel. We had thought this style of heating was pretty much out of date. But special purposes

often make special treatment necessary. Mr. Root tells us that a good many of the Grand Rapids growers who have steam and hot water in some of the houses, and flues in others, give the preference to the latter. Mr. Davis believes that a flue is much the cheaper; and in winter, when the houses are inclined to be damp, the flue seems to dry it out more effectively than either hot water or steam, and the lettuce can receive with safety more frequent waterings.

HOW THE INDUSTRY BEGAN.

Some years ago Mr. Davis came into possession of a new sort of lettuce, probably a cross between the Hanson and a strain whose name is unknown, brought by an old friend of his from the old country, 16 or 17 years ago. It seemed to do remarkably well as a forcing lettuce. By experimenting he developed a greenhouse especially for its cultivation, and in the same way he discovered the soil and manure that seemed to be best suited for its growth. He uses four or five inches of sandy loam, such as is found anywhere around Grand Rapids, with two inches of fresh, clean horse manure spread over it and forked in. This gives rank, white, crisp lettuce, and seems to be superior to any other soil manured by compost. Fermented manure has been tried again and again, but it does not do so well. Chemical fertilizers have also been tried, but are found to be "no good."

The stables of Grand Rapids save expressly for his use fresh manure without straw. When it is spread over the beds, it is beaten or pounded up fine with a stick a little heavier than a piece of lath, having some short nails driven into it.

"No matter how many greenhouses his neighbors put up," says Mr. Root, "for the last 15 years the demand has been, most of the time, beyond the supply. Of course, this may not always continue; but where the quality produced is equal to that raised by friend Davis and his neighbors, there seems to be no lack of a market. Even at the date of my visit—November 4—the grocers of Grand Rapids were offering 20 cents a pound, but the proprietor of the only lettuce that was fit for market would not let it go. I asked him why; and he said that in two or three weeks it would make such a growth as to make nearly double the number of pounds per square yard, therefore he preferred to let it stand and grow rather than to sell it as it was at 20 cents per pound. Just one man, with enthusiasm and a love for work both with brain and muscle, has built up this great industry."

CELERY IN KALAMAZOO.

The celery industry of Kalamazoo, more than the lettuce industry of Grand Rapids, is an outgrowth of favorable local conditions. There is no "secret of success" about it. Men and environment were specially fitted for the development of the industry, and as a result, "the golden product of the swamps of Kalamazoo" (so James K. Reeve writes to the *Independent*), "is found upon the tables of hotels along the Penobscot, and

beside the Rio Grande; almost within the everglades of Florida, and upon the western prairies; in the great cities of the Atlantic coast, and in the metropolis of the Rockies."

"The soil looks and feels rich, being of inky blackness, and soft and spongy to the touch," says the same correspondent. "My own investigation leads me to believe that the porosity of the soil and its consequent copious saturation (the elevation being but slightly above the river-bed), and the careful and painstaking methods of the Hollanders, who are almost alone engaged in the culture, are prime factors in the success that has been attained. This is corroborated by circumstantial evidences: 1. The celery plant loves a cool, moist bed; heat and drought are its mortal enemies. 2. Americans who have engaged in this work here have not been successful. It is true that they can grow celery, and good celery, and secure a large yield; but they can not control the cost of production so that they can compete successfully with the Hollander. 3. The most successful growers are those who use constantly the largest amount of manure. Stable manure is used almost wholly, and any great extension of the business must depend largely upon an increased supply of that material. All that is now produced in and about the town is eagerly taken up at a good price. I could not learn of a single instance of the use of a commercial fertilizer."

Since 1875, when the first patch was planted by a Hollander, the area of cultivation has grown from nothing to 13,000 acres, and the prices of celery land, in the same period, have advanced from a nominal \$30 per acre to \$500 and even \$600 per acre. The individual holdings are usually small, running from one to five acres, or as much as can be worked by "family power." The largest farm contains 50 acres, and is run by an American.

GROWING THE CROP.

The method is as follows: For the first crop the seed is sown in hotbeds in February. The plants are set in the open ground as early in May as the weather will permit. Trenches about six inches deep are usually prepared, partly filled with manure, and in these the plants are set from four to six inches apart, the trenches being four to five feet apart. In the meantime a second sowing of seed has been made in a finely-prepared seed-bed out of doors, and in June the plants from this are set out for second crop between the first rows. Other sowings of seed are continued, and when the first crop comes off, which is from the tenth of July to the first of August, the rows are immediately filled with plants for the third crop. A fourth crop is then put out in like manner by the more ambitious growers as soon as the second is harvested. Closer planting in the first instance, as practiced by some, prevents this rapid succession of crops, as it does not give soil enough to each row for successful hilling. The blanching of the celery is accomplished either by hilling up closely with earth, or by confining the growing plants between boards

which are held together with clamps. Of the many varieties grown, the White Plume seems to be the general favorite. As soon as the celery is matured and blanched, it is dug, trimmed of all green and superfluous stalks and leaves, washed in sluices or tanks, tied in compact bundles of twelve heads each, and at once delivered to the dealers.

WINTER STORAGE.

As soon as freezing weather begins, all the remaining plants are taken up and stored. The general method has been by building "coops," which are made by excavating about two feet below the natural surface of the soil, and then boarding up two feet more, making sides four feet high. A ridge-pole six feet above the center is then placed on supports, and the whole roofed with 14-foot boards, thus covering a pit 24 feet wide. The outside is then banked up with earth, the roof covered with straw. A house thus cheaply built will resist great cold. These coops are built from 100 to 300 feet long, as the needs of the grower require.

This method is now being superseded to a large extent by simply burying the celery in trenches. A trench is dug two feet wide and two deep and of any desired length. The plants are packed in this upright upon their roots, as closely as they can be placed, and covered with straw, earth and manure, as deeply as may be thought necessary to exclude frost. This method of winter storing seems to be growing in favor, and it is claimed that the celery comes out in better condition than when stored in coops.

CAN OTHERS COMPETE?

There may be some features in the Kalamazoo celery industry which one can admire, but there are more which we do not like. The methods here adopted are un-American, and the whole business is based on a system of drudgery to which the vegetable-grower in America should not submit. Americans, it seems, might find it hard to compete with people who, like these Hollanders, manage to make a living by employing the whole family—father, mother, grandparents and children of all ages and sizes—and keeping them at work every waking hour.

Mr. Reeve was forced to the conclusion that the Kalamazoo growers do not find a great profit in the business. True, those who are engaged in it appear to keep to their occupation very contentedly, and to secure a good living from it; but this is merely owing to the economical conditions of their (un-American) labor system. If they were forced to employ able-bodied workmen at full prices for the various operations, and then to sell their products to the dealers as they now do, it is doubtful whether the industry would survive.

Here, as in many other cases, the middlemen (dealers) and transportation companies appear to get the lion's share of the proceeds. If a small share of the efforts which the growers put into the task of producing the crop were used for the improvement of the market end, and especially for successfully dispensing with

the services of the dealers, who in reality are only shippers, the business could soon be placed on a more remunerative basis, and elevated to an American standard.

The only real advantage which the Kalamazoo people have over growers elsewhere, possessing suitable celery soil, is the reputation of the Kalamazoo product; but this is offset by several serious disadvantages, especially (1) the high tax they are compelled to pay to middlemen and express companies, in consequence of a wholesale production which demands the whole United States for a market and calls for long-distance shipments, and (2) the great local demand for manure which results in prices that are far more favorable to the seller than to the buyer and user.

Why should people in other localities, with soil just as suitable, and good retail markets much nearer home, not be able to compete successfully with the Kalamazoo

people? There are thousands of places in the United States where celery-growing, even on an American plan, can be made twice as profitable as it is in Kalamazoo. Let whoever doubts it, visit the John F. White celery patch of 35 acres near Mount Morris, N. Y., and see the fine stalks that are far superior to the average Kalamazoo product, and sell readily at 30 cents per dozen, wholesale. Here, of course, the whole business is systematized. Horse-power and improved implements and devices reduce the labor account to a minimum, and accidental irrigation privileges are utilized to the fullest extent. But all such opportunities are also found in many other places.

On the whole, we believe there are plenty of openings for specialty gardening, not only in these but in many other lines. It only remains for the shrewd grower to discover and take hold of them, to his own profit and the general benefit.

BOSTON MARKET-GARDENERS' GREENHOUSES.

HOW BUILT—FAIR CROPS—THE SEASON'S SERVICE.

THE hotbed as an adjunct of the market-gardener has seen its best days. It is being superseded by the greenhouse. A few years ago it was common to make yearly additions to the stock of hotbed glass: the day came when, owing to their large number, there was very little profit in the produce raised. Then the greenhouse sprang into existence, and some of the ventures have proved highly profitable. At first it wasthought necessary to build quite low, that the glass might be near the crop as in hotbed culture, but this was an error. To-day the houses are carried higher, with advantage to the crop.

Some early constructors endeavored to utilize their hotbed sash, but to no avail. The closeness of the ribs obscured the light, especially when the sun's rays struck the roof obliquely.

Heating has had several changes. At first, the four-inch cast-iron hot-water pipes were used. Since it has been found difficult to control the heat of a house by the use of so large a body of water, steam-heating was substituted, with an increase in the cost of the fuel. For the last two years a newer mode of heating is being adopted, namely, that of hot water circulating through two-inch wrought-iron pipes. Owing to the smaller amount of water contained in the pipes, and with the aid of valves, the heat in the houses can be controlled quite as readily as in steam-heating, and this at less cost for fuel. The pipe ascends gradually on its way entirely around the house, until it gets back directly over the boiler, where it makes a direct descent, thus favoring a rapid circulation of the water—so rapid, in fact, that the difference noticed in heat between the flow and return is but fifteen degrees. Expansion and contraction are provided for by a small open tank above the boiler, into which the water flows from the boiler in a 1/2-inch pipe,

the tank being fed from the hydrant by the aid of a float attached to cork, thus keeping the water in the tank at a certain level.

The size of glass has increased of late. It is the aim to have the ribs far asunder, so that the sun's rays will be impeded as little as possible during short days. In a few cases the ribs have been placed so far apart that a heavy snow has broken the glass, but now the limit of size is 16 by 24 inches; to dispose of the objectionable cold drip caused by condensation, the ribs are grooved, thus forming gutters which carry the water into a trough on the lower sill.

These houses are built in lean-to style, 30 feet wide inside. The back elevation is 12 feet, and the front five feet. The bed for cultivation is upon the solid bottoms without bottom heat. The walks are arranged nearest the front or back, thus making one wide bed in center; and to facilitate the working, a movable plank is used, one end resting on the heating-pipe that runs through the center, while the other end rests upon the side planking of the walks.

Lettuce is the principal crop raised during October, November, December and January, and cucumbers from February to July 1. It is usual to raise three crops, of lettuce before putting the house to cucumbers—one crop coming off about Thanksgiving or December 1, another about January 15, a third about February 15.

Price for the first crop rarely exceeds 50 cents a dozen; for the next crop often \$1 per dozen is realized, but 75 cents is about the average. So with a house say 200 feet long, with plants 8 inches apart, these three crops sum up a pretty snug amount.

Part of the house, however, has to be used for growing plants. It is the custom when one crop is transplanted, to sow seed broadcast for the next crop. These

plants are handled as soon as the seed-leaves are well-developed, and set 2½ inches each way in another bed, which gives the plants a chance to become stocky before the last transplanting.

Mildew and the green aphid are the enemies that stand between the gardener and profit. The aphid is easily kept off by fumigation with tobacco. Mildew is not so easily conquered. Many remedies have been tried, such as painting the heating-pipes with a mixture of sulphur and lime; but the key to the situation is in so governing the temperature and ventilation that the plant is grown under somewhat similar conditions as in field culture. Absence of sunlight for several days is almost sure to bring on mildew, and many crops harvested during dark months do not pay for the coal.

Cucumber seed is sown late in January in a warm part of the house, in a soil underlaid six inches deep by three inches of fresh horse-manure. The plants are covered by hotbed sash, thus insuring a high temperature, while the remainder of the house may be only moderately warm for the finishing of the last crop of lettuce. To keep their feet warm after transplanting, trenches are dug the length of the house, 14 inches deep and wide, into which is placed 12 inches of fresh horse-manure, and as this warms up, and the sunshine increases, rapid growth results. By the last of March, picking commences, continuing until July 1, when the vines are

exhausted. The first pickings, coming at a time when the public appetite is keen, meet with a ready sale at 15 to 25 cents each. As the season advances and supplies increase, prices gradually drop to two cents each about June 25.

Mildew is often a serious drawback, likewise the black louse. The former is less troublesome when the house is not too full of foliage. Sun and air among the foliage is a preventive, and to accomplish this a part of the foliage is cut out. For the destruction of the black louse, the removal of the first infested leaves is practised, tobacco fumigation having little effect in removing this invader.

The vines are trained on trellises, inclining both front and rear at an angle of 45°. This gives a chance to walk under the vines to gather the fruit.

Abundance of water is necessary; but the soil alone should receive these frequent waterings, as applications to the foliage will result in blight.

Unless a hive of bees is placed in the house, hand-pollination is necessary; otherwise, the fruit may not set or perfect itself.

The variety mostly grown is White Spine, and by judicious selection of seed stock, medium long, well-shaped and dark green fruit is obtained. The long-English varieties find no favor in the Boston market.

Boston, Mass.

E. P. KIRBY.

OUR WIDE-AWAKE GARDENERS.

THEY TALK OF NEW VARIETIES AND METHODS THAT HELP TO MAKE VEGETABLE-GROWING MORE PROFITABLE AND MORE SATISFACTORY—A FULL LIST BY DR. HOSKINS.



IN THESE times of closest competition in everything that cultivators are growing for market, it is absolutely necessary for the progressive gardener to keep at least a corner in his garden for the testing of novelties in what he grows, and in the methods of growing them. I have been doing this for upwards of 25 years; but looking backward over that time I do not see the progress in that part of our art which might have been expected.

Does any reader remember the Keyes tomato, a potato-leaved variety introduced about 1866, which was one of the first of the smaller sorts claimed to be many days earlier than anything before known? In four years the Keyes was forgotten, and dozens of other "earlier than any" novelties in that line have followed it. Let us note that not the "earliest," with no other merit known in them, remain; but the smooth, solid, productive, full-flavored sorts, such as Trophy and Gen. Grant, continue in demand. Now, also, a popular variety has to be free from the tendency to rot, which has become as much a terror to the tomato-grower as to the potato-farmer.

A much greater gain has been made in methods than in varieties. This is truer near the large cities than elsewhere, because the newer methods require large expenditure on the plant, and greater skill in the working of it. It is true that all kinds of iron-work have been greatly cheapened, and the demand for out-of-season vegetables proportionally increased. Both these facts have favored the development of commercial winter gardening, until now our tropical and southern caterers are far from having the market in their control. I will run briefly over the popular lists, and note where my own experience has located a decided advancement.

In Beans the new dwarf Limas are a long-desired improvement in earliness and ease of management, and they will stay. Among the poles, the new Brockton, of the "Horticultural" family, is a decided advance. The Early Golden-eyed Wax (which I grew for several years before the dealers got hold of it), is early, free from fungus-spotting, and productive; but the quality is far from being up to the claims made for it. The Kentucky Wonder is an excellent late snap variety.

In early Turnip Beets, the Eclipse took well: but the Edmonds has gone ahead of it and is more perfect and uniform, as well as earlier. In the later kinds, or the long-rooted beet, there is no very recent gain. In

cabbages, Henderson's Early Summer is an advance among the second earlies, and Warren's Stone-mason among the later sorts. The latter is a markedly superior strain, both in size, sure heading, and general uniformity, and unreservedly the best winter cabbage for northern New England.

In carrots, the Chantenay is the best thing we have had from France for some time. But the great popularity it has jumped into has led to putting inferior seed on the market, which is likely to disappoint. In Vermont, I find it so good a keeper that I can recommend it as a desirable variety to grow for stock, and one which can be harvested quickly without a spade. For market it sells itself on sight, and is wanted again for the table by all who try it. I have grown them in quantity at the rate of 1,000 bushels per acre.

In cauliflowers there has been a good deal of improvement, making it a much surer and better-heading crop. Emerson Snowball and Veitch Autumn Giant please me well.

Among the celeries, the self-blanching have had a remarkable run, especially among amateur gardeners, but I think all good judges prefer the banking sorts for quality and keeping. La Plume Chestnut is a very desirable sort.

Among sweet corns, Perry's Hybrid, though not quite fixed in type, is very large and fine for second early. The Cory has nothing to commend it but earliness and size. The Banana is a curiosity of merit for the private garden.

I find nothing new of value among outdoor cucumbers, and in lettuces nothing of importance since the Hanson and Deacon.

In onions, the only thing very new is the transplanting method of growing them, which I think favorably of, but have not yet tried. But, truly, in onion-growing, above all other things, "good seed is the foundation."

In peas, Maud S. is certainly a very profitable sort to plant, being large-podded and productive. Rawson's Clipper is as early and productive, but with smaller pods. I think it decidedly better in quality. Telephone lacks only in productiveness. Stratagem is worthless unless mulched to keep the pods off the ground. Horsford's Market-Garden pea has become a standard second early with me.

In early potatoes there has been a great advance in the past 20 years, beginning with Early Rose. We now have a long list to choose from, with no great amount of choice between well-known leading sorts. Of first early I prefer Polaris, and for a later, the Rural New-Yorker No. 2. These will be my crop next year. I ship direct from the field as soon as vegetables are marketable.

Vermont.

T. H. HOSKINS.

WISCONSIN'S GREAT GARDENER NAMES HIS CHOICE.

Gardening has been so revolutionized since 30 years ago, that only those who were then and are now engaged in it can understand the difference between then and now.

It was then the dread of my spring work to get my small seed planted, even after the ground was ready. It had to be done with the naked fingers, and was a slow and backaching job. Now, a bright boy 16 years old will plant more ground in one day and do it better than 20 good steady men could then. Fifty years ago the old Red Wethersfield onions were almost the only ones in our general markets. Now they are almost superseded by the beautiful Yellow Danvers. The tomato of even 30 years ago could not be sold in our markets to-day. The early cabbage of 30 years ago is out of date, and I have not seen a head of pure Early York in 15 years. The Jersey Wakefield has taken its place, and is its superior in all respects.

For late varieties, the old Premium Flat Dutch is almost gone out of date, although it is in many respects excellent, and for hardness and late-keeping I doubt whether we have any better variety. In cauliflowers the Snowball has for some years past been the best I could find for either early or late.

Among beets and carrots there has been less improvement of late than in other fruits and vegetables. The Globe beets have nearly driven the Long Blood varieties out of our market-gardens, although there is but little improvement in quality. The same may be said of carrots. The stump-rooted varieties have driven out the Long Orange, and improved the quality somewhat, but not largely. The consumption of lettuce and radishes has increased to a marvelous degree. I commenced market-gardening here in 1857. At that time, if I could have reached the same territory that I now reach with these articles, I have no idea that I could have sold \$50 worth of either in a season. I keep a careful account of sales, and have for many years, and last season I sold about 30,000 heads of lettuce, and about 40,000 bunches of radishes, averaging at least six to a bunch; making 240,000 radishes sold by one grower in a district where there are no large cities.

Perhaps I ought to say that they are actually sold—not sent to sell on commission, but actually ordered before they are taken from the ground. A portion of the lettuce was grown in my hotbeds.

The introduction of the sweet wrinkled pea was a great improvement. American Wonder, all things considered, is in quality about the most valuable variety now upon our list.

In bush-beans there has also been marked improvement. The Golden Wax have almost driven the old green-podded kinds from our gardens. With me, they are both earlier and of better quality.

There have been new varieties of sweet corn added to our lists, though the quality seems to me to be but little changed from what it was when I was a boy.

I can see no change in the quality of our asparagus, though the stalks that I now grow are, from some cause, larger than those that grew, years ago, in my grandmother's garden.

Wisconsin.

J. M. SMITH.

Of new points in vegetable-gardening it is thought that what has been called "the new onion-culture" has made the most stir. At one of the farmers' institutes, last February, in a talk on the matter, A. I. Root exhibited some samples of large fine Spanish onions. He says:

A. I. ROOT ON ONION-GROWING.

I felt a little afraid my talk had been pretty extravagant, and some of my hearers, I was told, criticised me a good deal, saying:

"Oh, yes, Root can talk, especially when he buys manure from the livery-stables, and puts on more manure to the acre than an acre of our ground is worth; but what good does such talk do us?"

You may perhaps surmise that some of my hearers were of the class that declare, "Farming doesn't pay." Well, not long ago a man I had seen a few times came into the office and said he had something down stairs for me to look at. On the way down he asked if I remembered my talk at Chatbam Center in the winter. Then he said he had bought some seed, and had been at work trying the new onion-culture. I felt afraid he had failed, and was going to blame me for my enthusiastic statements of what might be done on a single acre. By this time we reached the place where he had left his basket of onions. They were beauties, and you ought to have seen his face while he held them up and told me how he did it. He hadn't any greenhouse or hotbed, so he raised the plants in boxes in the kitchen window, and planted them out in ordinary clay soil, such as farmers use for corn and potatoes. I asked him if he had found a market for them, and he replied:

"Why, bless your heart, Mr. Root, there isn't any trouble at all about the market. My neighbors right around me will take every onion at one dollar a bushel, and I just wanted to see you and tell you that you wasn't extravagant a bit in telling what a farmer might do if he only had the will to do it. When you want to give us another talk, just remember there is *one* man in our neighborhood, any way, that will always be glad to hear you, and one who will *believe* what you say."

Another man in the same neighborhood raised a wagon-load in the same way, and brought them to Medina and sold them at once for 80 cents a bushel, at a time when ordinary onions were bringing only 30 cents a bushel.

The above onions were all Spanish King or Prize-taker. A handsomer onion, though not quite so large, is the White Victoria. It has, during the past spring and summer, made a host of friends in our vicinity, and it was really enjoyable to take a lot of these White Victorias into almost any crowd and see them stare and wonder at such large, handsome white onions long before anybody thought it was time for them.

Ohio. A. I. ROOT.

A JERSEYMAN BELIEVES IN GOOD SEEDS.

We have given Henderson's dwarf Lima bean a thorough trial, and although told that it does not take very well in market, we consider it a great acquisition to the

home garden. Buist's Early Morning Star pea has proved best of all as a first early pea, both for market and home use.

In new methods, we gave a partial trial to the new plan of growing onions by sowing seed early and transplanting, and were well satisfied with the result. Every year's experience serves to emphasize the necessity of making the soil extremely rich and fine, and keeping it *absolutely free* from weeds.

There is, in the seed business, one method which is comparatively new, and which secures one of the first requisites to success in all gardening—*thoroughbred* seeds. I allude to the use of "private stock" seeds, which means seeds grown by the originator of the variety. New varieties, for the most part, result from careful selection and isolation by specialists for a series of years; and in proportion to the skill brought to bear and the length of time and care given by the originator, we get more or less gain in earliness, productiveness, size and quality, or in some one or more of these points; but as soon as a variety comes into general use, and others raise seed with only ordinary care, most new varieties rapidly run down and deteriorate, and we are obliged to have recourse to fresh novelties. If these were always just what they are represented to be, and always adapted to our special needs, it would not be so bad, but unfortunately this is not the case; hence the great advantage of "private stock" seeds, which may reasonably be expected to retain all the good points with which they started out, and sometimes gain more. Of course such seeds cost more, but I believe they are far cheaper in the end.

If one wished to procure a suit of clothes, he would not go to a dealer in stoves or tinware, neither would he go to a dry-goods store for choice fruits and vegetables. Then, why in this business should we trust to "Tom, Dick and Harry" to look after it? The man who gives his whole time and attention to securing and taking care of seeds, or these in connection with garden requisites of all kinds, most assuredly can and will do it better than those whose attention is engrossed by other business. The only wise way, then, is to buy of such a seedsman; and if there is none near you, from whom to purchase seeds over the counter, you can get them through the mail by taking care to order only from a trustworthy firm, with a reputation to sustain.

New Jersey.

WM. F. BASSETT.

ON BEANS AND TOMATOES.

Every year brings new varieties of all kinds of vegetables before the public. Some deserve popular attention, others are worthy of culture in particular localities and on soils only suitable for their individual requirements. Too many kinds are sent out before they have been properly tested in different localities and on different soils.

In my market-garden I try all the most popular new varieties yearly sent out. My soil is a rather heavy loam, much enriched with well-rotted barn-yard manure;

and therefore, while it is not so well suited for extra early crops as soils of lighter and more sandy texture, it is less adapted to general and late crops, and with these I have good success.

Of wax-beans we have tried almost all the new varieties, and find Landreth's Scarlet and Yosemite Mammoth the best two for general culture. Their pods are showy and tender, and the plants extremely productive. Saddleback is a very tender variety, very productive, free from rust, but not so showy as the preceding, and therefore not so good for market. Burpee's Perfection has tender, large, showy pods, and is fairly productive, on sandy soil proving one of the best. Pink-eye is one of the best wax-beans for fall culture, being much sought after for pickling purposes. The pods are of medium size, very crisp and tender, and the plant is very productive. Blue-podded butter-bean is distinct and ornamental, at the same time very tender and juicy. Its color, however, a deep blue, is against its sale as a wax-bean.

Green-podded bush-beans are not so much in demand as the wax-podded varieties except for pickling, and for use before the wax kinds mature.

Early Warwick is probably the earliest good variety in cultivation; it is stringless, of good flavor and very productive. Extra Early Refugee is an improvement on the old variety; it has all the good qualities of the old, but comes much earlier to maturity.

Extra-early Round-podded Valentine is also an excellent sort; tender, well-flavored, and very prolific.

Henderson's dwarf Lima with me is about ten days earlier than the pole Limas, and very prolific; but it is not so well-flavored as the large Limas. Burpee's bush Lima, however being a form of the large Lima, is a decided acquisition, and one of the most valuable additions recently made among vegetables. It is of dwarf habit, prolific, and as fine-flavored as the large Limas.

Among Tomatoes of the early fair-sized varieties of recent introduction, Early Ruby and Atlantic Prize are the best. When growing side by side, they show little if any difference. They appear to be identical, but under either name, the tomato is a good one for early market. Owing to its weak growth it can be planted much closer together than the strong-growing kinds. The fruit is large, bright red, setting early, the whole crop maturing pretty near at one time. It is of little use for main crop. Ignatum is one of the best for general crop; it is of good size, striking color, very prolific, and producing good fruit to the end of the season. Henderson's 400 is of enormous size, but deeply furrowed, and while very solid and of fair flavor, too large and rough for market. Stone is an excellent late variety; large, solid, smooth and ripening evenly to the stem. It very much resembles Brandywine in every particular. Both are good and worthy of general culture. I find McCollum's Hybrid also an excellent sort for main crop—very productive of fruit that is large, solid and free from spot. Table Queen we have only grown on a small scale, but it is one of the most prom-

ising of the large-fruited kinds, being smoother than most of the extra large varieties.

Extra large tomatoes are not so desirable as medium-sized ones. Some of Livingston's varieties, such as Beauty and Favorite, have no equals for a general crop. They are invariably smooth, uniform in size, and of fine flavor, producing fruit to the end of the season. If we had a variety as early as Early Ruby, as perfect in form, color and productiveness as Acme, and free from spot, we would think that perfection had been about reached, as we now view the desirable qualities.

Ohio.

MANSFIELD MILTON.

MR. NICHOL WANTS EXPERIMENTS IN FORCING TOMATOES FOR FIELD CULTURE.

The man who would be up with the times in gardening must be on the watch for improved methods and varieties. If he is not satisfied that a new introduction is good, he must be prepared to test it in his own grounds, but he should never drop a certainty for an uncertainty.

We had heard, read and seen something of the "new onion-culture," and therefore tried it, and find it a success, and profitable. We intend to enlarge our beds another season.

How about setting out tomatoes in the field by the middle of May, and gathering ripe fruit by the middle of June? This is being done, and can be done in our latitude, even on the acre scale. We wish our experiment stations would give us field-growers the benefit of "tomato forcing" for field culture, as well as for "winter-house forcing."

On $1\frac{3}{4}$ acres of the Stone tomato last season, we gathered nearly 1,000 bushels, and many bushels of green ones were left when frost came. Among radishes we were much pleased with the new White Pearl Forcing. Fordhook squash is good, but too small. This is also the case with the Henderson bush Lima bean.

Those things that have proved a success, we are apt to follow up; those that have failed we drop. Our failures in gardening we attribute largely to procrastination—putting off until to-morrow what should have been done to-day; promptness is a prime necessity.

Ohio.

A. NICHOL.

ON FORCING RADISHES.

One of the first vegetables that we crave in the spring is the radish, and as it is of easiest culture, every family can have it crisp and tender, and in abundance. A few square feet will supply a family the year around.

All that you need are two or three hotbed sashes and a few boards for a coldframe. Make these beds snug and tight. The soil should be made rich by mixing in plenty of well-rotted stable manure. Be sure to add a little sharp sand also; this is important, for the radish likes a rich, sandy soil. A frame can be planted with radish in this vicinity late in February. Plant in rows about six or eight inches apart; never allow them to remain thick in the row after sprouting. It is at this

critical time that so many fail in raising radishes under glass. They require more room to grow when forced than in the open air. About two inches is the proper distance to thin them.

On warm days admit air by raising the sash, and water when the soil becomes dry. About the first of April you will have them growing nicely. Now mark out another row between each two rows of the first planting, and sow radish seed again. When these are ready for thinning, the first planting will be ready for the table. About 20 bunches per sash is the average yield, and all will be crisp, and uniform in size and shape. Continue this system of planting as long as you want radishes.

When the weather becomes warm enough, remove the sash entirely from the frame. About October make your last planting for the year. This will give you a supply for Christmas. Place the glass over them about November 1. I would advise earthing up firmly around the frame before freezing weather, and to cover the glass with matting at night. With this protection you can keep them in good condition until time for planting again. The best variety is the Early Scarlet Globe. It is a most attractive radish, far surpassing anything we have ever tried for general cultivation.

New Jersey,

T. M. WHITE.

MR. YEOMANS NOT MUCH IN FAVOR OF THE NEW.

Results are largely affected by climatic conditions, yet may be modified by the gardener. Thus we have grown onions for years successfully upon the same plat of ground, manuring with composted barn-yard manure, but for one or two seasons the crops fell off. By way of change we applied ashes liberally, and we had a very fine crop. Was the increase due to the ashes, to weather, to "pedigree seed," or to something else of which we know nothing?

We are not easily led away with enthusiasm for new varieties, as we have been disappointed too many times. In these days a new sort must possess unusual and undisputed merit, in order to force itself into continued use.

No selection of varieties can be adapted to all sections. Every grower must be an experimenter for himself. By careful observation, and the exercise of sound judgment, he may be enabled to determine with a fair degree of certainty what is best for him.

For some reason, presumably climatic, in our vicinity tomatoes of all varieties last season proved nearly an entire failure.

Connecticut.

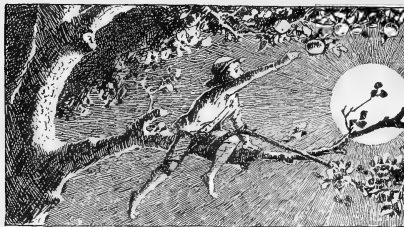
WM. H. YEOMANS.



THE LAST ROWS OF SUMMER.

"Behold the original and primitive nobility of all those great persons who are too proud now not only to till the ground, but almost to tread upon it. We may talk what we please of lilies and lions rampant, and spread eagles in fields d'or or d'argent; but if heraldry were guided by reason, a plough in a field arable would be the most noble and ancient arms."

—ABRAM COWLEY.



BVDS BLOSSOMS FRUITS

As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers hereby make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will not for a moment be judged by the standard of fine writing or composition, but by the practical and useful ideas or suggestions in them. But besides this premium, the gain accruing mutually between readers by the telling of experience should be a sufficient inducement to contribute such notes. We shall look for a hearty response to this offer from our readers.

I. LITTLE TWIGS.

WELCOME increased sunshine.

TREES are God's architecture.

ARE YOU your own berry-grower?

AMERICAN GARDENING covers about all.

ARE THE BULBS and tubers in a dry place?

THE HORSE-CHESTNUT is from the mountains of Greece.

TELL THE FAMILY of your greatest success thus far in gardening.

LEGIBLE INSCRIPTIONS two centuries old are found on beech trees.

WE COVERED many things in the garden last month with slabs of turf.

TUBEROUS BEGONIAS gave much satisfaction at "Woodbanks" the last year.

A HORTICULTURAL text-book for public-school use would be a good thing.

WHAT'S IN A NAME?—In this instance, AMERICAN Garden, Popular GARDENING.

THE SPLITTING OF PEACHSTONES is attributed to excess of moisture at the root at the ripening stage.

CAREFULLY PICKED APPLES keep remarkably well so long as we give them a low, equable temperature.

WHY SHOULD NOT every public park have its chrysanthemum-house to contribute November attractions?

WORTH THINKING OF.—At a recent appraisalment, some shade-trees were estimated to be worth \$750 each.

IF THE winter coat over strawberries and garden plants was neglected, it may yet be applied with good results.

A CAPITAL COURSE for family study this month would be the Elements of Botany. For this Gray's Lessons are delightful.

IT IS BETTER to plant forty acres of one kind of fruit than to plant ten acres each of four kinds, thinks the California Fruits and Flowers.

SWEDEN believes in horticulture. It is said that more than 20,000 children are regularly instructed in tree-planting and kindred subjects.

TO THOSE who can only grow window-plants that "will stand everything" we would name *Aspidistra larida*, sometimes called Parlor Palm.

QUICK WORK.—In the recent plant-potting contest at Madison Square Garden, George Martin potted 1,277 cuttings in an hour, and won the first prize.

THE LITTLE EMERALD GEM MELON has not yet deteriorated. Even in this rather cool season it was as sweet and spicy as ever. None are better; and there were plenty of them.

TO HENDERSON No. 400 TOMATO belongs the prize for size and solidity. Two specimens on one cluster weighing three and one-quarter pounds are not often found on our ordinary sorts.

A GOOD PLAN.—At a recent horticultural show in Chicago, one interesting feature developed was to have every visitor vote on the best exhibit in the whole show.—C. C. GAY, Cook Co., Ill.

DO MOLES EAT PEANUTS?—James Rose says he has got rid of moles by boring small holes in peanut-kernels with a small-bladed knife, filling them with strychnine, and dropping them into the runs.

IRRIGATION in growing onions on the new plan has been practised the last summer by E. H. Cushman, of Ohio, presumably with good results. Perhaps he will tell our readers all about it soon.

FIG-GROWING is possible in well-protected situations and with good winter covering, as far north as Canada; but while interesting to the amateur, should not be expected to be made a source of profit.

CHRISTMAS-TIDE is past, with all its duties and delights. Now we look toward Easter-day, the festival of resurrection, when nature, underneath the snow, bestirs herself, quickened with the new life of another year.

RAILWAY HEDGES.—Norway spruce, arbor-vitæ, or Japan quince would look much handsomer as snow-screens along the railroads than do the familiar rough board fences. That they would answer as well is proved by their use for this purpose in Europe.

THE NATIONAL FLOWER agitation will not down. Recently when the matter was submitted to the vote of the attendants at a Chicago flower-show the decision stood as follows: Goldenrod 1,268, rose 390, chrysanthemum 243, sunflower 90. That settles it!

TELL US what you have been doing in the garden this year. If you succeeded, how; if you harvested a failure, why—reckon the experience gained as of a certain value, and try to get your money's worth from it, and let others of us profit by it, too.—**ELDER'S WIFE.**

HEDGE-TRIMMING MACHINE.—A correspondent of the *Scientific American*, urging this invention, suggests that the cutting part might be a sickle or a set of whirling disks, very strong. He thinks it might form an attachment to a common wagon, the power to drive it being derived from the wheel.

WHITE GRAPES.—Go slow in planting even the best of them for market. Buyers take to a dark grape better than a light one—perhaps because the former is the natural grape color. The past season has shown that certain light grapes, which it was supposed would always bring fancy prices, were sold at nearly or quite the price of dark varieties.

THE FLEMISH BEAUTY pear is a grand success here in the Arkansas Valley, and we have heard of an instance of its producing 25 bushels to a single tree in one year. We also learn that it is being propagated under a new name. A fruit-grower at Grand Junction tells me that it is nearly seedless with him. A specimen he gave me contained but one seed.—**SAM. BUCAS.**

THE CURIOUS IN NATURE.—Several contemporaries have recently referred to the singular fact that when the well-known tender climber, *Ficus repens*, reaches a fruiting stage, it changes its leaves most remarkably. While the plant as generally seen has small rounded papery leaves, in the fruiting stage the leaves become large and leathery, more like those of the India-rubber plant.

SENSIBLE MR. CHITTY, member of the Paterson, N. J., common-council, and chairman of the committee on parks, is also a successful florist with practical ideas. In a recent report to the council he used severe words against the management of the city parks, going so far as to disapprove all further appropriations for them until the services of a practical superintendent be secured for carrying out future improvements.

TRUST CHIEF THORPE to make good use of his opportunities in the horticultural department of the World's Fair. He will arrange to use the south corridors of the great plant-hall for tropical plants in irregular groups. With the great number of palms, cycads, dracænas, crotons, marantas, ferns, anthericums and in-

numerable other kinds to be employed, this should prove a veritable bit of the tropics dropped down into the fair.

POVERTY GARDENS.—No appreciative reader of AMERICAN GARDENING is satisfied with a poverty garden; that is, one having next to none of nature's handsome gifts, in fine shrubs, trees, plants, fruits, etc., within its limits. But let us not be understood as recommending the other extreme, of getting together every kind heard of or read about. The happy medium gives maximum results for a minimum outlay. Next month some information will be given, helpful for beginners, on selecting kinds.

THE GARDENING of America is distinct from the gardening of every other land in a thousand particulars, incident to difference in latitude, atmospheric influences, etc. This is why the horticultural books and periodicals of that great garden-land, England, are of little use as close guides in this country. During the early settlement of America, our people blundered along by adopting the methods and materials in gardening of all Europe, but by to-day there has been worked out a distinctive American system of gardening, for which AMERICAN GARDENING stands. Visitors to the coming World's Fair in Chicago in 1893 may be prepared to see some evidences of the wonderful development of American gardening to date.

II. THRIFTY SAPLINGS.

Novelties in Horticulture.—We believe in them, of course, for every standard sort was a novelty at some time. What we don't believe in is that the rank and file of amateurs should invest freely in all novelties of the day, passing by the multitude of tested standard sorts. The money wasted on purchasing new flowers and fruits, not one in a score of which has ever amounted to anything, if devoted to well-tried, standard sorts, would have made the homes of our people from the Atlantic to the Pacific "blossom as the rose." Nurserymen and seedsmen who have been of greatest benefit to American horticulture have always laid the greatest stress on standard sorts. To invest in a few novelties may be interesting, even though disappointment is in store for one; to invest in many is folly. So it has been in the past; the future will be no exception.

A Profitable Lima Bean.—Last spring I planted a peck of Ford's Mammoth-pod Lima beans. We commenced picking for market about August 20, and continued until the heavy frost of October 8 killed the vines. We sold 560 quarts at 15 cents a quart; have saved five pecks for seed and three pecks of dry beans for eating. They are the finest Limas I ever saw, and all who examined them were enthusiastic in their praise. The vines were very large and prolific, some of the pods being ten inches long and about one-half of them eight inches, all well filled with large beans of fine flavor. I intend to plant 8,000 or 10,000 hills next year. My soil is timber-land and a sandy loam.—**L. C. EMERSON, Vermilion Co., Ill.**

La France.

With heavy heart and grief profound
I saw a rose, with humble grace,
Blooming over a lowly mound
Like the smile of a winsome face.

I said, "Ah, rose, I trust to you.
Let perfume and tint discover
To morning mist and twilight dew
We still remember and love her.

"Marble letters are white and cold;
Little they of her story tell.
Leaf and blossom do thou unfold—
Standing here as her sentinel.

"Speak, with a language all thine own;
Tell that we hold her near and dear—
As we journey a space alone,
She translated, while we are here."

"List," said the rose, "She, too, would speak,
Hearing your step as it passes;
Love can not die nor faith grow weak
Under the weeds and the grasses.

"I hear her call, 'O rose, give speech
To my old-time smiles and blushes;
My heart to hers can upward reach
In thy warm tints and flushes.'"

Bending over the rose La France
I kissed the blossom, believing,
Under the sod and mold, perchance,
My dear one could feel my grieving.—L. G. P.

Mistletoe in California.—We have several varieties of the mistletoe, the "kissing-tree," in California. One is *Phoradendron flavescens*, the little berries of which are translucent white, tinted with salmon color, plump with the tenacious substance known as "bird-lime," covering the two-celled green seed. The leaves are yellowish-green, orbicular and spatulate. It seems a most thrifty parasite, sending its roots or stroma along the oak-boughs, and filling the air with delicious fragrance when it is in blossom during July—as I can testify. The pistillate-jointed flower-spikes are opposite the staminate ones, the small green flowers arranged in four or five rows all around. I have seen four bunches, each as large as a water-bucket, on one branch of an oak tree here, and the tree seemed very happy in its attachment.—Mrs. K. P. S. BOYD, California.

The Calla Edible.—"It's a Lie!"—When a leading journal like the New York *Commercial Advertiser* prints a statement that the well-known calla tuber is edible, how proud we can be, in the name of American horticulture, that there are those ready to test the matter for the truth's sake! Such a statement was printed, and who should first accept the challenge to prove its falseness, and our interesting friend, "Caldwell the Woodsman," who supplies the *Florists' Exchange* with interesting news-matter from the south. He found the flesh of the bulb to resemble in appearance the flesh of the sweet-potato, but with a greater number of tough, fibrous strings running through it; it was dry and mealy, and smelled good. "Taking a big mouthful," says he, "I masticated it thoroughly and swallowed it. 'How does it taste, Caldwell?' chorused my guests.

'Why, it does n't taste of anything; it is absolutely tasteless,' I answered. Just then I felt a suspicious tingle on the tip of my tongue, which I knew too well." His next impression was so bad that he wanted to whip the *Advertiser* man, but he resorted to the butter-dish at once. Another public-spirited gentleman, who likewise had seen the statement and looked upon it as a challenge, says to the *Exchange*: "My curiosity got ahead of caution, and when lifting some from the garden I peeled a tuber, cut off a liberal chunk, and chewed it. I will never do it again, I can assure you. It was an experience never to be forgotten; my mouth, throat and the passages down into the stomach were inflamed for 24 hours, and nothing I took would assuage it."

Useful Gardening is pleasure-gardening also. Can one doubt that the amateur (a true instance) who by high culture grew two long rows of Haverland strawberries in his garden last year, and from which for days, he gathered two bushels of fruit per day, netting him \$3.20 per bushel, obtained pleasure without stint from the experience? His receipts from the two rows, exactly $\frac{1}{10}$ acre, were upwards of \$60, or at the rate of a full \$1,000 per acre. What returns in pleasure and profit good gardening does yield! We have no hesitation in saying that there are 50,000 people in this country, each one of whom could repeat the experience cited, in all particulars, selling their choice fresh product to their twenty nearest neighbors, with scarcely a particle of trouble, and with the greatest possible pleasure and satisfaction all around. Such efforts at high gardening, in a small way, are to be encouraged. And then, how it would add to the pocket-money of the people! This is an occupation for spare hours for any intelligent boy, girl, woman or man. Our only caution is, Don't start in on a scale beyond $\frac{1}{10}$ acre; half that area might be better. If any reader of AMERICAN GARDENING will favor the Editor with some past experience of his own in such lines, it will be gladly received. Let us talk up the matter in these columns.

Brazilian Morning-glories.—During a recent visit in the country I saw these flowers in all their glory. Seeds are being raised for an eastern florist. Though it was only the last of June, the vines had climbed to the tops of high cedar trees, and every available place was covered with them; old fences, dead trees, etc., were all overrun with the odd-looking woolly vines and foliage. In the morning when the large rosy-purple flowers were opening, it was a sight to behold. Here they are also raising seed of *Talinum patens*, a lovely plant with pink flowers and red seed-capsules. *Euphorbia heterophylla* is also being grown. The industry of seed-raising will, in time, be of more profit than cotton, as it is light, pleasant work, and women and children take to it quite naturally. I know one lady here who last year sent off \$150 worth of seed. You would never dream of the calls there are for southern-grown seeds and plants, and you would never think what "just a woman" can do when she has a mind to.—MARGARET CAMPBELL, Louisiana.

All are not Coffee-beans, which look like them. Good imitation specimens are now being manufactured in Philadelphia and Trenton, being composed of rye flour, glucose and water. The soft paste is then moulded and carefully dried. When mixed with real coffee, even the expert eye and tongue may be deceived. The bogus beans can be made at a cost of \$30 per 1,000 pounds. The business of coffee adulteration has become quite an industry, and it is estimated that American consumers pay out every year \$13,000,000 for roasted and ground beans, peas, rye, etc.

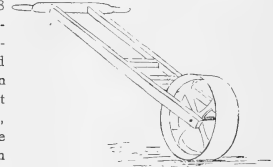
Foliage-Beets in the House.—A week before frost I took up some foliage-beets and potted them, putting several into a large wooden lard-pail. The experiment promises well. They stand in the vestibule and already attract favorable comment.—W. O. E., *Ont., Canada.*

Vines Beautify Rural Homes.—In the selection of kinds, a great deal depends upon location, soil and the grower. For the busy housewife, the self-climbers would prove most satisfactory, such as wistaria, Japan ivy, climbing hydrangea and Virginia creeper. But for an all-purpose vine, embracing so many of the good qualities—vigorous growth, dense foliage, ease of culture, and lasting fragrance—under good treatment the cinnamon vine fills the bill. It must be trained to go where you want it, but in an almost incredibly short time it sends out long runners, covered with beautiful glossy dark-green, heart-shaped leaves clear from the ground, and the leaves do not whip about in the wind like those of some other vines. It is the easiest-grown of all vines, its tubers remaining all winter in the ground. The blossoms are white, feathery and fragrant. As the blossoms fade, little bulblets form just beneath the flower. These bulblets produce a beautiful vine the first year, but will not blossom until the third year from planting. It is an old vine, yet but little known in a great many localities.—MRS. JOHN GAILLARD, *Pt.*

Plants for Unsightly Places.—Not long ago I passed a tannery, and was surprised and pleased at the attempt made to make the front inviting and pretty. There was quite a stretch of grass kept soft and velvety, and beds of flowers well cared for. There were zinnias, asters, balsams and other common sorts; but what a change they made in what is so often a disgusting kind of business! *Ampelopsis Veitchii* sticks closely to a wall and seems made to cover these huge, ugly factory buildings. School-house yards, especially in the country, are the most forlorn-looking places. And who has not been caught at some out of the way railroad station for an hour or two, waiting? And what a dismal place! Not a pretty thing to look at, far or near. But vines upon the house, and the grounds laid out in well-kept flower-beds, would have made the waiting more endurable. In England and France the stations are made lovely, prizes being offered to the superintendents for the handsomest one. How much might be done in these dingy, untidy streets where the workmen crowd together. Window-boxes, vines and even tiny

flower-beds are better than none. I saw an attempt to make something of a small space in a row of balsams planted in a place about three inches wide between the house and the sidewalk. But the worst of all bad-looking places is often that about a florist's establishment. I passed one yesterday—the outside littered with broken pots, weeds and dirt piled up close to the door for convenience. The proprietor was so busy laying out other people's grounds that he had no time for his own, and yet it would have been a good investment to have made his own surroundings beautiful.—SISTER GRACIOUS.

A Good Garden-Roller is made of a belt-pulley—mine being 18 inches in diameter with a 10-inch tire, and framed as shown in sketch. It rolls the rows, leaving the spaces between loose.—W. W., *Des Moines, Iowa.*



GARDEN-ROLLER.

Health and the Plant-Shelf.—"Take away those geraniums," said one of our neighbors as she entered the room where one of the family was sick with scarlet fever. "Don't you know they will kill the patient?" "Not if I know it," said I; "those plants are going to help her get well." And so it proved. Believe it or not, but soon after the sick child was able to leave her room, spots came out on the geranium-leaves, and the plants died: did they take the disease? Most of us have nice pianos in the sitting-room, and also furnace-heat, or a big base-burner. This makes a dry air, and the health of the piano is broken. Perhaps the sounding-board cracks or a string breaks. Now, even a few plants in the room would make moisture enough to keep the piano in good shape. Furthermore, plants are good barometers. If, with all your care, they droop, be assured that the air is too hot and dry for you and the children. Going from a room with such a high temperature into the open air, a heavy cold may be the result. But busy mothers say, "I have no time to fuss with plants, and they are apt to be dirty and make litter." True enough, you must have the dirt, and perhaps use the brush-broom a little more. And as for extra work, there are plants made to fit the case of a busy house-keeper. The *tradesantia*, or Wandering Jew as some call it, is beautiful, and grows in all the shades of green, brown and red. It simply needs watering every morning, and an occasional thorough sprinkling at the kitchen sink. These are lovely for sitting-room windows.—SISTER GRACIOUS.

Fruit in Utah.—Our fruit-crop was very large. The trees were loaded down with apples, pears, peaches, plums, and apricots. But few cherries or quinces are raised here yet. This is a fine fruit country. There is no insect or disease here yet to hurt the fruit. I came here three years ago for my health, and went into raising

fruit without proper experience. The first year the water gave out and I lost many trees, as we have to irrigate through most of the summer. Last year they made a fine start, but I had to be away from home most of the time and did not get to cultivating them, and clover-seed came down the ditch and took possession of the ground. I read that certain fruit-growers advised raising some crop among the trees to shade the ground, so let it be, but kept a six or eight-foot circle grubbed out around each tree, and let the clover grow and rot on the ground. It seemed to be making the ground very rich; 120 apricot trees made an average growth of four feet; apples, plums, and peaches averaged seven feet. My Mayduke and English Morello cherries were so loaded down with fruit that it stopped their growth. I did not know it ought to have been picked off. Some trees with a light yield made a fine growth of two to two and one-half feet. Bellmay had a little fruit which was very fine, and the tree made vigorous growth. Turner and Golden Queen raspberries have not done anything yet. Snyder blackberries all died. I think it gets too dry for them. Red and white currants both did finely. My strawberries did fairly well for a first year. I found that the ground wasn't rich enough, so I am preparing a new bed. I have it all marked off in square rods and am putting on manure at the rate of 80 big loads to the acre. The Sharpless and Monarch strawberries lead, and sheep manure beats all cheap fertilizers that I have ever tried or seen tried here.—W. A. M., *Utah*.

Children Brought Success.—The chrysanthemum exhibition of the Hampden County Horticultural Society was a success in point of attendance as well as the quality of what was shown. Several who have made a tour of inspection this week, beginning with New York, New Haven, Hartford and Boston, say that Springfield has led in the quality of plants. No other show in the circuit has had such fine specimens of well-grown plants. This may be accounted for in part by having exhibitors who give their whole attention to training plants rather than cut-blooms. While growers about the large cities find specimen blooms the most profitable, it is not so with us. Perhaps the most taking feature was the exhibit by children. Last May the society gave out to school-children 5,000 little chrysanthemum plants, with instructions for growing them in view of this show. About 1,000 were returned, and it was worth all the plants cost to see the children bring in their plants, some with scarcely a bloom on them, while others were really beautiful specimens of "natural growth"; some were in proper pots, some in fruit-cans, some in plain boxes and some in gaily decked boxes or tubs. It was an easy matter to distinguish the boys' plants from the girls', many of the latter using bright ribbons to support the branches to sticks, while a string was as good a fastener as the boys wanted. The satisfaction expressed in the look of the little ones at the thought of being able to exhibit at a flower-show was well worth seeing, and well paid the committee for their hard work. Every

child who brought a plant was given an exhibitor's ticket, bearing a number which was a duplicate of the tag fastened to the plant, that they might claim their plant again after the exhibition. This ticket admitted them to the hall as often as they chose to come in. Besides being a treat to the children, the fact that a young member of the family was interested in the show drew out the older members, thus helping the treasury. This is a good plan for any horticultural society to try, that has hard work in getting out an attendance. Interest the children. They are to be the flower-growers of the future, and what better work can horticultural societies perform, than to educate people in the growing of plants and flowers to the highest perfection? Seventy premiums were offered for what the children might show, ranging from \$2 to 25 cents; besides this, a dress pattern was given to the girl that brought in the best plant grown by herself, and a suit of clothes to the boy who should grow the best plant. Each present was valued at \$10.—W. F. GALE, *Hampden Co., Mass.*

The Season's Length.—Those who make the mistake of supposing that the outdoor garden season lasts but from frost to frost, rely chiefly on tender stuff for adornment. Those who can count on a garden season which lasts from March to December, with some attractions besides during the entire 12 months, in addition to the tender stuff, also freely employ hardy plants, bulbs, shrubs, and vines, and trees, deciduous and evergreen. Singularly enough those who seek the longest season of attractiveness can do so along the most inexpensive lines. They get much greater worth for their money.

Are mealy bugs the destroyers of your peace and plants? Do you think nothing but a darning-needle will exterminate them without exterminating the plant also? Just chloroform them, and thus put them painlessly and expeditiously out of existence. The chloroform evaporates so quickly that it has no time to injure anything but the bugs. Dr. Thornton, of Missouri, discovered this method of dealing with the pest, and gave me the idea, with the privilege of passing it on, if I found it to be good. As yet, I have not tried it on many varieties, there being a dearth of that insect in my collection just at present, but I think if applied with a small brush to infested parts, no harm could result, to even the tenderest plant. Try it!—ELDER'S WIFE.

Preserving Plants.—The plants to be preserved are first freed from dust and washed. A strong solution of crystals of soda is prepared, into which the plants are immersed for two or three days. The solution is prepared by a combination of 18 ounces of crystals to one quart of water; a little caustic lixivium is sometimes added to advantage. The plants are dried between cloths for three or four hours, and are greased either by rubbing them gently with the hand with olive-oil, or immersing them in melted lard. These prepared plants may be colored if desired by painting them with a solution of dextrine containing about five per cent. of solution of aloes; to this coating are applied the proper-colored powders.—*Moniteur Scientifique*.

A Beautiful Scene in Michigan.—Oakland county contains over 350 lakes, ranging from very small to several miles long and a mile or so wide, surrounded by high, usually wooded, hills, and often by tamarack swamps, where frequently grow in profusion cypripediums and other rare orchids, sarracenias and many choice wild-flowers—the wooded slope is frequently a garden of asters, goldenrods, liatris, etc. Alas, these beautiful places are often inhabited by the deadly Michigan rattler! But what I wish to call especial attention to is the view from a boat upon the lake. The shore is greatly varied—hill and valley, gentle slopes, steep bluffs, peninsulas and capes, gulfs and bays, wooded hills, grassy plains, tamarack or arbor-vitæ swamps, pines, white spruces, willows, oaks, etc.—these, with the beautiful water, making a scene of wonderful charm. All about us are aquatics in rare profusion—*Nymphaea tuberosa* (that grand white water-lily!), *N. odorata*, *Nuphar advena*, *Brassenia peltata*, potamogetons of many kinds, myriophyllums, *Anacharis Canadensis*, *Valisneria spiralis*, etc. Along the shore we often see masses of that beautiful plant, *Pontederia cordata*, with its large, handsome, calla-like leaves, and long spikes of handsome blue flowers; *Liatris spicata*; lobelias, and, adding wonderfully to the beauty of the scene, great beds of the *Scirpus validus*, lake bullrush (often eight feet high), *Scirpus pungens*, *S. lineatus*, great burrseed (*Sparganum eurycarpum*), cattail, etc., each species growing by itself in great masses. Nothing can equal the airy grace and beauty of these lake rushes, when viewed from a distance. Could not the landscape gardener derive a valuable hint from this beautiful scenery?—W. A. B.

The Long-leaved Creeping Willow.—The long-leaved creeping willow (*Salix longifolia*) is a beautiful shrub, usually growing in the form of a circular mound (like a mass of foliage) five to ten feet in diameter and one to three feet high in the center. The foliage is very dense, the leaves being long and narrow, and firm in texture; low branches, one to three feet high. The numerous whitish, densely woolly aments expand with the leaves. The stems are prostrate, creeping, rooting their whole length, radiating from a common root. This creeping and rooting property renders this shrub of great value in binding together loose sands, and preventing the washing away of the banks of rivers and lakes. In the wild state it flourishes on sandy, gravelly, stony or clay lands, where water is not stagnant, and drainage is good. A favorite place for its growth is on a steep bank of a stream or lake, or on a steep hillside (often growing luxuriantly on a steep clay hillside)—in these situations trailing down the slope instead of growing in the mound-like form it assumes on level land. This handsome prostrate shrub well deserves the attention of landscape-gardeners. Its peculiar habit of growth especially adapts it to planting in parks or large grounds, in masses well away from other and taller shrubbery, where it will form a bed of beautiful green foliage or on steep banks, in large rockeries. Persons that

grow this willow should remember that it is shrubby and lives many years, increasing in beauty with age, and should not expect too much of it until thoroughly established, say the third or fourth year. It is a native of the northeastern states and Canada. It does not grow in swamps or beside stagnant pools, like other willows. There are two other creeping species, viz., mountain willow (*Salix phylicifolia*, L.) and creeping willow (*Salix repens*, L.), both found in the White Mountains. Of these three species the long-leaved is most available for cultivation. All are handsome.—W. A. BROTHERTON, Mich.

Pruning Raspberries and Blackberries.—There is too much hit-or-miss trimming going on. Avoid it by waiting until the buds have advanced far enough for you to recognize the fruit-buds. The first few buds on the laterals are unproductive; the number of these varying greatly in different years and different sorts. After the leaves have unfolded a little, the difference is plainly discernible. In my first experience in trimming blackberries, I followed the advice of some horticultural journal, "Trim the laterals back to 12 or 15 inches." That year my blackberry crop was a total failure. The Erie has perhaps more unproductive buds than any other variety. This season I did not trim them at all, the fruit all being out on the ends of the canes.—W. B. FULTON, Shelby Co., Ohio.

Horticultural Society of Chicago.—Like most of the fall floral exhibitions, this one is one of chrysanthemums, over and above all and everything else—chrysanthemums big and small, grown to single blossoms and to masses of bloom; in standards, with a height of six feet or more, and 12-inch pots holding great, spreading plants which a 6-bushel basket would scarcely cover—chrysanthemums pretty and homely, regular and precise in outline, and ragged and torn to the verge of absurdity—of all colors, shades and mixtures, save only blue; but still oceans of chrysanthemums, here, there and everywhere, on the floor and on tables, in every part of the great Battery Hall. Of course there were other things—roses in fine variety, carnations also, and even lilies-of-the-valley and *Lilium Harrisi*, looking strangely out of season. There were great masses of ferns and palms, and beautiful displays of orchids and begonias, table decorations and cut-flowers—all combining to make a dazzling and almost bewildering display, with its warmth of color and soft odors, in strange contrast to the cold, gray November weather outside of the big building. A few of the most popular chrysanthemums I will name below. They may not be the choicest to the eye of the professional, but to the inexperienced and the lover of the beautiful they are the choicest of the choice. A plant of Waban, grown in standard form, had a top two feet in diameter and with nearly a hundred fine blooms of soft magenta-pink. A Mrs. Wm. Bowen was very showy and had immense blooms. Of the whites, Minnie Wanamaker, Ivory and Diana were especially noticeable—the last-named being the purest and most dazzling of whites. Harry E. Widener,

Mrs. Frank Clinton and Kioto claimed the most of the attention for the yellows. Lilian B. Bird is always a favorite; Shasta, a white with very similar form, was very striking, and E. Audiguier, a pure dark-red, tightly quilled blossom, was also fine. But this enumeration might continue for half of the entire list—where so much is superb it is hard to make selections. J. C. Vaughan, of Chicago and Western Springs, was especially fortunate in the matter of prizes. Out of a total of 19 classes for which prizes were offered, he took first on 12, and second on three. O. P. Bassett, of Hinsdale, came next, and had a long list of fine prizes scored to his credit.—T. L. B., *Cook Co., Ill.*

Great is the Chrysanthemum!—If any one had doubts on this subject before, the last season should have set all minds at rest. Such shows and blooms and novelties—such chatter and enthusiasm and attention from all classes! And not only throughout the length and breadth of this land, but almost the world over. Even old England claims to have had 150 chrysanthemum shows recently. It is perfectly safe to say that no flower, no one horticultural attraction in the world, ever before received a degree of attention equal to that bestowed during the past few months on this great flower of the sunrise-land. And for this America must be given a large share of the credit, for while other nations have not lacked in enthusiasm for the chrysanthemum, it is certain that American florists have been at the front in developing and growing this wonderful composite. Nor have amateurs been slow in coming forward as growers of the plants to a high degree of perfection, as is made patent by the many premiums won at the shows by this class.

¶ **The California Maybush.**—The hills near San Francisco are beautiful now with the bright red toyon, or Christmas berries of *Heteromeles (Photinia) arbutifolia*, an evergreen shrub or small tree, in masses of bright green foliage, the end of every branch adorned with a large, heavy bunch of berries, more crimson and more delicate than the mountain ash, and of a pleasant spicy flavor. They are green and pear-shaped when young, but swell into scarlet-crimson roundness, the five-toothed calyx-cup remaining on top of the berry, the crimson fruit-stems and petioles adding to the brilliant effect. At Christmas time the markets are full of them and of the white manzanita flowers and mistletoe berries. Every window is decorated with wreaths, but oh, how soon they fade in the hot sun! We have had no frosts here this charming winter severe enough to wilt the Madeira-vine leaves, or the Australian ivy which I saw yesterday, escaped from cultivation, covering a low oak with its tasseled yellow flowers, close by a gorgeous toyon tree, against a tall gray rock, which same toyon I remembered admiring last June, in its great white clusters of bloom. The tree has no thorns, but the blossoms are similar to those of the hawthorn, have ten stamens and five rounded spreading petals on claws. I never saw it in cultivation.—Mrs. K. P. S. BOYD, *California.*

Hardy Plants in the Windows.—Sometimes we see such plants as the fine old Madonna lily (*L. candidum*), gladiolus, Japan anemones, etc., recommended for forcing in the window for winter flowers. Such forcing can be done successfully, perhaps, but at best it is uphill work, because of the long season of growth these plants require before flowers appear. In selecting hardy plants, bulbs and shrubs for winter-forcing, let a preference be given for those that naturally bloom early in the season. Thus hyacinths, tulips, crocuses, violets, creeping phloxes, bleeding-hearts, lilacs, deutzias and all of their early season, say blooming in May and June outdoors, are the best of flowers for window culture; while kinds that flower after July or August will yield bloom only after a long season of painstaking devotion; and the chances are against making a perfect success of the undertaking, even after the most intelligent and persistent care.

The Oleander as a Pot-Plant.—The oleander, when well-grown, is a plant that pays for the trouble it requires with abundant blossoms throughout the summer, excepting very short intervals of rest. With its dark-green leaves and clusters of flowers, it is pleasing to the eye and an aid in beautifying many places. For cuttings take thrifty sprouts, four to six inches long, from the trunk and lower parts of larger branches, making the cuts close to the parent wood so that the enlargement of the bases of the shoots will also be separated. Small branches from the ends of larger ones are not as satisfactory. They contain flower-buds and are more woody in construction. The lower parts of the cuttings are then put into bottles containing fresh rain-water, and the bottles placed in a warm and light place. For home propagation a warm, sunny window will answer all purposes. When well rooted they should be potted separately. It is better to keep the potted cuttings the first winter in a frost-proof room, and not in the cellar. The first years, until the plant is two or three feet high, it should not be allowed to bloom, but all the energy must be concentrated upon the formation of a healthy, straight and strong stem, a good base for the future crown. After this it will produce a terminal cluster of flowers. From the buds at the base of the flower-stalk will spring two or three branches (preferably three). These will form the groundwork for the head. If they grow with equal vigor, no pruning is necessary; but if there is any irregularity, they must be pruned so that the branches may become equal. Plants thus treated produce thrifty and symmetrically formed standards, ornaments to any garden or lawn, increasing yearly in size, and flowering abundantly. If a shrubby form is preferred, it may be obtained by pruning, no high stem being allowed to form from the start. Being a native of warm regions, the oleander delights in sunlight and moisture. Its roots need an abundant supply of water, which must be given daily in dry weather. Watering with soap-water, not too strong, dish-water and liquid manure, are all beneficial. Any good fertilizer from the cow-stable may be suc-

cessfully used as a mulch. Wooden boxes or tubs are best suited for its culture, since they retain moisture and do not allow the soil to bake. In fall, when the weather becomes cold, and night-freeses are expected, the oleander should be covered with old carpets and blankets, and by November 1 stored for the winter. After the plants have finished two years of growth, they may be stored in a cellar. Large plants ought to have their branches tied together, and if too large to stand erect an inclined position must be given, so that the crowns will not rest on the floor. This is to avoid dampness on the foliage. The soil should not become dry but should be kept moderately moist. As soon as the weather is favorable in spring, the plants should be brought out into the fresh air.—IMMANUEL W. SCHAUB, *Will Co., Ill.*

Parsley as a Garden-Edging.—The accompanying illustration represents a path in my garden, 120 feet long and seven feet in width, edged with parsley. (See page 2.) The picture gives but a faint idea of the beautiful and extended view we have. My garden is 30 feet above the river (a branch of the Mohawk), and opposite is a large island; the field in the distance is covered with broom-corn. The mountains are the Helderbergs. This parsley edging has proved to be quite a money-making affair. My little nephew has sold, so far, \$7 worth, and the season is not over yet, for I notice this morning that the plants are as green and crisp as ever. I wonder that parsley is not more cultivated for the profit there is in it.—MISS E. W. LYON, *Schenectady Co., N. Y.*

The Tomato Crop.—Tomatoes have done unusually well in this section this season, notwithstanding the dry weather. I have the following varieties: Mikado, first to ripen, followed closely by Matchless, Ignatum, Chemin, Table Queen, Livingston's Beauty, Dwarf Champion, Shah and Paragon. For good quality and abundance of fruit no one can be disappointed if he plant any or all of these varieties. The Shah and Table Queen, in my estimation, are the best of their class. The Shah has the form and habit of the Mikado, being distinguished from the latter by its yellow or flesh color. and is of value for preserving. The Table Queen is my favorite, and I think it is the best tomato grown, being large, smooth and solid. Some specimens kept in perfect condition for more than four weeks.—HENRY C. TOWNSEND, *N. Y.*

The Ground Mole.—In times past I have been for and against the moles, but just now would favor the extermination, if possible, of the pest. Let me give a mode of capturing them. They like a soft place in winter, and if possible below frost. When the ground freezes over a foot deep, my impression is that most of them are killed. The mode alluded to is to put up piles of weeds or grass, so as to keep the ground from freezing under them. Then, in the winter, when the ground is frozen hard, upset these stacks, and dig down where the moles will be found in winter quarters. This I have seen stated is a sure plan to capture them. Have never tried it myself before, but just now these hills can be

seen on my grounds, to be examined in the winter. This last dry fall I have gone along and pressed down their ridges among my pet strawberry-plants more than a score of times.—S. MILLER, *Montgomery Co., Mo.*

Pruning the Vine.—Six clusters of grapes on a single cane is thought by D. S. Marvin to be unusual. I have several times seen canes bearing six clusters of grapes, but only on one variety, the Eumelan. As the lower clusters on a cane are generally larger, and ripen better, it is well to pinch off the upper ones, leaving only two or three, or, on very vigorous canes, four. This can be done before the vines bloom, and later after the fruit has set, if there are any imperfect clusters. To relieve the vine of these will also benefit the remainder. In spring, when the young growth is about eight inches long, is the time to begin. Pinch the canes two or three nodes above where the upper cluster shows; remove all weak shoots, and if the vines are weak, also some of the bearing canes. Do not allow the vine to overbear. We cannot expect as much fruit on a Delaware, Duchess, Brighton or Iona as on a Worden, Concord or Bacchus. After the laterals have started, pinch them back to one leaf. Some will grow again, and the operation should be repeated. The well-developed, large, healthy foliage, near the fruit, needs this most. On varieties bearing better on canes of six or eight eyes than on short spurs, two or three canes of sufficient length should be allowed to grow before pinching. Vines thus treated will ripen their fruit somewhat earlier, also the wood and eyes, which is very important for the following season.—C. H. GERBIG, *Lackawanna Co., Pa.*

The Japan Plum.—In looking over my notes made this season regarding the merits of the different Japan plums adapted to this section, I am decided in the idea that the Burbank Japan stands at the head of the list. While several others are very good, and deserving attention on the part of fruit-growers, this sort is certainly the best, and will be largely planted when known. H. E. VanDeman, chief of the Section of Pomology, was very pronounced in his opinion as to its value for New York state, in a conversation I had with him a few years since, and I am now sure he was quite right. I shall graft over to this variety next spring what trees I have fit for this purpose. Its beauty, great productiveness, good quality, and hardness will insure satisfactory profits.—S. D. WILLARD, *Ontario Co., N. Y.*

Marechal Niel Rose and other Plants.—Mrs. Mohler asks whether this rose is hardy in Central Missouri. I would answer from what I know of the climate, No. But there are many things not hardy in a trying climate that can be had by a little care and painstaking. One of the finest Marechal Niel bushes I ever knew was in a very cold locality. The plant was set alongside of the dwelling, near a cellar window. During the summer it was trained on a trellis, and in late autumn was pruned of all weak and stunted growth; the long canes made that season were carefully preserved, and the side shoots on them spurred in closely. The canes were then removed from the trellis, and carefully drawn into

the cellar through the window. The stem and all parts outside were heavily banked with earth, and the soil in which most of the roots rambled, mulched with coarse manure. Thus tucked away, it spent the winter, and in spring was drawn out and again tied to the trellis. When such a course as this is not possible, the plant may be pruned in the same manner, and coiled upon the ground and the entire top covered with soil, mounded up smoothly so as to shed the water. Few persons appreciate the value of an earth-covering for half-hardy plants. I once had charge of some immense old masses of *Hydrangea hortensis* planted on the north side of a large building, where no ray of sunlight struck them in winter, and where the soil seldom thawed for months, and a temperature below zero occurred every winter. The blooming of these old plants had been very unsatisfactory, owing to their being continually killed to the ground, although covered with straw or fresh leaves. I adopted a different plan. So soon as the frost had nipped the leaves they were stripped off the plants, the latter pruned of old and useless shoots, and then spread flat upon the ground and held in place by bean poles pinned to the ground. Sods were then cut in long rolls just as for ordinary sodding, and the entire plants were sodded over. The green mounds were not only more sightly, on a highly dressed lawn, than heaps of leaves and straw, but the plants were effectually protected, as was evidenced by their massive growth and wonderful profusion of bloom. On these masses thus left in the open ground, the flowers were always blue in color, while pot-grown plants from them were always pink. In the gardens at the same place we grew a fine collection of figs. These

were treated in a similar way. The trees were branched from the ground. In the fall, after the foliage was killed, the branches were gathered into four bundles and bent to the ground at right angles to each other in shape of a cross, and pegged fast. The soil from the open spaces was then heaped high over the collar of the tree, and sloped down in four ridges, covering the branches so that the earthen mounds looked like four-pointed stars. I have had them, thus tucked away, go through a spell of 18° below zero and bring the early crop of fruit through safely. Here in the south many more tender things can be wintered in the same way. *Erythrina Crista-galli*, cut off above ground and mounded over, comes out in fine style. *Aloysia citriodora* will also rest well under an earthen blanket, and tuberous begonias, with an additional cover to keep frost from the tubers, will come out better than if lifted. Most people in this section leave their tuberose bulbs in the open ground, but this is a mistake, for although the bulbs survive and grow, the flower buds already formed therein are often killed by cold and wet, and people wonder why their tuberose fail to bloom. In several localities in this state, tuberose bulbs are grown in large fields for foreign shipment, and the men who grow them know the proper way to treat them, but amateur growers expect these things to bloom without care. Even for these the earthen mound would generally be effective, but they are all the better for being lifted, cleared of offsets in spring, and reset. In this latitude figs will be better protected by evergreen boughs stuck thickly around the bushes, than by being buried. The same is true of broad-leaved evergreens like *Camellia Japonica* and *Gardenia Florida*.—W. F. MASSEY, Wake Co., N. C.

COMMENTS BY READERS.

[One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

The Pole Lima Beans must not go. (Page 681.) Henderson's Bush Lima fills the bill with us from July 20—about the time wrinkled marrow peas give out—till August 10 to 15, when pole Limas come in. Again from October 1, or thereabouts, onward, late-sown bush Limas have their time. They are then full of pods; and setting a temporary coldframe over them, and also protecting them against frost with straw mats, secures us bush Limas till into December. But both Henderson's and Burpee's dwarf Limas will be largely and exclusively grown in many parts of the country where poles are expensive. Here, however, where we can get plenty of poles, we shall always regard the pole Lima as indispensable.

Must the Pole Lima Go?—(Page 681.) My experience says, most emphatically, No. I raise both the bush and pole varieties; when my customers cannot get pole Limas, they will take the bush variety, and apparently relish them; but as soon as the pole Limas are

ready for picking, the other sort go begging. Individually I think there is as much difference between a pole Lima and a bush Lima as there is between an ordinary cabbage and a Savoy.—THEODORE JENNINGS, Westchester Co., N. Y.

Gather the Leaves (page 681) when they are a little moist, because they then are easier raked, packed and hauled, and lay them on your rhododendron or azalea beds nine or ten inches deep, and keep them there with a few branches, a little thatch or even dirt strewed over them. Gather very dry oak-leaves and pack them around the hollyhock, tritoma, pampas-grass and other plants of precarious hardness. I don't like them on strawberry-patches or rose-beds, because of their mussiness when being removed in spring. Dry leaves held in place with boards, branches or thatch are excellent to pack about and over the walls of an outdoor water-lily pond to keep them from injury by frost. As a heavy bank they are a capital wrap around a slightly built

greenhouse, or a coldframe or cellar, and we always use them for protecting our celery in the ridges in winter.

Zinnia Haageana fl. pl.—You recommend it. (November.) Good! I have grown it many years, and esteem it one of the indispensables. But it differs very much in habit and doubleness. The best form is called *imbricata*. They will never become as popular as the common zinnias, because they are more slender and delicate, to begin with; with age they become sprawly, and there is little variation in the color of their flowers. A dwarf, compact-growing form of recent introduction is a decided improvement in habit. By the way, how the bottom has dropped out of the boom of the carnation-striped zinnias!

Oyster Bay Asparagus is the most esteemed brand in the New York market. (November.) The land here (town of Oyster Bay) is sandy, or deep sandy loam, and this is considered better than heavier or clayey soils. The most curious thing about our asparagus-growing is the deep planting; we use one-year-old plants and set them out in rows four to four and one-half feet apart, and plant the crowns exactly 16 inches under the level of the ground, covering them over only a few inches to begin with, and during the summer a little more at each cleaning time, till the trenches are filled up level. Theoretically, death must soon overtake these deeply buried plants, but in fact they last from a dozen to fifteen years in excellent bearing. During the past thirty years, at least, a great deal has been written about planting deep in order to get white "grass," and shallow to get green "grass," and about the inferiority of the white and the superiority of the green; but in all that time it is the same retelling of the old story, and not one new idea has been advanced. Even for green "grass" I prefer to plant eight inches deep, for the crowns rise a little as they grow old, and it gives me an opportunity of forking, hoeing, or cultivating over the whole surface of the bed when I want to, without injuring the crowns. And the plants are just as strong and healthy as those sown or planted near the surface of the ground. We also indulge in another apparently harsh measure, which is, never to allow a spear of asparagus to grow higher than cutting-size before cutting it clean off; the whole field is kept as bare as the turnpike road till the end of June or first of July, when cutting ceases and the ridges are plowed down and the ground harrowed level. Then there is a grand rush for life, and the stronger choke out the weaker shoots; it is a case of the survival of the fittest. And as the strong ones take possession, they are the ones that set the eyes for next year's crop. When the strong shoots are cut for use, but the small ones spared "for the good of the plants," these small ones must necessarily set many eyes for the following year's grass. This clean-cutting during the asparagus season does away, to a large extent, with the asparagus beetle during its busiest breeding season. To tell you the truth about the cutting off of the old "grass," it is a good deal a matter of convenience. If

we would remove them in the fall we would have to mow them over, rake up and cart them away, leaving the stumps in the ground to bother us next spring; but if we let the old tops stay as they are till March or early April, an ordinary harrow will tear them down, pulling them out of the ground, for they then have rotted off at their connection with the crown and therefore have barely any hold in the earth.—WILLIAM FALCONER, *Long Island, N. Y.*

The Excelsior Peach.—In November number (page 699) "G. R.," in his accurate description of this peach, does what I believe is always the right thing, namely, cautions the public against placing too much confidence in the promises of *any* new fruit; but to class Excelsior with Globe or Wonderful peach, is a mistake. While Excelsior is new to peach-growers outside of New England, it has been growing and fruiting there in many orchards for eight or ten years past. Wonderful was put upon the market without any one knowing of its fruiting qualities, except what was told of the original seedling tree and its fruit. Budded trees from it had never been tested in orchards before trees were offered for sale. About the origin of the Globe I am not much informed, and whether either one will prove of general value in the orchard, I do not yet know. Excelsior, on the other hand, was brought to my attention by its great hardness of fruit-bud in several different orchards some years ago. It was only after watching its fruiting in these orchards for several years that I invested in and planted trees, and I shall plant more in Connecticut every year so long as I can get the land to put them on; for I do believe it can be depended upon to produce fruit nearly every year. Excelsior has never yet been tested in the south, but even a hardy peach is a handy thing to have down here, once in a while; and so I show my faith in it by bringing along 15,000 trees of Excelsior, and planting them with our other varieties here. Some time I may write you of the great peach interests of southwest Georgia, where there are a number of peach-farms of from 200 to 1,000 acres in extent.—J. H. HALE, *Houston Co., Ga.*

Pruning Grapes in Spring.—P. C. Reynolds' experiment (page 702) in pruning grape-vines after they had made an inch or more of growth, calls to mind a case which came under my own observation: Years ago an acquaintance failed to prune his small vineyard until the spring growth had well commenced, when he pruned about one-half of it. The severe bleeding caused him to let the balance go unpruned. In the fall the pruned portion was well loaded with large, fine clusters, while the unpruned part bore but little fruit, and that of inferior size and quality.—Z. C. FAIRBANKS.

The Woodruff Red.—In the November number E. P. Powell makes the following remarkable declaration: "Woodruff Red is a beastly gross affair, without one good point." As I have grown this grape for several years, and recommended it as a valuable and useful variety for general planting, I can not permit the above statement that it is "without one good point," to

go unchallenged; for, from my point of view, there is not a grape mentioned in Mr. Powell's article that has more good points than the Woodruff Red, and I think it would trouble Mr. Powell to name a variety better adapted to universal use in all points excepting only the solitary one that it does not suit his peculiar, individual taste. In many sections where one or two vines were sold upon its first introduction, hundreds are now ordered from the reputation made by the few first sent out. I freely allow that neither my opinion nor that of Mr. Powell changes the character of the grape; but a great many people have tested the Woodruff in my presence, and no one ever expressed any such opinion as Mr. Powell. I have had several persons say they liked it better than the Delaware, and although I could not agree, it confirmed me in the opinion formed long ago, that there was no use in quarreling about diversity of tastes. Allow me to introduce a few words from a letter recently received from an entirely disinterested source—a gentleman who was not a professional grape-grower—which seems to me to sustain just the position I take. He says: "In a recent number of THE AMERICAN GARDEN is a rather autocratic deliriance from a Mr. Powell in regard to the merits of different grapes, which among other things says, in substance, that the Woodruff Red is a gross and beastly thing, unfit for cultivation. This leads me to conclude that one can hardly depend upon the evidence of his senses as regards the value of any variety of fruit, and that it is after all more a question of locality or personal preference than anything else. In the spring of 1887 my brother bought a vine of Woodruff Red—of you, I think—and I have since eaten of the fruit of it; and it seems to me an exceptionally fine grape, superb in appearance and pleasing to the palate. My brother has most of the leading varieties in cultivation, and gives this the preference. The last season he has sold a large quantity of different kinds to a near-by market, and the Woodruff Red was the favorite over all others."

I will offer the testimony of only one other, as to the "good points" in question. It is from Mr. Powell himself: "*Woodruff*. A red grape of superb foliage; fine bunch, large berry; ripe the very last of September. Quality excepted, Woodruff is a great acquisition; but it is not good to eat, and it is very late." I should also differ with Mr. Powell quite as much in my estimate of some other grapes which he commends highly, but which are of little value in this locality. This, however, only goes to show that it is unsafe, if not unfair, to condemn a variety as wholly unworthy or "beastly," simply because it may not be adapted to our locality, or suited to our personal taste. The Hubert grape, so highly praised by Mr. Powell, I have found, in favorable circumstances, all he describes; but in unfavorable seasons, cold and rainy at the time of ripening, it has been wholly poor and almost flavorless. The Lady grape, which Mr. Powell finds so unproductive and imperfect in its clusters, is in other places just the reverse. Persons have written me they wished

Mr. Powell could see their Lady vines, whose fault was that they bore too heavily, and required thinning. Brighton in unfavorable seasons has poor clusters, and is unproductive; and I think it has Mr. Powell's "dead flavor" when over-ripe. In favorable circumstances, however, it bears well; and if eaten when just ripe it is very good—even better than the Woodruff—but when the two hang long on the vines, side by side, the Woodruff, like the Niagara, improves, while the Brighton acquires the "dead flavor" and is poorest of all. The Empire State also has been a disappointment to many, and will continue to be so if it is allowed to over-bear, which it will do if permitted. I find it a strong grower, with healthy foliage and perfect blossoms, setting its fruit well even in unfavorable weather. It almost always forms about twice as many clusters as it can bring to maturity; and unless severely thinned, the consequences are as described by Mr. Powell. The grapes do not ripen; they shrivel, fall from the stems, and are of no value. If half or two-thirds of the clusters are removed as soon as bloom is over, the Empire State will give very different results, according to my experience. The Jefferson also requires the same treatment, when it will ripen perfectly and leave little to be desired in excellence and beauty.—GEO. W. CAMPBELL, Ohio.

"**That Little Curl**" of Marvin's.—(Page 616.) I am as much surprised at friend Marvin's surprise as he was surprised at seeing six clusters of grapes on one cane. I have produced six bunches so often, and in a few cases seven on one cane, that I was under the impression it was quite a common occurrence. I have vines of Wyoming Red, from which was taken a cane 11 inches long with seven clusters from three to five inches in length. I have also repeatedly cut canes with six and seven bunches in from 13 to 15 inches from Elvira, Noah and Early Victor. The theory that pinching or spring pruning has a tendency to cause the vine to produce heavier crops is probably correct. I am a great advocate of spring pinching-pruning, but I am in some doubt as to whether it is an advantage to varieties that are highly productive, as is the case with several of the *labrusca* family. 'Tis a true saying, "It takes a brave heart to trim the vine," for there are few who trim close enough. Moore's Early, condemned by many for not being productive enough, has always given me a good crop of fruit, due, I believe, to the mode of severe pruning. In trimming I leave one or two eyes, never more than three; then in the spring pinch the young growth one or two joints beyond the last cluster, while quite small. The sooner this is done after the clusters show themselves, the better, as it concentrates the sap in the fruit and makes it grow larger; the leaves also grow larger, and being more fully developed resist disease better. Still, this pinching process should not be carried to extremes. Whether spring pruning makes the grape produce more or not, is a question, but it certainly makes the clusters and berries much larger.—GEO. R. WOOD, Jefferson Co., Ky.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Alyssum is a most useful house and garden plant, and a good stock should be provided for in season, either by growing the seed or propagating from cuttings.

Asaleas may be had for a longer time in bloom, if part are kept in various degrees of temperature, some for late to be kept quite cool, and others warmer. Those for immediate flowering can have considerable heat, and an abundant supply of water. Plants going out of bloom ought to have a warm place and plenty of water on top and at the root, to induce good growth for next season.

Begonias, after blooming, should have the older growth trimmed out, and should be kept rather dry at the roots. After new shoots have started, somewhat later, shake out the present soil, then repot into pots of same size, using fresh soil. To propagate the rex division, take well-matured leaves, and cut the main ribs on the under side at half a dozen or more places, just below their dividing-point, lay the pieces on the propagating bench, with a little sand on top to keep them well down. Pot off each piece when roots have formed. The flowering sorts are propagated from cuttings kept rather dry while rooting.

Borders.—Manure roughly spread over them will protect the roots of perennials, etc., and provide needed plant-food. This will greatly aid in bringing good growth and fine bloom next season.

Caladiums, and similar tubers, stored for the winter, should be overhauled to make certain of their safety and well-doing. Mice and other enemies often destroy them.

Callas are subaquatic, and there is very little danger from over-watering, provided the crocks are provided with good drainage. They do not flourish in sour mud. Give them very rich soil, good drainage, plenty of water and plenty of room, and in proper temperature they can not help but do well.

Camellias.—Give them a temperature of not over 50°. Sponge off leaves several times a week.

Carnations.—After blooming, clean out and retie the old stalks. Syringing in bright weather will help to clean the plants of red-spider. A little lime-water given once in a while seems to be of benefit.

Dahlia-roots to be treated like caladium-tubers.

Ferns.—If those in cases are overwatered, the soil becomes sour. It is always best to keep the cases somewhat open for a few days after watering. Airing should be given daily by tilting up the glass when no dust is moving.

Fuchsias brought from the cellar at intervals for succession of bloom, should be pruned as needed. A week or more later, as new leaves show, repot into light rich soil, using pots a size smaller than those the plants were taken from.

General Greenhouse Management.—Ice and snow are a fruitful source of glass-breakage. When the edge of the roof overhangs any kind of lean-to, or the end of an abutting glass-house, an ice-shield should be provided for the winter. For the removal of soft snow, use a light scraper, some three feet long, to ride on the glass-bars. For a shovel, one having a blade fully eighteen inches wide is best. More room between the plants should be given as the days become longer and lighter. Crowding plants never shows them off to good advantage. Estimate the number of pots required, being sure to calculate on enough of them, and engage them at once for prompt delivery. Always scrape off and wash old pots before putting new plants into them. Ventilation should be given on all favorable occasions to insure health of the plants.

General Management of House-plants.—Where coal is used as fuel, there can be little trouble in keeping up the required temperature. A light wooden frame, of a size convenient to handle and covered with paper on both sides, set between the plants and the glass, will help to keep out cold. In very cold nights a lamp may be kept burning near the plants with benefit. Another good way of giving protection in an emergency, is by placing all movable plants on a table away from the window, and covering them with newspapers. Where but a few plants are kept, scale, mealy bug, etc., may be kept off by hand-picking. A wet sponge or other methods of applying water will keep off red-spider. For the purpose of securing good early plants for spring use, all cuttings of a suitable size can be started in a box of sand in a warm sunny place. Plants to furnish good slips should be kept somewhat pot-bound.

General Lawn Management.—Snow often injures deciduous and evergreen shrubs, and should be shaken out after every heavy snowfall. A light board shelter placed over each young tree will afford a good protection. When drifted about young trees above the limbs, it should be shoveled away to prevent injury from it on settling. Trellises, labels, arbors, rustic vases, etc., required for next year, should now be made. Cedar can now be had from the swamps while the ground is frozen. It is most excellent timber for the purpose. Walks ought to be neatly cleaned up after each snow-storm. Scatter salt or ashes over slippery places.

Geraniums.—Old plants, to be kept in good growth, should in each case be repotted a few days after cuttings have been taken. In the tricolored section nothing suits better than shelves near the glass in a rather dry house, with about 55° of heat.

Hedges of the deciduous kinds may now be clipped, *Hyacinths* and other Dutch bulbs should now bloom. They require sunlight and an abundance of water; in

fact, they can be grown in water alone. As they pass out of bloom, remove the flower-stalks and set the pots in a cool but not dark place, watering moderately until spring, when they can be planted outside.

Hydrangeas, if wanted quite early, may now be started. For general use, a month or more later will be better.

Lemon Verbena should be treated like fuchsias.

Lilies-of-the-valley that were started earlier in sand, or are now to be started, can be brought in twice a month. If the clumps are of good quality, and rightly treated, they will bear above 80° bottom heat, and nearly as high for the house. To obtain the finest bloom, shade with cloth to keep off the sunlight and cold air.

Mignonette, of the earliest sown, should now be in bloom in a temperature of 45° to 50°, while plants for spring bloom must be kept somewhat cooler. Guard against frost, and keep them near the glass. For house use, seed may now be sown.

Orchids now at rest ought not to have more water than enough to prevent the buds shriveling. *Vandas*, *aërides* and the like may require rather more than the fleshy *oncidiums*, *cattleyas*, etc. The required watering must be done with care, so that the foliage shall not become wet; and the early part of the day is the best time for this. Keep the temperature quite regular throughout the dormant season.

Pansies.—When stock from seed sown in fall is not at hand, seed sown this month will make good spring-blooming plants.

Pelargoniums like a warm situation, with air and sunlight. Much of their beauty depends on their free growth at this season.

Perennials.—*Delphiniums*, *sweet-williams*, *hollyhocks*, etc., if seed be sown now in the window or greenhouse, with fair treatment until planting-out time will bloom by September. Summer seedlings of these plants should be given some winter protection.

Petunias.—Propagate from cuttings as fast as good growth permits. Seeds also may be sown this month.

Plans for making improvements about the place at this season should be worked out. Good results can not be obtained if the planting is done promiscuously in the hurry of the spring work. Orders for stock should also be made out at once, and forwarded to the plant-dealers and seedsmen for early attention.

Primroses of the double-white class ought to receive careful attention, with a view to propagation later on.

Propagating such plants as *heliotrope*, *geraniums*, *car-nations*, *verbenas*, and other summer-blooming plants, should be well under way this month. *Geranium*-cuttings may at once be put in thumb-pots for rooting; but be watchful in the matter of watering them.

Seed-sowing.—*Mignonette*, *petunia*, *maurandia*, *ten-weeks'* stocks, *cobelia*, *golden-feather*, *verbena*, *Salvia splendens*, *sensitive-plant*, *dianthus*, *antirrhinum*, and *mirulus* may be sown for early strong plants.

Roses of the hardy class, if not earthed up a foot or so, may be helped by the use of coal-ashes for this purpose. This will insure their safety.

Scizanthus want about 50° heat, with air and light. Staking should also be properly attended to.

II. GARDENING FOR TABLE AND MARKET.

Asparagus under glass should be watered without stint if best results are desired.

Coldframes, containing vegetable-plants of any kind, should have all the air possible on suitable days. Clean off all decomposing leaves, and stir the surface of the soil should it tend toward hardness.

Apples and other fruits in winter-storage need frequent examination, and prompt removal of rot-specked specimens. Keep in a temperature of about 34°, and well ventilated.

Boxes for Seed.—The so-called "flats" are a great convenience for sowing seed in, to be placed in frames, hotbeds, etc. We obtain a full supply during the winter by arranging with our groceryman to save for us all the boxes in which he receives canned meats, etc. These are of just the right depth and of a handy size. Gardeners can get them in almost unlimited quantities and at a merely nominal price by speaking to a number of grocery-men in their vicinity about them. Such flats can also be made of starch or soap-boxes.

Cucumbers under glass require a night temperature of 70°, and a day temperature of 80°, and more in full sunlight. Full information on cucumber-forcing was given in December issue. It is a promising industry for the skillful gardener. Do not encourage the plants excessively with stimulants, unless the plants are quite strong.

Grapes now starting should not have more than 35° at first, and be well syringed twice a day to assist the breaking of the buds. As the young growth appears, air should be given sufficiently to prevent its being weak and the foliage thin. Take advantage of mild days for this work.

Insects of most kinds that affect fruits need not be greatly feared, if the grower makes up his mind to use arsenical sprays in their proper time. The codlin-worm especially can be readily disposed of by these means. The plum-curculio does not yield so readily to this treatment, and the old jarring process may yet have to be depended upon. At any rate, it behooves every grower to make himself fully acquainted with all these questions, then to procure the required apparatus and drugs; and this should be done as soon as possible, in order to have everything on hand when needed.

Labels on fruit-trees should be inspected, in order to replace the old ones with new ones before the names have become illegible; or at least the names should be written in anew. A heavy pine label, painted with white-lead and written on before dry with a soft lead-pencil, is excellent. Strips of zinc, moistened and written on with lead-pencil, are perhaps even better. Attach them to a small limb with copper wire. Never put the wire around the body of the tree, because if neglected the wire may choke it.

Lettuce which has been kept growing in hotbeds should be watched for greenfly and damping-off of the leaves,

which often takes place after a long spell of cloudy weather. Spread a layer of cut tobacco-stems upon the soil about the plants. This will aid in keeping the greenfly off. Be sure not to overwater, and give plenty of air on all suitable days.

Manure is the great requisite above all others for the garden and orchard. Be sure to make full provision for all that can be used to good advantage. The compost can usually be drawn to the garden more easily and cheaply now while the ground is frozen and labor cheap, than at almost any other time. Order and secure what fertilizers you may need, also wood-ashes, which are a splendid manure for both garden and fruit crops. Bonedust and phosphates can be applied almost any time, even in winter. Nitrate of soda should not be applied until pretty near the time when the plants need it. Stable-manure should be spread out evenly over the ground as fast as drawn out. Good horse-manure should be saved for hotbed use. Where but one or two horses are kept, and the manure has to be saved for a long period for hotbed use, it may be spread rather thinly under a shed, and if possible kept from heating until almost time for use. Then throw it into a large square heap, and allow it to come to a heat. Then fork it over several times, at intervals of a few days, and it will be in good condition for use.

Mice often become very troublesome in hotbeds and celery-trenches. You can easily trap them with a so-called "delusion trap" (every hardware-dealer keeps them), if you only keep the trap well baited and set.

Mulching material on strawberry-beds, etc., is liable to be blown off by heavy winds. Boards and evergreen branches placed over it will prevent this. Coal-ashes

make a good mulch for trees, and small-fruit plants of all kinds.

Mushrooms.—The temperature of bearing beds should be kept as near as possible to 60°. A steady temperature greatly prolongs the crop. Save manure for new beds.

Orders for trees and plants wanted for spring setting should be made out at once, and sent early to your favorite nurseryman. We do not advise you to trade with the tree-agent. You can get your stock cheaper when you buy direct from a reliable nurseryman, and if things do not prove to be up to the mark, you can hold him responsible.

Pruning can be done at any time, at the convenience of the owner, in the winter. Good judgment is needed in this work, or the injury may overbalance the benefits from it.

Rhubarb under glass to be treated like asparagus.

Root-grafting may be done now. Pack the grafts in sand or sawdust ready for spring planting.

Seeds.—A list had better be made out at an early date, and the order given to your favorite seedsman without delay. Fortunately there are many reliable seedsmen in the United States, and you can hardly go amiss if you order of any one having an established reputation. Always buy seeds of highest grade. The cheap stuff is not worth bothering with. Send for the catalogues of our most noted dealers, study them carefully, and pick out what you want. Plant the reliable well-known sorts for main crop, and the novelties for trial only.

Strawberries under glass must not be allowed to overbear, or you will get rather small berries. Apply the syringe to keep down red-spider, and avoid excesses in temperature and watering.

THE NATIVE WHITE PINE.

(See *Frontispiece*.)

UNDOUBTEDLY the most majestic and picturesque tree of northern forests is the familiar white pine, and no other is so valuable in the common arts of life. It has a wide range throughout the north, extending from Newfoundland to Winnipeg, and covering immense tracts in Maine, New York and Michigan. It is found scattered along the Alleghany mountains to Georgia, although in lower levels it reaches little beyond Michigan and New York. It follows the sandy shores of Lake Michigan throughout their length upon the east. The white pine is the leading lumber-tree of northern forests, although much of the Michigan, Wisconsin and Minnesota pine lumber is the product of *Pinus resinosa*, the red or so-called Norway pine, which we illustrated in the November number.

As an ornamental tree the white pine deservedly stands high; for while it is a strong grower, its long and flexile leaves relieve it from that feeling of harshness which

attaches to the Austrian and Scotch species. And its very familiarity is a strong point in its favor, for it strengthens the ties of old associations, and carries our thoughts into our own woods and over our own hillsides. It takes kindly to cultivation, too, demanding only a dry and rather loose soil, and no extra attention. It is too coarse for the immediate vicinity of the house, yet it can come closer than the other large pines. The long, slim cones of this pine distinguish it from all its congener in the east, and they have about them more grace of form than any other pine-cones which come within the possibilities of our gardens.

But the white pine is most characteristically a part of our landscape when it stands alone in some field or on some declivity, shorn of some of its limbs, and bravely struggling against the inevitable march of time. We appeal to our readers to spare these isolated sentinels; and we hope that they will not forget to give the younger brood a place about the home.

HE THAT QUESTIONS



MUCH SHALL LEARN MUCH
BACON.

QUESTIONS ASKED AND ANSWERED.

It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists.

Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the 5th of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2689. **Cold-storage for Fruits.** How should a cold-storage house, especially for storing grapes, be built? Some of our fruit-growers are thinking of joining for the purpose of putting up such a structure, if we can get the necessary information.—G. M. A., *Boulder, Cal.*

2590. **Transplanting Hemlocks.** When is the best time or the work? How far apart to grow handsome individual trees?—V. R., *Youngstown, O.*

2691. **Transplanting Large Trees.** In large cities there are persons making a specialty of doing this. Will you tell us the ways and means by which they succeed?—J. C. B., *Utica, N. Y.*

2692. **Bean-growing.** Please tell us something about the field-culture, handling, etc.? I wish to grow beans in my young peach-orchards.—K. B., *Graz, Ky.*

2693. **Pear Trees from Cuttings.** Can I grow Kieffer and Bartlett pear trees successfully from cuttings? If so, how shall I proceed?—F. I. P., *Atlee, Va.*

2694. **The Garber Pear.** Is it desirable for this locality?—A. B., *Winona, Can.*

2695. **Mice Girdling Trees.** What can we put on the trees in the way of paints, etc., to prevent injury? Mice are very plentiful here.—G. E. F., *Freeman, Can.*

2696. **Sawdust as a Mulch.** We have a large pile, 25 years old, close by. How would it do for mulching strawberries? and how should it be put on?—A. C. K., *So. Warsaw, O.*

2697. **Market for Sweet-peas.** Could you give me the address of a good man in New York city, or elsewhere, to whom I could consign or sell sweet-peas in their season?—W. L. O., *Gates, N. Y.*

2698. **Catalpas for Timber.** Are the hardy catalpas valuable for timber? At what time should seed be sown?

2699. **White Thorn for Pear-stock.** Is it good, and if so, for what purpose?—N. L. C. M.

2700. **Grapes in California.** Please give description of cultivation and pruning in use in California.—S. C. C., *Marietta, Georgia.*

2701. **Wintering Cabbage-plants.** When should seed be sown? and how is coldframe made to winter them in?—E. C. W., *Zanesville, O.*

2702. **Diseased Grape-leaves.** What causes the grape-leaves to turn yellow on the edges, as if scorched by fire? What is the remedy?—C. B., *Payson, Utah.*

2703. **Free-blooming Roses.** Please name a dozen or more that come the nearest to being constant bloomers.—J. L. P., *St. Louis, Mo.*

2704. **Propagation of Clematis.** Please describe some good method of propagating *Clematis Jackmanni*, and others.—B. J., *Montreal.*

2705. **Fertilizer for Plum Trees.** What is the best?

2706. **Pears after Apples.** Will pears succeed in an old apple-orchard where the apples have died out?—G. W., *Antioch, Ohio.*

2707. **Planting a Flower-garden.** The space has 85 feet front and 30 feet depth. How would you arrange walks and beds? What flowers would you plant for succession of bloom?—Mrs. M. M. C., *La Grange, Ga.*

2708. **Muslin Bags for Bagging Grapes.** Where can they be bought? Do you know of any other good bag that can be fastened without pinning?—W. S. H., *Montclair, N. J.*

2709. **Composting Night-soil.** Is there any good method by which it can be speedily and properly reduced to a good garden manure?—S. M., *Buxton, Pa.*

2710. **Best Stocks for Pears.** Are pear trees on native seed as good as imported stock? Will dwarf pears do as well on quince-stocks raised from seed as on stocks from cuttings?—A. S. L., *Willard, N. Y.*

2711. **Growing Cranberries.** Please give some information?—F. E. B., *Fortville, N. Y.*

2712. **Onion and Cabbage-growing.** I desire to learn all about it. Have never raised any. Where can I buy a garden seed-drill? and what will it cost?—M. P. B., *Huntsville, Ala.*

2713. **Annual Flowers in Lily-beds.** What sorts can I plant that will not injure the growth of the lilies?

2714. **Flowers for Shady Places.** What sorts can I use? Will tuberous begonias grow in shade?—M., *Boston.*

2715. **Yellow Gladiolus.** Which is the best sort?—J. M. B., *Columbus, Ind.*

2716. **Anemones in Coldframe.** Will potted anemones bloom the first winter, if properly treated? They were planted about October 1 outside, in a frame covered with sash in cold weather.—W. H. C., *Ewart, Mich.*

2717. **Nitrate of Soda on Onions.** Will it pay one to use 500 pounds on 1½ acres? Common manure scarce and hard to get. Will such application be liable to kill the seed?—B. P., *South Elgin, Ill.*

2718. **Hammond's Grape-dust.** Has this proved effective for grape-rot and mildew? How often should it be applied? Is it preferable to Bordeaux mixture and easier applied? Would you risk a crop of grapes on it?—W. S. H., *Montclair, N. J.*

2719. **Watering Celery Stored in Trenches.** How should it be done? Celery unbleached, put in the trenches for winter use.—J. H., *Defiance, O.*

2720. **Propagating Hibiscus.** Will cuttings start quicker in soil or in water?—Z. W. B., *Bryan, O.*

2721. **Wintering Canna-roots.** What is the best method?—R. F., *New York.*

2722. **White Grub in Strawberry-beds.** What can I do to get rid of them?—R. F.

2723. **Cabbage Root-fly.** How can we best protect our cabbages?—F. W. Y., *Ohio*.

2724. **Fruit-trees for Missouri.** What varieties of the several tree-fruits can be recommended?—*Northern Missourian*.

2725. **Gueii Plum.** Can it be recommended for western New York?—G. F. T., *Syracuse, N. Y.*

2726. **Manure for Hotbeds.** Horse-manure not easily procured here. Can you recommend a substitute?—A. S. M., *Aaronsburgh, Pa.*

2727. **Prevention of Plum-rot.** What is best to use? Would any of the mixtures recommended for grape diseases be good?—W. B. F., *Kirkwood, O.*

2728. **Hedge Management.** How should we treat our hedges to make them perfect?—F. M. N., *Toronto, Can.*

2729. **Roses Failing to Bloom.** Jacqueminot and other hybrid roses yielded magnificent bloom the first season after planting. They were well treated, and have made a most rampant growth, but not another blossom. What can be amiss?

2730. **Draining the Garden.** Soil a stiff heavy red clay filled with granite and limestone. Does it need tile-draining? If so, how should it be done?

2731. **Silkworm Eggs.** Where can they be procured? and can they be raised in dry cold latitudes, with eight months of winter?—A. P. T., *Petoisky, Mich.*

2732. **Winter-storage of Bulbs.** I put my tulip bulbs and some others in paper boxes or bags in a cold room, if I do not wish to plant them until spring. Can the following bulbs—tuberose, calla, spider-lily, freesia, Spanish iris, Easter Lily, Persian ranunculus, *Hyacinthus botrioides*, Chinese sacred lily—be kept the same way? or how?—M. I. S., *Patchogue, N. Y.*

2733. **Training Dewberries.** My Lucretias have made eight feet of growth. What is the best way of training them? Will a straw mulch suit them?—D. A. C., *Chatham Center, O.*

2734. **Willows Poisoning Water.** I have an ice-pond, surrounded by willows. I am told they poison the water. Is this true?—G. S. S., *New York*.

2735. **Nut-growing for Market.** What kinds, if any, would succeed and be profitable near Kansas City, Mo.?—T. A. P.

2736. **Pine Sawdust as Manure.** Is it better than straw? Can it be recommended as a mulch around trees?—W. A. M., *Utah*.

2737. **Remedy for Apple-tree Bark-lice.** What would you recommend? Is there any way to prevent their appearance?—E. W. W., *Me.*

REPLIES.

2620. **Increasing Easter and Auratum Lillies.**—That depends on how much you wish to increase them, and why, your knowledge of, and inclination to these things, and convenience for them. They can be increased from scales or from seeds, and such stock three years old will make blooming plants. There is also a natural increase of large and small bulbs every year. After the plants have finished their growth and died down, the bulbs may be dug up and the ripest ones, that is, the large ones that most readily separate into scales, may be broken up, and the scales sown broadcast in shallow flats in sandy soil, and covered over an inch deep. Then put the flats into a partly-shaded coldframe to stay till the following spring, when the scales will have calloused and small bulbs begun to form. Leave them in these flats for a year, and next year transplant the bulbs into a frame. Auratums do not break up so well, but are easily raised from seed; the seeds, however, may take six, twelve or twenty-four months to germinate. We sow the seed as soon as it is gathered, in flats or in frames, and keep them cool over

winter, no matter if they do freeze. Our cut-flower florists insist that it does not pay them to raise their lily-bulbs or keep over old ones, and just as soon as the pot-plants have done blooming they dump the bulbs into the rot-pile. Yes, the bulbs would be good enough for blooming another year, but not so good, they claim, as fresh imported bulbs, and they can not afford to run any risks or grow second-quality stock.—WM. FALCONER.

2627. **Prickly Comfrey for Forage.**—The plants grow well, and one dairyman in New York state has grown fifty tons per acre. This is an exception, and it can safely be said that farmers can not afford to grow the crop in place of corn, rye or clover for soiling purposes. In several feeding-trials the writer found it very hard to induce cows to eat it. When eaten, good results were obtained. It is easily propagated by dividing its roots, and for this reason it is difficult to eradicate. To destroy the plants plow out and pick them up.—WM. H. CALDWELL.

2614. **Pears for Profit.**—Of 100 trees to be divided between Bartlett and Anjou, I would plant seventy-five Bartlett and twenty-five Anjou. The latter are not quite so well known as the former, but the trees are a little more vigorous and hardy, and less liable to blight. But why confine the list to two varieties? Would it not be better to have a succession? An orchard of one or two varieties may embarrass the owner to harvest, from the difficulty of getting additional outside help in an emergency. But the regular force on the place can more easily gather the fruit if it ripens gradually through the season than if all at once.

Then again, the table is much better supplied by a succession of earliest to last. Here is the difficulty. There are few good early pears for either table or market. The Osband Summer is a pretty little early pear, of fair quality, but the trees are so very subject to blight that I would not plant it again. For a late variety do not under any circumstances plant the Rutter. It came highly recommended to me for its good qualities, but it is without exception one of the poorest pears I ever tasted. I would not give the tree standing-room in the orchard. Neither would I plant the Seckel. The trees are vigorous and tolerably free from blight, but the fruit, although of fine quality, is too small for market. My answer so far has been to tell people what *not* to plant—information that would have been *very* valuable to me a few years ago.—T. E. GOODRICH, *Ill.*

2726. **Manure for Hotbeds.**—The difficulty of obtaining a sufficient quantity of horse-manure of the right kind for hotbed-making is one experienced by many gardeners, but it is not one that should discourage anybody. Of course it is generally conceded that fresh horse-manure from well-fed and hard-worked horses is unsurpassed for hotbed-making by any other manure. While dry straw should be sorted out, any coarse litter that is well wetted with urine, is all right and may be left in. Dry leaves, gathered in fall or early winter, and used for bedding, also come handy to add to the bulk of the manure. Sheep-manure can also be used to good advantage, and even hog-manure, from well-fed animals and mixed with sufficient litter, will answer. In short, any manure that is rich and moist (not wet) can be used for this purpose. Once we had a quantity of muck from rabbit-pens, mixed with the animals' dung and urine, and this gave a good,

moderate and lasting heat. We believe that, in the absence of horse-manure, mixtures of such materials as dry muck, forest-leaves, sods, straw, hen-manure, ashes, bonedust, etc., could be made that would answer quite well for hotbed use. This really is a matter of great importance, and we can only wonder that there are no reliable experiments of this kind on record. Our Experiment Stations could make themselves quite useful by taking up this work, and by inaugurating systematic experiments, with a view to finding a good, serviceable substitute for horse-manure in hotbed-making. On the other hand, it might be said that hot water, circulating through a system of iron pipes, is about as good a substitute as ever will be found.

2721. **Wintering Canna-roots.**—Canna-roots should be kept warm during winter. If the place is warm and moist, says the *American Agriculturist*, they will start to grow; but this will not injure them, as in their native habitat they are evergreen and ever-growing. When they are kept warm and dry, they will shrivel somewhat, but without serious injury, as they are tenacious of life. If frost reaches them they will surely die; if kept cool and moist they will surely rot; but if they are kept in any warm situation, they will just as surely live. These conditions are of especial importance with the so-called French hybrids, which should be taken out of the ground before the frost has killed their foliage.

2719. **Watering Celery Stored in Trenches.**—Celery if properly stored in trenches in November or December, needs no attention from the time it is put in until taken out for use or sale, except proper protection to keep it from taking harm by freezing. No watering is required. The trenches should have drainage enough so they will not fill with water, causing the celery to rot. The bottom of the well-covered trench cannot be otherwise than moist, and this is all that is required to keep the plants fresh and in a somewhat active state. When celery is stored in boxes, or directly on the floor of a rather dry cellar, the plants may wilt from want of moisture at the roots and rapid evaporation from the leaves. In such case it would be advisable to saturate the ground on which they stand, in the boxes or on the cellar floor, at reasonable intervals as needed. But the foliage should be scrupulously guarded against contact with water, as this would surely lead to rot.

2694. **Garber Pear.**—This is a good variety in the southern and middle states. In a general way it partakes somewhat of the character of the Kieffer, and where the latter can be grown with success and profit the Garber is likely to do still better. At any rate it is worth a trial. Whether it is suited to sections as far north as Canada, we are unable to say. It has not yet been fully tested.

2693. **Pear Trees from Cuttings.**—Probably all fruit-trees can be grown from cuttings. With the Kieffer and LeConte pear it is a common method of propagation in Florida, Georgia and other southern states. LeConte cuttings in Florida take root in open ground almost as readily as a willow. Greater difficulty is experienced in northern locations, and we can make a success of rooting such cuttings only in hotbeds or greenhouses. The procedure is about the same as with any other kind of cut-

tings. Make them six or eight inches long, and insert up to the top bud in a bed with moderate bottom heat. If the cuttings are made in the fall, tied in bundles and kept in moss or sand in the cellar over winter, they may be found calloused by spring, and possibly strike root if planted out and treated like grape-cuttings.

2706. **Pears after Apples.**—There can be no objection to planting a piece of ground with pears after the apple trees have died out by old age, provided the ground is in fertile condition, or well enriched with the proper manures. Fruit-trees require plenty of food to bring out full crops, as the latter remove a great quantity of fertilizing materials from the soil. Starvation is only too often the cause of poor fruits and poor fruit-crops, as also of trees dying out long before their time. If the old apple-orchard is of this kind, it would be far better to select another piece of ground, but if used for a pear-orchard good compost must be used without stint.

2705. **Fertilizer for Plum Trees.**—We do not think that you can find anything superior to wood-ashes, alone if leached, with bonedust or superphosphate if unleached. The unleached ashes can be applied in almost unlimited quantities with good results. If the ashes are unleached you may use fifty or sixty, or even more, bushels per acre, and several hundred pounds of bonedust. In place of the unleached ashes in this combination, you may use muriate of potash at the rate of 400 pounds per acre. If you can get neither ashes nor potash salts, use thirty or forty loads of good stable-compost per acre. A reasonable quantity of the latter would probably be of benefit even with bonedust and ashes, especially if the ground should be but scantily supplied with humus.

2708. **Muslin Bags for Bagging Grapes.**—The ordinary cheap grocery bags answer first rate for bagging grapes, and the labor of pinning them on is not so very formidable as to be feared. Cut the upper corners off in such a way as to allow the two flaps to fold nicely over the cane (with cluster inside the bag), and pin above. A firm in Ohio sells two-pound manilla bags, with a piece of thin wire attached near the upper (open) end, which wire can easily be twisted around the neck of the bag, thus securely enclosing the bunch. These bags are advertised under the name "Ohio grape-protectors." Any one preferring muslin bags can have them made quite easily and cheaply of the very thinnest and cheapest kind of muslin (cheese-cloth). A good seamstress will sew a great many in a day on a good sewing-machine.

2709. **Composting Night-soil.**—The sooner Americans learn to dispense with these dead pits, the deep privy-vaults, and to use instead earth closets, that are entirely above ground, the better for their health and welfare. Dry soil or muck, or sifted coal-ashes, should be used with such liberality that the resulting material is reasonably dry, and entirely without offensive odor. In such condition it is immediately fit for a garden, orchard or field-manure; but it may be still more improved by composting it for a while with fresh horse-manure, or indeed mixing it with any other manurial substances.

2682. **Planting Tree-seeds.**—The time for planting different kinds of forest and fruit-tree seeds varies. Some should be sown soon after ripening, others require

treatment for first rotting or softening the outer coat. Ash seeds, after ripening in the fall, should be placed in layers of light earth or sand for a year to rot the outer coat. Beech-nuts may be kept in dry sand until the following spring, and then be sown in nursery row. Birch-seeds should be treated like those of beech, except that it is recommended to turn over the soil and seeds at intervals until planting-time. Chestnut, maple, walnut and oak-seeds do better for being sown when gathered in the fall. Seeds of elm mature as early as May and June, and may be sown at once—indeed, if the sowing be deferred, germination will not take place until the following spring. Thorn-seeds should be rotted in a heap of sand for twelve months before sowing. Seeds of fruit-trees are usually sown either in the fall, directly in the seedling rows, or else are mixed with alternate layers of sand, and kept exposed to freezing and thawing until spring, when they are planted out as early as practicable. The planting is usually done in thick rows, transplanting the seedlings into permanent nursery rows the spring following. A rule for depth of sowing any kinds of tree-seeds is from three to five times the length of the seed. The ground should be mellow and in perfect condition. If the soil is rather heavy it is well to keep it mulched with fine manure until the seedlings are up, to prevent the surface from baking.

2638. **Night-temperature for Conservatory.**—The most suitable temperature for what are known as greenhouse-plants, such as geraniums, carnations, camellias, abutilons, etc., is about 45° at night. Those known as hothouse-plants do better for having about 15° higher. A temperature of 70° and above will suit any kind of plants when the sun shines, provided some air is admitted at the same time, while in dark cloudy winter weather more than 10° above a suitable night-temperature, is seldom desirable.

2656. **Hotbed-making.**—A hotbed may be made by piling up fresh strong horse-manure some three feet in height, after being firmed and slightly elevated at what is to be the back side of the bed. As a number of loads of manure will be needed for an ordinary-sized bed, it may be necessary to gather the manure for the purpose for a time previously; in which case it is better that the accumulation be kept from wet, under cover, and be frequently overturned to check the escape of heat before it is needed. When the soil is well drained the bed may be sunk a foot or two in the ground, and should be a foot larger each way than the outside of the frame which is to be used. It is important when filling in the manure to tread it not only moderately firm but as evenly as possible, so the surface of the bed later on will keep its shape well. After the manure is in place the frame can be put on at once, and filled in with about six inches of light rich soil for a seed or plant-bed. Sash should be put on at once, and kept closed until the heat has run up through the soil thoroughly. This accomplished, it is better to wait another day before sowing the seeds. Sow in drills extending across the bed, leaving a space of about three inches between the drills. After the bed is properly started, care is required in sunny weather to prevent the heat rising to an injurious degree, a matter to be regulated by moving the sash up or down a little to admit some air. A thermometer should be in the bed, and be

closely consulted. It should be placed where the sun will not directly strike it. A temperature of 60° at night would be suited to the average of plants; and this might run up 15° or 20° higher in the day time without detriment. The other extreme of cold in frosty nights must be scrupulously guarded against by covering the beds with mats or shutters at all threatening times. By banking-up over the manure on the outside with soil, the heat from the manure will be very materially saved to the bed and the appearance in general be improved.—A. H. E.

2695. **Mice Girdling Trees.**—All sorts of devices and paints, etc. have been tried with more or less success. The best method of protecting young trees, we think, is clean cultivation. Mice are not apt to travel a great distance over perfectly bare ground, in order to find a young tree to gnaw. Weeds, grass and rubbish of any kind in an orchard is pretty sure to bring mice, which in winter work under the snow. Tramping down the snow around the young trees immediately after every fresh fall, thus packing it solid, will very likely keep the mice away from the trees even in ill-kept orchards. Old neglected fences, especially rail fences, are about the worst things near a young orchard, because they harbor mice and other vermin. Our correspondent has used tarred paper tied around the trees, and banking with earth, with success, but considers this method too much trouble, as it has to be done and undone every year. We can not agree with such an idea. A man can go over quite an orchard in a day, putting on the tarred paper (wire screen will answer the purpose) and the safety of the trees is thus insured at slight cost. It is worth all the trouble and expense.

2722. **White Grub in Strawberry-bed.**—It is questionable whether anything better can be done to destroy the grubs than hunting for them near plants showing signs of attack (lack of gloss of foliage, and the wilting of the younger leaves in hot and dry weather) when the grubs are few in number, or giving up the patch when there are many. It is folly to expect that grubs can be killed by any application of ashes, lime or salt which would not also destroy the plants. Nor can the pest be disposed of by fall plowing, except when accidentally brought to the surface and found by some of their numerous enemies. While in the ground, the grub may freeze into a solid chunk all winter, and yet be full of life after it thaws out. Bisulphide of carbon, inserted into holes in the ground, and covered up, is often recommended. Undoubtedly it would kill all the grubs which the fumes can reach. But the method is hardly practicable, and is certainly expensive.

2723. **The Cabbage Root-fly** is common, and in its larva stage, then known as "cabbage maggot," destructive to young cabbage and cauliflower-plants. The onion-fly and radish maggot are near relatives, if not of the same species. The fly looks somewhat like a common house-fly. It lays its eggs at the base of the plants or stalk, and the egg soon hatches into a footless maggot, which at once makes its way beneath the surface, feeding upon the outer portions of the stalk. It is white, pointed at the head, the body increasing in size towards the hinder end where, it is squarely cut off. In full size, it is about 1/8-inch long. It pupates in the ground, and soon emerges as a perfect fly. The first brood, appear-

ing in early spring, is usually the most destructive, the later broods probably finding suitable feeding-grounds in old radishes, decaying cabbage-stumps, etc. Various remedies are recommended. We usually plant rows of radishes between cabbages, cauliflowers and onions, as we believe the fly prefers radishes first, then cauliflowers, cabbages and onions in order. Our onions have never been troubled to any extent, while the others suffered badly. Strong caustic lime-water and concentrated solutions of kainit or muriate of potash, are safe and sure remedies if applied in time. A pint or half-pint of the liquid should be poured upon every plant, so that it will reach clear to the maggot-infected root. This will kill the eggs as well as the maggots by simple contact. Prof. D. Hulst, of the New Jersey Station, recommends the kerosene emulsion, one part, to 12 or 15 parts water. At planting, the roots of all cabbages should be dipped into some of the compound, and thereafter, at intervals of two weeks, enough of the compound should be poured about the base of the stalk to wet into the earth at least an inch. This ought to be done whether there is evidence of the presence of the maggots or not. Plants once seriously affected can hardly ever be saved.

2725. *Gueii Plum.*—S. D. Willard, who makes plum-culture a specialty, writes to the *Canadian Horticulturist* that the *Gueii* originated at Lansingburg, near Troy, N. Y., and has fruited for several years. "It is a rich, dark colored plum, with a beautiful blue bloom, rendering it very attractive as a market-fruit. It is hardy and productive, and has been constantly growing in favor since its introduction. It ripens about the time of the Lombard, and is in every way superior to that variety.

2735. *Nut-growing for Market* is as yet hardly out of the experimental stage. With the proper selection of soil, probably many nuts could be successfully grown in northern Missouri; but for profit we would put more dependence on chestnuts than on any other nut. Whenever the ordinary American chestnut is found growing indigenously, it seems there should be a chance to grow the improved varieties profitably. The establishment of orchards of good varieties of course offers obstacles. Varieties do not come true from seed; grafting is a delicate and more difficult operation than grafting ordinary fruit-trees; and trees of good varieties, for that reason, are high-priced, and not always long-lived. But perhaps all these difficulties can be overcome in the end.

2736. *Pine Sawdust as Manure.*—There is little plant-food in pine sawdust, and that is not readily available. The best use for it is as an absorbent in the stable, and then fit it for manurial purposes by composting. As a mulch around trees it is all right.

2731. *Silkworm Eggs.*—You can probably get them by applying to the Department of Agriculture, Washington, D. C.; but it is more than doubtful whether it is worth while to bother with them. The worms have to be coddled, and require endless attention, and certainly do not pay under present conditions.

2730. *Draining the Garden.*—Any garden-soil which does not rest on porous subsoil, thus having natural drainage, should be underdrained, and this, if possible, by tiles, which is the best method. How to arrange the mains and branches depends altogether on the lay of the

land and the cost of the tile and labor. We can get tile at the following prices, viz: 2-inch, 12 inches long, \$12 per thousand; 2½-inch, same length, \$15; 3-inch, same length, \$20; and larger ones at proportionally higher rates. The work had best be done at a time when labor is cheap. Have the ditches as narrow as possible, in order to save labor in digging.

2728. *Hedge Management.*—Joseph Meehan gives the following good points in the *Practical Farmer*: A hedge to be perfect must be broader at the base than at any other part. The first summer pruning is mainly to thicken the hedge and strengthen the base. To do this, the top and most of the upper branches are clipped off, while the lower ones are touched but little in an old hedge, and not at all in a young one in which the shape has not been well formed. As soon as the tops are cut away the sap flows to those remaining, greatly invigorating them. In old hedges where shape and bushiness have already been attained, the whole of the hedge may be trimmed back to thicken it, but let the severest cutting be at the top. For every branch cut off a half a dozen new ones form, so that in time a hedge becomes so dense that a bird can hardly fly through it. After the first cutting there will be more growth made, and this is allowed to grow on as long as it will. When all growth has stopped, which will be in September in the Middle States, the hedge is gone over again, and cut clean into a good shape, which should be neither too round nor too pointed. In connection with this it may be said here that single trees should be pruned in the same way that the hedge is. Bushiness comes from stopping the leading shoots so they are done growing. Pruning in winter acts the other way, encouraging an extra strong top-growth.

2713. *Annual Flowers in Lily-beds.*—Observing the principle that dwarf-growing kinds have shorter roots than others, we would plant such only in the lily-bed. A good list would be candytuft, cockscomb, pansy, portulaca, ten weeks stocks, sweet alyssum, abronia, clarkia, erisemum.

2714. *Flowers for Shady Places.*—Ferns from the woods succeed better in the shade than anywhere else, and are among the handsomest of decorative plants. Lily-of-the-valley, snowdrops and most Dutch bulbs, *Aquilegia Canadensis*, wintergreen, periwinkle, pansies, plantain lilies, nearly all anemones, hellebores or Christmas roses, hepaticas, blood-root, wake-robin, violets, May-apples, hypericums, *Rubus odorata*, begonias, among tender plants. The tuberous begonias flower well in partial shade.

2716. *Anemones in Coldframe.*—We think that by properly protecting the coldframe from rain, snow and cold by the use of a light board shutter, the tuberous anemones should flower some time in the spring. But in our experience it has been found a difficult matter to properly protect such a frame in the cold north. It takes a good deal of attention. The anemones grow and flower readily in a greenhouse of moderate temperature.

2720. *Propagating Hibiscus.*—They root better in sand or a soil consisting largely of sand, than in water. Take the top of a shoot, cutting it just below a joint

at a point where the growth is moderately soft, and trimming away the lower leaves, then insert it in the sand or soil to the depth of about $\frac{1}{4}$ -inch, assuming that the cutting is two or three inches in length, and press the soil firmly all around; water to keep from wilting, but not so much as to make the sand very wet, as this might induce rot. Sprinkle the leaves several times daily. To invert a glass tumbler or dish over the cutting, tilting it up a little daily on one side for admitting air, will be helpful in preventing undue evaporation.

2665. Manure-water for House Plants.—No one other article in this line fully comes up to animal manure as the base of a liquid fertilizer for plants. A neat way to make it is to fill a barrel with manure closely packed down. Bore a hole in one side of the barrel near the bottom, and then pour on water and catch it as it leaks through the hole. It will be a dark color, and too strong for use unless diluted with clear water till it looks like tea. Gross feeders like cinerarias, fuchsias, chrysanthemums, may receive of this liquid about twice a week while they are making rapid growth; other plants, like roses, heliotropes, lantanas, geraniums, etc., not oftener than once a week. In no instance apply liquid manure to a plant when it is not in an active condition as regards growth. In the absence of stable manure use guano, hen-manure or bone meal, at the rate of a large tablespoonful to a gallon of warm water. Ammonia is often recommended for house plants; but either of the above is to be preferred, for the plain reason that these are true plant food, as ammonia is not. But ammonia may sometimes be used with benefit, at the rate of one-fourth ounce of ammonia to one gallon of water.

2667. Manure for Annuals.—Nothing is better for annuals than good stable manure. A good way to apply it is to cover the bed with a coat in the fall, and then turn the soil over roughly with the spade. Let the clods of earth be exposed to the elements during winter.

2662. Commercial Flower-growing.—Our advice to one who has had no experience in flower-growing, but who desires to engage in it as a business, must be of a general character. First procure some good books on the subject, such as Henderson's Practical Floriculture (\$1.50), Long's Home Florist (\$1.25), etc., sold by The Rural Publishing Company, and study them thoroughly. Start only a small greenhouse to begin with—say 12 by 30, or 20 by 30 or 40 feet, and start your experiment, doing your very best with the knowledge you pick up by reading. Should you be lucky enough to get a good man for the work, one who knows something about plant culture, at a moderate price (there are such, but not always easy to find), it is likely you might begin the sale of some flowers or plants in the course of four or six months from starting. Whether in the long run you could make a success of the venture, depends very much upon your natural adaptability to the business, and your market. We know of women who, from a beginning as moderate as yours would be, have step by step, as they gained knowledge and confidence, worked up into quite a nice trade. One thing you must make up your mind to—success in commercial flower-growing is only attained by great painstaking, and constant, intelligent work.

2664. Best Hedge Plant.—As a hedge plant along the street line of a fruit plantation, we think there is nothing better than the honey locust, as this is both ornamental and effective in turning off intruders. It is hardier than that other great deciduous hedge plant, the osage orange. It is of vigorous growth and thrives without nursing or coaxing. It can readily be kept to any form, as no plant better bears shearing. The plants are sufficiently thorny to be impenetrable when set in hedge line. A usual distance apart to set the plants is nine or ten inches. Sometimes they are set in a double row, alternating the plants. One-year-old plants can be bought for \$5.00 or less per thousand, while those two years old are not held above a dollar or so per thousand higher.

2676. Root-lice on Apple Trees.—Our experience with root-lice on trees is limited, but from what we know in dealing with the pest, and the nature of potash salts, we are sure that liberal applications of kainite, or muriate of potash, at the rate of about ten pounds of the former or about four pounds of the latter to a tree several years old, scattered around the trees as far as the roots extend, would be one of the very first remedies we should try. We believe these potash salts have more virtue as insect-killers, for insects in the ground as well as on plants above ground, than is generally recognized.—G. R.

2675. Hyposulphite of Soda for Rose Mildew.—Hyposulphite of soda has been used with some effect for apple scab, and will undoubtedly be of some service as a remedy for rose mildew. A solution if made stronger than in the proportion of one pound to twelve or fifteen gallons of water, is liable to injure the foliage of apple trees, and we would make it even weaker for roses. But why use this remedy, when we have a better one in sulphur fumes? Prof. Maynard gives the following as primary causes of the disease attacks, viz.: Exposure to drafts of extremely cold air when the plants are growing rapidly; high temperature running the same day and night; watering just before night; too little water; extreme dryness; poor drainage; deficiency in plant food. The first thing to do is to prevent mildew by avoiding these causes; but if mildew does appear, it can be checked by keeping a kettle or basin containing some sulphur (brimstone), heated to nearly the boiling point, in the room for three or four hours, twice or three times a week. One of the small kerosene stoves and an iron kettle may be used to advantage for this purpose. Enough sulphur should be evaporated to fill the room with the vapor, so that it will be visible, and give something of the odor of sulphur. But guard against the sulphur taking fire; for burning sulphur is quickly destructive to all plant growth, and much damage might result in a plant-house from a little carelessness in arrangement or manipulation during the production of sulphur fumes.

2677. Peaches on Plums.—Peaches may be top-grafted on any variety of plums, and the grafts made to grow. The usual and better way, however, is to set buds into the young wood. Whether much is to be gained by having peach branches on plum bodies is another question. Some varieties of the plum will prove better for this purpose than others.—G. R.

CURRENT



GATHERED WORLD-WIDE.

The Seed Industry.—While seed-growing has been carried on as a business for more than a century, it is only within the past thirty years that it has assumed large proportions. More than one-half the seed-farms reported were started between 1870 and 1890. In 1890 there were five hundred and ninety-six farms, containing 169,851 acres devoted exclusively to seed-raising, of which 96,567¼ acres were reported as producing seeds. These seed-farms represent a total value of land, implements and buildings of \$18,325,935.86, and they employed in the census year 13,500 men and 1,541 women.

Plants Growing on Sponge.—Many have practised the cultivation of mustard and cress upon moistened flannel, and we know from experiment that the growth can be prolonged beyond the germination stage for a much longer period than could be anticipated. We were reminded of this the other day on the receipt from Mr. Burbidge of a vigorous groundsel in flower, growing on a piece of old sponge which had been laid aside, and which furnished the requisite moisture, and a little more. It is astonishing how small a proportion of solid matter is extracted from the soil by plants in proportion to their bulk. Air and water, light and heat, are each and all more potent factors in the growth of plants than is soil.—*Gardener's Chronicle.*

[Grass-seed sprinkled in a wet sponge, occasionally moistened, hung up by a string in a window, in a few weeks will make a beautiful ball of green.—ED.]

How to Tie Carnations.—John McGowan says he nails uprights rising about six inches from the soil, along the front and rear sides of the bench. Along these uprights, and parallel to the bench, he fastens a strip of wood, one inch square, which forms, as it were, a light rail running six inches above the edge of the bench-side. On these rails are fastened strips of wood one-quarter inch square, running from one side of the bench to the other, and laid one on each side of every row of plants. This is a much quicker way than the use of stakes, and it allows of a freer circulation among the plants.—*Florists' Exchange.*

Nurserymen's Mistakes.—Ninety-nine per cent. of the so-called mistakes in supplying wrong trees and vines are due to the fraudulent practices of irresponsible tree-dealers or tree-peddlers, who represent nurseries

that have no existence except in their order-books. The tree-peddler gathers up the surplus stock in the country and bills it out to suit his orders, regardless of variety, often making a dozen or more kinds out of one sort. To suppress the irresponsible dealers we must sell our trees through our own agents, doing our own billing-out, and wholesale only to reliable nurserymen who are directly responsible to the purchaser; but without the coöperation of the planter it is next to impossible to get rid of the objectionable class. The planter should place his orders only with an authorized agent of some responsible nursery, or send his orders directly to the nursery; there would then be comparatively few mistakes, and the small errors that may occasionally occur—and some will happen under the most careful management—would cause no serious loss to the planter, and the nurserymen could almost invariably make satisfactory amends for such errors.—*Flemer & Felnty, in Rural New-Yorker.*

A Family Tree.—A pretty custom which was at one time common in some parts of New England was the setting apart of a "family tree." This tree was not of a dry, genealogical kind, but was always one of the finest in the orchard, selected with a view to its apple-bearing abilities and its beauty. In one little village many of the orchards have trees of this description, and the older inhabitants can refresh their memories as to the number of children in the families that have occupied farms at different times, provided the period of occupancy was long enough to make the setting up of a "family tree" worth while. On one farm there is a large old tree which bears seven different varieties of apples: Baldwin, Jeremiah, Summer Sweeting, Winter Pippin, Astrachan, Russet and Gilliflower. The grafts on this tree were made, not one at the birth of each child of the household, as was sometimes the custom, but when each boy or girl grew old enough to choose his or her special favorite among apples. The tree is now more than sixty years old, and its present owner shows it with great pride, and gives samples of its fruit to the children of the neighborhood with a free hand.—*Youth's Companion.*

Chicory as a Winter Salad.—Chicory deserves recognition as a winter salad-plant on account of its whole-

someness and easy culture. Chicory is a hardy plant, and if sown in time the roots will be strong, and, like sea-kale, may be taken up when wanted. For blanching, common chicory is sown in May and June. The plant should



BUNCH OF BLANCHED CHICORY.

have a rather light and moderately rich and deep soil. The ground should be deeply dug, and the seed should be sown in drills not less than 15 inches apart, and when they can be well handled the seedlings should be thinned out to one foot asunder in rows. After this the only attention they require will be hoeing between the rows and watering in dry weather, till November or December, when the plants will have shed their leaves and be ready to take up for forcing. A number of roots should be taken up and laid in soil in some cold shed or other structure where they will not be frozen, and from this store they can be removed in batches for forcing as wanted.

For a small family, as many roots as can be put into a 12-inch pot will be sufficient at one time. Whether the roots are forced in a bed, or in pots or boxes, they should be buried up to within an inch of their crowns in light soil of any kind, watered, and placed in a temperature of from 50° to 60°, and be kept in the dark. The leaves should be cut when young and tender, and always just before they are required for salad, for which purpose they are prepared like lettuce or endive. When sent to market, blanched chicory is tied up in bundles by the roots, as shown in illustration.—*Gardening Illustrated*.

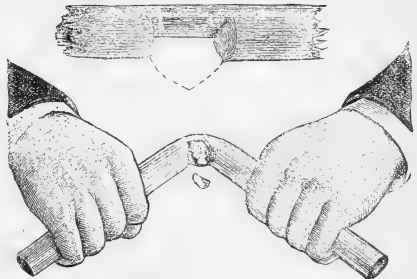
Fighting the Gypsy-moth.—The Gypsy-moth Commission has taken the precaution to send out ten of its best and most experienced scouts to look for traces of the pest within the limits of Boston. They have already made a strict inspection of the trees on the common, but not a sign of a moth was found. The work will be continued for thirty days as a matter of verifying what they believe to be the truth—that no moths have crossed the border. If any should be found, a war of extermination will

be begun without delay, as the commission is anxious to be able to make a satisfactory report to the next legislature. The work has been delayed until the present time in order to give the leaves a chance to fall, thus making the inspection easier and more thorough.—*Boston Transcript*.

Pears Without Cores.—Writers often express surprise that there should be an orange without seeds, but this experience is met with in almost all kinds of fruits. There is an apple called Mennechor's Nocore, so named expressly from the total absence of seeds. An illustration of this is in the Rutter pear; it is extremely rare that seed is found in it, although they are occasionally there. The common currant—Zante currant of the stores—is simply a grape which does not produce seeds. A singular feature about these varieties is, that they seem to increase in productiveness by reason of this want of perfection in the seed. The Rutter pear especially is a great bearer; there seem to be almost as many pears as leaves on the tree. Unfortunately, if all are allowed to reach perfection, the fruit is of inferior quality, but when properly thinned out the flavor is delicious.—*Meehan's Monthly*.

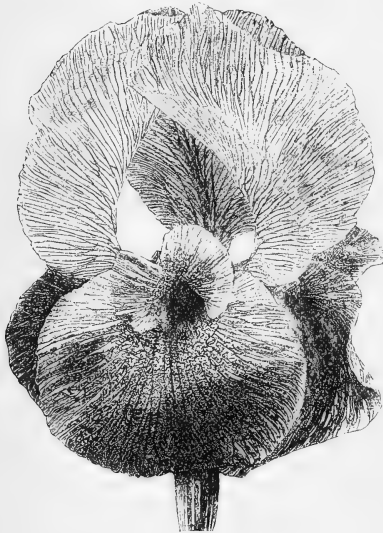
Home-made Nut-cracker.—A nut-cracker like the one shown in illustration may be made of the flexible branch of a tree; that of the nut-tree itself will do. Cut in the branch selected a niche as thick as the finger and quite deep, leaving only some fibers of wood and the bark intact, so as to connect by a flexible band the two ends of a branch. Take each of these handles in the hand; after having placed a nut in the cleft, bring them together with force and you will break the shell.—*Southern Planter*.

The Salubrity of Forest Air.—*Biederman's Centralblatt*, a German review, affirms that the atmosphere in the neighborhood of forests does not contain any excess of oxygen. The salubrity of the air ought to be attributed to the great purity of the atmosphere. Wooded districts are not troubled with smoke, injurious vapors, or germs and bacteria that are found in towns. The innumerable leaves and branches of a forest in a manner filter the air, and retain the micro-organisms,



HOME-MADE NUT-CRACKER.

which float in the lower grounds. Besides, woods cut the cold and dry winds so dangerous to the organs of respiration, and render the temperature more uniform.



IRIS GATESII.

Iris Gatesii.—This magnificent Armenian Iris is the veritable prince of the whole family, vigorous in growth and producing immense flowers very much larger than even a very big flower of *I. Susiana*. To the florist's eye this is simply a perfect flower, noble in outline, and the petals superbly rounded. The ground-color of this grand flower is a silvery white, covered with a network of scarcely perceptible lines and feathers of a pale purple.—*The Garden*.

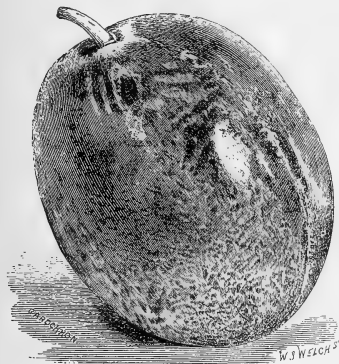
The Vegetation of Central Africa.—There were many lateral depressions, marking the courses of the streams, and few elevations of any importance, but over the whole slowly sailed the snow-white mist in broad, irregular streams; these, in a few moments, became joined into a universal mass, which to us, looking down upon it, resemble an inverted sky. All this was very annoying to us as curious sight-seers, anxious to know the strange world we were in; but it furnished suggestions as to the reason why this part was so especially prolific, and why Ruwenzori was so coy. No winds could cool this portion of the valley, or waft the vapors away and clear the atmosphere from an entire corner of the compass, owing to the extent and great height of Ruwenzori. The great mountain intercepted every breeze from the east round to south, and prevented the

everlasting exhalations of the valley from being blown in that direction; but on their reaching the intense cold above distilled them and rediffused them in copious showers of rain. From north to west the northern range of mountains obstructed the free passage of the winds, and assisted to maintain that equable heat of the valley that was necessary for the fostering of that marvelous vegetation. In every camp of this region the smoke hung over us like a pall, smarting the eyes, and half-suffocating us. In such a nature's conservatory as the Semliki Valley, buried under its own perpetual warm exhalations, vegetation, as a matter of course, finding every favorable element therein necessary for its growth and nourishment, grows in riotous profusion. Where the humus is deep we find a tall and stately forest, with an impervious underwood of young trees bound together, and sometimes altogether hidden by countless climbing vines and robust plants; where the humus is thinner, as near the foot of the range, dense crops of cane-grass from 10 to 15 feet in height flourish, luxuriant and impenetrable. Every tree-stem has its green robe of soft moss dripping with dew, and each tree-fern or horizontal branch has its orchids, or broad elephant-ear plant. Every rock is clothed with lichens, and even in the slightest hollow there will be seen a multitude of plants. In short, everywhere, except upon the perpendicular face of a late-moved boulder, vegetation thrives.—*From Stanley's Report*.

Top-dressing for the Chicago Park Lawns.—A good deal of the land is almost a pure sand for many feet deep. A soil of a foot or so costs a large sum, and even then, without a liberal use of the sprinkler, vegetation soon burns up. With this watering, however, no soil quicker responds to drink. Lincoln Park has all the manure it can take care of brought to it, free, from stables, etc. This is composted with refuse of all kinds, from the sweeping of the lawns, scraping of the walks and drives, and from the animal-pits, etc. Along in winter, generally toward the breaking up of the winter, this material is carted out when the sod is well frozen, and dumped in considerable clods, frozen as it is. Presently, as it begins to thaw and is disintegrated by the effects of freezing, it is spread carefully over the surface. In a while after thawing it is scarified and fined down, and as the young growth of grass begins in the spring it is partially raked off, but a good deal of the fine stuff, of course, is left. The effect of this each year is to give considerable stamina to the sward. As the grass is largely composed of Kentucky blue-grass, poas, and other grasses, even if the top looks dead the roots are still fresh below. A very little rain on such parts as it is impossible to sprinkle, quickly makes it green again, so that, as a rule, even if the natural soil is poor the lawns of Lincoln Park show less the effects of drouth than does a heavier soil in which the rain or irrigation has a tendency to run off rather than to soak into the soil. The reason it is not carried on to the lawn earlier is, of course, the unsightly appearance of a manure-covered park. By hauling late in the

winter the unsightly feature does not last long, and is in a season when visitors are few.—*Prairie Farmer*.

Effects of Girdling a Fruit-tree Branch.—Our illustrations show the effect of girdling a part of a tree



GIRDLING EFFECTS.—JEFFERSON PLUM FROM ABOVE THE CONSTRICTION.

so that its downward growth and development are checked, and an accumulation of food formed above the tie. The case in question occurred in the garden of Philip Crowley. A branch of a Jefferson plum was accidentally girdled in this way, with the result that the fruits produced from the portion above the constriction were very much larger than others on the same tree. Ringing and girdling are very old cultural practices.—*Gardener's Chronicle*.

Ingenious Fruit-picking Contrivance.—An ingenious fruit-picking contrivance has been invented by Edward D. Stodder, of San Francisco. It is a light, double, wheelbarrow ladder, which can be folded up or elevated at any angle at will. An endless belt, with double pockets, like those of a grain-elevator, conveys the fruit to the ground and automatically dumps it into the boxes, doing away with the necessity of the picker's leaving the ladder for any other reason than that of changing its location. A number of the ladders will be put into orchards the coming season by the inventor to demonstrate their usefulness.—*Cal. Fruit-Grower*.

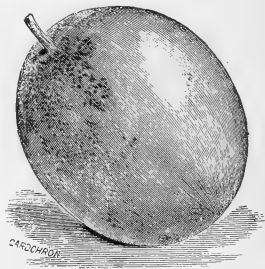
A Drink from Hops.—The production of a non-intoxicating beverage from hops is a novelty that has attracted some attention of late. It is stated that an Assam tea-planter, at the close of the last hop-season, settled down on the Medway, near Maidstone, and with drying-machines and tea-rollers, as used in Assam, succeeded in making a kind of tea which, though it cost twice the price of excellent Indian or Chinese tea, is likely to become an important article for mixture with the better-known beverage of that name. The

infusion is said to contain all the tonic, soothing and nutritive properties of the hop, and when mixed with tea proper, counteracts its astringent and tanning properties. A company has been formed in London for the sale of this tea, and it is now to be obtained from any grocer.—*Gardener's Chronicle*.

Bees and Fruit-growing.—I have had an abundant crop of every kind of fruit this year. I have purchased five acres of land which I hope to plant with fruit-trees, and have enlarged my apiary in order that I may take 10 colonies of bees to my newly purchased ground when planted, for I am more fully convinced than ever that bees and fruit-culture ought to go hand in hand. It makes me smile when I read of some correspondents talking about "bees eating fruit." I certainly have seen bees on pears, but it was *after* the fruit had been attacked by wasps. Some grumble because the bees eat a few plums or pears, which perhaps would never have grown had they (the bees) not fertilized the blossoms.—*Cor. British Bee Journal*.

How to Make Nuts Germinate.—The only reason why many persons fail to make such nuts as pecans, hickory, English walnuts, and chestnuts germinate when planted is, that they allow them to get thoroughly dried before they are placed in the ground. For pecans, shellbark-hickory, butternuts, filberts, and other hard-shell kinds there is no better place to store them during winter than in heaps of sand piled up on some shady spot in the open ground. First place a layer of the nuts, then a layer of sand, then a layer of nuts, and proceed in this way until your stock of nuts is exhausted, and cover the heap with six inches of good soil or sods, and leave all undisturbed until spring; then take out the nuts and plant in drills. If there is danger of mice

and squirrels carrying away the nuts, place them in well-drained boxes, covering with wire netting. Chestnuts may be stored in the same way, but the sand should be clean and the boxes set where the water from melting snows will quickly drain off. Fresh imported English walnuts buried in the fall or any time in the early winter will usually germinate quite freely. Imported filberts are sometimes gathered before quite mature, and for this reason fail to grow; but if the kernels are plump when obtained there is no danger of failure if kept cool and moist during the winter.—*American Agriculturist*.



GIRDLING EFFECTS.—JEFFERSON PLUM FROM BELOW THE CONSTRICTION.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN



Pennsylvania Horticultural Society.—The spring exhibition will be held at Horticultural Hall, Philadelphia, Pa., opening on Tuesday evening, March 29, at 8 o'clock, and remaining open until April 1. The premium-list is an extensive and liberal one.

Indiana Horticultural Society.—The thirty-first annual meeting was held in the hall of the society, in the State House, Indianapolis, on Tuesday, Wednesday and Thursday, December 1 to 3, 1891. Denison Hotel was the headquarters of the society during the meeting.—*W. H. Ragan, Sec'y, Greencastle, Indiana.*

The Chautauqua Grape-growers.—The Chautauqua County (N. Y.) Horticultural Society is discussing measures to form a consolidation of the grape-growers and to make better railroad arrangements for shipping. The following officers were elected for the year: President, J. J. Keyes, of Hanover; secretary, S. S. Crissey, of Fredonia; treasurer, P. M. Manton, of Fredonia

The American Carnation Society is organized for the purpose of improving the carnation in every possible way. It is not a trade organization, but every person who grows, or buys, or loves the divine flower is welcomed within its ranks. The preliminary meeting was held in Philadelphia October 15, and the organization was completed November 4 at St. James' hotel, New York city, and the first annual meeting will be held in Buffalo, N. Y., third Tuesday in February, where an exhibition of carnations will be held. Many new and improved varieties are expected to be there that have never before been shown to the public. Very great interest is manifested all over the country. Many growers and amateurs are experimenting with seedlings with the hope of producing the *ideal* as laid down by that friend of horticulture, John Thorpe.

Essays on interesting and instructive matters connected with the carnation will be read and discussed, and there is little doubt much useful and desirable information will be elicited.

The officers elected until the meeting to be held in Buffalo are: President, Edwin Lonsdale, vice-president, William Swayne; treasurer, C. W. Ward, East Moriches, N. Y.; secretary, C. J. Pennock, Kennett Square, Chester Co., Pa. All the officers as above act as ex-officio members of the executive committee. The three others are R. T. Lombard, Wayland, Mass.; James Hancock, Grand Haven, Mich., and Robert Craig, Philadelphia. Vice-presidents were elected in the different sections of the country to look after the interests of the carnation in their particular localities, and altogether the outlook for this popular flower is most promising. Persons wishing to become members

should send their names to Secretary Pennock, Kennett Square. Dues two dollars a year.

Pears in Kansas.—At the last meeting of the Kansas horticulturists, B. F. Smith recommended a succession as follows: The Tyson first early, then Clapp's Favorite, Bartlett, Seckel, Sheldon and Buere d'Anjou. The Duchess he considered too coarse, and the Winter Nelis too small. The Bartlett suffers badly from blight, but has the redeeming habit which no other variety seems to have, of sending out new sprouts.

Staking Fruit-trees.—At a recent horticultural meeting in Ohio, the subject of staking trees came up for discussion. One method suggested was to tie the tree to a stake with a straw band, twisting the band in the form of a figure 8 as shown in illustration (reproduced from *Ohio Farmer*). This prevents all injury to the tree by being rubbed against the stake when swaying back and forth.



Chrysanthemum Names.—Edwin Lonsdale, secretary of the American Chrysanthemum Society, announces that registration of the names of new chrysanthemums has begun, T. H. Spaulding having handed in the following list: American Flag, Amy Carey, Annie Lonsdale, B. S. Hubbell, Christopher Columbus, Chicago, Columbia, Columbian, Chow-Chow, E. Hitzeroth, Ethel Paul, Excelsior, Gus Bennett, J. N. May, Lillian Russell, Looking Backward, Mamie Craig, Masterpiece, Mrs. J. W. Morrissey, Pauline Hall, Ruth Cleveland, Standard, Shenandoah, William Barr.

Arsenites and the Curculio.—Before the October meeting of the Summit County (O.) Horticultural Society, Prof. Claypole said he thought results in spraying had been overestimated, especially in the case of spraying for curculio, or plum-weevil as he insists upon calling it. He had visited the State Experiment Station and seen Professor Weed's trees, and there were plums on the trees not sprayed as well as on the others, and he thought an impartial observer would have found it difficult to make out a case in favor of the results of arsenical spraying as a preventive of curculio.

Weeds in Ohio.—The worst six weeds for central Ohio, taken in order of present menace, are wild carrot, Canada thistle, toad-flax, prickly lettuce, oxeye daisy, and wild morning-glory. This list is probably not correct for all parts of the state. Many times six will be required to include all troublesome weeds. The ones named above agree in that they require similar treatment for their destruction, viz., to keep them constantly cut, or to occupy the ground with some thoroughly well-cultivated hoed crop for two or more successive years.—*A. D. Selby, before the Columbus (O.) Hort. Society.*

The Peach Tree not Short-lived.—In France there are peach trees more than 100 years old. In Maryland and in Delaware there are bearing orchards that were

planted 70 years ago, and in this valley I have seen vigorous peach trees known to be more than 30 years old. Pruning is very important, not merely to give symmetry to the form of the tree, and to thin out the fruit, but it has a powerful effect in invigorating and preserving the tree; and proper pruning, done annually, ought to keep a peach tree in good condition for a hundred years or more.—*S. B. Galey, before the Oregon Farmers' Institute.*

Small Greenery.—At a meeting of the Massachusetts Horticultural Society, W. D. Philbrick described a cheap and simple arrangement for keeping greenhouse plants in the winter. It consists of a small apartment attached to the dwelling, and heated by a coil of pipe from the furnace in the cellar. It must be partitioned so tightly from the house that when smoking the plants with brimstone or tobacco, none will find its way into the rooms. A good way is to fit sashes between the posts of a piazza, to be removed in summer with all the shelves and pots. The heating-pipe, one inch in diameter, may extend around the piazza floor.

Preparing for Planting Strawberries.—The land should be brought into good condition the season before the plants are set, by deep fall plowing, and liberal manuring if the ground is not already rich. Potatoes are about the best crop to grow on the land the year previous to setting strawberries. Spring is the best season for setting strawberries. If the ground was plowed deep and well in the fall, no plowing will be required in the spring; but to prepare it for the plants, go over it once with a cultivator, with the teeth set to cut deep, then with a harrow making the ground fine and level.—*J. S. Harris, before Southern Minnesota Hort. Socy.*

Native and Foreign Strawberries.—The strawberries of Europe are mostly descended from the Chilian and Virginian stocks, while those of the United States are the progeny of the Virginian stock almost exclusively. There is no shadow of whim or taste in the matter, for the South American race suit the European climates, and the North American race suit the North American climates; for in those states in which strawberries are in the greatest demand, the winters are too cold and the summers too hot for the progeny of *Fragaria Chilensis*. Thus, the question of staminate and pistillate is simplified, for the southern plants are more distinctly hermaphrodite than the northern; and this fact accounts for our indifference to the subject of sex in this fruit.—*Shirley Hibberd, before the British Fruit-Growers' Ass'n.*

A German Horticultural Society in Missouri.—The name of Montgomery County Horticultural Society has been changed to *Hugo Obst und Gartenbau Gesellschaft*, with headquarters at Hugo, Mo. This society is local, and all the business is transacted in German. The fruit-industry of this locality was started only about 10 years ago by Germans, who found the land better suited to fruit-growing than to anything else. Soon the Montgomery County Horticultural Society was organized. The greatest drawback was, that but few of the Ger-

mans could understand English, so the change became necessary. A great many orchards have now been planted. We plant about three-fourths Ben Davis, balance mostly Jonathan with a few Willow Twig. Strawberries are also grown quite extensively. A good many will be shipped from here the coming season.—*F. Lionberger.*

Fighting Weeds.—The laws for the prevention of weed-spreading are ample in the state of Ohio, but alas, they are not enforced. It is a sorry commentary upon the intelligence and spirit of the land-owners if they will permit the whole state to become infested with wild carrot, Canada thistle, and the like, when by simply enforcing the law these pests could be gradually stamped out. Farmers who do not yet suffer from this cause scarcely realize how much these and other weeds depreciate the value of farm-land. If unwilling to summon the law to their aid, they can still do much by individual effort to prevent the spread and establishment of injurious weeds. The way to accomplish this is: (1) See that no weeds are sown with any crop. (2) Destroy, root and branch, all intruders as they arise, and thus prevent them from becoming thoroughly established. (3) Where land is already infested, cultivate some hoed crop for a few successive years.—*A. D. Selby, before the Columbus (O.) Horticultural Society.*

School of Technical Horticulture in England.—A scheme for the establishment of such a school is being considered by a joint committee of the Gardeners' Company and the Royal Horticultural Society. The object is to impart a higher class of education in the principles and practice of the cultivation of fruits, flowers, vegetables, etc., than is at present obtainable in Great Britain. No student will be admitted who does not already possess some elementary practical knowledge and experience of gardening or garden-farming. All students will, in ordinary circumstances, be expected to continue their studies for at least two years, and all students must be prepared to devote themselves to the manual as well as to the scientific branches of the work, and to yield implicit obedience to the directors. It is proposed that the Gardeners' Company and the Royal Horticultural Society should secure suitable land where experimental and practical gardening may be carried on; pending which, arrangements are being made to utilize the gardens of the Royal Horticultural Society at Chiswick, for the instruction of students in connection with the scheme.

Apple Questions Discussed.—At a recent meeting of the Grand River Valley (Michigan) Horticultural Society the president asked if any improvement had been made in getting the Northern Spy hardier by trying grafting on different stocks. E. C. Phillips said that Ben Davis and Talman Sweet were found to be best for grafting with the Spy. Mr. Jacobs prepares land for planting by setting his stakes in the fall, and plowing the patch in lands just the size to make the dead furrows come right for planting; then he plows as deep in the

dead furrows as he can, and secures plenty of loose, deep-stirred soil in which to plant on the ridge. Mr. Jacobs said there was more profit in the Ben Davis than in any other variety. Its poor quality seemed no obstacle to its sale. People hardly ever called for a named variety. He put in Ben Davis to sell, and, for eating, a few Jonathans. Does it pay to thin apples? E. C. Phillips said, Yes, just as much as to thin peaches. In answer as to the number of trees a man should plant, Mr. Jacobs said it depended wholly upon the man and the situation. Some men, with excellent locations, would make a failure of apple-growing, while others, with less favorable surroundings, reaped a fair amount of profit from their culture.

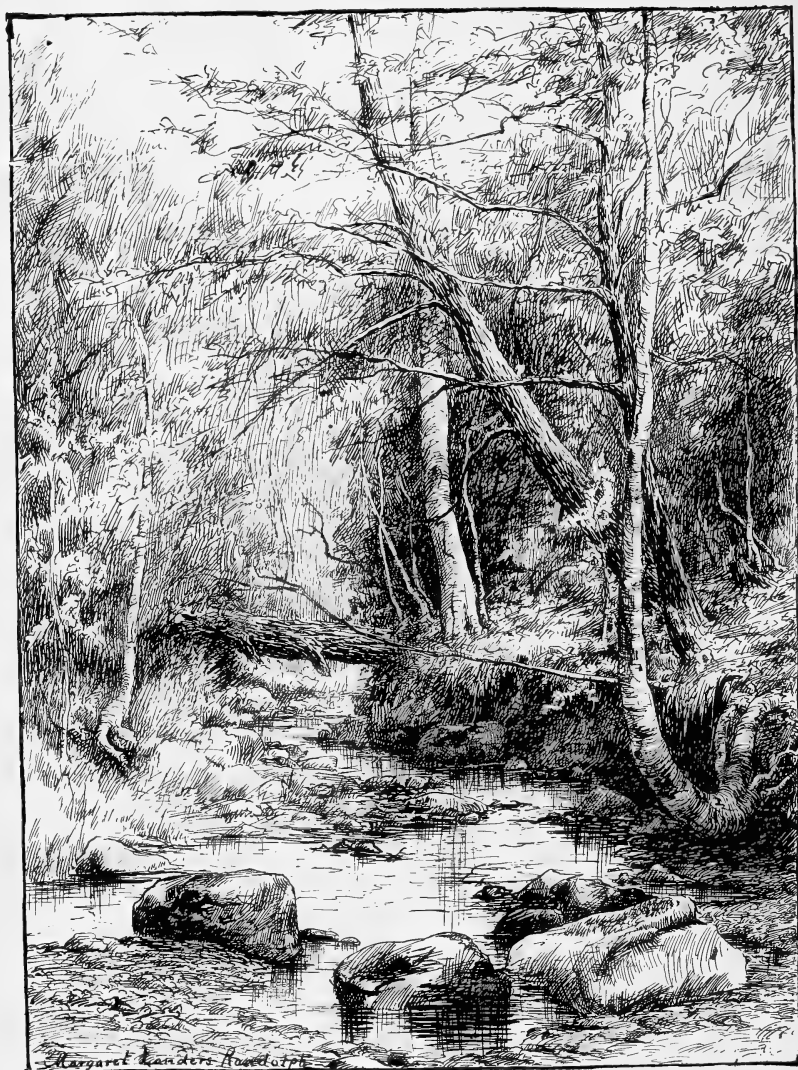
Small Fruits for Home Use.—If I were obliged to abandon either my vegetable-garden or my small fruits, the garden would have to go. I have repeatedly had fruit fresh from the vine and tree on my table every day and almost every meal, all we wanted to eat, from the last of May until the middle of October. Think of that, you who occasionally smack your lips over a dish of stale berries purchased at the grocery-store or of the professional fruit-grower! The idea of going away from our own rural home to buy stale fruit, when we can have that which is fine and fresh on our own plantation, and that in great abundance, so easily, if we only will. Then too, think of the berry and peach shortcake, pies, puddings and many other delicious dishes that the ingenious housewife can prepare, with which to give us a feast and send us out to our work again, joyous and happy as though we had been to a banquet. Yes, sir, your cabbage and turnips, summer squash and cucumbers, string-beans and greens, beets and radishes, and even green peas, as delicious as they are, all sink into insignificance, both in value, importance and economy, when compared with these.—*A. P. Coddington, before the N. Y. Farmers' Institute.*

Wind-breaks in Nebraska.—In planting groves never use a single variety, but a judicious mixture. For the north, plant the first row to box-elder, the second to ash, and so on. The reason is, that the ash has very light foliage, while the box-elder is dense. By planting these two alternately the ground is completely shaded, which prevents weeds from growing and moisture from evaporating. In the south Platte country plant the mulberry, noted for its dense shade, with catalpa, ash or honey-locust. With walnut, plant osage-orange or black cherry. For the southwest, plant mulberry with black-locust, catalpa and ash. Plow deeply, pulverize thoroughly, and mark out four feet each way as for corn. Plow a furrow, then take the bunch of plants in a pail of water, and with a spade draw away the soil opposite the cross mark. Have a boy carry the pail and set in each tree, holding it while you draw a spadeful of earth

over the roots and place your foot on them. As soon as the row is set, fill the furrow with the plow. Have the boy follow with a hoe, and straighten any trees that are knocked down, and fill all spaces left by the plow. In this way an active man and boy can set 5,000 trees per day. After planting, the great secret of success is good cultivation. Never let weeds grow, and keep the soil loose.—*Nebraska Horticultural Society.*

Crop-rotation and Spraying.—It is a law of plant-culture that the continuous growing of any one crop upon a given area of soil tends to the concentration of the enemies of that crop—whether of insects or fungi. With annual crops, like most of those of the garden and grain-field, the remedy is more easily applied than in the case of fruits. There is a strong inclination to grow the crop for which the soil is naturally best fitted. Thus the onion-grower desires to keep his best onion-land continuously in onions, and the smut finally increases and ruins his crop and future prospects. Sweet potatoes can be grown to greatest profit only upon a special soil, in limited areas; and constant cropping has permitted the soil-rot to increase to such an extent that the crop is often a failure. The same is true of clover and other crops, but more particularly of those that are susceptible to some root-disease. It therefore follows that in the serious consideration of our subject, the importance of a judicious management of crops should never be overlooked, and a system of rotation adopted that will bring the greatest health—other things remaining reasonable and satisfactory. This continuous change of crop, united to full rations of available plant-food and proper sanitation, will do much to lighten the labors of the fungicidal applications, and render all applications, when necessary, of the greatest benefit. Let the spraying of crops with compounds of copper, etc., come after the fair thing has been done for that crop under the head of farm or garden management. Here, as elsewhere, the ounce of prevention is worth a pound of cure. Do not let me be misunderstood, for I am a full believer in the virtues of fungicides. There are many places where they pay and pay well, but they can not do everything. They may ward off destructive diseases, as the copper-salts for the black-rot of the grape, but they alone will by no means bring a profitable crop. Everything else needs to be done for the vines that will bring a full fruitage, and then it will pay to save the crop from premature decay. And finally, to carry my point one step further, when the plants have been surrounded by the best sanitary conditions, it is possible that the application of fungicides may sometimes be omitted. However it will be a long time before all these points are settled, and in the meantime nothing is lost by turning them over in our minds.—*Prof. Byron D. Halsted, before the Ohio State Horticultural Society.*





KIRKLAND GLEN, CLINTON N. Y.

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THE GIFT OF TONGUES IN TREES:

AS VARIED AS THE SPEECH OF MEN.

THE OLD POPLARS.

There's a grim row of sentries along the hillside

We pass, when to climb the steep pathway we try;

'Tis the dear row of poplars we cherish with pride,

As they stand there like giants against the blue sky.

Сно.—The storm-riven poplars, the moss-covered poplars,

The rough, giant poplars that stand by the way.

They stand there so proudly, as bearing the brunt

Of the rough blasts of winter which through their leaves play,

Like stern vet'ran warriors in battle's dark front;

But their falling leaves tell us they're passing away.

Сно.—The loved chain of poplars, the dear band of poplars,

The long-living poplars, are passing away.

O friends of our boyhood and past generations,

Like you, to reach upward be ever our aim,

Unscathed by the storms of life's toil and temptations,

Unflinching in duty, unswayed in fame.

Сно.—Oh long live the poplars, the friendly old poplars!

The heaven-pointing poplars that stand by the way.

Professor Edward North, president of Hamilton College, once spoke of some of the historic trees of central New York as "talking trees." No man ever had a keener comprehension of life's language as spoken by his forests of friends; no one ever had a more poetic soul and pen to translate the words that whisper and whisper, on and on, seeking for ears and souls. He spoke of "the elms that droop so hospitably and caressingly over the village walks—the Kirkland elms whispering a benison on Hillward Way." Is there any tree that stands more for America at large, from the Atlantic to the Pacific, than the white elm? How superbly it lifts its arms aloft toward the skies, and then as gracefully bends them downward until its finger-tips sweep the sod. The old elm which your artist has selected is one of a noble grove through which the earlier settlers cut their highway. But so stately were those trees that, with exceptional generosity, they were left to stand in the very roadway. Actually, these sons of New Englanders, full of thrift to the last chip, turned out and drove around this one, and another and another. What a waste of firewood! At last, only a few years ago, a man whose soul reposed gently in his boots, cut down some of the finest specimens, and his fast horse can now go without a swerve, straight to the grocery. We have lost in this section some of the rarest, most priceless elms in the last ten years. We need a tree-protecting law of the most stringent sort—one that will prevent any one from cutting a tree out of the highway without permit of a county forestry commission.

"Not many parks in the land," says a recent writer, "afford more beautiful views than Hamilton College campus, with its winding foot-paths, carriage-drives, shade-trees, shrubbery and hedges. A



EVERY TREE has a language.

One can be understood by me;

another by you; few by all.

I was pleased by that group of

hemlocks in the November

GARDEN. It is the very group,

what there is left of it, that Sconondo,

the Oneida chieftain, is said to have

loved so well to sit beneath with his friend

Domine Kirkland, missionary to his tribe.

The trees stand on a high bluff looking over the Oriskany valley, and now over the graves of both Indian and white man. They sleep in the cemetery of the college they together founded. It is supposed that Sconondo pointed at those very trees, or referred to them when he made his eloquent and famous speech: "I am an aged hemlock. The winds of a hundred winters have whistled through my boughs." These trees are now certainly 200 years old.

long row of tall poplars, like old Continentals in line, sentinel the classic halls. The trees were brought from Philadelphia, whither they had been imported by Thomas Jefferson from Lombardy: They were planted on College Hill between 1804 and 1808, under the direction of Samuel Kirkland and his daughter." Few colleges have had the happy baptismal fortune of such a half-dozen godfathers as Washington, Jefferson, Hamilton, Steuben and Kirkland. These trees are cherished in their drear old age as Jefferson's trees. President North speaks of them as "the buttressed poplars, shivering in

helps out, besides, a natural allegory that long has been a sort of oft-recurring object-lesson to such of the students as dwell in the village below, and climb the hill to recitations. There are two abrupt turns in this hill. From time immemorial, so the college legend holds, the distance from the foot to the first turn has been called "Freshman Hill," and that from the first to the second turn, "Sophomore Hill." The distance from the second turn to the top is nearly straight, but fortunately the row of poplars, extending about half its length, marks a distinct division. The lower of these is "Junior Hill";



A TYPICAL AMERICAN ELM—GRANDEST OF TREES.

their old age, and still pining for the softer airs of Lombardy." In most places it must be confessed that the Lombardy poplar is unfit for shade or poetry. It gets to be excessively woody and lost to verdure. Its popularity has risen and waned, and it will be planted hereafter mainly for windbreaks on the prairies. But the row that follows down the steep slope of College Hill, as pictured (see page 67), points not alone the way of timid freshmen to the higher walks of classic aspiration, but that of the senior down into the valley, where the villages wait for his eloquence, and the cities long for his store of profound wisdom! This ancient row of poplars

the upper, "Senior Hill"—that last arduous climb to the fane of learning from whose altar the graduates address their words of wisdom to admiring audiences, Commencement Day.

For delicious associations the sugar-maple is unique. Sugar from a tree? Yes, and in such vast quantities and of such luscious quality that nothing saccharine ever matched it. No wonder the English tourist went home disgusted that lack of enterprise had allowed so much sap to go to waste! "It should be bottled up," he insisted, "and used as a harvest drink." But the richest commerce of colonial life centered in the "maple-orchards." There

in spring—and the springs were milder then—the young and old gathered for all imaginable frolic. The boiling-down was done in the woods, and no one missed the logs and limbs that were burned under the great ten-pail iron kettles. At night the boys went to the bush to keep up the boiling till midnight. Somehow on those days few hen's-eggs reached the house, and nutcakes and mince-pies vanished from the pantries and apples from the cellars. The time came, however, when maple-trees were more scarce, and now it hardly pays the farmer to tap what few trees he has left. The sugar-maples seen in the sketch (page 69) are a delightful group, too valuable for their beauty to be bored. The time has nearly or quite come in which to plant sugar-orchards as we plant apple-orchards. The manufacture of maple-sugar will become a great and profitable business.

All along the Oriskany valley, which runs northward through New York, there are glens that formerly poured in their contributions to the flood. The solid ridge 1,000 feet above the level was carved through by the contributory springs, and down and down, until the bed-rock is sometimes of the Niagara group and sometimes of the Salina. These glens are now exquisitely beautiful, and some of them wooded in wildness along their abrupt or easy slopes, while only a whispering rill goes under the ferns and over the shales down to the meadow-life and the sun. Not one of them is more picturesque or woody than Kirkland Glen. The far-sloping and yet rugged and complex banks have kept back the farmer and his plow on both sides. There the squirrel is yet in happy relation to sylvan homes, and the bees have on rocky cliffs a few trees that it will not pay to climb and cut. The brook has some delicious secrets it has never told to many,

and, I dare say, not a few tiny trout may be supposed to exist in the shaded pools. Blackberries fit for a feast of the gods used to grow thereabout, in great abundance, putting to shame, prospectively, the scarcity that should prevail in the region in later years when man had left there the marks of his energy in destroying nature's work. Thimbleberries, too, opened their great white blossoms, wooing the bees on the steepest bluffs. It is a glen of rare beauty. There remains much to charm



LOMBARDY POPLARS, PLANTED IN 1806 ON COLLEGE HILL, CLINTON, N. Y.

the eye, although the depredations of man have impaired its picturesqueness. E. P. POWELL.

LIVING SOUVENIRS OF TRAVEL.

WILD-FLOWERS TRANSPLANTED TO THE GARDEN.



THE DESIRE for travel is characteristic, and when the cares of the work-a-day world grow oppressive, the husband, daughter and I leave them behind for a few days or weeks, and seek rest and recreation among new scenes. For the time we are children together; we ride or row, walk or climb, as

the mood is on us; we collect shells and curious stones, and gather flowers and vines by the basketful. Having a great love for flowers, particularly for wild ones (which to our partial eyes are often more charming in their simple gracefulness than many of the stiff, top-heavy cultivated flowers of the present fashion), we have fallen into the habit of digging up every choice specimen we see growing wild. Of course, cars and steamboats will not stop for us, but the greater number of our little trips are taken behind our matched bays, and whether we are one or one hundred miles from home, there is generally a sharp-pointed, short-handled hoe, together with a bucket and piece of coarse coffee sacking, tucked away under the seats. Whenever something choice is seen, the horses are stopped, out comes the hoe, and a little vigorous digging soon brings out the plant by the roots, when it is dumped with scant ceremony into the bucket. A little fresh earth is thrown over the roots, and the sacking is tucked over all to prevent drying out. When far from home, the specimens are placed close together, a little damp earth and wet moss are squeezed tightly around the roots, and then a heavy cloth or sacking is tied snugly around all. We have cut back and thus prepared shrubbery and young trees, and carried them with us *three weeks* before reaching our journey's end, and yet rarely have we lost a specimen. When our journey promises to be a long one, we plant our smaller specimens in tin cans or old baskets filled with soil, crowding half a dozen plants or more into each can. Just enough water is supplied to keep the soil moist, but not wet. Plants can be carried in this manner

an indefinite time without injury, and sometimes the more vigorous growers will actually make new roots in their crowded quarters.

To us, at least, there has been great pleasure in all this. It is a singular fact that there is some plant or vine peculiar to every neighborhood. We have ridden hundreds of miles in the southwestern country, embracing southern Missouri, Arkansas and the Indian Territory. The lovely sweet gum-tree, or liquidambar, the red-berried black alder, the curious wahoo with its beautiful scarlet fruits, the bitter-sweet vine (*Celastrus scandens*), the *Clematis crispa*, the white water-lily, the hepatica, the white dog-tooth violets, the typha or cattail, and *Lilium Canadense*—all beautiful plants and worthy of preservation—were found by us but once in all our travels, each in its own circumscribed territory, which in some cases was but a few rods in extent. We found the beautiful cypripediums, or lady-slippers, the rare *Viola pedata*, var. *bicolor*, and many other fine native plants almost as limited in their haunts. If we had not been prepared to secure these treasures whenever we saw them, we must have lost many of them entirely, as there are but few firms in the United States that deal in wild-flowers, and their collections are by no means complete. There are native plants found in abundance throughout the land that are well worthy of garden culture, and these, of course, can be purchased of those florists dealing in wild-flowers. However, in one trip specimens that would be valued at many dollars if procured of the florist are easily obtained, and perhaps some rare ones may be found beside. Some of the rarest and loveliest flowers grow in secluded or almost inaccessible spots, in lonely valleys or on the wild mountain-sides. Such flowers can not be purchased of any dealer. While it is always a pleasure to the flower-lover to acquire a new plant or shrub, it is doubly so when it is known to be something rare and uncommon.

One of the advantages that follow the making of a wild-flower collection is, that it fixes in one's memory the locality where each variety was found, and also the general topography of the country, so that each plant can bring to mind a picture of the scenes once visited. I shall never forget the lonely rock-ribbed valley in Arkansas where I first saw the liquidambar, to which I have referred, with its

glossy star-shaped leaves and curious corky bark. No, nor the little pond at the foot of the forest-covered hills, where the good husband waded to his boot-tops after the roots of pond-lilies. Not long since, a dear friend who has accompanied us on several of our pleasure-trips, made us one of her rare visits. We were in the yard, walking and talking, looking at this and at that, when she said to me, as a thought seemed suddenly to strike her :

"Cousin, this morning one of you related an incident of our first trip together that I had entirely forgotten ; and this afternoon you described one of our camping-places in Arkansas that, for the life of me, I couldn't remember. You don't know how mortified I was at what I thought my defective memory ; but now I understand how it is that you forget so little. Here in your yard I see the alder that was dug that picnic day in Kansas, the buckeye and hepatica brought from Camp Danger, and the leather-wood from Eureka—all living memorials of the places we have visited together. Everywhere you have been you have found something new and

brought it home with you. Next time I shall follow your example and, in the bloom of my living souvenirs, live the bright past all over again."

It is becoming more and more the custom for town and city people to take an annual vacation. I wish it was not confined to them alone, but that the thousands of hard-worked farmers and farmers' wives would get away from their familiar fields for a few days, even if their journey were but to the next township.

In one sense, we country folk, as a class, need this sort of change even more than city workers. The merchant and the lawyer find, amid the incidents of their daily avocations, much variety, and their minds are kept alert and active in the strife for wealth or fame. But in the tasks of the husbandman there is but little such relief ; and his need for change of scene is so much the more imperative. It is true that "all work and no play makes Jack a dull boy," and particularly true if Jack's work itself is mainly dull and humdrum.

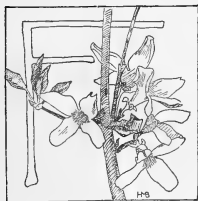
WANDERER.



SUGAR-MAPLES ON THE HILLSIDE AT CLINTON, N. Y. (See page 67.)

COCOANUT-GROWING IN FLORIDA.

A RECENT INDUSTRY OF GREAT PROMISE.



FROM the time of leaving Titusville I had been on the *qui vive* to obtain sight of *Cocos nucifera*, the cocoanut-palm. Not that I had not seen the tree before, for at various places I had been assured that it was directly within

my line of vision. But I wanted to discover one for myself, and by its fruit to know it. Without its fruit it was to my unbotanical eye a mere palm, not so very different from many of its congeners. Without its fruit it was merely the palm of the conservatories, or the subtropical or semi-tropical affair of trimly kept grounds. For that I was not searching, but only for the long-dreamed-of tree of the tropics which should bear aloft its pendent clusters of great fruit.

As our boat drifted its slow way down the long length of the Indian river, I carefully swept either shore with my glass. Palms there were of many sorts, interwoven with pines, the typical growth of the north, alternating with dense mangrove swamps, making a fitting background for low-growing palmettos, and giving more and more the tone to the landscape as we journeyed south. But not until we had drifted down for 150 miles between these low banks did I find that which I sought. At Jupiter Inlet, at the extreme southern end of this long thread of tide-water, stands a noble, graceful tree bearing high up beneath its feathery crown of foliage a great burden of clustered fruit. The same sweep of the glass brought within range both it and "Jupiter Lights," the lighthouse made known to us all so well by a famous story-teller.

A hundred miles further south are growing some trees which are known to have been there for half a century; but for how much longer, or how they came to be there, the historian saith not. Doubtless the seed was washed ashore from the south, and either thrown high up on the beach by some great storm, or carried there by a strolling native or by a wandering half-savage settler. Certain it is that it found congenial soil, and rooted and grew and thrived, that it might teach a lesson to a future generation.

Cocoanut-growing upon this coast has been marked by well-defined epochs. The beginning of the first one was when this seed, long ago, was washed upon this almost uninhabited shore, and thus was providentially saved from perishing.

The second period began 15 years ago, when the bark *Providential* (from what port I know not) went ashore some 30 miles below this Jupiter Inlet, and made a total wreck, not only of herself, and of owners' and consignees' hopes, but of a goodly cargo of cocoanuts as well. Fifteen years is only a little stretch of time, and the march of progress goes with swift strides. Fifteen years ago the dwellers upon this coast were few; they were far apart, and further yet from even the outposts of civilization.

This cargo of cocoanuts was a gift of the sea none too well appreciated. It could not be eaten; it could not be worn, nor converted into coin of the realm. Then, remembering the old trees to the south which some of them had either seen or heard of, and in default of any other use to which to put this questionable treasure-trove, the settlers began to plant the nuts.

The beginning of the third epoch came seven years later. The history of this I will give, as nearly as possible, as I had it from the lips of the man best qualified to speak, Ezra Osborne, doubtless the largest cocoanut-planter in the world. It was told to me one mid-winter afternoon as we sat beneath the friendly shade of a cocoanut-grove, upon the shores of that idyllic spot that men have named Lake Worth. It was winter, but the flowers were blooming about us, and the dense, rank vegetation of the tropics crept in tangles round our feet.

"It is about ten years," said Mr. Osborne, "since my attention was first attracted towards Florida as a desirable place for investment. Finding that I could secure a large tract of land along the Bay of Biscayne at a very low figure, I purchased it without any definite idea of its value or ultimate use, but rather on the principle that any land in the state was desirable at that price. Subsequently I was led to look into the possibilities of cocoanut-culture, and gave orders for planting a couple of thousand trees upon my purchase. The agent to whom the order was given found himself unable to carry it out, by reason of his inability to procure the seed-nuts. By the time his report was made I had become sufficiently interested in the project to determine on carrying it out on a much larger plan than was at first contemplated.

"The great difficulty in the matter was to procure the seed, the peculiarity being that the nuts must be still enveloped in their husk, which is usually removed before they become an article of commerce. Importers who were consulted were at first eager to take the contract for furnishing the required amount, but after correspondence with their foreign agents were all finally compelled to abandon it. At last a Baltimore dealer was found, of sufficient enterprise to send a vessel to Trinidad upon this special errand, and to bring a cargo of somewhat more than 100,000 nuts safely to this coast.



VIEW ON A FLORIDA COCOANUT-FARM. (From a Photograph.)

A vessel was then fitted out at New York with men, teams, implements and commissary stores, and despatched to the scene, when the work of planting began. For three successive years such a cargo of seed was brought from the same source, and the planting continued until some 330,000 seed-nuts had been placed in the ground. To show further the extent of the operations, it may be stated that the plantation at the end of that time embraced more than 3,000 acres, and extended in an almost unbroken line for 45 miles along a narrow strip of coast, besides embracing many of the eastern Keys."

After three years, work was suspended and the owner prepared to await patiently the maturity and fruiting of the trees. Mr. Osborne disclaims having had, even at that time, any definite idea regarding the disposal of the product which was expected to result from this immense experiment. Cocoanut-planting had been found profitable elsewhere, notably in the island of Ceylon. The world was rapidly increasing its capacity for absorbing products of all sorts, and doubtless would be ready for this one by the time it was ready.

On paper, the prospective profits could be figured easily enough. The cocoanut-tree comes into bearing at from five to eight years of age. When it has reached full maturity it will produce from 300 to 400 nuts per annum. Some authorities place the average at one nut per day for each day of the year. Thus the annual crop of nuts from this grove would amount to the extraordinary number of 120,450,000; or, on the basis of 108 trees to the acre, as planted, each acre would yield 39,420 nuts.

In the great markets of New York, Baltimore and Liverpool, prices have usually ranged from \$3 to \$6 per 100, never going as low as \$2. From this grove, they could be placed in either of these markets at an expense of not more than one cent each. Figure the profit upon the whole for yourself. It might range anywhere from \$1,250,000 to \$2,500,000 or more per annum. "There's millions in it!" Yet notwithstanding these glittering possibilities, it is by no means certain that a single nut will ever find its way, intact, to the great markets of the world. There are few trees which will yield such a diversity of useful products as this, and this enterprise is being conducted on a scale that suggests that these products will be made available in every manner which science and commerce can propose. As yet no effort has been made to gather or dispose of the nuts which have already been produced, although many of the trees first planted have fruited somewhat for a year or two. But as this product is scattering, and small as compared with the expectations from the entire grove, and as the plantation is remote, nothing will be attempted until there are sufficient nuts to warrant working on a very large scale. Cocoanut-growers at Palm Beach, Hypoluxo and other points about Lake Worth are finding thus far a ready market for the entire production of their groves, which are usually of small extent (the outcome of the wreck of the *Providential*), by selling the nuts for planting, at four cents each. A sound nut will produce one,

two, and infrequently three sprouts, the latter number being one for each eye, and these sprouts sell readily at fifteen cents each when well started. This affords a good profit in a small way, but how long this source will be available is an open question. Just now there is a rage for planting, both for commercial and decorative purposes; but whether the demand for the former of these uses will be maintained, probably depends much upon the success of Mr. Osborne's experiment.

The possibilities that lie within range of that are many, and can hardly be exaggerated. To gain an idea of these, we have but to look at the palm-tree in its relation to the daily and common needs of the Singhalese villager. It supplies easily the most of his physical needs. It may be said that his needs are few, but likewise is his knowledge limited as to how these wants may be best supplied. If our wants are greater, so is the genius with which we invent the means of supplying them; and with our greater knowledge we should find uses for the palm and its products of which the Singhalese *ryot* never dreamed. Yet with him it is food and drink, the meat and the milk of the nut supplying both. It furnishes a cup that cheers and inebriates as well, a liquor called "arrack" being fermented from the sap. The nutshells give him a cup from which to drink it, while the plaited leaves serve as plates and dishes from which to eat, as well as for thatch for his humble cottage. From the fibrous casing of the fruit he weaves ropes, nets and matting. The dried flower-stalks are used as torches; the large leafstalks line his garden fence. The timber of the tree is used for every purpose for which wood is required, and the trunk when hollowed out serves either for a canoe or a coffin.

Besides these personal uses, the oil of the nut furnishes a chief article of commerce, the shipments from Colombo and Galle amounting to something like 1,000,000 gallons per annum, albeit the native method of extraction is of the most primitive sort. The oil is obtained from the dried kernel of the nut, the native means being a rude mill or *checkoo*, consisting simply of a heavy wooden mortar in which a clumsy pestle of hard wood is made to revolve by a pair of oxen at the end of a long pole secured to the upper end of the pestle. At Colombo, European merchants have latterly engaged in the business, and by the use of steam-power are producing large quantities of oil of a very fine quality. The manufacture of foot-mats is now also carried on upon an extensive scale by the employment of modern machinery, the fiber of the husk being used. This fiber is called *coir*, and from it a rope is woven that is admirably adapted for use in salt water, and many of the trading-vessels of the country employ no other cordage than this.

We now come to the last and best-known use to which any product of the tree is put—the preparation, from the kernel of the nut, of that culinary article known as desiccated cocoanut. It is not many years since this first became an article of commerce and of general use; but it may already be found in every quarter of the

civilized globe. Although I have left its mention to the last, this will probably be the first method of utilizing any of the products of the plantation.

During the past year a factory has been erected at Miami, having such capacity and so constructed that it may be readily adapted to any of the above uses that

come within the range of possibly commercially successful enterprises; doubtless the near future will now see the complete fruition of an enterprise that has added one more, and that a most unique one, to our great American industries.

Ohio.

JAMES KNAPP REEVE.



TRENCHING IN THE GARDEN.

HOW TO SAVE HALF THE LABOR.



LET US till the garden so thoroughly as to derive the greatest possible benefit from our efforts. A right start on all hard and heavy soils may be made by trenching, particularly in the borders and where trees are to be planted. By "trenching" is meant

increasing the depth of the soil, breaking it up 16 or 20 inches below the surface, instead of about half that depth, according to the more ordinary plan. Trenching is to the garden or flower-bed what subsoil plowing is to the larger area. Of course, it is useless on light land. The advantages of trenching are the opening up of larger stores of plant-food, and providing a reserve of moisture for times of drought. A lawn on trenched land will retain its beauty in dry weather incomparably better than one on untrenched soil. The extreme end of a large lawn on the writer's grounds was slighted in the matter of subsoiling. But a main drain from an adjoining plat was carried across this end of the grounds the winter before the lawn was planted. In putting in the drain, a ditch about three feet deep was dug, and later filled in. Along the line of that ditch, the soil having been "trenched" in effect, not only did the grass seed catch much better, though the season was dry, but ever since there has been here a beautiful line of lawn, even in the driest weather, while on both sides the grass continues inferior. It affords a striking object-lesson

on the advantage of trenching for lawns, in its excellent effect on the grass.

The old way of trenching in Europe is shown to the left in the annexed engraving. First, a strip of soil about three feet wide across the garden is thrown out, as *a* from space *b*, to a depth of about eight or ten inches. This lays bare the subsoil, *c*, which is newly turned over to a good spade's depth, some manure being incorporated with it. Next, the surface soil of another strip across the garden, of the same width as the first (shown at *d*), is dug up and thrown in the space, *b*, exposing the subsoil, *e*, which in turn is worked over as *c* was. This course is followed across the area, the soil, *a*, being wheeled into the last open strip at *f*.

The writer has adopted what he considers a great improvement on the old way above described, which necessitates that all the soil be thrown about three feet on an average. This plan is shown at the right of the illustration. The surface soil is [turned over a good spade's depth in the ordinary way, but the furrow, *a*, is kept rather wider (say ten inches in all) than usual. Then as each furrow is in turn formed, some manure is scattered in the bottom, and this lower or subsoil stratum is dug over a full spade's depth, the workman standing



TWO METHODS OF TRENCHING.

in the furrow and working backwards. By this means every purpose of the European method is gained, with hardly half the labor. Trenching may be practiced at any season when the soil is fit to work. The preferable time is in the fall, for then the freshly-turned earth is exposed to freezing, with some advantages.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XV.



IN THE case before us this month, it is desired to combine garden usefulness with the largest measure of garden beauty. The owner is of that large class of amateurs who, possessing considerable skill in cultivating flowers, and living where cut-flowers and plants would sell well, desires some

income from their sale, while gratifying her love of floriculture. While we derive much pleasure from assisting our correspondent to secure the object desired, we are additionally glad of an opportunity of introducing an instance of ornamental gardening which we hope may lead florists and nurserymen generally to arrange their grounds in a handsomer manner. As before intimated in this serial, those who sell flowers, plants, seeds, etc., should be leaders in setting examples of tasteful lawn and garden arrangements. It is not creditable to horticulture that so many instances exist in which the grounds of commercial men are anything but pleasing to the eye, simply because so little pains are taken to arrange, plant and care for them properly. Indeed, it is not altogether a rare state of things, that of a score of homes along a street, one occupied by a florist is by all odds the least handsome. Let us hope that florists and nurserymen generally will awaken to their opportunities as public educators in fine gardening, with the almost certain assurance that the public will appreciate their efforts so highly as to become correspondingly more liberal buyers of material for embellishing their own grounds.

Accompanying the sketch of the grounds shown in Fig. 1 was the following letter :

DEAR SIR:—In response to your offer, I enclose a drawing of my home lot, which is of double width, being 64 feet wide and 190 deep. The house was built at the extreme left, with the idea that ultimately the other half of the land might be sold, there being room to build another house the size of ours. Having always grown plants and flowers, and for many years having had a small greenhouse in connection with a former home, I have concluded to undertake flower culture in a small way for the pleasure and pastime it will afford myself and family, and to sell any surplus to neighbors. My residence here last year, when I had many outdoor flowers, showed that there was a fair demand for cut-flowers, the people coming here for them. If, therefore, you

will favor me with such a plan of the plat as will render it handsome to the eye, as well as attractive to buyers, and give me a large area for the cultivation of many kinds of hardy and tender flowers suitable for cutting, I shall greatly esteem the favor.

If my greenhouse were about 50 or 60 feet long and 16 wide, it would be amply large. It is not likely that I shall ever care to extend the glass area; still, the possibility of an extension might be kept in mind. My house fronts to the west. The part back of the cross-line, A (Fig. 1), was under cultivation the past season. I had thought that the greenhouse might be located to the rear of the long straight walk, with cultivated land or a lawn on both sides. Still, you may be able to suggest something better. I would greatly enjoy having some graceful curves in the walk, but fear the shape of the place will not admit of them.

The plan we would substitute is shown in Fig. 2, in which 1 is the residence; 2 the greenhouse, the dimensions being about 64 by 16 feet; 3 the boiler and potting-shed.

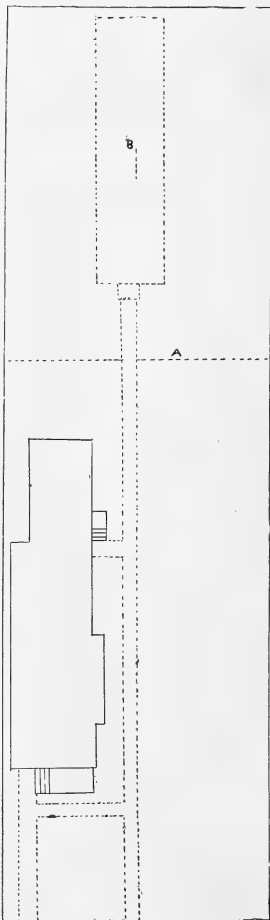


FIG. 1. ORIGINAL PLAN OF PLACE.

The arrangement suggested outside the buildings is as free and varied as possible, with a view to pleasing garden effects, combined with a large percentage of space for hardy shrub and flower borders. By locating the greenhouse to the extreme right of the grounds at the back, as the residence is to their extreme left at the front, the desirable end will be secured of having all the space adjacent to the greenhouse in one body of sufficient area to contribute a considerable degree of boldness to that part, and form quite an ample spread of lawn. This back garden would be one of the special attractions of the place, and, cut off in a measure from the street end by the heavy planting in the neighborhood of 5, while not entirely excluded from view, it would serve as the lodestone to draw flower-lovers (who should become flower-buyers) to the further limits of the area open to visitors. It would be the handsomest, as it would be the broadest, section of the garden.

Another obvious gain in locating the greenhouse to the extreme right will be the chance afforded of introducing curves in the walks. Indeed, by this means it will become possible to invest the walk system to the front of the greenhouse and the residence with a series of pleasing curves that will go far towards ridding the place of the charge of stiffness. By having but a single walk entering from the street, a degree of breadth is secured in the extreme front of the lawn that is a great improvement as compared with the effect of two walks at the front, shown in the original diagram. With an elm or other shade-tree near the veranda, and several shrubby clumps of irregular outline near the street line, this part should present a fine appearance from the street, as well as from the house.

Back from the street a small area of lawn, open in the center, is met, which loses itself in grass walks among heavy groups of shrubs and flowers farther back. The real aspect here should be that of a large lawn-plot, occupied towards the rear with bold plant and shrubby borders. This idea would be strengthened by the openness towards the street. Were the space there occupied with shrubby beds, nothing having the semblance of a lawn would be left, and the effect would be greatly weakened. The planting of these borders, as well as of all others, should follow the rule of setting strong-growing shrubs in the center and rear parts of the borders, devoting a space toward the edge to all kinds of hardy and other flowers suitable for cutting.

As our correspondent makes no request for lists of suitable kinds, it is assumed that she is sufficiently acquainted with flowering-plants and shrubs to be able to make a suitable selection. It may be said in the way of general information, however, that nearly all the hardy flowering-shrubs are valuable for cut-blooms, while some, such as the lilacs, weigelias, mock-oranges, roses and hardy plumed hydrangeas, are wholly indispensable. Were some of the smaller beds—for example, the one lying between the round bed at 5 and the house—to be occupied only with shrubs to their edge, the effect would be good. While the rear garden, 6, would present an

aspect entirely its own, it may, as regards the planting of the marginal masses, be treated in general as suggested above. We favor keeping all kinds of plants or shrubs by themselves, not only for convenience, but for

the better effect thus secured. Still, that the plants of different distinct masses should run into each other somewhat at their margins is deemed quite desirable.

Between the front and back garden, along the walk, is introduced an attractive feature, namely, a series of arches over the walk, to be covered with climbing shrubs producing flowers. The list might embrace roses, clematis, honeysuckles, trumpet-vines, wistarias, etc.

To the rear of the heavy shrubbery adjoining the grass-plot, 6, might be an open garden spot for the growing of carnations, bouvardias and other winter-flowering stock during the summer. In case it is desired to enlarge on the glass area, no better place for locating the extension appears than next to the back fence, at 8.

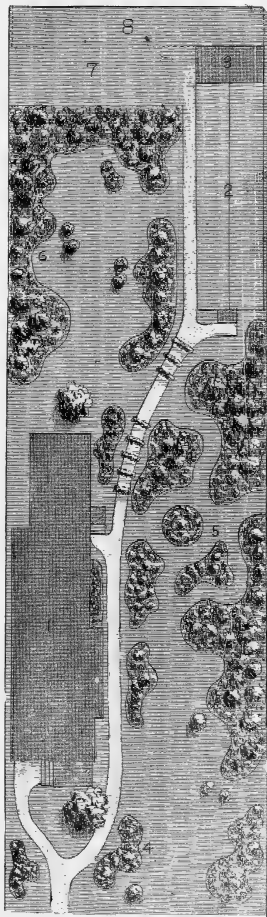


FIG. 2.—IMPROVEMENTS SUGGESTED FOR PLACE SHOWN IN FIG. 1.

From considering the improvement of a home embellishments, we proceed to touch upon a plan also rather

unusual, so far as instances of its kind in the past are concerned, but many examples of which it is hoped will be seen in the future. It is the adoption of a park-like plan for suburban districts, with a view to imparting a large measure of landscape charms to a community of homes, entirely outside of any gardening that may be done within the boundaries of the respective home lots.

Our illustration is from a plan submitted to certain readers of *GARDENING* by request, and which is now being carried out near St. Louis, Missouri. The tract embraces 157 acres of magnificent rolling land, which it is desired to improve as handsomely as possible. It is to be divided into about 200 lots, with a view to inducing business-men from the city to take up their homes in the country.

In preparing the design, the idea constantly borne in mind was to secure a large and handsome park devoted wholly to private residences, and without any of the lots appearing isolated or remote from the others, the lots having generally a frontage of 100 feet, and a depth varying from 120 to 300 feet.

The portions devoted to public use, including streets, circles, junction plats and small parks, go far toward imparting a park-like aspect to the entire tract. The system of tree-lined winding drives imparts beauty and grace. By having the main driveways

36 feet wide (the street proper being 66 feet wide), and the residences not nearer than 65 feet from the curb lines, a stretch of lawn 166 feet wide from building-front to building-front, less the width of the drives and walks, is secured. Add to this the considerable areas devoted to lawns between the houses, made possible by the width of the lots, and the impression is at once created that each house is situated in a large park at a convenient distance back from the drives. Although the highways present considerable boldness of curve, it would be im-

possible to make them more direct and convenient as regards access to the railroad station, were they laid out straight and crossing at right angles. This is especially true in the present instance, owing to the rolling character of the land, as the drives for the most part follow the valleys.

At various points the areas not divided into lots, but devoted to highways and to other public uses, are of considerable width. Adjoining the railway, for example, plats fully 100 feet wide in places are heavily planted with trees and shrubs for cutting off at intervals the view of the railroad from the nearer lands fronting

in that direction. Between section E and F, G, I, the presence of a beautiful woody dell, through which runs a brook fed by a spring, was taken advantage of to form a bit of public park. Another rill was found meandering through a picturesque dell which lies between what are now sections L and S; and here, too, a good width of the park-like character was preserved, which extends westerly toward the railroad, around the curve formed by section L. Throughout, an irregular style of arranging the street trees has been adopted, with the further idea that the improvement of the individual lots shall in a measure conform to the general lay-out of the tract. The building of street and divis-

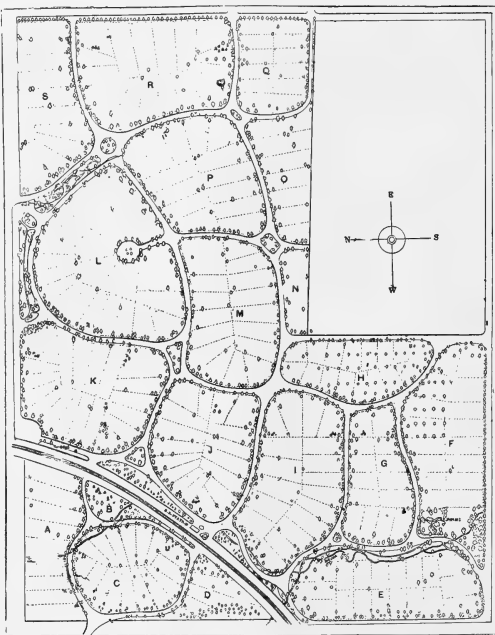


FIG. 3—PLAN OF A RESIDENCE PARK NEAR ST. LOUIS.

ion fences by home-owners is discouraged.

It would be easy to institute comparisons between the present park-like plan and the plans of certain adjoining subdivisions that have been laid out on the square-block order, with streets running in straight courses, by abrupt rises and falls over hills and through valleys; but this is needless. There seems to be no more reason for disregarding the principles on which the beauty of landscapes rests, when laying out a district comprising a hundred lots than when laying out a single lot.

THE ECONOMIC PLANTS OF JAPAN—XII.*

ROOTS AND TUBERS USED FOR FOOD.

THE LIST here given includes most plants of this class which have any importance from an economic standpoint. Many are wild plants used as food only occasionally, or when necessity compels; others are put to more uses than one, and their roots are not in all cases the most valued portion. Some are grown for ornament as well as for use as vegetables, as in the case of the lotus, the lily and the iris.

The roots of plants not cultivated are mainly valued for the starch they contain, and in many cases it is this substance alone that is sought. The starch is extracted, after the roots have been cleaned, by first crushing them in a huge stone mortar; the pulp thus produced is then strained through bamboo baskets, which remove all fibrous material. The filtrate is now washed, or stirred in water, and allowed to settle several times in succession till all impurities have been removed; the starch is then spread on trays and set in the sun to dry, and when this is accomplished, it is stored in boxes and kept ready to be used for food as occasion may demand. The starch of certain plants has a bitterness which mere washing cannot remove. It is sweetened by soaking for some hours either in lye or lime-

water, after which it is again washed in clean water before it is dried. Starch thus obtained constitutes no inconsiderable portion of the food of the poor in country districts.

ACORUS SPURIUS, Schott.; Jap., *Thobu*. This flag has



APIOS FORTUNEI—HODO-IMO.

upright, linear leaves like the iris, some two feet tall, and small greenish flowers in a dense head on a short scape. The whole plant is somewhat fragrant. The rhizoma furnishes starch. Nothing is more common in many country districts than to see a perfect hedge of this plant on top of old houses. The damp atmosphere and frequent rains keep it well supplied with moisture. The custom of planting it in the thatch is said to be due to a superstition that it protects the inmates from harm. The planting is done on May 5, and on the same day some of its leaves are put in the family bath, where it is supposed to exercise miraculous influence in protecting the bather against disease.

APIOS FORTUNEI, Maxim.; Jap., *Hodo-imo*. (See illustration.) The root produces small ovate tubers of very agreeable taste, which are boiled and eaten like potatoes. It grows wild in the wooded mountains of central Japan,

where the inhabitants gather it, and it is also occasionally cultivated by such of the natives as are fond of it as an article of food.

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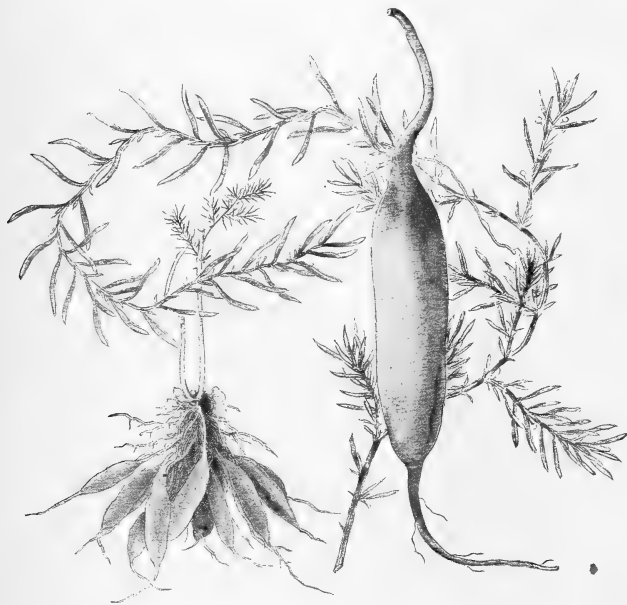
ASPARAGUS LUCIDUS, Lindl. (*A. falcatus*, Thunb.); Jap., *Kusa-sugi-kadsura*. On this page is represented a plant with its tubers as I pulled it from the ground. This peculiar plant has a twining stem 12 to 15 feet long, and fleshy roots or tubers, rich in starch. The vine would be well worth cultivation here for ornament. The slender herbaceous stems are thickly clothed with short-pointed and sharply triangular leaves. On a trellis it forms a graceful and dense dark green covering.

BATATAS EDULIS, Choisy (*Ipomoea Batatas*, Lam.; *Convolvulus Batatas*, L.; *C. edulis*, Thunb.); Jap., *Satsuma-imo*, *Riukiu-imo*. (The Sweet-Potato.) There are few

short, the yield is not so large as it would be if it were planted earlier. This drawback is still further emphasized by the fact that the farmers carefully cut the roots from the young plants when they draw them from the seed-bed, and plant only the tops as cuttings. The plant is thus still further delayed in its growth by the length of time it takes to form roots. The seed-bed is a rude kind of hotbed, made of grass, leaves and rubbish, on which the potatoes are laid, the smallest ones being selected for seed. All varieties that came under my observation were fibrous and tough, and lacked sweetness. They would be considered poor in this country.

CANNA INDICA, L.; Jap., *Dandoku*, and other species are rarely cultivated for the starch contained in their large fleshy roots. Some of them, as *C. edulis*, Edwards, and *C. coccinea*, Rosc., yield a superior kind of arrowroot.

COLOCASIA ANTIQUORUM, Schott.; Jap., *Sato-imo*, *Imo*, *Aka-imo*, *Ugu-imo*, *Yatsu-gashira*. Few plants cultivated for their roots are of more importance than this. It is quite generally grown as a farm crop throughout the country, and it furnishes a considerable percentage of the food of the people. The plant is well known in America for its ornamental qualities, the large dark green leaves, commonly called elephant's ears, forming a striking contrast to other plants. In Japan it is cultivated for the tubers which form in abundance about the old root. They are usually prepared by boiling like potatoes, and then served with *shoyu*. They have a pleas-



ASPARAGUS LUCIDUS—*KUSA-SUGI-KADZURA*.
Single root and spray at left, two-thirds natural size.

more important vegetables in Japan than the sweet-potato. It is cultivated to the northern limit of its successful growth, and constitutes an important part of the food of the people. All authorities agree that the sweet-potato was brought to Japan from China. According to a Japanese author, the sweet-potato was brought to the Riukiu (Loo Choo) Islands from China about seven hundred years ago: so it has been there long enough to feel at home.

The sweet-potato is there always grown as a second crop, being planted late in June between the rows of barley or wheat. The growing season being thus but

ant starchy taste, though they are of rather close, or sometimes pasty texture, but not fibrous. Why they should be called *Sato-imo* (sugar-potato) is not apparent, for they are not at all sweet. The culture is similar to that of potatoes. The yield reaches 150 to 200 bushels per acre. The leaf-stalks are also used for food, being prepared by peeling off the outer fibrous layer, and hung in the sun to dry for winter use.

The illustration on page 81 shows a plant of a small red variety called the *Ingo-imo*, just as I pulled it from the ground, reduced to one-fourth natural size. There is fully as much difference in the eating-qualities of the

several varieties as we find in different kinds of potatoes; some are dry and mealy, others pasty and watery. They also differ much in earliness, color, size and mode of growth, and some are suited to upland, others to swamps. As a rule, the quality is best when they are grown on dry, sandy soil, but the yield is heaviest in moist soils.

They compare very favorably with other root crops in nutritive qualities, as they contain only about 80 per cent. of water, and of the dry matter one and one-half to two per cent. is nitrogen; the rest is starch and other non-nitrogenous substances.

CONOPHALLUS KONJAK, Schott. (*Arum Dracunculus*, Thunb.; *Amorphophallus Rivieri*, Durieu., var. *Konjak*, Engler; *A. palmiformis*, Riviere); Jap., *Konnyaku*. This is another cultivated plant of the family Araceæ, of much importance in Japan. The root forms a fleshy, somewhat flattened corm, often of very large size, which, after being cleaned, sliced and dried in the sun, is pulverized in stamp-mills, and the flour thus obtained is used for food. The illustration on this page represents the corm, leaf and flower of the *Konnyaku* plant. The two former are much reduced; the flower is nearly natural size.

The plant requires a rich, moist soil, which must, however, be free from stagnant water. The plant is propagated by the young corms which form on the side of the old one. The crop is dug in the fall before frost in northern regions; but wherever the frost is not severe enough to injure the corm, the roots may remain during the second and even during the third year undisturbed, the old corms continuing to grow in size until when dug in the fall of the third year they are often a foot in diameter. When thus left over, the crop is liberally manured each spring when growth starts; 600 bushels per acre is an average yield for a three years' crop. Once out of the

ground the corms do not keep well; all but those intended for seed are therefore sliced and dried soon after digging and the pieces stamped into powder, in which condition it will keep for an indefinite period without deterioration. I may add a word in description of the *konnyaku* mill, which in fact is only the ordinary stamp-mill of the country, and is used for pulverizing many other substances. *Konnyaku* was grown somewhat largely in Oyamada, and this mill was kept at work during the greater portion of the year.



CONOPHALLUS KONJAK—KONNYAKU. Much reduced.

Water is the universal and wellnigh the only source of power. Running streams are abundant, and the mountainous nature of the country gives them plenty of head. With the least possible amount of intermediate gearing the wheel turns a massive shaft, raised about two feet from the floor and running the whole length of the building. On one side of this shaft is a row of huge wooden mortars, made by sinking blocks of hard wood in the earth and scooping out the upper end. Each of these bowls is provided with an equally huge pestle con-

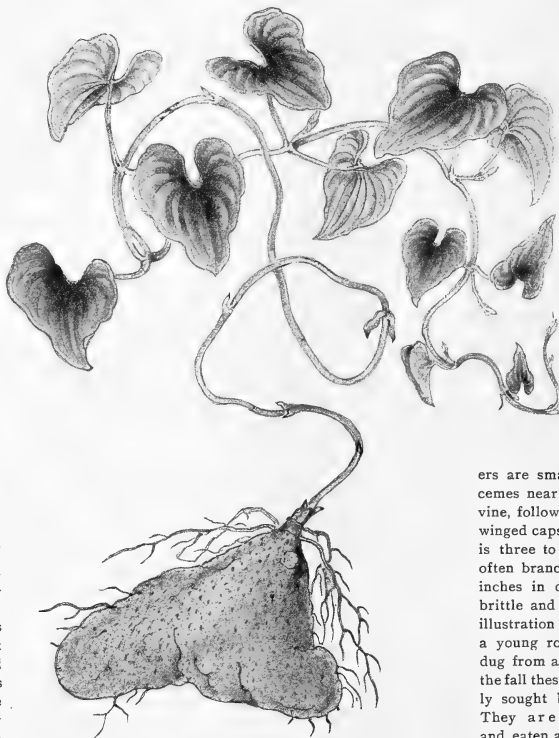
sisting of a heavy piece of timber some seven or eight feet long, which is held in an upright position in the bowl by a framework. To lift these pestles, a series of wooden sprockets, or arms, are inserted in a spiral around the shaft, in such a manner that when the latter is turned one after another of these arms pushes against a shoulder on the pestle, which is lifted a foot or more and then drops into the bowl, crushing by its weight whatever it may contain.

The fine gray *kanniyaku* flour which results from this process is cooked in many ways.

CYCAS REVOLUTA, Thunb.; Jap., *Sotetsu*. One of the palms from which sago is obtained. It being well-known as an ornamental plant, needs no description here. It grows in abundance on the islands of the extreme south, especially on the Bouin Islands, whence large numbers are exported to Europe. It is a slow grower, hence its value as a source of sago is but slight from the cultivator's standpoint. The stem attains a height of eight to ten feet, and old specimens usually have several or many trunks from the same root, most of them being more or less inclined. It stands the winter in Tokio with a slight protection of straw. The sago is obtained from the trunk by first felling and paring it and cutting the interior in pieces, which are then pounded in a trough with water, the fiber floating away and the starch settling to the bottom.

DAUCUS CAROTA, L.; Jap., *Ninjin*. (The Carrot.) Commonly cultivated. There are but few native varieties, and none of them very good. The most common one is

a large pale red root which often grows two feet long, called *Kintoki-ninjin*. It lacks sweetness and flavor compared with our improved varieties, and for that reason could not compete with them here. Foreign varieties have been introduced and are grown in the neighborhood of the foreign settlements. Carrots are quite commonly used in Japanese cooking, and can be found in the vegetable stalls during the greater part of the year.



DIOSCOREA JAPONICA—TSUKUNE-IMO.

DIOSCOREA JAPONICA, Thunb. (*D. oppositifolia*, Thunb.); Jap., *Yama-no-imo*, *Jinen-jo*. (The Yam.) This species grows wild in abundance in hedge-rows and waste places all over Japan. It has a slender voluble vine, which climbs to a height of ten to twelve feet. In the axils of the leaves of some of the vines are small oblong bulblets. The pistillate flowers

are small, white, in racemes near the top of the vine, followed by triangular winged capsules. The root is three to four feet long, often branched, one to two inches in diameter, fleshy, brittle and palatable. The illustration (page 82) shows a young root of this kind dug from a hedge-row. In the fall these roots are eagerly sought by poor people. They are either boiled and eaten after the manner of potatoes, or grated and stirred with *shoyu* and

water into a pasty mass called *tororo*.

A cultivated variety is called *Naga-imo* (long potato). It has somewhat larger leaves than the species, and the root is larger and more regular in form. I have repeatedly seen specimens upwards of four feet long and between three and four inches in diameter. To prevent breaking in handling, each root is tied to a stick before it is marketed. Another variety is the *Tsukune-imo*, which has a knotty, bulbous root with a fancied resem-

blance to a clinched fist, which is the meaning of the name. A plant of this variety, much reduced, is illustrated on the opposite page.

D. SATIVA, L.; Jap. *Maruba-dokoro*, is a wild species with pungent roots which require soaking in water, or better still in lye, before they are edible. The *Kashu-imo* is a cultivated form that properly belongs to this species. The bulb is rounded, with many fibrous roots; the vine is thick and angular, leaves large, alternate; and the bulblets (*mukago*) in the axils are large and globular. A portion of the vine, with a leaf and bulblet, is illustrated on page 53.

All the cultivated forms are usually propagated by pieces of the root, which are planted in rich, deep and moderately moist soil. On a trellis made of bamboo

sticks the vines are trained, the farmers maintaining that the roots grow both larger and smoother when the vines are thus supported than when they trail on the ground. They can also be propagated by the bulblets or from seed, but neither method is to be recommended when pieces of root can be obtained.

The yams can be dug at the end of the first season's growth, if desired, but as they continue to gain in size for several years, they are seldom dug the first fall. They usually remain three years in the ground, the bulblets alone being gathered yearly. These also are eaten, but they have a rank taste like potatoes exposed to the sunlight. All the forms, both wild and cultivated, serve as a source of starch.

C. C. GEORGEON.



COLOCASIA ANTIQUORUM—INGO-IMO.
One-fourth natural size. (See page 78.)

TEA-CULTURE IN THE CAROLINAS.

THE FACTS IN THE CASE TOLD.



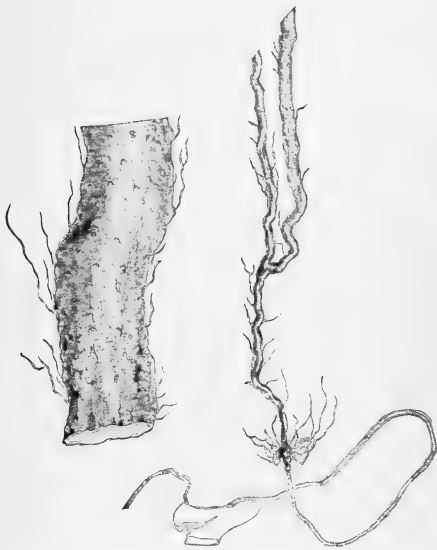
YEARS ago, when General Le Duc was United States Commissioner of Agriculture, he inaugurated experiments in tea-culture in the hope of introducing a new money-crop for the South. General Le Duc went out of office before he had time to demonstrate what could be done with tea, and flippant penny-a-liners ridiculed the effort so that his successor dropped it.

The tea-garden planted under the auspices of the department at Summerville, S. C., was abandoned to grow up into a wild thicket, and the general opinion

seemed to be that the effort was a failure. Had the tea-plant been of such a hardy nature as to thrive at the North, there is no doubt that private enterprise would long since have pushed the growing of it to success. But the southern people, impoverished by the war, could not afford to experiment with new things, and so tea-culture dropped out of notice. But here and there all over the South a few tea-plants have been scattered, and individuals made a little tea in a rude and uninformed way. Even before the war, and before General LeDuc's experiments, tea had been planted in North Carolina. In 1860 Mr. Smith made quite a tea-garden near Fayetteville, N. C. A short time ago I visited this plantation. The tea-plant has had literally no attention since the war, and has had to struggle for existence with pines, cherry-laurels, green briars and all manner of wild

growths, and the whole thing is now a dense thicket where no one would suspect a tea-plant to be growing. But pushing our way through the brambles, we found the tea-plants, or rather trees, holding their own bravely with the rest of the bushes, and demonstrating their right and ability to live.

The widow of the man who planted them still lives on the place, and still makes tea from the plants, and tea, too, of a quality and flavor seldom found in the tea from the stores. She kindly gave me a large package for trial. On reaching Greensboro' I had some of this tea drawn and tested by a New York dealer who happened to be at the hotel. His unhesitating decision was, "That tea is worth \$1 per pound by the cargo."



ROOT OF *DIOSCOREA JAPONICA*—YAMA-NO-IMO. (Yam.)
Section at left is natural size. (See page 80.)

A few days after this engagements brought me to the neighborhood of Charleston, and hearing that efforts were being made to rehabilitate the old government tea garden at Summerville, by Dr. Charles U. Shepard, I determined to look further into the matter, with a view to inaugurating some work in this line at our own station in Raleigh. On driving out to Dr. Shepard's pretty country-seat, "Pinehurst," to my surprise I found six tea gardens of recent planting, averaging an acre in each. All were in admirable order, clean and well cultivated, and the rich green foliage testified to the health of the plants. They have been raised from seed from various

quarters, but most of them are the Assam hybrid, a variety raised in India by crossing the native tea upon the Chinese. Dr. Shepard told me that having bought a part of the great Nuvington plantation on which the tea experiment first started, he thus became interested in the matter. The part he bought did not include the tea-plantation itself, but he has since leased it with the right to remove the trees if he chooses. Many young plants have sprung up from seed at the old place, and many more were in a nursery there. These he transplanted near to his house, and afterwards procured seed from the Gulf states and from China and Japan, and increased his plantations on various soils and exposures. He is still raising young plants, and has quite a nursery under latticed screens made of laths. He also has orders abroad for seed from the Himalayas, China, Ceylon and Japan, and proposes to increase to fully ten acres. He has as yet made no tea from his young plants, but has made some from the old government plants. This tea was of such a high quality that a large tea-dealer in Washington, whose trade demands tea of extra quality, offers to take all he can make, literally at his own price.

Dr. Shepard's opinion, based on his experience, is, that the leaf grown here is better for black than for green tea. He says that the cost of picking is about 25 cents per pound of cured tea. Just what the cost of curing will be when done on a large scale, with the best apparatus, he is as yet unable to say, but feels well assured that the business may be made profitable by making only high-grade teas and not attempting to compete with the mass of trash now imported. So soon as his plants are of the proper age, he proposes to put in the best apparatus and enter into the manufacture as a commercial venture.

Once under way, there is no doubt that American ingenuity will be able to simplify and improve the manufacture, and a new and important money-crop be introduced in the South. Mr. Jackson, an expert tea-grower from Assam, who had charge of the Summerville plantation under General Le Duc, stated that with the negro labor of the South he could make tea more cheaply than with coolie labor in India, because of its greater reliability. In regard to the hardiness of the tea-plant, I think there is little prospect of its successful culture much north of 35° in this country. At Old Point Comfort, Virginia, hard winters cut the plants badly, and on the upper part of the Delaware and Maryland peninsula, mine were killed. But in all the piny woods country, from Raleigh to the Gulf, they will thrive.

W. F. MASSEY.

N. C. Agricultural Experiment Station.

[We take special pleasure in corroborating Professor Massey's observations, having spent a considerable time in investigating the question of American tea-growing and of the labors devoted to the attempted industry during Commissioner Le Duc's administration. It deserves attention.—Eds.]

A REPORT ON GRAPES IN KANSAS.

HELPFUL TO GROWERS IN THE CENTRAL STATES.



F the varieties of grapes in cultivation here I will describe only those found of value: naming first the well-known sorts; second, the less common kinds, and last the worthless ones. The varieties are arranged in groups as to color and order of ripening, thus enabling the reader to note at a glance their chronological succession.

Moore's Early.—Perhaps the best early grape, taken altogether, among the standard varieties. Berry large and showy. It is a seedling of Concord, of about the same quality and hardness, but not so large in bunch, so vigorous in growth, or so productive.

Early Victor.—Ripens with the preceding, is larger in bunch, stronger in growth, more productive, of better quality; berry smaller, more subject to rot.

Ives.—Large in bunch, medium in berry, colors early. Never good in table quality, and only a wine-grape. Vigorous, healthy and productive. Makes a good wine.

Worden.—So nearly identical with the Concord that it is difficult to distinguish. More tender in skin, will not ship as well. Perhaps a few days earlier.

Concord.—Rots in some locations so much that it is scarcely worth cultivation; but whenever the disease can be controlled, or does not occur, this grape is valuable.

Cynthiana.—Reliable. Has never failed to produce a full crop. Large in bunch, small in berry; of fine quality, hardy, healthy, vigorous, very productive; free from rot and mildew. Makes a heavy wine of high quality.

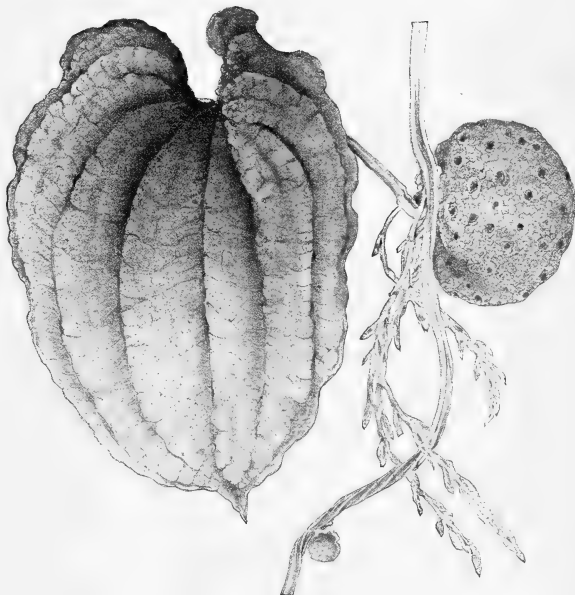
Herman.—Reliable; has never failed. Free from rot

and mildew; hardy, healthy, vigorous, productive. Bunch large, long, compact; berry small and only fit for wine.

Delaware.—A feeble grower, tolerably hardy, very productive. Free from rot, but subject to mildew in unfavorable weather.

Brighton.—A fine red grape, that soon deteriorates after ripening. Large in bunch and berry. Does not always set fruit well; not quite hardy, nor very productive. Vigorous and healthy, but rots and mildews some.

Ulster Prolific.—No doubt the best red grape among standard varieties; hardy, healthy, vigorous, very pro-



DIOSCOREA SATIVA—KASHIU-IMO.

Leaf, bulblet and young seed-pods, three-fourths natural size. (See page 81.)

ductive. Bunch medium, compact; berry medium or above, dull red, rich, sweet, sprightly. Little subject to rot or mildew.

Marsala.—Vigorous, productive, red. Large in bunch and berry, pulpy and foxy. Free from rot and mildew;

reliable, not very desirable, where we can grow better varieties; good for jelly and canning.

Woodruff Red.—Of same general character as the preceding; not quite so large in bunch, larger in berry, and of finer color. More desirable. Hardy, vigorous, productive; reliable, but only good for jelly and canning.

Jefferson.—Of fine quality. Bunch large, rather compact; berry large, meaty, sweet, rich and vinous; vine healthy, vigorous, very productive. Requires winter protection, but worthy of extra care.

Hayes.—A white Concord seedling of about the same quality, or a little sweeter; bunch and berry large. Hardy, vigorous, fairly productive. Rots more or less.

Victoria.—Another white Concord seedling of much the same character as the preceding, perhaps larger in bunch and berry; more productive, and not as subject to rot; more desirable.

Niagara.—Very large, handsome. Sweet, sprightly, somewhat pulpy, of fair quality, with considerable native aroma. Very vigorous and productive, but not quite hardy; subject to rot and mildew. Desirable where it can be grown.

Pocklington.—Hardy, healthy, vigorous, productive. Sweet, sprightly, quite pulpy, with a strong native aroma, of fair quality. Rots in unfavorable seasons.

Elvira.—White. Small compact bunch. Vigorous, hardy, productive. Berry medium, tender, juicy, sweet, sprightly. Subject to crack—they are only good for wine.

The following are new varieties of merit, named in the order of their ripening:

Superb.—Black; bunch medium, compact; berry medium, tender, without pulp, sweet, rich, sprightly, vinous. Vine hardy, healthy, vigorous and productive; free from rot and mildew; very valuable.

Jewel.—A black Delaware seedling. Bunch medium, shouldered, compact; berry medium, skin rather tough, slightly pulpy, sweet, rich, sprightly, vinous. Vine not vigorous until fully established; free from rot and mildew; will hang on the vines long after ripe and ship well.

Superior.—Black; bunch medium, compact, handsome; berry medium, very tender, juicy, without pulp, sweet, rich, sprightly, vinous, pure, of highest quality. Vine hardy, healthy, very strong grower and productive. Free from rot and mildew. Although this grape does not ripen quite as early as Superb, or perhaps Jewel, it is superior to either, and a much stronger grower.

Matchless.—A remarkable grape; black. Bunch very large, compact, regular, handsome; berry very large, pure, sweet, sprightly, rich, vinous, with a slight pulp. Hardy, healthy, vigorous and very productive. Free from rot and mildew; will hang on the vines long after ripening; ships well; it colors early and evenly and ripens nearly as early as Jewel. We know of no other grape so attractive and desirable for market. It must become popular when known.

The last three above named possess all the qualities desired. No single variety can ever have all of them; namely, earliest in ripening, best in quality, largest in bunch and berry; strongest grower, very handsome and productive; best for market, table and wine, and the best to handle and ship.

Osage.—A black Concord seedling, large in bunch and berry; of about the same quality, perhaps a little sweeter, about a week earlier; hardy, vigorous, productive. Rots about like the parent.

Standard.—A black Delaware seedling, as large in bunch and berry as Concord; better quality. Hardy, healthy, vigorous and productive. An excellent market and table grape; a superb wine grape. Somewhat subject to rot.

Concordia.—Black; much like Concord in bunch and berry, of better quality; ripens earliest. Hardy, healthy, vigorous, productive. Free from rot and mildew. Promising.

Eaton.—A black Concord seedling of about the same quality, but larger in bunch and berry; not as vigorous, but hardy, healthy and productive; handsome, showy.

Paragon.—Bunch large, often shouldered, compact, handsome; berry large, tender, sweet, rich, sprightly, vinous, without pulp; a bag of delicious juice. Vine hardy, healthy, vigorous and productive; free from rot and mildew. Ripen with Concord, but will hang on the vines long after that. The most valuable market, table and wine grape of high quality we have; easily grown and propagated, and will stand all kinds of weather. No other grape has so many points of excellence.

Black Imperial.—A medium-sized black grape of high quality. Bunch large, shouldered, compact; berry tender, rich, sweet, sprightly, vinous, of a peculiar refined flavor. Hardy, healthy, vigorous, productive. Rots considerably; if this could be controlled, it would be a valuable and desirable grape.

Avilla.—Small, black of same type and character as *Cynthiana*. Native of Southern Kansas. Rich, sweet, sprightly; vinous, hardy, healthy, vigorous, productive. Free from rot and mildew; a fine wine grape.

Cherokee.—Black; same type as *Cynthiana*, larger in bunch and berry. Hardy, healthy, vigorous, productive; free from rot and mildew. Raised from the same seed as Ozark; more juicy, sprightly and vinous and perhaps of equal value. Ripens late.

Ozark.—A remarkable black grape of the *Æstivalis* class; as large in bunch as Concord, almost as large in berry. A prodigious grower—will produce more than twice as much foliage, cane and fruit, as any other variety here. Remains vigorous and green until frost. Ripens very late, but is protected by the heavy foliage, until killed by hard frost. A rich meaty grape, of a peculiar pleasant flavor, unlike any other. Hardy, healthy, very productive; free from rot and mildew. A valuable late market and wine grape.

Perfection.—Red. Bunch long, shouldered, compact, handsome; berry medium, clear bright red, sweet, rich,

sprightly, vinous. Vine hardy, healthy, vigorous, productive. Free from rot and mildew. This is the earliest and most perfect red grape we have; much like Delaware, but larger in bunch and berry. Vine hardier and stronger in growth.

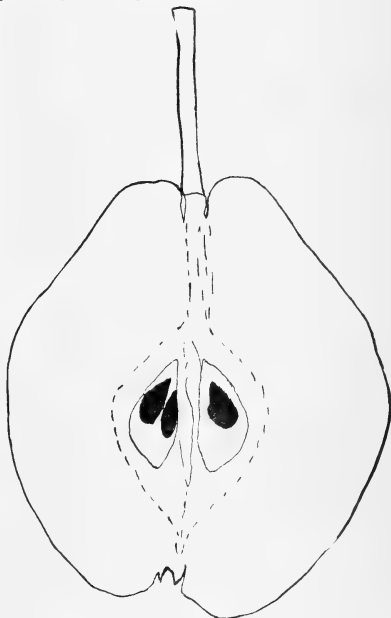
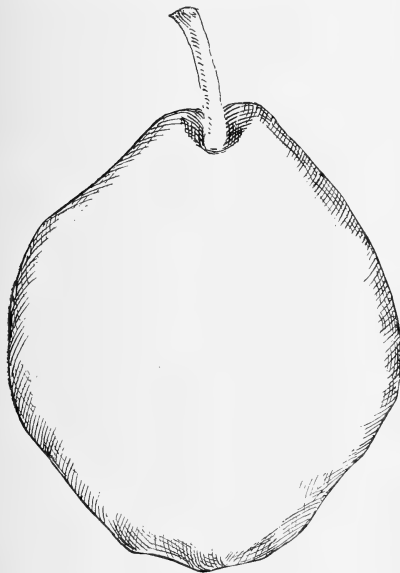
Moyer.—A small red grape of good quality. Bunch small, compact. A feeble grower, not as large in bunch, or berry, nor as good in quality, as Delaware.

Eureka.—A Delaware seedling. Bunch large, shouldered, compact; berry medium, tender, rich, sweet, sprightly, vinous, pure as a European grape. A good grower, hardy, healthy, productive; free from rot and mildew. More reliable than Delaware.

ly, vinous. Hardy, healthy, vigorous, productive; free from rot and mildew; our best red for late market, table and wine-making.

White Jewel.—White; of the riparia class. Bunch rather long, compact, handsome; berry medium, tender, juicy, sweet, sprightly. Hardy, healthy, vigorous, productive; free from rot and mildew. The earliest white grape; good for early market and wine.

Green Mountain (Winchell).—Greenish white, of good quality; hardy, healthy, vigorous and productive; a promising early grape.



JAPAN PEAR—SNOW. (See Page 86.)

Ideal.—Red seedling of Delaware; as large in bunch and nearly as large in berry as Concord; of better quality than its parent. Hardy, healthy, vigorous, productive; with us it rots and mildews some. The finest large red grape where it can be successfully grown. Very valuable, being large and showy and of excellent quality.

Norfolk.—Red. Flavor of Catawba; bunch not quite so large, but more compact; berry about the same size but of higher flavor and better quality. Hardy, healthy, vigorous, productive; somewhat subject to rot.

Primate.—Red. Bunch large, compact, handsome; berry medium or above, firm, tender, sweet, rich, spright-

Leavenworth.—An early white Concord seedling. Bunch large, compact, handsome; berry large, firm, not pulpy, sweet, sprightly, of agreeable flavor, with some native aroma. Hardy, healthy, moderately vigorous, productive. Free from rot and mildew; fruit will hang on the vines long after ripening, and ship well. Better and more productive than Lady.

White Imperial.—Early, white. Bunch large, long, shouldered, compact, handsome; berry medium, firm, tender, sweet, rich, sprightly, vinous. Hardy, healthy vigorous, productive; nearly free from rot, does not mildew. This variety stands at the head of the entire list in quality.

Oseola.—A white seedling of Standard. Bunch large; berry large, tender, sweet, rich, sprightly; a strong handsome grower, hardy, healthy, productive; free from rot and mildew. Ripens a little before Concord. A promising new grape.

Eclipse.—White. Bunch large, shouldered, not very compact; berry large, tender, rich, sweet, sprightly, vinous. Strong grower, hardy, healthy, productive. Ripens about with Concord. Our best large white grape.

Magnate.—A white Concord seedling. Bunch large, shouldered,

compact, handsome; berry large, tender, sweet and sprightly, better than Concord. Hardy, vigorous, productive; free from rot and mildew. Fruit will hang on

the vines long after having ripened. One of our most reliable and productive varieties.

Farrell.—White. A strong, healthy grower.

Osee.—White; riparia class. Bunch medium, short, thick, compact; largest of all in berry; tender, juicy; peculiar, not agreeable, flavor. Hardy, vigorous, productive; nearly free from rot and mildew. Good for wine.

Minnehaha.—White; bunch very long, compact, shouldered; berry medium, sweet, vinous, of delicious quality. Vigorous and productive. Requires winter protection.

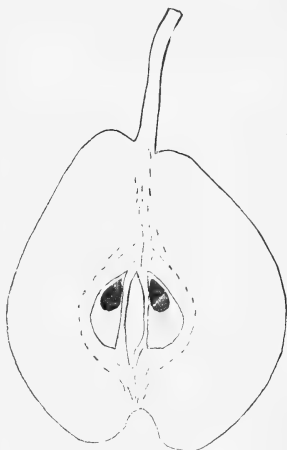
White Beauty.—Bunch large, long, shouldered, compact; berry fully medium, firm, tender, without pulp, sweet, rich, sprightly, vinous. As pure and refined in quality as a European grape; hardy, healthy, vigorous, productive. Free from rot and mildew. Ripens about with Concord; will hang on the vines until frost, and handle and ship well, our most perfect and valuable late white grape of high quality. * * * *

The following grapes we reject as unworthy of cultivation: (1) Among black sorts—Champion, Janesville, Hartford, Mary Ann, Cottage, Telegraph, Black Taylor, Rulander, Louisiana, Clinton, Herbemont and Norton. (2) Among red grapes—Perkins, Dracut Amber, Wyoming Red, Vergennes, Iona, Diana, Catawba, Salem, Venango, (3) Also the following white—Lady, Jessica, Ann Arbor, Martha, Faith, Lady Washington, Duchess, Peter Wylie, Green's Golden, Triumph, Noah, Prentiss, Empire State, Mo. Resling, Pearl and White Herman.

All these have some great defect or defects that cannot be overcome without more labor than they are worth. Why should we grow uncertain, fickle, and poor grapes, when we have so many that are better?

Kansas.

J. STAYMAN.



CHINESE BERGAMOT PEAR.

JAPAN PEARS FRUITING IN IOWA

AT THE AGRICULTURAL COLLEGE GROUNDS.

AMONG Japan pears recently introduced into the Agricultural College grounds at Ames, the following, worthy of special note, fruited for the first time last season.

Strong Japan (Japan Golden Russet).—The original home of this variety is in northeastern China. The minister to Japan sent a few small trees from Peking, China, to a friend in Massachusetts, W. C. Strong, who sent a part of the original shipment to Prof. J. L. Budd. This is the reason why it was named Strong Japan. The Japan Golden Russet of eastern nurserymen is probably the same, coming from Mr. Strong. It has fruited this year for the first time at the Iowa Agricultural College. The cut on opposite page is exact size. The fruit is handsome, flat, apple-shaped, golden russet color, uniform, smooth, although it looks rough owing to numerous small gray dots. It has a deep regular basin, wide cavity; ripens in October. Flesh firm and juicy. The tree is hardy; foliage thick and leathery, enabling it to endure drouth. It is a heavy bearer,

and the great handsome fruit hangs in attractive clusters

Snow Pear.—The native home of this pear is Mongolia. It was obtained at the same time as the above, through the agency of the minister to Japan. It also fruited this year for the first time. The cut (page 85) shows the pear in its exact size. The skin is thick, smooth; form uneven, yellow russet color, blushed on sunny side. Flesh dull white, juicy, gritty near the core, well flavored, mildly acid; eight to ten light brown seeds. The tree is hardy, but shows a little tendency to blight; healthy foliage, thick leaves; bears well.

Chinese Bergamot.—This is a bergamot pear brought from China, and, like the two above, fruited this year for the first time here. The cut on this page is exact size. The tree is hardy, of rapid growth, and has the characteristic thick leaves of Chinese pears. The skin is thin, green in color with numerous dots. Flesh white, juicy, highly flavored, fine-grained. Ripens about the last of October.

Iowa Agricultural College.

SEWARD MORRIS.

SOME WILD AMERICAN FRUITS

THAT WOULD REWARD CULTIVATION.



ONE who has visited the upper peninsula of Michigan, where many square miles are literally covered with blueberry bushes, and has gathered and feasted on the large, luscious berries, ranging from one-half to five-eighths of an inch in diameter, can doubt that this fruit offers great possibilities for cultivation. What the requirements are can be determined only by experiment. A study of the various species in their habitat makes it evident that the method for the successful cultivation of one would result in failure with another. Here are some species to which it might be profitable to give more attention.

The black huckleberry (*Gaylussacia resinosa*) grows in dry, hilly, sandy woods. There are several varieties, both round and pear-shaped, some with very large fruit, fair in quality, but their large seeds will probably prevent their cultivation.

The high blue huckleberry (*G. frondosa*), also called high blueberry or dangleberry, grows in the open woods three to five feet high. Quality very good.

The blueberries deserve more attention than the huckleberries, being of better quality. The billberry (*Vaccinium caespitosum*) bears a large, globose, blue, finely flavored berry, growing on a bush three to six inches high, found in the far north in sandy or rocky localities. The Canadian blueberry (*V. Canadense*) grows in dry, rocky, arid and sandy locations, throughout most of the northern portion of this country. In some localities it bears an abundance of blue, finely-flavored berries; in others it is a shy bearer.

The common low blueberry (*V. Pennsylvanicum*) includes some of the finest varieties. It is six to twelve inches high, growing in sandy or rocky localities in northern and northeastern sections. Growing in dense patches, it is by far the most abundant variety in the upper peninsula. The berries often exceed half an inch in diameter, are usually blue and of delicious flavor.

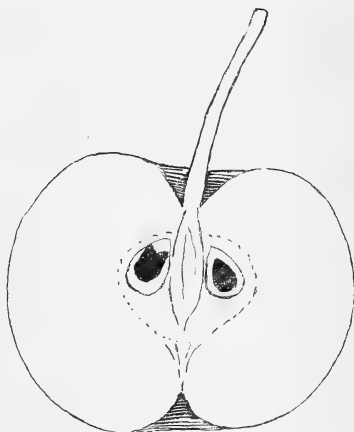
The finest I have met with might properly be called black blueberry. Some botanists consider it to be a variety of *V. Pennsylvanicum*, but I am not yet satisfied as to species. It usually grows three to six inches high. The berries are the largest of the genus, round, black, and of a rich and delicious flavor. They are almost too tender to ship long distances. To enjoy it to perfection one must visit its native haunts. It grows in a region of considerable rainfall, on dry, sandy plains, in light,

loamy soil. Many thousands of bushels of this and the preceding kinds are gathered in the upper peninsula every year. If the proper method could be found for cultivating them in localities where they are not native, I believe they would be of great value to fruit-growers.

V. vacillans is a larger shrub, with a smaller bluish black sweet berry. It is found farther south than the preceding, but is inferior in quality.

The species previously mentioned usually grows in dry localities, in soils having good drainage, containing plenty of leaf-mold, and is usually found where there is an abundance of rainfall. Sometimes I have found them growing on the tops of rocky peaks, where very little soil had lodged in depressions and crevices.

The next species, the common high blackberry (*V. corymbosum*) is peculiar to swamps, being rarely found on higher lands. It grows five to ten feet high, and bears black or purplish berries of subacid flavor. Its quality is inferior to that of the low blueberry and the black species, still it seems to be the most promising for those who may attempt to cultivate these fruits. It is often found growing in water six inches to two feet deep, but



JAPAN PEAR—STRONG. (See page 86.)

sometimes it is met in fairly dry locations. It always grows where the soil is black, rich and mucky. When found in dryer locations there is usually a considerable mixture of sand. I think it likely that the soil adapted

to the cultivation of the cranberry may also be suitable for this.

Joseph Meehan says that of many plants of *V. Pennsylvanicum*, taken from the New Jersey and Pennsylvania woods, cut down one-half, and planted in ordinary garden soil in the full sun, nearly every one grew and bore berries the second year, giving promise of a good berry-patch in two or three years. It is emphasized that the plants should be secured in the spring and cut down one-half before they are transplanted.

Wonders have been wrought by careful attention to our native grapes. The genus *Ribes*, to which belong currants and gooseberries, contains native species as yet uncultivated that seem full of promise. The red currant (*R. rubrum*), from which the numerous red and white varieties have been derived, is a native of the United States. The golden currant (*R. aureum*) of the west, usually cultivated for its flowers, is now receiving considerable attention for its fruit. Another species worthy of much attention is the mountain or skunk currant (*R. prostratum*). It is often found growing in the tamarac swamps of Michigan, the prostrate shrubs attaining a far larger size than the common red currant, and sometimes forming compact masses three or four feet high and from five to eight in diameter. The berries are at least one-third larger than those of the common red currant, and grow in bunches nearly twice as large. Even if the flavor of this fruit is peculiar and not altogether pleasant to our palates, is the fact any sign that the same attention as is given to the grape and apple, will not result in as great a transformation as has taken place in these fruits? Wood's Class-book of Botany states that the fruit of the wild black currant (*R. Floridum*) is insipid. That description cannot apply to the wild black currants of southeastern Michigan, for they have a delicious subacid flavor, and are highly prized by those acquainted with them, both when eaten from the hand and when cooked. Their savor is far superior to that of the black currant (*R. nigrum*), having none of the flavor so disagreeable to American palates, and, besides, the berries are larger and handsomer. I believe this to be one of the most promising of the genus.

Most of the smooth cultivated varieties of gooseberries are derived from *R. hirtellum*. *R. oxycanthoides* is a smoother shrub, and I believe deserving of as much attention. Were it not that the swamp gooseberry (*R. lacustre*) grows farther north than any other species, I would not think that it deserved especial attention, as the dark-colored prickly fruit has a disagreeable flavor. The prickly gooseberry (*R. cynosbatii*) bears large, prickly, but finely flavored berries. It varies greatly in the wild state and seems promising.

The choke-cherry may yet come to be the most valuable class of cherries. The dark red fruit is rather large and in large clusters, and, although disagreeably astringent, is no worse than many of our cultivated fruits. The fact that it is an abundant bearer, although a small tree, is much in its favor. Besides, it yields numerous ra-

ces of handsome, fragrant, white flowers in early spring.

Our native plums are receiving considerable attention. All are variable when wild, some varieties having much better fruit than others. Four species grow east of the Mississippi river: the red or yellow plum (*Prunus Americana*), the beach plum (*P. maritima*), the *P. umbellata* of the south, and the Chickasaw plum (*P. Chickasa*). Several varieties of *P. Americana*, as the Hawk-eye, Rolling-stone, Lendloff, Cheney, Gaylord, Le Duc and Kopp, are said to be of good quality. Among the varieties of *P. umbellata*, the Wayland is pronounced very excellent. The Wild-geese is a variety of *P. Chickasa*. Considering the short time given to the cultivation of wild plums, there certainly is good promise that great things may yet be expected from our native kinds.

The high-bush cranberry (*Viburnum Opulus*) is worthy of a place among the jelly-producing fruits. There are three species of viburnums, natives of Michigan, bearing rich, sweet berries—the sweet viburnum (*V. Lantago*), the black haw or sloe (*V. prunifolium*), and *V. nudum*; of the latter there is a quite distinct variety which grows along the shores of Lake Superior, and is sometimes called *V. cassinoides*. *V. obovatum* is another species, with sweet-flavored fruit. I know that the acid or subacid fruits are most in demand, yet from these species may yet be produced fruit of much value.

The black elder (*Sambucus Canadensis*) is well worthy of cultivation as a fruit and ornamental shrub.

There are several species of the genus *Rubus* besides the blackberry (*R. villosus*), the dewberry (*R. Canadensis*), the black raspberry (*R. occidentalis*), and the red raspberry (*R. strigosus*), that may pay for a thorough test. Among these are the sand-blackberry (*R. cuneifolius*), the southern dewberry (*R. trivialis*), the two species known as flowering raspberries, the purple-flowered raspberry (*R. odoratus*), with large, bright red, sweet-flavored fruits, and the white-flowered raspberry, (*R. Nutkanus*), with bright scarlet, acid, but very seedy fruits, an inch in diameter, the cloudberry (*R. Chamaemorus*), a herbaceous plant bearing large amber-colored, sweet fruits, and *R. triflorus*.

In Michigan we have a species of blackberry called low blackberry, which is very different in appearance from *R. villosus*. The stems are four or five feet long, rather slender, never erect, usually leaning over other low shrubs, and raised about two feet from the ground, never trailing like the dewberry. Its stems, leaves, flowers and fruit are very different from those of *R. villosus*, and just as unlike those of *R. Canadensis*. The large fruit is generally borne in large clusters, hanging beneath the stem.

The last native fruit which I shall notice, and which I consider the most promising of all, is the sweet-scented crab (*Pyrus coronaria*). It varies greatly in the wild state, some varieties bearing fruit very much larger than others. The fruits, which are naturally very sour and astringent, can be made into delicious jelly and marmalade. They can be picked and kept like other apples.

One family I am acquainted with used a barrelful during one winter, and found the jelly cheaper than molasses or syrup, and much better. The marmalade made from the boiled fruit, after the juice has been removed for the purpose of jelly-making, has a peculiar flavor, with which one must be familiar before it will be liked. It



THE AMERICAN PERSIMMON.
Natural size, in wild state.

will then be highly prized. Now, this fruit is not at all more astringent or disagreeable than the original *Pyrus malus*, from which sprang our cultivated apples. The

fact that there are so many varieties in the wild state, is full of encouragement to one who would develop the fruit. I saw a notice some time ago, that a person in Wisconsin had succeeded in obtaining five varieties from this species. I hope the report will be fully corroborated, for this species is far hardier than our ordinary apples. Its handsome flowers also make it excellent for ornamental purposes.

In conclusion: Very speedy results in developing these native fruits ought not to be expected. The delicious varieties of apples, pears, peaches and plums which we enjoy are the results of centuries of selection and development. Of these, the pear has been the longest in cultivation. Its varieties were prized by the ancient Romans, while the apple was despised by them, and considered unfit for food. None of the original types, from which have sprung our cultivated fruits and vegetables, bear much resemblance to the splendid varieties which we see to-day. The parsnip and carrot, in their original state, were poisonous. These facts ought to be full of encouragement to all who would experiment with our native fruits.

Michigan.

WILFRED A. BROTHERTON.

DIOSPYROS VIRGINIANA—THE PERSIMMON.

A NATIVE FRUIT WORTH CULTIVATING.

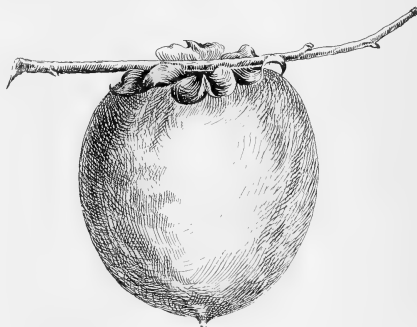
THE genus *diospyros* embraces about twenty species, scattered over the subtropical and temperate regions of both hemispheres. Of these, the best-known species follow:

I. *Diospyros Ebenus*, the ebony-tree of Ceylon. II. *Diospyros Lotus*, or "Date of Trebizond," common on the shores of the Caspian sea. III. *Diospyros Mabola*, found, but not abundantly, in the south of France. IV. *Diospyros Kaki*, one of the most valued and luscious fruits of Japan, and now largely cultivated in California and in Florida. V. *Diospyros Decandra*, found in Cochin China. VI. *Diospyros Virginiana*, our own persimmon or seeded plum, confined, I think, to North America, but widely distributed from southern New Jersey to Georgia.

This last-named species varies much in its habit of growth and in its general characteristics, according to locality, nutrition or exposure. In New Jersey and the north of Pennsylvania and Ohio it is scarcely more than a tree-like shrub, while in the bottom-lands of Virginia and the Carolinas it frequently rises to a shapely tree forty feet high, covered with fruit which is dear to the heart of every southern boy in spite of its intense astringency, which, in its green state, is like concentrated tannic acid. This is gradually lost as the fruit ripens, giving place to a mild, rich sweetness of pulp, which to some persons is very agreeable. Still, the persimmon in its wild state is not a general favorite. It is eaten in the south chiefly by the omnivorous small boy and by the 'coon and 'possum. Sometimes, also, it is mashed

into a cake with cornmeal, and dried for the brewing of what is known among the "crackers" of Carolina as "simmon beer."

The capacity for improvement, however, of the American persimmon by cultivation is beyond question. Fifteen years ago I had some correspondence with the poet Bryant (whose zeal as a cultivator and whose interest



AMERICAN PERSIMMON, CULTIVATED.

in fruit-growing were almost as great as his poetic enthusiasm) on the subject of the improvement of our native fruits by high cultivation. Mr. Bryant often insisted that the time would come when this would be-

come one of the popular and marketable fruits of the middle states. He gathered specimens and varieties of the *Diospyros Virginiana* from all parts of the south and west, and cultivated them most carefully, and his pleasant old home at Roslyn will doubtless show to-day some relics of his ingenious care in the laying out and arrangement of his experimental plantations.

Mr. Bryant decided, after many years of experiment with the persimmon, that the finest and most vigorous varieties were those grown in the alluvial meadows of southern Indiana; and he sent me some specimens, from one of which, by high fertilization and root-pruning, I have from year to year gathered fruit of greatly improved size and flavor. I enclose a rude sketch of one specimen of this year's fruit from one of the trees received from Mr. Bryant. The smaller drawing (page 89) shows the wild fruit which has received no special care, gathered from another tree.

As I have already said, the astringency of the fruit is much diminished by cultivation, while the flavor is improved; and, as in the Japanese persimmon "Kaki," the pulp becomes more abundant, and the seeds are reduced in number from five in the wild state to two or even one, and often quite disappear, and the fruit becomes absolutely seedless.

The persimmon is an ornamental tree, shapely and symmetrical in form; its bark and leaves are distinctive and its wood is dense and heavy. It grows readily but slowly from seeds, is a gross feeder, and with good cultivation and care will produce fruit in its sixth year. It is perfectly hardy as far north as Hartford, Connecticut, and will bear fruit on Long Island from year to year without interruption. The genus is diœcious. The

flowers of the male tree are twice as large as those of the other sex, but much less abundant. The tree produces numerous suckers, which, however, are unsuitable for propagation, but will make tidy shrubs for the lawn or border.

Subscribers of AMERICAN GARDENING rejoice to see so much attention paid in its columns to our native trees and shrubs. One of the recent articles on the papaw (*Asimina*) was of great interest to me, as I have cultivated the tree for years on Long Island. My own specimen is annually covered in May with its peculiar and unique flowers; but it has never borne fruit. In the old "Prince's Nursery" grounds, however, in Flushing, the papaw has borne its banana-like fruit for forty years, and continues to do so to-day, unless perhaps disturbed by the rude hand of Modern Improvement—that progressive fiend which has in recent years desolated so many choice plantations in the suburbs of New York city, and has already laid waste the ancient "Linnean Nurseries," so dear to the savant and the flower-lovers of sixty years ago.

The Central Park of New York city, although so nearly complete as an arboretum, contains, so far as I am aware, no single specimen of either the papaw or persimmon. Both would thrive there successfully if once introduced and protected for a year or two of their helpless infancy, and we call upon Mr. Parsons and Mr. Woolson to finish the good work they have so well begun in the planting of native American shrubs and trees, and not to rest until the whole catalogue of them shall be as nearly complete as the limitations of soil and climate at their command shall allow.

Queen's Co., N. Y.

J. W. B.

JUDGE MILLER'S FRUIT-NOTES.

HOW HE MAKES THE BUSINESS PAY.

A. D. 1891 was a fair one for the horticulturist, crops of most fruits having been good in nearly all parts of our great country. This means great encouragement for the fruit-grower, notwithstanding his numerous failures to make it profitable financially.

The man who wishes to begin on a small scale and only cultivate a few acres will do well to locate near some thriving town, in which he can sell a great quantity of fruit. It simply wants a start, and the consumption of fruit is contagious. If a family is known to purchase plenty of fresh fruit, neighbors (if only as imitators, or from pride and jealousy) will also want it, and soon the whole population of the place would be thus influenced.

Just now the black-cap raspberries seem to have the lead; yet I well know the time when one could hardly be sold at all. Many years ago I had an over-stock of them, but my customers would refuse them, saying they were only the ordinary wild berries planted in the

garden. I plainly saw that unless some stratagem were used these berries would go to waste. So I gave to a few rich, influential ladies some of the berries to try and to show to their lady friends. Sure enough, the trick succeeded, and soon one came and said: "I want some of the same berries Mrs. Coleman got;" another wanted "the same kind sold to Mrs. Kline." From that day to this, the black-caps have had the supremacy. That we are in want of a first-rate red raspberry as good as Turner and as firm as Cuthbert, every one knows.

For my own eating I want nothing better than Turner. As I am situated, the shipment of fruits of the quickly perishing kinds, such as strawberries, raspberries and cherries, is by no means a paying business; so that last summer we tried a new plan. Some of our finest cherries and berries were canned and preserved under arrangements with a friend's family at St. Louis to use them and to pay us the price of the fruit, and the vessels to contain them, and a fair compensation for the work of putting them up. The report comes that they

and their visitors pronounce them superior to any of the same kinds that they can buy at the stores, and now the most suitable packages in which to put them up will be devised, so that the enterprise may be carried out on a larger scale next summer. Thus we will save boxes, crates, express charges and commission, selling to consumers direct. Another advantage will be, that when cherries are ripe we can use them, whereas if one rain comes on the Bigarreus when ripe, they are not fit to ship the following day.

The amount of miserable stuff sold and used by the people in the cities, called jelly of different fruits, which is flavored by chemicals (many of which are unwholesome and do not contain any of the fruit they represent), is enormous; but when put up neatly, with a show label, it will take. To break up this nefarious traffic, it is only needful to inform the consumers how they are swindled.

When one buys a can of strawberries they are usually small, tasteless trash, and show that they were too poor

to sell. When we preserve this fruit, none but the best berries are used.

I have alluded to this to induce others to join in the crusade against these frauds. One drawback to our success in accomplishing this is the silly idea that something having a foreign name takes best with so many people; and until we can convince them that we, here in America, can get up just as good an article of this kind as the English or French, it will be an up-hill business. There is a lack of true patriotism in too many of our people, and in no way is it shown more than in their going to Europe to spend the millions of dollars that should stay here. They bring back articles for which they pay more than the price for the same goods here, and pay the duty besides, unless they can smuggle in their foreign purchases—and all this only for the silly purpose of being able to say that they bought these things in Europe.

Montgomery Co., Mo.

S. MILLER.

THE ENGLISH SPARROW AND THE HORTICULTURIST.

REPORTS FAVORABLE AND OTHERWISE FROM OBSERVANT READERS.



THE English sparrow a nuisance that should be persecuted with shot-guns, traps and poisons, or is he a comparatively harmless, or even useful fellow whom we might well tolerate among us or even protect? To determine this matter we have invited and still invite reports of actual experience on the part of our observant readers. Our friends must remember that we want no hearsay, only direct evidence such as would be accepted in any court of justice. What have you with your own eyes seen, for or against this bird?

A GOOD WORD FOR THE SPARROW.—If the prejudice against the English sparrow is as great in the east as here in Indiana, I am not surprised that THE AMERICAN GARDEN is severely criticised for its defense of this much-abused bird. I endorse every word said in his favor on page 747. As far as I have studied his habits, I have but one objection to him—his persistence in nesting about our buildings, and thus befouling them; but for this the remedy is easy, viz., to build better and plainer houses, avoiding all filigree ornamentation that would serve as footholds for this industrious foreigner. The charge of pugnacity is slanderous. While he vigilantly protects his own domicile, he lives in perfect harmony with our native birds, and I assert, knowingly, that he *does* destroy insects, and I cannot accuse him of poaching on our fruits. He is a happy little scavenger, buffeting all kinds of weather and all seasons of the year in his endeavors to pick up and consume the accumulating filth of our streets and gutters. This wholesale abuse of him is either born of malice, or is the result of prejudice. Rut-

ledge, an English authority, says of his habits: "When in the country, sparrows feed almost wholly on insects and grain, the former being procured in the spring and early summer, and the latter in autumn and winter." And further, after acknowledging that there is a prejudice against them, even amongst English farmers, he says: "Yet their services in insect-killing are so great as to render them most useful birds to the agriculturist." —W. H. RAGAN, *Indiana*.

RATHER LIKES THEM.—THE AMERICAN GARDEN exactly expressed my views in regard to English sparrows. Here we pay a bounty of three cents a head, and boys often make good wages killing them, but I have always insisted that boys prowling around the barns, shooting into the trees, etc., all around one's yards, were worse than the birds. In fact, except that around porches, cornices, etc., they are sometimes nasty, I have never known them to do any harm, and I am very sure that robins, which I always protect as blessings, do far more damage to our fruits than sparrows have ever done. But it is now the fad to curse the sparrows, and perhaps they deserve it, especially as our government and state authorities have proved by volumes of observations and statistics that they are destructive to fruits, grain and birds, and possibly to the peace and safety of the country in general. I well remember that years ago, when a teacher, I was almost indignant with my father because he would not cook food for his hogs. It was abundantly and persistently proved by the Department of Agriculture, and published by authority, that cooked food was almost or quite twice as valuable as raw, for fattening hogs, etc. Well, we are now just as authoritatively assured that a positive loss results from cooking food for stock. When a boy, I learned from the official and other reports that

unless milk was set in very shallow pans, the full amount of cream would not rise, and much loss would follow. Now we are informed, and probably correctly, that deep cans are just as good or better, and far more convenient. So it has been with many other things on the farm or in the garden (with deep plowing, for instance) till we are cautious about accepting new theories or conclusions, even those of learned professors or other high authorities.

I repeat, though I have been a farmer and a market-gardener of both fruits and vegetables on a large scale for about 12 years, I have never seen the least harm done by sparrows, and I rather like them, though they are somewhat aggressive and impudent.—S. W. GIBSON, *Eaton Co., Mich.*

THEY DESTROYED MR. BEATTIE'S LETTUCE AND PEAS.—Early last spring, I made my first planting of lettuce from plants which had been started indoors, and were consequently a little tender. They were well suited to the sparrows' tastes, for in two days from planting not a vestige of a leaf could be seen. In the same manner four rows of peas were ruined. No sooner had they sprouted than the sparrows got in their fine work, and kept them pinched down to the ground. I tried every conceivable kind of scarecrow to frighten them, but without success.—THOS. BEATTIE, *Newport Co., R. I.*

AGAINST THE SHOT-GUN POLICY.—Time and again I have seen four or five sparrows after one grasshopper. I have seen them feed in flocks on the seed of the lesser chickweed (*Stellaria media*) which is common on cultivated ground during winter and spring at the south. To say that the sparrow does not destroy seed is outside the mark, for it certainly does. During the past season several varieties of sorghum were planted near together, and as soon as the seed became of any size the sparrows began to devour it. In England it is common for farmers to employ boys during seed-time and when the grain begins to ripen, to scare the sparrows off. I have been so employed myself, and used to be supplied with an old tin pail, or something of the kind, and charged to shout and make as much noise as possible. Sometimes I was intrusted with an old gun and some powder, and myself generally contrived to supply the needed shot with bits of stone or lead. In that country gardeners use wire screens, called pea-guards, to keep the sparrows off their peas. This may also be effected by stretching strong black cotton along the rows about two inches above the ground. It is no uncommon thing there to see the gooseberry bushes with bits of rag tied on the end of each shoot, or laced about in all directions with black cotton or worsted. I believe the sparrow is less guilty of driving off the singing-birds, than the boy with the gun, and that about Thanksgiving at the north more small birds are killed in one week than are driven off by sparrows in a year. Almost every boy is out with a gun, and everything that has feathers is shot. At the south the robins are killed during the winter by the score, and find a ready sale at 75 cents per dozen. Besides the robin, the negro boy shoots almost every bird that comes in his way.—H. W. SMITH, *Louisiana.*

HAS FOUND NO DAMAGE DONE.—In ten years' experience growing fruits and vegetables, I have not noted much damage by sparrows, although it is often charged that they drive our native birds away. I have seen them picking green worms from cabbage. I have failed to find any damage in several acres of raspberries and other small fruits, while robins are very hard on Delaware grapes and black raspberries.—A. H., *Cincinnati Co., Ohio.*

DAMAGE REPORTED.—Concerning the sparrow: I have seen him pick off buds from currant and other bushes and trees. I have caught him eating the tops of young peas, lettuce and other vegetables. I have seen him pick off grape-blossoms, and it is almost impossible to get any of many kinds of seeds, as the sparrows pick them as fast as they ripen. I have seen them rout a pair of bluebirds out of their home.—JOHN D. YOUNG, *Clinton, Iowa.*

SPARROW EXTERMINATION IN CHICAGO: HUMANITARIANS OBJECT TO THE BOUNTY LAW.—Under the new law of Illinois, which went into effect December 1, giving a bounty of two cents for the head of each English sparrow killed in the state, the slaughter of the little birds has been inaugurated with vigor. The sparrow-man in the county clerk's office took in 1,572 heads in one day. Several objections have been made to the new method of exterminating the pests, the most notable of which is that made by John G. Shortall, president of the Illinois Humane Society.

"The law is educationally vicious," he said recently. "It sets a lot of children to work to devise the destruction of innocent living creatures. No one who has the interests of the coming generation at heart can fail to view with alarm this new method of educating children to take pleasure in destruction and murder. Moreover it causes great danger to life and property to arm the children for this inhuman warfare."

A SPARROW FARM.—On the bank of the Kaw river, about two miles above Lawrence, Kansas, is a farm on which is probably the most unique business in the West, says a correspondent in the *Boston Globe*. The English sparrow has always been looked upon as an outlaw among the birds and a pest to man, but J. D. Norton thought there was money in the little birds if they were properly handled. He got as many as he could collect and took them to his place, where he had arranged houses and corners for them to build their nests and propagate. All along the river there grows a tall weed which bears a seed especially liked by the birds, and the sparrows soon found it out and made their home contentedly on the farm. This was four years ago, and the little fellows have multiplied in a marvelous manner. Mr. Norton is now reaping the benefit of his foresight and is supplying the market with birds at good round prices. They are sold as sparrows at all seasons, but when they reach the tables of the first-class hotels and restaurants in Kansas City, St. Louis and Chicago, they become reed-birds and rice birds, according to the season. The birds have accumu-

lated by the thousand, and now the whole country is alive with them. Mr. Norton has the whole business down to a system, and does not flood the market with birds, but sells just enough to keep the hotels scantily supplied, and thus keeps the price up. The birds multiply so readily that there is no danger of the nests being depopulated. As they bring good prices, the man who thought of the scheme is coining money, for while he is at very little expense, his flock is increasing rapidly and bids fair to bring him a fortune, as the intention is to supply the eastern markets as soon as he can make the proper arrangements for transporting the birds.

NOT ALTOGETHER HARMFUL.—Many say that the sparrow will eat and destroy ripening grapes. A few years ago I watched these birds and found that instead of eating the fruit they were picking off insects from the under side of the leaves; the real culprits were robins; these, however, were easily kept away by having scraps of tin swinging near the vines. Last spring I

suspected that the sparrows nearly ruined the early peas, but of course, they were convicted on circumstantial evidence; we could not detect them nipping the young vines, but we found them eaten off, and there were numbers of sparrows among the peas. They showed guilt in their actions. On the whole I think they are no acquisition, and that we would be better off if they had never been brought to this country, for in the cities they are a nuisance, they do not sing, and they are veritable little fighters. But they have come to stay, as they find this land of plenty a good home, as do all foreigners that come to our shores; and I do think they cannot be exterminated, any more than can the rabbits from Australia. The State of Illinois has offered a bounty of two cents a head for all dead sparrows, but with a climate to suit them, and plenty to eat, the sparrows have the best of the bargain, and the bounty is of little use as an exterminator, for they multiply in spite of it.

Schenectady Co., N. Y.

E. W. L.



FILLING VACANCIES IN THE ORCHARD.



BLIGHT is a giant destroyer of pear trees. The mortality from that cause and from accident ranges from five to twelve per cent. per annum. An orchard of mine containing 500 dwarf Bartlett and Louise Bonne de Jersey,

planted in 1876, has had the vacancies set nearly every spring since.

Passing through it a few days ago, the skips seemed about as numerous as ever. Quite a number of the largest trees have died since the fruit was set last spring. Some of the reset trees are now full-grown, and have been bearing for several years. In fact, all trees of a bearing size have borne a heavy crop this season.

The soil is a hillside, southern and eastern slope, clay, and not excessively rich. The first two years it was planted to corn, then seeded to grass, and has not been plowed since. The ground has been top-dressed with wood-ashes and commercial fertilizer, and the trees

have been mulched in winter with forest-leaves and in summer with the weeds and grass mowed from between the rows. In late years a circle has been spaded each spring as wide as the branches extend, and commercial fertilizer worked into the soil.

Now the question is, How long shall I buy trees to fill the vacancies? Young trees planted in an old orchard grow but slowly, and if set in rows by themselves would be cared for more easily, and probably make a better growth. But is it business-like to allow the ground of an orchard to remain only partly filled? It is like a cornfield with a poor stand.

The Bartletts were set 16x16 feet and the Louise Bonne 8x16; none of the former have grown large enough to crowd, although a few of the latter have in one direction.

Which plan will bring me the most dollars? I am inclined to the opinion that the trees are not too large, to allow small ones to grow in the gaps, and so I intend to reset again this spring, and after that probably will not repeat the process.

Illinois.

T. E. GOODRICH.

ORNAMENTAL AND PRACTICAL GARDENING

IN THE EDITORS' GROUNDS.

ALTHOUGH the early-flowering hardy shrubs, the forsythias, have long been in cultivation, it is quite surprising how many flower-growers are yet ignorant of their beauty and worth. The common-

est form is *F. viridissima*, usually known as Golden Bell, and it deserves to be classed among the best dozen hardy shrubs in cultivation. It is a native of North China, whence it was introduced into European gardens in 1845. In habit it is dense and spreading, forming a handsome bush in borders or on the lawn. The flowers appear early in spring, ahead of the foliage, and from their bright yellow color and profuseness present a strikingly attractive appearance among shrubbery. As shown in the engraving, drawn from life, they are of neat, pleasing shape, and being arranged along slim, willowy stems, are very well suited for cutting for vases, etc. On the writer's grounds, near Niagara Falls, they usually bloom the first week in May.

But what renders this species of the greatest value, perhaps, is the beauty and brilliancy of its dark green foliage through a long season. The leaves appear just after the blooming period, and hang until late autumn almost with the persistency of those of an

evergreen. There is a richness and neatness about the foliage which, added to its other merits, entitles the shrub to a prominent place on the lawn. The complaint has been made that the shrub grows straggling and otherwise ill-shaped in time, but we have never met such cases where some tillage has been given to the roots—a thing easily done when the plants are arranged in groups on the lawn and the surface of the soil is kept worked and clear of weeds, treatment to which all shrubs are entitled.

Forsythia suspensa, also shown in the engraving, is another valuable shrub, differing from the first sufficiently to make it interesting in every collection. In habit the growth is more open, and droops somewhat. While on this account it may be more picturesque in the sense of being irregular, not to say straggling, this fact serves to render it more useful about rock-work or in the midst of plantations of other shrubs, than for a prominent place on the lawn, which *F. viridissima* so well deserves to occupy. The foliage also lacks that peculiar richness which is characteristic of *F. viridissima*, but its flower is more lovely, being less stiff in its form and disposition, and less crowded along the branch. The fact that the flowering shoots are erect and straight in *F. viridissima*, while they tend to curve



GOLDEN BELL
(*FORSYTHIA VIRIDISSIMA*).

LARGER GOLDEN BELL (*F. SUSPensa*).

in *F. suspensa*, has been frequently put down in favor of the latter by most growers. The color is a light bright sulphury yellow, and shows to excellent advantage in the shrubby border in early spring. On our grounds it comes into bloom from a half-week to a week before *F. viridissima*.

Fortune's forsythia is an erect-growing, spreading bush, with bright green foliage and handsome drooping flowers, much like the others in appearance. It makes a picturesque display as an early-flowering shrub.

To engage in regular subtropical gardening is expensive business, for the class of plants employed, being tender, are costly to keep over winter and costly to buy of a size sufficiently large to make a fair showing, as this implies that they have been grown under glass for many years. A price of from \$20 to \$100 or more is not uncommon for large specimens of palms and agaves, such as are wanted in real subtropical gardening.

Our "subtropical" gardening depends for effect mainly on hardy trees and plants. In connection with these



Aralia.

Paulownia.

Ailantus.

SUBTROPICAL GARDENING IN THE NORTH—A HANDSOME FOLIAGE EFFECT.

SUBTROPICAL GARDENING.—We have no examples of real subtropical gardening on our grounds. We do have examples of that which approximates the finest effects that can be produced by subtropical gardening, and it satisfies us as well as the latter possibly could, at but a mere fraction of the cost.

What is understood by subtropical gardening is the use of tropical or subtropical plants, like palms, cycas, dracenas, agaves and many other kinds having striking foliage; the aim being to produce strong effects with their bold forms of foliage rather than with flowers.

some cannas and caladiums—plants readily wintered in the cellar anywhere—are used, but the chief reliance is the former. Two engravings from photographs of effects produced on our grounds are given herewith. One of these represents an instance where our camera was turned on a bed containing, at this point of view, *Ailantus glandulosa*, *Aralia spinosa*, and *Paulownia imperialis* in the background, with a few leaves of *Polygonatum cuspidatum* in the foreground (left lower corner in the engraving). The other view (page 96) is of a clump of ailanthus alone, in its solitary grandeur.

We can imagine nothing finer among cultivated plants, whether hardy or exotic, than the forms of foliage here illustrated. Besides the kinds named, our beds contain four species of rhus or sumac, three of aralias, several of catalpas, including the golden, several each of magnolias, elders, barberries and palm-leaved spiræas, besides perennial sunflowers, including the graceful *Helianthus orgyalis* and *H. Maximilianus*, three species of polygonatum, several eulalias, rheums, etc., all of which possess most charming foliage, together affording a large variety. In the collection as a whole, our eye finds as

season, by averaging the first and the subsequent cost over a long period, the outlay is almost too insignificant to be mentioned.

One matter remains to be stated in connection with managing ailantus, aralias, etc., in this way. It is that they should be cut down to near the ground every year or alternate year, early spring being the preferable time for the pruning.

THE LAWNS AT "WOODBANKS."—Time but confirms our conclusions earlier reported, that the claim of superiority for the mixed lawn grasses offered by seedsmen



CLUMP OF AILANTUS.

much to feed upon as in any ordinary collection of subtropical plants grown in the summer garden which we now recall. And the best point about these beds is their cheapness and ease of management. The plants were purchased mainly at Rochester and Flushing nurseries, at a cost averaging not more than a dollar each. They were planted in the spring of 1889 and produced the effects here shown by the second season after. The plants are good for an indefinite period; and, as no expense is required in managing them beyond a little manure annually and the stirring of the soil through the

is wide of the mark. Our sample plats of 18 different kinds of lawn grasses include the highly extolled "mixtures." While nearly every one of the 18 plats is a fairly presentable lawn, that occupied by Kentucky blue-grass (*Poa pratensis*) alone, and those in which this kind forms a large proportion, are so superior to those sown with the average mixture sold by seedsmen, and to those sown with other kinds separately, that we have no hesitation in saying that, to go far beyond the blue-grass for small lawns, on our clay soil, is a grave mistake. All things considered, we must place the mixture of half-and-

half Kentucky blue-grass and red-top at the head of the list. Taken separately, these differ considerably in character, the blue-grass having fine narrow blades of a rich dark green color and forming a very dense mass, while the red-top is much coarser, of lighter tint, and to that extent less handsome. Mixed half-and-half, the former is prevented from forming that degree of denseness which is objectionable in blue-grass alone, causing some of the lower leaves to smother, while the red-top is dwarfed by the combination to a degree that causes the formation of a fine even lawn, without any signs of coarseness, and so close that weeds or grass-seeds carried in by the winds have no chance of gaining a foothold. It is an ideal coat of grass for a lawn on clay soil that is to receive ordinary attention from the mower.

The quality of all of the "mixtures" is not the same, and this is the most serious point involved. Of the various high-priced mixtures tested on our grounds, not one is equal to the simple mixture we recommend, while some are decidedly inferior. The seedsman's mixtures generally lack evenness as compared with our own, and the reason is not hard to find if we may judge from one such mixture, the analysis of which consisted of equal parts of the following six kinds: red-top grass (*Agrostis vulgaris*), Kentucky blue-grass (*Poa pratensis*), crested dog's-tail (*Cynosurus cristata*), English rye-grass (*Lolium perenne*), timothy or herd-grass (*Phleum pratense*), and a fescue grass (*Festuca duriuscula*).

The result from seeding with this formula is a rough, uneven coat of grass, inferior in every way to the growth from our own combination. The trouble is that here we have, as too often is the case with the high-priced formulas, a mixture of kinds possessing widely different characteristics which never will thrive together, as do blue-grass and red-top. The crested dog's-tail, for one, is a very fine grass exceeding the Kentucky blue in this respect. On the other hand, timothy is of coarse growth, and when scattered to the extent of about one-sixth among the finer sorts, it forms large, coarse stalks which soon displace the finer kinds in a measure. The English rye-grass is another strong grower, with spreading wiry stems, which presents a rough appearance as it enlarges. While both of these coarse grasses make fair lawns when sown alone very thickly to cause dwarfness, they are, according to our taste, utterly unfit for mixing with the fine-growing kinds named.

It is not claimed that this is a fair example of all the regular mixtures sown, but we do claim that the seedsman's formulas generally partake more or less of the faults of the one cited, showing that some of the kinds included do not thrive well with others. Neither would we charge that our seedsman have knowingly sold inferior mixtures at high prices. They themselves may be ignorant of the mischief that lies in their own mixtures. The higher price of the mixtures is easily accounted for, if the one of which we have given an analysis is to any extent a fair sample, by the fact that a single kind forming one-sixth of the whole, namely the crested dog's-tail, is quoted at \$7.50 per bushel, or six times as high

as the price of red-top and double the price of Kentucky blue. One advantage of using red-top along with blue-grass is this: Blue-grass is a little slow to germinate, and may sometimes miss where the other would not. Red-top comes up easily and quickly, and in anything like a fair season soon forms a good lawn. It thus serves to make up in a sense for the slowness of blue-grass, where it may act as a nurse for it at the start. When once established, no grass is more hardy and durable than the blue-grass.

When ordering seed for sowing, we prefer that the different kinds should come separately; then we mix them as the sowing proceeds. This is easily done by putting into the sowing-pan a handful of one and then of the other alternately, and running the hand to and fro a few times through the dish further to mix the seeds.

SOME FINE NEW CELERIES.—We have already told our readers that the White Plume is our sole reliance for summer and autumn celery. Indeed, if planted late, it can be had until long into the winter, and although dwarf, it will, under good culture and favorable conditions, reach quite respectable dimensions. Mr. March, known as a grower of cauliflower-seed of fine quality, near Puget Sound, writes us that he markets White Plume celery three feet tall, single plants of which weigh from five and one-half to six pounds.

But the White Plume, although very acceptable in the absence of any other, and fairly good when well grown, can not lay claim to the best quality. Many of the ordinary standard sorts (chief among them Golden Heart, now so generally grown by market-gardeners) are much better in their season, and yet even these are now surpassed in this respect by some newer introductions. If our friends desire to have the very best (and in the family garden there is no need of having anything short of that), let them try the New Rose and the Giant Pascal. The blanched stalks of the former have a beautiful pink tint, and the growth is vigorous. We had them in prime condition right after the White Plume, in October and November.

The Giant Pascal is indeed a unique thing. The variety is said to be a sport of the Golden Self-blanching. In true nutty flavor, freedom from all bitterness and width of the leafstalks, it has no equal that we are aware of. It is brittle and entirely stringless. The mammoth leafstalks, often two inches wide and half an inch in thickness, are just as sweet, nutty and enjoyable as the tender hearts of the ordinary kinds. We have had what we thought to be excellent celery before, but we have never enjoyed any quite so much as the Giant Pascal. Besides all this it is dwarf, needing very little earthing up, and it blanches easily and quickly. It will be the leading sort for late use in our garden hereafter.

THE NEWER LETTUCES.—For some years we have annually planted a great number of the newer varieties of lettuce side by side. The list includes many excellent sorts, but in the bewildering array, some of which differ but slightly from others while many are good, we have

found it impossible to decide which is the best. When the conditions of soil and atmosphere are favorable, indeed, we can hardly miss it. For forcing and for the earliest we use the Grand Rapids. This, however, produces leaves rather than head, and we prefer varieties of greater heading-proclivities for later use. Of course all growers and all markets have their favorites. The Deacon is held in high esteem by some, and Henderson's New York lettuce by others; Marblehead Mammoth has its friends, and so has the older Salamander. We find them all good, but the following we like still

Between the *cos* varieties, under whatever name they are sent out, we have never been able to discover material differences. This time we tried the trianon. The quality of all these sorts is certainly fine, and they deserve greater attention by the American gardeners. Slight blanching improves them. We used cheap rubber bands, slipping them over the tips of the leaves and thus holding the latter together. The heart blanches in a few days, and is very brittle and tender. In the absence of rubber bands, cotton yarn tied around the tip ends will do just as well.

THE Highbush BLUEBERRY.—A solitary bush obtained, we believe, from the Arnold Arboretum was planted on our grounds three years ago. The soil is a yellow loam, underlaid with quicksand in some places and stiff clay in others. The plant fruited for the first time last season, and the accompanying illustration gives a truthful representation of one of the fruit-clusters.

This is our first experience in the cultivation of any of the blueberries or huckleberries, but it certainly encourages us to continue on this line. Indeed, we would like nothing better than to have a patch of this fruit large enough to give us at least an abundant home supply. Apparently the plant does well under cultivation. Its growth is healthy, even if not excessively vigorous. It fruits freely. It is a compact, upright grower, increasing from year to year in size, and undoubtedly in fruitfulness.

The great question is, where to get the plants. Unfortunately no suckers are produced from the roots, while seedlings, it is said, are by no means sure to produce as good fruit as the parent plant. We might go to the woods and get our plants from the wild stock there, but most of the wild plants bear fruit of inferior quality and size.

Whether propagation from root-cuttings has been tried or not, or whether it is practicable or not, we do not know. Growing seedlings seems to us yet the most promising method of getting a stock of plants. Undoubtedly, by judicious selection and good cultivation we will be able to increase the size of the fruit. This we infer from the report of a Massachusetts gardener who has made it a practice to select and mark the best bushes in the wild state while in fruit, then to dig them up in the autumn and transplant them to his garden, and who states that these plants, when brought under cultivation, improve both in productiveness and the size of the berry, the diameter of the latter increasing from 50 to 100 per cent. under good culture.

Altogether, we believe that this class of fruits offers a very promising field for further investigation and experiment, and we shall continue our attention to it in the expectation of adequate reward.

La Salle-on-Niagara.



THE Highbush BLUEBERRY.

better, viz., Ohio Cabbage, Burpee's Hardhead, California Cream, Childs' Half-Century and New Sensation. The last-named is a last season's introduction, and it has given us fine tender, although not very solid, heads. We can well recommend it. Half-Century is undoubtedly the hardest-heading sort out. In this respect it resembles a cabbage more than a lettuce. The others mentioned give us larger and also quite solid heads, but they can not hold a candle to Half-Century in solidity; yet they are good, and we would hardly wish to do without them.

ROCKERIES ON THE LAWN.

HOW THEY SHOULD BE BUILT.



SOME things must indeed be seen to be appreciated; and among those which no artist's brush can reproduce and to which no writer's pen can do justice, are nature's rockeries—chaotic structures which she has thrown together, draped with ferns, cushioned with moss, and touched with color in a manner bewitching and well nigh inimitable, especially if she builds by a mountain brook. What lover of nature has not some such secluded dell in mind which he longs to take up bodily, brook and all, and place in a more accessible spot—on his own lawn for instance? A selfish streak runs through us all, and like the celebrated knight, we sometimes feel that nothing short of "the earth" will satisfy us.

Most people have to grow their ferns without rocks, and the latter are by no means essential; nevertheless a few stones judiciously placed are an advantage in fern-culture. But the usual stone-wall style of rock-work is anything but artistic. In determining the general plan of your rockery, always have in mind the principle that art must approach nature so near that there shall be no abrupt transition from what is natural to what is artificial; for when there is such a transition the beauty of the display, no matter how elaborate it may be, is much impaired if not wholly lost. The spell is broken, so to speak, when one is forced to think, "Ah, that effect is not natural." The "eternal fitness of things" is always considered in every work of art, such as the well-disposed features of landscape gardening may properly be called.

Imitate nature, then, to a certain extent; but remember that too much confusion is out of place on a well-kept lawn; also that boulders are not always obtainable or easily handled. Something "twixt art and nature" however, can be made with little expenditure of time and labor, which will afford more pleasure in proportion to the space occupied than could possibly be obtained in any other way. The following description of the rockery on my lawn, in constructing which I strove to secure that natural effect referred to, may prove helpful to inexperienced builders, who are welcome to the benefit of my experience.

One of the main requirements to be considered is generally lost sight of, viz., a soil connection, through every pocket or crevice, with the earth beneath; otherwise capillary attraction has no more chance to produce

a damp soil than in an ordinary flower-pot when the drainage is imperfect.

A corner location is desirable if shrubbery can be had for a shady background, and the rock-work sloped towards the open front. But as no such corner was available on my lawn, a more exposed situation was chosen, although partly shaded by large trees. Out of deference to the lawn-mower, and to avoid extra shearing, the ground-plan of my rockery is circular and composed for the most part of 10 or 15-pound stones. I call myself fortunate in securing a curved slab of calcareous rock which forms several feet of this outline; this slab is in a state of disintegration, consequently an irregular layer of the stone can be sprung at one end to admit and hold a pellæa in its rocky grasp as faithfully as ever they were wedged elsewhere by nature.

The filling in of soil must of course keep pace with the rock-work; most any soil will do for the foundation if a composition of muck, leaf-mold, loam and sand can be placed about and within reach of the fern-roots. The desirable irregularity of structure must come in the second tier of stones. With this idea in mind, four large, picturesque-looking stones were placed at right angles to each other, inclined slightly towards the center—thus forming four large pockets, which are walled up on the outer side some eight or ten inches, while the inner wall measures about two feet and a half. Greater height is not desirable because in the large central pocket grows a fine specimen of *Onoclea Struthiopteris* (*S. Germanica*); and even at this elevation a light wire support is necessary to preserve the vase-like shape of this tropical-looking fern from damage by wind-storms.

Large roots of *Osmunda regalis* and *O. cinnamomea* were literally built into the four receptacles described, while the space between the first and second tier of stone affords ample room for *Aspidium Goldianum*, *A. marginale*, *A. acrostichoides* and others; one *Adiantum pedatum* alone is placed on the most exposed side, as far as possible from the drip from overhanging boughs, for it repels water, as its Greek name, *adiantum* (unwetted) indicates. So great, indeed, is the antipathy of maidenhair to moisture, that after a wetting its fronds have the appearance of having been dried—a paradoxical state of affairs happily not common. *Polypodium* and *phlegopteris* are also represented, while *Asplenium ebeneum*, *A. Trichomanes* and the rare little *Ruta muraria* are sandwiched in between bits of limestone, in cosy nooks of which there seems to be no end.

On the north side, *Cystopteris bulbifera* drapes its graceful fronds on the cool gray surface of solid rock. The opposite rock is of a reddish color, and forms substance with chink and hollows scooped by the elements,

in which harebells now flourish; in fact, harebells—dainty creations of nature—are almost the only floral element permissible in a fernery if we except the elegant tracery of herb-robert, with its bright pink flowers, fresh green leaves and red stems. With all these woody treasures, my rockery is not crowded, and there is a

chance for individual development. Moss and fern and flower are here—everything, in short, but "the brook," to
 "Sparkle out among the fern"

or, if preferred, to
 "Wind about, and in and out—
 With here a blossom sailing."

G. A. WOOLSON.



CITY GARDENS—A CONTRAST.

BACK YARDS IN NEW YORK AND FLORENCE.



SIT at a rear window of a New York house, and look out on brick walls and high wooden fences enclosing little squares of back yards, and in the whole interior of a large block the only vegetation seen is an occasional ragged spot of grass and one lonely ailantus-tree. Generally speaking, these back yards of our city homes are among the most barren

places of the earth. Yet it would take so little care to make these forlorn bits of space into small paradises!

From November to March, even, there is grace and beauty in the lines the vines take in their clamberings. Some of them are as fine in their winter habit as when in full leaf.

The great majority of New York families are in the city from the first week of September till June. This gives nearly five months when a garden could be enjoyed. It need not be an elaborate one, nor require much labor. To plant bulbs in October or November in the long, bare beds that usually border the yards, would be to get a succession of flowers throughout the spring. Fruit-trees—cherry, peach and apple, once put in, would ask no care, and would give lovely rifts of pink and white bloom for weeks.

The wistaria, where allowed to get a foothold, covers the walls with a purple flush in May and then with a noble foliage till November. Other free-growing vines, like the rampant Virginia creeper and the big-leaved Dutchman's-pipe, or, if dampness is feared, the snug, close-growing Japanese ivy, will kindly cover all unsightliness with beauty. English ivy makes a rich, green, enduring mat where other things decline to grow.

For autumn-blooming there are many plants. Chrysanthemums put into the ground in the spring and for-

gotten through the summer would not result in exhibition plants; but in November they would hold up for your inspection masses of sunshine yellows and reds, dull and vivid.

Japan has furnished *Rosa rugosa*, a fine autumn bloomer, its superb foliage changing with the frost to rich reds and purples, a good plant for the city garden. There are numerous others, and small trees and shrubs that bloom in most of the months given to city life, and that adapt themselves to close quarters, and thrive with little care.

There are vines to fit all places—some that will scale any height or cover any forlorn depth; others that will grow with wide-spreading branches, creating bowers, as does the wistaria, or clinging flatly, hardly taking any perceptible amount of room, as does the Japanese ivy.

From this rear window, looking out on the cheerless and barren prospect, one feels as if man had exerted himself to get a totally uninteresting and disagreeable effect, and that nature had retired disgusted. Anon, by contrast, I lose this view, and am again in an old-world city, looking down into an old-world "back yard." And, oh, how beautiful it is!

It is Florence in early May. The garden is back of a house of the three-window width, and is somewhat deeper than most of our city lots would give. It is a little maze of winding, graveled paths and turf-bordered beds, with shrubby and one tall, slender, feathery tree. Creepers clamber over fences and house-walls. Among them and on trellises blooms a perfect wealth of roses.

At places where the narrow ways meet and widen are clusters of pots with orange and lemon and fig trees, stately palms and geraniums, and other blooming plants. The ground of the beds under the shrubbery is covered with heartsease and mignonette and like humble flowers. This is a humble garden, with little money spent on it from year to year, but with a flower-loving mistress.

Looking farther away, there is nothing else quite so charming to be seen, but on every side are vines and shrubs and flowers. In one garden is a bower lined with

roses and roofed with wistaria, with hanging fringes of the purple flower. I see balconies rimmed with plants; and one tall chimney that rises from a low building lifts itself within reach of a high window whose owner has utilized the top by placing a row of flower-pots along it, and the plants are thriving.

Beyond, the dome of a cathedral broods over the scene, and is the only glory in sight that we could not have in New York, if we cared for outside beauty and were

not such an indoor people. To adopt an idea of Du Maurier's, it is good to fall asleep nights with the thought that the garden is there, and all that beauty waiting for me to waken up to.

Alas! I wake to find myself, with chin in hand, gazing gloomily out on shabby brick walls and wooden fences enclosing little squares of yards, with only, in the whole block interior, an occasional spot of ill-kept grass and one ailantus-tree.

OLIVE LUSK MUNRO.

THE TOMATO IN THE SOUTH.

HOW TO ENRICH THE SOIL FOR IT.



SOIL overrich in humus or nitrogen ought not to be chosen for tomatoes. While the plants adapt themselves to almost any kind of soil under judicious fertilizing and cultivation, and yield more or

less fruit according to the influences of weather and insect enemies, maximum results are to be obtained only from soils that promote a healthy growth of vine and a normal setting of fruit in proportion to the size of the vine. A black soil rich in nitrogenous matter but lacking a full supply of the essential mineral elements can not be expected to produce as much fruit as one rich in mineral elements. An excessively luxuriant growth of vine is not to be encouraged, for there may be more vine than fruit, especially when much rain falls after the fruit has set. I have found a gray soil rich in the mineral elements, either naturally or made so by proper applications, and with just enough nitrogen to produce a medium-sized vine, the best adapted for the production of a crop of fruit least likely to be impaired by the damaging influence of too much moisture.

The boll-worm and excessive moisture are the greatest enemies to this crop in our climate, and excessive luxuriance of vine invites injury from these causes. Instead of the richest soil for this crop I would much

prefer every time to select that of medium fertility, and fit it for the crop by a fertilizer that would supply the elements of food in the right proportions to make medium-sized vines that will carry all the fruit possible, and to increase the number of vines per acre.

Long experience has shown the superiority of a mixture for tomatoes made up in about the following proportions: Superphosphate, containing 15 per cent. of available phosphoric acid, 1,000 pounds; kainit, analyzing 12 per cent. potash, 750 pounds; nitrate of soda, containing 16 per cent. of nitrogen, 250 pounds.

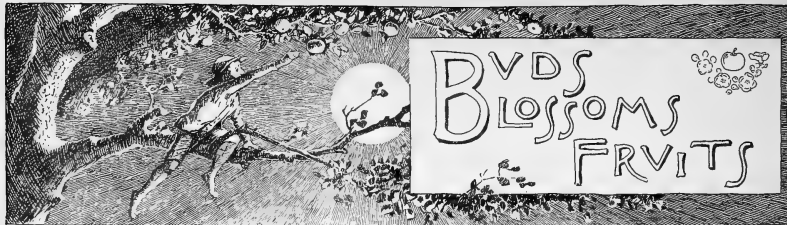
This formula is used merely as an illustration showing the proportions of the three essential elements. Any materials can be used in lieu of these substances to furnish these elements, due allowance being made for the difference in the per centage they may contain. Other forms of potash salts, or cotton-seed hull ashes, etc., may be used to furnish potash, and dried blood or cotton-seed-meal may be substituted for nitrate of soda. The important thing is that about 150 pounds of soluble phosphoric acid, 90 pounds of potash, and 48 pounds of nitrogen be furnished the soil in applying a ton of fertilizer. A ton or a ton and a half of such fertilizer, lightly harrowed into the soil a few weeks before the plants are set out, will put soil of medium fertility in good shape for growing a big crop.

Rank, unfermented manure should not be applied directly to tomatoes. Where it is intended to use such manure, it should be thoroughly composted previous to application.

Cook Co., Georgia.

SAMUEL A. COOK.





. As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers hereby make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will not for a moment be judged by the standard of fine writing or composition, but by the practical and useful ideas or suggestions in them. But besides this premium, the gain accruing mutually between readers by the telling of experience should be a sufficient inducement to contribute such notes. We shall look for a hearty response to this offer from our readers.

I. LITTLE TWIGS.

COLEUS plants are easily raised from seed.

VICK'S MONTHLY, Rochester, N. Y., with the November issue was changed in style and reduced in price.

THE CINNAMON of commerce is the inner bark of a species of laurel, *Cinnamomum verum*.

THE WINTER SUPPLY of tomatoes for the London market is largely provided by growers in the Canary Islands.

THE POPULATION of England is said to pay out 75 cents per capita a year for fruit.

THE LATE Emperor Dom Pedro was much interested in gardening and kindred pursuits.

SOMETHING of pomological or floral interest can always be found upon our page of horticultural markets.

THE MASSES of evergreens on our grounds, comprising many species, are a daily source of delight at this season. We love them.

TUBEROUS BEGONIAS with flowers so striped as to recall the flake and bizarre carnation have recently been obtained by ERNST BENARY.

THE SECRET FORMULA lawn-grass mixtures must go, or at least be relegated to the rank of commission seeds. See report on some tests in another department.

AN ASIATIC WAY.—The Chinese obtain tree-chrysanthemums by grafting the improved varieties on the erect stems of a species of artemisia.

A SUNSET, a forest, a snow-storm, a certain river-view, are more to me than many friends, and do ordinarily divide my day with my books.—*Emerson*.

HANDFULS of tobacco stems, kept moistened and laid among your plants, may almost wholly take the place of

the inconvenient fumigation in ridding plant apartments of insects.

CELERY.—Kalamazoo no longer has a corner, or near that, on celery-growing. Numerous other sections are being discovered in widely separated states, equally suited to growing this delicious succulent.

EXTENSIVE ORCHID-GROWERS.—The United States Nurseries at Short Hills, N. J., is a comparatively young establishment, yet it contains 21 greenhouses devoted to orchids.

WINTERING SQUASHES.—A warm dry apartment is essential. Cellars heated by furnace or boiler are first-rate. In such a place we have preserved specimens until late in spring.—M. S. PERKINS, *Mass.*

HEALTH AMONG FLOWERS.—The *Gartner's Zeitung* reports an authentic case of a German florist whose age is now 101 years. He was born in October, 1790, and still enjoys fairly good health.

THE INCREASED USE of cauliflowers is a notable feature in New York's green-truck trade. Growers should aim to help further the demand by cultivating the best specimens of this desirable and profitable garden product.

JUST THINK OF IT! California's venture in viticulture is within little more than a quarter of a century, and a crop of perfect commercial raisins was produced last year which makes us almost independent of the vines of Spain.

BEAUTY EVERYWHERE.—Before I read Ruskin, I wondered why God had not made the world more beautiful. When I read Ruskin, I saw that the world was as beautiful as it could be. I was taught to see that the commonest things were full of beauty.—*Prof. Drummond*.

A REMARKABLE case of natural grafting is reported from Michigan. Two hemlock trees in Alpena county, the trunks of which are 15 inches in diameter, stand six feet apart at the base. Ten feet above the ground the trunks unite, from which point a single stem some 70 feet high proceeds.

FREE MAIL-DELIVERY.—The feeling in favor of the free delivery of mails throughout the rural districts is almost unanimous. It is bound to come. You may hasten its day by writing to your congressmen and to each of your state's senators, urging them to support such a measure when it is brought before Congress.

DIRT WEIGHS.—When our San Francisco exchanges speak of a huge cocoanut tree, weighing six tons, that

it is said will be brought from Honolulu to adorn a public park at the Golden Gate, it is safe to assume that a large share of the weight boasted of will be soil rather than tree.

A SWEET-SCENTED WOOD.—Thomas Meehan in his new monthly journal calls attention to the fine church at Metlakatla, built by the civilized Indians of Alaska, which is said to be as fragrant as if incense were continually floating through the air, because it is constructed from the wood of the great arbor-vitæ—*Thuja gigantea*.

HELENIUM PUNICEUM, a hardy herbaceous perennial; has yellow composite flowers, and grows about 18 inches high. The flowers are about two inches across, freely produced and useful for cutting. The plant may be raised from seed. *H. autumnale* grows taller, blooming in September.

A FLORAL design at the funeral of a prominent journalist is thus described: It represented a page of the paper he had edited, with the title and rules in violets, the columns of white immortelles, and bore the date of his death. On the page was a wreath of Catherine Mermet roses. The design rested on a pedestal composed of tropical leaves.

FRUIT AND INTOXICANTS.—Free users of fruit are not apt to love whiskey. Have you ever observed how flat any kind of drink tastes after you have eaten a good apple? It has been suggested that if a beer-drinker could be induced to eat an apple every time he wanted beer, he would never drink beer again. That sounds rational.

GARDEN SCHOLARSHIPS.—Between now and April, three of the six established scholarships for garden pupils, of the Missouri Botanical Garden, St. Louis, are to be awarded. Those who desire full information concerning the great advantages offered by these scholarships and the conditions upon which they are awarded, should address the director, Dr. William Trelease.

FLOWERS AND DEATH.—We believe in the use of flowers in the presence of the dead. Not in that extreme display of designs at funerals which has of late so often and justly been condemned, but in the disposing of some sweet modest blossoms about the loved one's form, fit emblems of this fleeting life, which is as the grass and the flowers of the field.

A DEVICE FOR BUDDING has been invented by W. H. Rowell of Florida, who claims that 12,000 buds can be inserted with the machine in a day, and that any one with ordinary intelligence can learn to operate it in a little while. The holders for the buds are made adjustable, so that they will hold any size bud, or will operate upon stock of any size.

LARGE CRANBERRY YIELD.—The shipments of cranberries for the present season from the stations of the Cape Cod division of the Old Colony railroad, Mass., between Middleborough and Provincetown, will exceed by over 45,000 barrels the largest yield of any previous year. The total shipments for 1891 up to December were 134,324 barrels, with 3,400 yet unshipped, against 89,886 barrels last year.

FROGS AND INSECTS.—A recent writer in *Gardening Illustrated* tells how he turned a score of green frogs out in his orchid-houses six years ago. They were then poor little thin things; they are now quite plump and in excellent health. They have never been fed, but they could not be in such good condition if food had not been abundant and good. It is thought that they lived principally upon wood-lice in winter.

TO GROW CANNAS to perfection, they must be given a deep, well-enriched soil, and as soon as hot, dry weather sets in, be well mulched with coarse littery manure. In dry weather water copiously. Noutoni, Ehemanni and Childsii are three grand flowering varieties, but none of them can compare in size of flower and freedom of bloom with Star of '91, one of the very best plants of recent introduction.—C. E. PARNELL.

GREENERIES IN TOWN.—New York is said to have required upwards of 200,000 Christmas trees during the past season. They have mainly been young wild growths of balsam fir and Norway spruce, the former preferred. For the bits of natural green which were thus carried into so many homes the expense was small in each case, and we doubt not gave as much satisfaction as a similar amount expended for any other kind of holiday greenery could have done.

NIGHT PLOWING.—We expect to hear of strange things continually from the Pacific slope. The latest is plowing by steam at night, the plow engines being equipped with locomotive headlights. The only difficulty reported is the securing of competent gangs of men to take the night shift. The California *Fruit Grower* is of the opinion that if the process becomes customary, land-tillers on the coast can rush their work through in short order. We should say so!

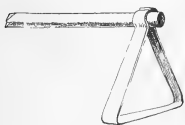
THUNBERGIA FOR HANGING-BASKETS.—Have you ever tried it? If not, do so. Just tuck the seeds into the hanging-pot already partly filled with something less desirable, and let them come up when they get ready (they won't until then, anyway); then as the *Thunbergias* grow, thin out the others and give them a chance to spread. I have one several years old which I cut almost to the ground every fall and spring, and soon the new growth starts and the dainty blossoms come out in profusion.—ELDER'S WIFE.

II. THRIFTY SAPLINGS.

Export Apple-Trade.—J. C. Houghton & Co., Liverpool, report the apple-market as quiet about the holidays. They quote Baldwins, \$2.76 to \$3.48; Seeks, \$3.24 to \$3.48; Greenings, \$2.64 to \$2.88. The shipments in one of the last weeks of December were: From New York a total of 5,363 barrels. From Boston, a total of 12,670 barrels. From Portland, 4,535 barrels—a grand total of 25,568 barrels, of which 19,211 are to Liverpool, 1,893 to London, 1,143 to Glasgow and 321 to Hamburg. The total shipments to date have been 609,244 barrels to Liverpool, 110,475 barrels to London, 230,441 to Glasgow and 17,335 to other European ports—a grand total of 967,495 barrels.

Some of Washington's Wild-Flowers.—A lover of flowers who has lived a long time in the east, and has to coax and pet and house with such care in winter certain favorites of the floral family, will be filled with delightful sensations when beholding for the first time those same pets growing wild, as free from any need of coaxing as the grass, and as luxuriant as the heart could wish. Here the *Mimulus moschatius* forms dense carpets, and there the monkey-flower (*Mimulus tigrinus*) grows in all its splendor, rivaling the calceolaria in its bright colors. Then early in April the delphiniums bloom with their colors of deepest blue and scarlet. The lilies, too, are well represented in twenty or more varieties. A very fine one is *Lilium Columbianum* of the catalogues. In flowering shrubs there are the red-flowering currant, which is a beauty in early spring, the fuchsia, the flowering gooseberry, the *Mahonia aquifolium* and wild roses in great profusion.—T. H. CARTER, *Callam Co., Wash.*

A Hand Weeder.—One of the simplest yet best tools used in our onion and other beds this season was a hand



A SIMPLE HAND WEEDER.

weeder we made ourselves by sawing a broken hoe-handle into eight or ten-inch lengths, and fastening each piece to the apex of a $\frac{3}{4}$ -inch triangular piece of band-iron, as shown in illustration. The cutting-edges were filed sharp.

These tools never clogged, and did better work than any patent weeder. Of course we use the Planet Jr. wheel hoe and attachments, and the weeder made an excellent supplement to it.—L. G., Pa.

Street Fruit-Vendors.—While Charles A. Green, in his readable little book "How we made the old Farm Pay," gives some sensible advice in favor of fruit-growers turning peddlers in disposing of their products, the Chicago papers on the other hand have recently raised a cry against a certain class of fruit-vendors, mostly foreigners, who make the air hideous crying their wares through the streets. We believe thoroughly in fruit and vegetable-growers selling direct to consumers; we regret much to see the honorable vocation brought into bad name by a class of peddlers who make a nuisance of themselves in every way. But after all, the one class is a set of irresponsible street hawkers, while your honorable grower usually works up a line of regular patrons whom he visits periodically, with satisfaction to himself and his patrons. The grower who thus distributes his products is never a hawker, hence the harsh things said of the latter are not to be interpreted as applying to the former.

Who are the Commercial Men.—The complaint is made by the commercial florists in England, that so-called private collections of orchids and other choice plants are grown in the interests of trade, more or less. It is an evil that has often been complained of in this country, but is hard to remedy. When a man who is engaged in mercantile or other pursuits goes to the

country to live, the growing of horticultural products becomes his occupation and recreation to some extent, and it is not easy for him to confine himself only to producing enough for his personal wants. But in most lines the professional grower is able so to excel the other that he has little difficulty in disposing of his crops advantageously.

Burnt Earth in Propagation.—Have any of our readers tried burnt clay or other soil to stick cuttings in? So excellent an authority as Dr. Masters, of the London *Gardener's Chronicle*, says that in his own experience he has found that roots are emitted in this substance more rapidly than in others. Another writer gives as a reason why this is so, that burnt clay has the property of absorbing ammonia from the atmosphere, thereby securing a constant and regular stimulant to the cuttings, enabling them to send out the radical fibers very quickly. Another English gardener testifies to the value of burnt earth about delicate alpine plants, and also in the kitchen-garden.

Pears in Mid-Winter.—Ellwanger & Barry, of Rochester, are doing a good service to American pomology, by showing how successfully winter pears can be grown and marketed. A year ago an excellent article appeared in these columns on this subject. Recently we had an opportunity to taste some of their last year's crop of Anjou pears. The specimens were large, handsome and luscious. The growers have no hesitation in saying that, one year with another, this plat of Anjou pears proves far more remunerative than plats of like size devoted to Bartlett or any other variety. This is unquestionably the finest winter pear in cultivation.

Home-Made Garden-Roller.—Take a sound piece of chestnut log 15 or 18 inches long and a foot or so in diameter. Make it round and smooth. Insert iron pins or bolts at each end. Fasten the roller part to a simple handle by means of two pieces of wagon-tire, as shown in the illustration. This makes a roller as good as any you can buy and the saving in expense is certainly worth considering in these days.



HOME-MADE GARDEN-ROLLER.

Roots in Drains.—It is well-known that roots often obstruct drain-tiles to an extent that renders the latter useless. In the last issue of *Meehan's Monthly* an instance is recorded of a drain from an out-building in the yard of a public school in Philadelphia, that was choked, and on examination a little root of a maple tree was found to have penetrated a very small pore in the terracotta pipe; yet so rapidly did these roots increase, after they found there was plenty of food at command in the drain, that although the pipe was eight inches in diameter, several bucketfuls of small fibrous roots were taken out, which had completely choked all circulation through the drain. It was a wonderful example of the

increase of roots, in circumstances favorable through the abundance of food. It is said that in this case no trouble is anticipated for the future, as it is believed that a bucketful or two of brine, passed through the drain once or twice a year, will effectually scorch off any fibers that may attempt the same frolic in future. But where this remedy cannot be applied, it will be well not to have drains in the vicinity of the roots of trees.

Wire-Worms.—After three years of experimenting to find a protection to crops against these worms, at the Cornell university station, the professors are obliged to declare that they have failed to discover a single effectual means of destroying the worms in the soil or of protecting seeds from their ravages. One of the things undertaken was to determine which of several ways recommended for operating against wire-worms was the best, but not one of these was found effective. The true wire-worm referred to is the larva of the click-beetle or snapping-bug, a slender yellowish white worm with an unusually hard body.

The Carnation needs a special soil of well-rotted manure and clay, equal parts of each, with a little sand to make it porous. Good drainage is indispensable, as the plant requires a copious supply of water, on both the roots and foliage. Syringe frequently to keep the red-spider in check. Young plants give the best satisfaction. When lifted and potted in September, they will soon begin to set buds, and will bloom all winter if kept near the glass in a cool room. In spring they can be planted out in the flower-garden, and will bloom till frost. Slips from the old plants should be taken in February or March. They require a low temperature in rooting. Put the slips in small pots or cans, and do not allow them to dry out. Thus the carnation can be easily perpetuated.—MAY FROST.

A Caution Regarding Blue-Grass.—Usually when blue-grass is spoken of, the species *Poa pratensis*, commonly known as Kentucky blue-grass, is meant. It is important, therefore, to note that a closely allied species, *Poa compressa*, is also catalogued by some dealers as blue-grass, being distinguished as Canadian blue-grass. This species is next to worthless for lawns, and has little or no value as fodder, being so hard that animals do not relish it, hence its other common name, wire-grass. Where known, it is usually looked upon as a pest hard to eradicate when once established. When ordering blue-grass seed for the lawn insist on getting *Poa pratensis*.

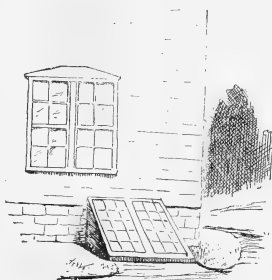
Draw the Line Here.—Because the term rosarian is considered in good form as applying to rose-growers, seems to be considered sufficient reason for certain enthusiastic members of the New American Carnation Society seriously to call themselves carnationists. This the *American Florist* delights to see, at the same time that it goes equally far in adopting the term chrysanthists for chrysanthemum-growers and orchidists for orchid-growers. If you start off this way, gentlemen, where will the matter end? Certainly not short of our having palmists, tulipites, violetarians, begonians, etc., with our cousins among fruit and vegetable-growers styling

themselves respectively plumists, pearasites, straw-berryers and, quite as sweet as any other, onionarians! We suggest that the line be drawn sharply just here.

Onions can be kept for winter use in the attic or garret. Thus the odor does not get through the house. Freezing does not injure them. In cold weather cover them with a piece of old carpet. Cabbage can also be kept in the same place. We who live in city houses heated with furnaces have to be people of expediency, and we sometimes envy country people who can store their cellars full for winter use.—E. W. L., *Schenectady Co., N. Y.*

The Tatarian Honeysuckle as a Bird-Feeder.—During the berry-season the robins have but little choice between the seeds of these bushes and the raspberries. If disturbed in the berry-fields, they contentedly settle down on this otherwise worthless fruit. It is very abundant, and is therefore a great help to berry-growers. As a floriferous bush the honeysuckle ranks high, and it is also of value for the bees, but its highest worth is to feed the robins.—E. P. POWELL.

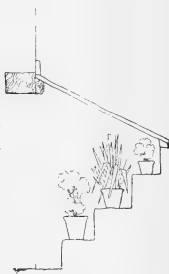
Cellar Way Plant-Pit.—A subscriber sends us a description and sketches of a plan to utilize an outdoor cellar-way as a plant-pit. The cellar-way almost invariably is made to face the south, and is thus in the right situation. All that is needed is to substitute glass for the wooden doors, and



CELLAR-WAY AS PLANT-PIT.

make everything snug and tight, banking with earth if thought necessary. The inner cellar door is left open, and danger from freezing thus avoided. The cellar steps serve as plant-shelves.

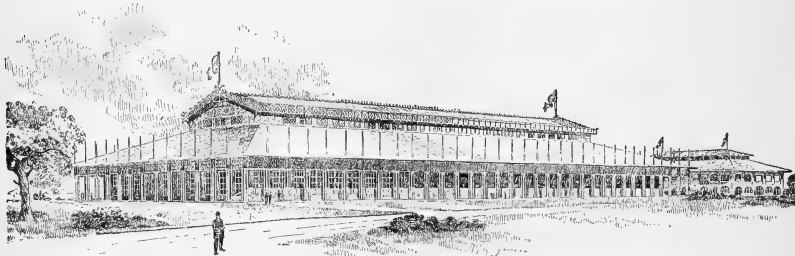
How High is the Tree?—There may be a favorite shade-tree the height of which you desire to know. In these days of town, suburban and rail-road improvements it often happens, also, that trees in the way of improvements have to be sacrificed, and the owner is entitled to be well paid for them. It then becomes important to establish values, and if you can state the height of any given specimen thus to be sacrificed, and can thus demonstrate the correctness of your figure, the tree



CELLAR-WAY AS PLANT-PIT. Cross Section.

may be worth more. A simple way to ascertain the height in any case is to set a stick in an upright position near the tree on a sunny day, say to stand four feet above the ground, and measure the shadow of the stick and at the same time the shadow of the tree from the middle of its trunk. It must follow that as the stick's shadow is to the length of the stick, so the tree's shadow must be to the tree—an easy computation.

My Hedge of Roses, that divides our place from our neighbor's, is a source of enjoyment to me and is very much admired for its beauty by passers by. The row contains over 50 different varieties of hybrid perpetual and moss roses. With the assistance of our florist, I selected the hardiest varieties. First the ground was spaded to the depth of a foot and a half, and well mixed with a rich compost of well-rotted stable-manure. The earth then was well pulverized, and the plants set in a row two feet apart, and thoroughly watered and shaded for a few days. During the summer they were kept well cultivated, not a weed being allowed to appear in the border, and the hose was turned on them every dry day.



FORESTRY BUILDING,
World's Columbian Exposition.

In October I cut to the ground all canes excepting nine to twelve of each bush, shortening these to two feet. The first of December a mulching of manure was applied for protection, and this was spaded in about the roots in the spring. After the first blooming in June I cut all bushes well back, using the pruning-scissors. A new growth soon started, bearing a mass of blossoms later. For three years I have followed this course, and have been rewarded with a beautiful hedge which would ornament any yard.—E. C. H., *Kearney, Neb.*

Horticulture at the World's Fair.—An effective bird's-eye view of the World's Columbian Exposition at Chicago, to be held next year, has been received. It owes its handsome appearance largely to the fine landscape effect obtained through the combinations of the shrub, meadow and water features of the vast area over which the great buildings are scattered. The fact that the spot is on the shores of Lake Michigan is much in its favor. In the landscape effects to be obtained, the coming world's fair will be as far ahead of any predecessor as the extent of the exhibition will be in advance of any world's fair that has ever been held. The horticultural

hall and related features will certainly be among the greatest charms of the show. A proposition has been received from the mikado of Japan to erect a permanent building on the grounds, surround it with a typical Japanese garden, and then present to the city of Chicago the building and garden. The main horticultural building is growing rapidly, while in the landscape department four hundred men have been kept busy of late, whenever the state of the weather permitted. The fall and early winter work consisted of making terraces and other grading, and in transplanting trees and shrubs. Work is now under way towards erecting a large range of temporary greenhouses, in which to store plants. The interest which is being taken in all parts of the country by plant-growers to make the exhibition of tropical plants successful is very encouraging to Mr. Thorpe. He has been promised palms, tree-ferns and other stately exotics from the greenhouses of Jay Gould, J. B. Colgate, Mrs. Paron Stevens, G. W. Childs, the Fairmount Park and H. H. Hunnewell. As showing the interest taken in this department by states, it may be

mentioned that Missouri has asked for 20,000 square feet in the horticultural building alone. Colorado has asked for 25,216 square feet, divided chiefly among the departments of horticulture, mines and live stock.

Women in Horticulture.—Why not? Not long ago I heard of sixty applicants for a teacher's position with very small salary. Now suppose the disappointed "fifty-nine" try horticulture! At least they would have stronger nerves and better health than in teaching, and might earn as much money. Some women have made a success of it, even with old-fashioned tools, without much study of the better methods, and handicapped in many ways. Some of the tough old dames in the Detroit flower-markets have comfortable bank-accounts. Old Nancy Harper tended her garden and stall for years. When she died, she willed her small farm to the city for a hospital. The city grew up to, and went miles beyond, her land. It therefore became very valuable, and a large hospital was built, and named for the old lady, "Harper Hospital." But educated women are turning their attention to gardening. There is Miss Wilkinson, daughter of a prominent physician in Manchester, Eng-

land, a successful landscape gardener. She has laid out parks, public gardens and private grounds. Women are particularly adapted to this profession. They are apt to look after the little things and economize much more than men, and success in horticulture may depend on small items. At least, let women see what they can do with their own back yards, large or small, and read, read, read, the splendid floral magazines that are dainty and bright with pictures and interesting articles.—A. L.

Hotbeds for Profit.—I made two beds 7x4 feet. First, was made February 22, 1891. The second, March 20. From these two beds I sold plants as follows:

33 Marguerite Carnations, 6 cts each	.....\$ 1 98
11 Moon-flowers, 10 cts. each	..... 1 10
40 Verbenas, 4 cts. each	..... 1 60
30 Asters, 2 cts. each	..... 60
10 Petunias, 3 cts. each	..... 30
9 Rooted Heliotrope cuttings, 8 cts. each	..... 72
13 Doz. Pansy plants, 20 cts. per doz.	..... 2 60
Miscellaneous flower-plants	..... 3 00
40 Doz. Cabbage plants, 10 cts. per doz.	..... 4 00
40 Doz. Tomato plants, 20 cts. per doz.	..... 8 00

Total cash receipts	.....\$23 90
Gave away to friends plants worth	..... 5 00
Used in my own garden plants worth	..... 8 00

Total production of hotbeds\$36 90

COST OF BEDS.

2 Old frames from store-front with glass	.....\$ 5 00
Repairs, putty, dray, etc.	..... 1 40
2 Loads of horse-manure	..... 60
Miscellaneous	..... 1 00

Total cost\$ 8 00

Of course I did all the work myself. Size of town, 1,200 population. No greenhouse in the place, but two or three other persons had hotbeds, and raised vegetable-plants for sale. I found the best way to sell most flower-plants was in thumb-pots, which are very cheap and greatly aid the sale as the plants can be transplanted without danger of losing them.—J. R. W., *Marshall Co., O.*

Tying Grape-Vines.—The ordinary methods of tying grape-vines with string, bark, straw, timothy or other such material, is slow, and, where labor is scarce, expensive. A much better method is to use rings, open at one side, of No. 19 unannealed wire. These are slipped around the trellis-wire and one or more green shoots, and then pressed between the thumb and finger till the ends cross, each of which is given a short bend by a skillful motion of the same thumb and finger. It is not necessary to press them so close as to injure the green wood in the slightest. The rings are made by winding the wire on a spindle three-fourths to one inch in diameter, into coils of any convenient length, which are then cut by a pair of ordinary trimmer's-shears into rings. These are carried in bags similar to those used by nailers. As they are inclined to tangle, it is perhaps a saving in time to prepare a number of sticks sixteen inches long and one-half inch in diameter, with a wire nail through the end. Pass these through the coil and cut into rings

which will be carried by the stick without tangling. One or more of these can be attached to a convenient place about the person, and the rings readily removed, a score at a time, and placed on the little finger of the left hand for immediate use. This method will lessen the cost of tying fully one-half; and a further saving may be made by an improvement of the ordinary three-wire trellis, by placing two No. 16 wires opposite to each other, on the posts between the first and second wire, and also between the second and third wires. As the shoots grow they are placed between these or against the main wire, and most of them will keep a proper position till the tendrils catch the upper wires. Those that will not take the right position readily are tied with the wire rings. To tie old wood to the trellis in the spring, use burlap or other coarse fabrics cut into pieces six inches square. The threads of these can be taken out so easily, and are so convenient to carry, that no one after using them would ever go back to balls of twine.

—A. McNEILL, *Ont.*

The Same Old Things.—Here, in my own window, are two long-leggy geraniums, with only half a dozen leaves and no buds nor prospect of any. My neighbor has others like them. The one on the right, ditto; the one on the left, also ditto. Every one seems to think they must have geraniums; whereas, the place for them in the winter, nine times out of ten, is the cellar. One enterprising woman started in the right direction when she potted a Canada thistle! It made a pretty window-plant, and many of her visitors that would turn up their noses at thistles in the fields, taken by surprise, asked her the name of that curious plant in her window. But we needn't depend on weeds. We may have bulb-windows, and they, in their surprising beauty, will delight and satisfy. If not bulbs, we might try some of the annuals. If the seeds be planted in pots in August, by frost they will be ready to flower. Nasturtiums, sweet alyssum, petunias, all are satisfactory. A Jerusalem cherry tree, with its red berries, looks well nearly all winter. But if you want something to suit you wholly, try begonias. One of my friends is a "collector," and no man after a rare and costly coin beats her in enthusiasm when she has found a new begonia. She has ten or twelve varieties, and is sighing for more. But why not, once a year, say, add one really choice plant to your collection? My first one would be a palm, *Lantania Borbonica*. Mine does duty for the table on all the birthdays and holidays, and, with the ferns, gives a tropical look to the rooms, especially when the cold wind blows over the snow, and we have to stay in the house.—SISTER GRACIOUS.

Race Distinction in Peaches.—The Persian race occupies the most northern position in our country, extending to the northern limits of peach-culture, and forming the bulk of the northern orchards. The Northern Chinese race occupies the lower portion of the range covered by the Persian, and some varieties succeed below it. This class produces very large fruit. The Spanish race occupies the entire range of the

Northern Chinese, and extends considerably southward of it. Its introduction into Texas was the practical beginning of Texas peach-culture. The South Chinese race extends a little below the region of the Spanish, being most valuable below the line of greatest success of the latter. This race comprises numerous choice varieties, and it is believed that it is the material from

which to expect extra-early varieties for the south. The Peen To race occupies the extreme southern portion of the Southern Chinese range, and extends still below it, where no other peaches are known to exist. It is not to be seriously doubted that it will thrive in a tropical climate side by side with the banana, orange, etc.—G. ONDERDONK.

COMMENTS BY READERS.

[One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

The Rascally Seedsmen Again.—Be merciful, "Mary Gaines"! (Page 68r). You don't tell us what the seeds were or the treatment they received. Few men in America have raised as many different kinds of plants from seeds as I have done; and these seeds were obtained by purchase or exchange, or were the donations of friends, and a large number of them were of my own saving. And I long ago learned enough about raising plants from seed to know that in many cases the seedsmen's seeds were as good as my own saved, and that often to myself alone were to be attributed the causes of failure in the seeds to grow.—W. F.

Helenium Autumnale.—True, as your correspondent (page 683) says, this plant is an autumn glory. In September, in good moist garden land, you can look for clumps of it six to eight feet high, a golden-capped pillar of bloom. But it needs a stout stake, and it needs it in time. Fine for certain effects and uses as a garden plant, but rejected for cut-flowers. The dwarf form of it is somewhat earlier-blooming than the other, and is more fitted for garden borders.

Growing the Prizetaker Onion.—(Page 700). The seed, though obtained from headquarters, was quite badly mixed, perhaps one-fifth of the onions being either red or white, and often quite flat. I sowed an ounce of seed early, in hotbed, and three ounces in the center of a bed of three-fourths of an acre of rich black land. Those transplanted grew large and generally ripened, though there was some tendency to thick-necks or scallions. The seed sown in drills gave a good stand of onions, that were, when pulled in October, three-fourths thick-necked, not exactly scallions, but with bulbs only partly formed, and of no value for market. My one trial would seem to indicate: first, that the Prizetaker requires a long season and favorable circumstances for its perfection; second, that when so situated it yields two or three times as much as standard varieties; third, that it is of fine quality, mild and tender, and will sell for perhaps 50 per cent. more than ordinary onions.—S. W. GIBSON, *Mich.*

Girdling for Fruit.—Those girdled trees in the November number (page 705) reminded me of our seedling crab-apple. This was girdled intentionally. Last spring I noticed it was not dead, and so I had it chopped around

again. To my surprise it soon put out leaves, and was covered with beautiful blossoms. I watched in vain to see it wither and drop its leaves. The last of August my brother came here, and said, "That tree that I killed two years ago is full of apples."—ADELE.

"My Cellar Work-Table," in November number, inspires me to tell of my own, which I think without a rival. It is simply the cellar story of a bay-window, with a brick wall across, of convenient height for potting plants, filled in at bottom with charcoal, and then with potting-soil to a level. It is finished in front with a heavy slab on which to work, and which serves to keep the brick in place. It is furnished with a drain, and also receives the water from the cemented basin of the window above. We designed it as a winter garden for oleander, orange, roses, ivies, etc., which are either planted directly into it or stood on top of the earth, as preferred. There are three windows, and the place is conveniently supplied with fresh earth from outside. I find it desirable for potting plants, as well as a lovely winter garden for anything needing light and rest. The walls are cemented, and make a pretty background for ivies and taller roses, which hold their buds and bloom all winter. It also affords a suitable place for hanging-baskets, and can be made a thing of beauty as well as use.—S. A. PLEAS.

Improved Vegetable Varieties.—(Page 68r). Of new and meritorious vegetables we may mention Livingston's Favorite, Beauty and Perfection, and Atlantic Prize tomatoes. Among winter squashes, Pike's Peak is very good, but the dull slate color is against it. Early Puritan, Empire State and Everett are good potatoes. All-Head cabbage is considered an acquisition. As a rule, market-gardeners find it safe to plant mostly of old well-tried varieties of vegetables, which need not be named here.—E. MORDEN, *Ontario, Canada.*

Natural Devices for Cross-Fertilization.—*In the December number (page 772) you quote an article from *Popular Science News*, under the above heading. Text and illustrations refer to the stamens, the withered stigmas, etc., etc., explaining the devices to secure a cross. The best point escapes notice. At the annual

* *Am. Jour. Science*, p. 308, 1876, "Sensitive Stigmas as an aid to cross-fertilization of flowers," by Prof. W. J. BEAL.

meeting of the American Association for the Advancement of Science, held in Detroit in 1876, I showed that the two broad, flat stigmas of trumpet creeper, *maritima*, bladderwort, and several species of *milimus*, were curved apart in fresh flowers. On a warm day, as an insect crowds into the flower the stigmas are touched before the anthers are reached. After a few seconds, while the insects "sips the water" below, the two stigmas approach each other, and mutually and completely cover the portion which is sensitive to pollen. As the insect backs out of the flower, no pollen can be left on the stigma of the same flower. I then anticipated, and have since seen, that the same state of things exist, in *pinquicula*, and in species of *catalpa* or *bignonia*.—W. J. BEAL.

"An Improved Dibber."—(Page 682.) I don't like the word "improved." You can pad the handle of any dibber. But, padded or not padded, give that tool to a market-gardener, and set him planting cabbages by the thousand with it, and, if, at the end of the first day, he has one good word to say for it, please send him *American Gardening* for a year at my expense, and the dibber to me as a curiosity.—W. F.

A hearty invitation is extended (page 683) to the friends of *American Gardening* to visit Editor Long's home, at La Salle-on-the-Niagara. Go, every one of you who can. I have already been there, and I not only got a hearty welcome, but fared well and was mightily interested in his plantations and experiments.—W. F.

Remarkable Tenacity of Life.—(Page 758.) Prof. W. H. Ragan's article on the tenacity of life of the Scotch pine, mentions a case where the bark had been completely girdled, without seriously interfering with the aftergrowth and development of the tree above the space girdled. In Lincoln Park, Chicago, there is a Scotch pine that was accidentally girdled some years ago, which would answer in its description that described in Prof. Ragan's article.—W. C. EGAN.

Improvement in Vegetable Varieties.—(Page 681.) I have cultivated Henderson's Bush Lima ever since it was introduced, and have been trying my best to learn to like them, but find it impossible. I think they are no more to be compared to King of the Garden or Dreer's Improved, than an ear of field-corn is to an ear of Honey or Stowell's Evergreen. We have used Henderson's Lima, both in the green and dry state, and find them entirely lacking in the rich buttery flavor of the best pole Lima. The size also is against them; they are so small, both in pod and bean, that it is quite a task to gather them. I think the "coming bean" is Burpee's New Bush Lima. I purchased a packet last spring, but had the misfortune to have one plant destroyed by cut-worms in the early stage of its growth. The other three grew and bore an abundant crop of large, full-sized beans. I secured 436 perfect beans from my three plants, and all will be planted next year. They should be planted, one bean in a place, and at least two feet apart, three feet between

rows. I find it pays, in planting Limas, to stick them with the fingers eye down. Limas are very tender when coming up, and if the ground is baked or packed with heavy rains, it is almost impossible for them to push their way through the hard soil if they are planted on their sides.

The American Wonder Pea is the favorite here, being early, productive and of excellent quality. No other dwarf pea is grown in my garden.

The Japanese Wineberry fruited (or at least *tried*) this season, and it is the most utterly worthless novelty I have ever had on my place.

If we would only look around us at home with eyes wide open, we might often find something of as much or more practical value than anything that can be purchased of the dealers. A few years ago some blackberry bushes sprang up by the fence, beside the cornfield. While walking near there, I found them loaded with such berries as I had never seen or tasted before. I now have two rows of these berries in my garden, and consider them far ahead of any berries I have ever before cultivated.

I do not think much of the Crandall Currant. My three-year-old bush has had good cultivation, but never bore half a dozen currants.—L. E. LIPPINCOTT, III.

Laing's Begonias at the World's Fair.—(Page 684.) Glad to know they are coming. Laing has got the stuff—there is no better. But he will have to exert himself most vigorously if he expects to have a walk-over. We are not now dependent on Europe for *AI* tuberous-rooted begonias, and Mr. Laing knows it. His son opened his eyes in amazement on a Long Island farm this autumn, when he stood in the midst of a field of 20,000 begonias, of as good a strain as one might expect to find at Forest Hills. But send your best begonias, Mr. Laing, for, as yet, they lead the world. And more than all, come yourself, John Laing. Come—see this broad land of liberty, whence shackles freely flow to thee. Come where old friends shall meet thee, and thousands new shall greet thee.—W. F.

Bedding-Plants in the Buffalo Parks.—That's right. You do need them, and should have them. But the trouble all along has been, the city wouldn't pay for them. All cities that have a display of bedding-plants in their parks pay specially for the show. There is an impression abroad that Superintendent McMillan is opposed to the use of bedding-plants in public parks, but this is a mistake; he favors their legitimate use, but is opposed to their abuse. The whole show, in the way of hardy or tender plants, depends on the liberality of the city, and not on the superintendent. Give to Mr. McMillan the means, and I am satisfied no man in the country can put them to better use. But where it is useful to depend for the requisite funds on city officials, it is not surprising that there should be difficulty in obtaining money for artistic floral or foliage displays.—WM. FALCONER.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Amaryllises to be given their full rest before they are started again.

Annuals.—Sweet alyssum, dianthus, antirrhinum, stocks, petunias, and other hardy sorts, may be sown for earliest bloom in the window. In greenhouse also sow these, and cockscombs, amaranthus, cobæas, mimulus, etc., during this month, for earliest flowers.

Bedding-Plants.—It is none too early to decide what kinds you will want, and what quantity of each, and where to get the supply. If to be raised, push propagation from now on.

Begonias of the tuberous class, that were kept in pots over winter, may be started up, giving them fresh soil a little later. Those out of soil to be potted. Seed may be sown, to make flowering plants for use, late in summer.

Bulbs and Roots of border-plants, like canna, dahlia, caladium, gladiolus, etc., are to be examined and kept from harm by mice, etc.; and those showing signs of decay to be removed.

Callas must have plenty of water, with good drainage.

Camellias.—When these are done blooming increase the heat slightly, but the air should not be allowed to become dry. Plants in bloom will be best suited by a night temperature of 45°, with 10° or 15° higher during the day. Plants to bloom later may be kept somewhat cooler. Sponge the leaves on both sides frequently.

Carnations.—Push propagation from cuttings. Pot off as soon as rooted, and keep in a cool, airy place. When strongly established and several inches high, pinch back to one inch.

Chrysanthemums.—Cuttings will be struck this month.

Cinerarias are to be watered regularly and aired freely. Aim for fine foliage as well as flowers. Do not crowd the plants, and keep in a light place and a moderate temperature.

Cyclamen Persicum.—After blooming stand them back a little from the window, to give other plants in bloom a chance. The tubers should not be dried off too soon. Continue to give a little water as long as the foliage remains plump and fresh.

Earth-worms are apt to become troublesome. The best remedy is caustic lime-water, applying it to the soil once a month.

Frames, in which daisies, pansies, polianthus, and other spring-flowering plants are kept, should have careful attention now. Sashes are apt to leak, and may need fixing. Rain or snow-water should not be allowed to get in at the sides. Bank around with earth to keep out cold. While freezing may do the plants no great harm, it will certainly do them no good, and it must check their blooming.

Fuchsias at rest are to be started. Slips may be taken and propagated from the young strong growth. Old plants to be cut back and grown in bush-form. They should not be allowed to become pot-bound.

General Greenhouse Management.—Make provisions for the needed stock of plants. Push propagation rapidly. Procure pots. The necessity of cleaning and washing old pots very thoroughly before new plants are put into them again can not be pointed out too often. Insects increase rapidly with increasing plant-growth. Regular fumigation, by burning tobacco-stems, will keep the aphid under control. An infusion, about the color of tea, may also be freely sprinkled on infested plants, which should afterwards be showered abundantly with water. Faithful hand-picking and frequent showering, as well as washing the leaves of ivy and other smooth-leaved plants, will be a great help in keeping all in a healthy condition. In houses of high heat, spraying daily for red-spider and other insects should not be neglected. Hand-picking, washing and brushing are the best remedies for scale and mealy bug.

General Management of House-Plants.—With the brighter and longer days come increased growth and bloom. Airing must be strictly attended to whenever the weather is suitable. Often the needed ventilation can be given by opening a window of an adjoining room. Keep a vessel full of water on the back part of the stove to supply the needed moisture to the atmosphere. This will not only be favorable to plant-growth, but conducive to the health of people in the house as well. Give plants a little more water than they received earlier in the season, but be sure not to overdo it. Once a week turn the plants in the window to keep the growth even on all sides. Nip the points out of the young growth of thrifty-growing plants, if you desire to have them become compact and bushy. Most plants are benefited by frequent sprinklings overhead, but these should be given in the morning, and never while the sun shines upon the foliage.

Gloxinias should have their full season of rest. Start them up only when they show an inclination to begin new growth.

Heliotrope cuttings are now to be struck for fine summer plants. Repot the old plants as needed.

Hotbeds are a great help in providing plants for summer. Start them this month. In an emergency we may make a frame with double sides, providing for a dead-air space or sawdust filling all around, and arrange for bottom heat by placing a small oil-stove under the box holding the soil, and a piece of sheet-iron between this and the stove.

Hyacinths in glasses must have the water replenished as needed. Tie up when in flower. Bring in plants

from the cellar for succession. These and other bulbous plants do their best service, as window-flowers, now. As they pass out of bloom, cut away the flowerstalks.

Ivy, and all other smooth-leaved plants, should be sponged off frequently and thoroughly, to give them a bright, fresh appearance.

Lawn Management.—Mice often do great damage by girdling trees and hedge plants under the snow-line. The easiest way to prevent this is by tramping down the snow, after every fresh fall, all around every tree or bush. Should any changes in the general arrangement of beds, walks or drives be necessary or desirable, put your mind to the task at once, map out your plans, and come to a final decision before the time for actual work arrives. Make your selection of plants, shrubs and trees at once, and place your order with a reliable nurseryman or florist. Provide for labels, stakes and other requisites that will be needed later on. Manure, well-composted and free from weed-seeds, may be drawn out on the lawn, beds and borders, while the ground is frozen. If you have no such manure, however, it will do very well to use any of the commercial lawn, vegetable or fruit-fertilizers on the market. These are easily applied and not offensive to smell or sight, as fresh stable-manure would be. A half ton per acre of such chemical fertilizers will give you good results.

Mignonette may now be started from seed in the greenhouse. They will make nice plants, and become very acceptable for window and conservatory decoration by the time mild weather sets in.

Oleanders may be started up now, if desired for flowering in May. As growth begins, give plenty of water and some liquid manure.

Orchids beginning to grow, when in flower, may be shifted as soon as done blooming. *Aërides*, *vandas*, *saccolabiums*, *dendrobies*, and several other genera, do best in sphagnum, with small crocks or sharp sand. *Cattleyas*, *lælias*, *oncidiums*, do equally well in peat, mixed with crocks and a few bits of charcoal. Some do best in a mixture of peat and moss.

Pimroses.—The ordinary sorts may be thrown away after bloom, depending on young plants, grown from seed, for next year's supply. The choice double-flowering sorts should be kept over, and may be worked for propagation. If it is desired to grow seed, keep a few of the best plants, and grow them in a light but not sunny exposure, and with a fine camel's-hair brush artificially fertilize the flowers.

Pruning House-Plants.—With soft-wooded plants this can hardly be overdone for securing good shapes. Long-legged, spindling things are hardly ever attractive or desirable. The bush form, close and compact from the ground up, is what we want.

Pruning Shrubs is to be done with a view to preserve the natural habit of each subject. Never bring them into formal shape unless grown for hedges. The class, including roses, hardy hydrangeas, burning-bush, *cornilla*, *amorpha*, *althæas*, late-flowering *spiræas*, and others, that bear their bloom on the new growth of the

season, may now be cut back quite severely with good results. Almost all other shrubs, however, produce their bloom from buds on the old wood. Severe pruning now would only result in cutting away a large share of next season's flowers. Prune these shrubs no more now than is absolutely necessary for the improvement of their general shape, leaving most of the pruning until just after the blooming-season. Hedges of deciduous kinds should now receive their annual trimming on mild days.

Roses of the monthly class, in the window or greenhouse, like a sunny position, but should not be kept too warm. Guard against greenfly. Start up the hybrid perpetuals that were potted in autumn and thus wintered, and when buds appear apply liquid manure. There is no better season for rose propagation than from now on. Use cuttings from the best and strongest wood of recent growth. Never allow the plant to suffer from want of water, from the time the cutting is put in until the young plant is fit to set out. To get good plants they should be kept in continuous healthy growth.

Salvia splendens needs plenty of pot-room, and a cool temperature at this season. Keep the plants in good growth all the time.

Seed-Sowing.—At the south all hardier annuals may be sown outdoors this month. Where early plants for summer bedding are desired at the north, annuals, such as cockscombs, balsams, globe amaranths, portulacas, phloxes, stocks, *træpæolums*, *cobæas*, and other kinds, may be started under glass.

Shade-Trees.—We like some of these not far from the dwelling; but too many about the house are not desirable as the direct rays of the sun upon the house are necessary for the well-being of the inmates. If it is necessary to remove trees from near the house, when over-crowded, now is the time to do it. Probably the best plan is to dig around the roots, and cut the tree down somewhat below the surface of the ground.

Verbenas like fresh, sweet soils. Shake the plants out and repot when in need of such treatment as indicated by their refusal to grow. Keep near the glass, and give plenty of air.

II. GARDENING FOR TABLE AND MARKET.

Asparagus is a rank feeder, and plenty of plant-food should be provided if nice, large, succulent shoots are wanted. A dressing of well-composted stable-manure, or some high-grade complete fertilizer, will come acceptable. Salt is often recommended. In some cases it may be beneficial, but under average conditions it will not prove of much account. On the sea-coast its application would be labor lost.

Asparagus-Forcing.—Air should be given whenever possible. To insure tender shoots, maintain rapid growth by close attention to proper heat, ventilation and watering. Start roots into growth for succession.

Coldframes need strictest attention, especially during clear, warm weather. Air freely, and be sure to harden

off wintered plants to get them ready for early setting in open ground.

Cucumber-Forcing.—Maintain a temperature of 65° or 70° at night, and 70° to 85° by day. Give air whenever the weather allows, avoiding cold draughts. Stop side shoots at second joint, and attend to proper fertilization of the fruit-blossoms. Prepare beds, and sow for later crops.

Currants.—Prune on mild days where needed. Apply manure.

General Orchard Management.—Pruning may be begun on mild days. Saw off the stubs left by broken branches, and cover the wounds with thick paint or melted grafting-wax. Cut scions, if not already done. Young trees need protecting from mice and rabbits. Consider if it will be profitable to plant more trees, shrubs or vines. Make a list of what is needed, and order early. Scraping the moss and old, dead bark off, and washing the bodies with some alkaline liquid, is always a good practice.

Gooseberries are to be treated like currants.

Grape-Forcing.—The late houses will be kept cool by airing freely in all suitable weather. Houses just started give a temperature of 50 degrees, gradually increasing as growth commences. Vines in flower require strict attention to avoid dampness, which would prevent fruit-setting. In earlier houses the fruit should be thinned as soon as the berries are of the size of small peas.

Grapes.—Prune vines at once if they were neglected until now. Repair trellises where needed, and paint the woodwork.

Hotbeds now. Horse and sheep-manure can be used for heating them. Be sure and have the manure evenly distributed and well tramped down. Beds, if not properly made in this way, are apt to sink in, and form a depression in the center.

Lettuce may be profitably grown under glass. Study the wants of your local market, and sow and plant to meet the demand.

Manure.—Top-dress the orchard and small-fruit patches, but be sure to keep weedy manure out of the strawberry-field. Don't expect good fruit and plenty of it, unless you feed the trees and bushes accordingly. Ashes and bone-dust are first-rate fruit-fertilizers. We must again speak of the great importance of utmost liberality in regard to manuring the garden. Good, well-rotted compost can not well be used too freely. Put it on thick, and then put on some more. Next give additional dressings of fertilizers, ashes, hen-manure, etc.

Mice are often troublesome in hotbeds. We have no

trouble in catching them with a so-called "delusion trap," using pumpkin, squash or sunflower-seed, partly mashed, for bait.

Moles in hotbeds and coldframes are not easily caught, but the attempt should be made.

Orchard Map.—Such a map, carefully made, is very desirable for the purpose of keeping a record of varieties. Draw the map on stiff heavy paper for permanent use. Mark every tree, and every row of small fruits and grapes, and write in the name of the variety. If labels should ever be lost, you can easily ascertain the variety name, by a glance at your map.

Parsley, growing in boxes or in coldframes, to be given liquid manure frequently.

Parsnips.—Dig as soon as the ground thaws for use or market.

Planting.—At the south all hardy early vegetables may be planted, also potatoes. Asparagus, rhubarb and horse-radish plantations may be gotten in readiness for cropping. Do not hesitate to take a little risk of being caught by a late cold snap. It usually pays, and shrewd gardeners always do.

Radishes.—No crop is grown with greater ease under glass than this; and it is often quite profitable. Try a patch in the hotbed.

Rhubarb.—If desired early, a few plants may be covered by boxes or kegs, and fermenting horse-manure piled on pretty thickly over and around them.

Salsify is to be treated like parsnips.

Seeds.—Examine the stock at hand, and ascertain what will be needed. Catalogues of leading seedsmen should at once be sent for, and thoroughly examined. Make out your list, and order without delay. Otherwise much inconvenience, delay in planting, etc., may result. Let us repeat our advice, to plant the well-tried, well-known standard sorts for main crop, and the novelties for trial only.

Strawberries.—Examine the patch often. Heavy winds often blow the mulching off, or roll it up here and there, thus exposing the plants to injury by cold and heaving. Replace the mulch as needed.

Strawberry-Forcing.—Give liquid manure at times, until the fruit shows indications of ripening, when further watery applications should be withheld, and the fruit exposed to heat and light as much as possible. Start plants for successional crops.

Vegetable-Cellars should be cleared of all rubbish. Keep as cool as possible, by airing freely in suitable weather.



HE THAT QUESTIONS

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the fifth of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2738. **Ventilated Barrel.** Please give address of manufacturer.—H. T. W., Texas.

2739. **Mixtures for Grape Diseases.** What are the best formulas for Bordeaux mixture and carbonate of copper solution?—T. L., La.

2740. **Zephyranthes Varieties.** Where can all the varieties named in an earlier number be obtained?—C. W. L., Mass.

2741. **Pines and Spruces for Odor.** What kinds emit so pleasant an odor, especially in summer time?—J. T. T., N. J.

2742. **Strawberry Plants from Old Beds.** Are they as good for setting as plants from beds that have never borne fruit.—M. D. F.

2743. **Marketing Cucumber Pickles.** What kind of packages are used, and where can they be obtained? How are the pickles laid down? Do you know of any book on the subject?—M. D. F.

2744. **Remedy for Flea-beetle and Blight.**—Flea-beetles have eaten my potato-crops, and blight turned them yellow. What remedies would you recommend?

2745. **Soot for Lawn.** I have a quantity of soot from boiler where hard coal is burnt. Is it good for a high lawn, and should it be used alone or with lawn fertilizer?—L. W. D., N. J.

2746. **Acme or Shense Apricot.** Is this one and the same? If so, which is the right name?—R. F. N., O.

2747. **Remedy for Scale Lice.** One of my young tulip-trees is quite covered with scales. What can be done?—F. X. M., Mich.

2748. **Fruits for the Family.** What list of the various fruits would you recommend for western New York?—M. H. J.

2749. **Peanut Culture.**—What are the essential conditions of success?—Southern Virginian.

2750. **Utah Hybrid Cherry.** What is its origin? Has it proved worthy of planting?

2751. **Black Hansell Raspberry.** Do you know of any under this name?—S. J. B., Kans.

2752. **Best Clematises for Bloom.** My soil is sandy loam, made especially deep and rich, mixed with plenty of leaf-mold, rich compost and some peat. Spot well drained and protected from noon sun. What clematis will give largest and best bloom during the season? I have C. Jackmanni.—W. H. L., N. J.

2753. **Pears for Kentucky.** I want to plant for profit. Are the following good and blight-proof, viz. Kieffer, LeConte, Lawson, Jefferson, Garber, Early Harvest, Idaho, Souvenir de Congress? Which of them have Chinese sand pear blood? Do they grow freely from cutting? Would the trees, when three or four years old, be injured by driving three small staples in each, to support three lines of wire for training grape-vines on, and could both pears and grapes be grown in this way?

2754. **Shrubs for Kentucky.** Will the following shrubs *Arucaria fimbriata*, Seedless Oonshu Orange, *Citrus trifoliata*, *Elaeagnus longipes*, grow in this climate? What fig is best adapted to this district, and would it require protection?—G. D. C. E., Lyndon, Ky.

2755. **Climbers for Veranda and Lawn.** I wish to plant some climbers that cows will not eat. What would you recommend?—T. W. L., Va.

2756. **Wood-ashes for Pear Trees.** What is the value of a bushel of good ashes for this purpose? How should the material be applied?—T. E. G., Cobden, Ill.

2757. **Transplanting Large Trees.** In the cities large trees are transplanted quite frequently and quite successfully. Please describe the mode of operation.—R. M. W.

2758. **The Buffalo Tree-Hopper.** A small greenish yellow bug, a hopper, did great damage in our pear orchard last year. What is it and how can we get rid of it?—M. N., Ill.

2759. **The Hardy Orange for Hedge Purposes.** Will Prof. Massey please state what treatment *Citrus trifoliata* requires to make a hedge fence. How long will it take from seed to get at fence?—P. W. R., Kentucky.

2760. **Water-Cress in Greenhouse.** Could the greenhouse culture of water-cresses be made profitable?—M. N. O., N. J.

2761. **Protecting Peach Buds.** Can anything be done to protect the buds of peach trees from harm by late frosts?—W. W. M., R. I.

2762. **Vineyard on Western Slope.** What is the objection urged against a western exposure for grapes? What is a piece of ground suitable in every other respect. Would you advise me to plant it?—B. B. S., Miss.

2763. **Nursery Stock from Different Sections.** Will peach and plum trees grown in Delaware and New Jersey do as well as if grown in Ohio?—D. H. H., Ohio.

2764. **Running Water in Fruit-House.** I can have a six or eight stream flowing through bottom of fruit-house. Would this be a good thing?—V. B.

2765. **Remedy for Pear Curculio.** Do you know a practical remedy?—A. B. H., Mass.

2766. **Plum Varieties for Western Ohio.** Please name six or eight varieties best suited for market and the home garden.—O. C., Ohio.

2767. **Spruces from Seed.** Can an inexperienced person hope to be successful in raising the Colorado and Douglass spruces from seed? I have plenty of order and want about 500 seedlings. How is it done?—G. E. B., Minn.

2768. **Cianthus from Seed.** Have tried for four years, but never succeeded in getting a flower. What is required?—C. E. B., Minn.

2769. **Best Tomato for Family Use.** What variety is best flavored and free from rot?

2770. **Knife or Shears for Pruning Grapes.** Which is most suitable? My experience with the shears is not satisfactory.—J. Q. B., *Conn.*

2771. **Strawberry Products.** Can wine, jelly or syrup be manufactured from strawberries, and placed on the market with profit?—C. N. F., *Mich.*

2772. **Cement for Holes in Trees.** Is there any mixture of cement or other substances that could be recommended for filling up holes in old apple trees that have resulted from the decay of limbs?—G. S. C., *N. Y.*

2773. **Preventive for Wormy Apples.** Which is the best method of keeping apples from getting wormy?—A. A., *Utah.*

2774. **Grass for Shady Places.** What kinds will succeed best?—K. N., *R. I.*

2775. **English Walnuts.** Who can give me information as to best varieties of English walnut, and where can I purchase best trees for California planting? C. S. J., *Boston.*

REPLIES.

2731. **Winter-Storage of Bulbs.**—To keep tulips and similar bulbs in paper boxes in a cool room over winter, planting them in the spring, is not the best course. By planting in September or October, root-growth starts at once and continue more or less until blooming-time the spring following, and thus the bulb is in the best possible condition to develop a fine show of bloom, with which the blooms from bulbs wintered out of the soil as described could ill compare. 'Of the other bulbs you name, we would prefer to see only 'tuberosa kept out of soil. All others would do better planted in the fall, even though kept so cool as not to incite leaf-growth, or stored outdoors, covered thoroughly to keep away hard frost from them.

2704. **Propagation of Clematis.**—Various means are employed—cuttings, layers and grafts; but layering is the best for those not skilled in propagation. The layering is done when the new wood is moderately firm—preferably in five or six-inch pots, filled with a mixture of loam and sand, with drainage-bits at bottom. With the pot or pots at hand bring down the shoots, cut them partly through in a slanting direction and peg them securely in the pots, the surface of the soil at this stage being two inches, or a little less, from the top of the pot, and quite firmly pressed. Afterwards cover the layer with about an inch of soil, and the process is complete. After-treatment consists in maintaining moisture in the soil, made easier in hot, dry weather by earth or coal-ashes, etc., being packed about them. It will be some months before the layered shoot can be severed from the parent plant, hence it is worth while to be at some pains so to pack the pots as to preserve moisture. When at length roots have formed on the layered part, sever it near the surface on the end towards the parent.

2703. **Free-Blooming Roses.**—In addition to the Wootton, LaFrance, Madame Etienne and Duchess of Albany which you have, we recommend the varieties of the polyantha and rugosa races; such Bourbons as Apolline, Edward Desfosses, Hermosa, Louis Odier; such teas as Gloire de Dijon, Reine Marie Henriette, Bougere, Gerard Desbois, Homer, Madame de Vetry, Marie Ducher, Sombreuil; such Bengals as Agrippina, Douglass, Duchess of Edinburgh and James Sprunt.

2697. **Market for Sweet-Peas.**—Following are some

of the leading wholesale commission florists in New York with whom you might correspond: J. K. Allen, 106 West Twenty-fourth street; Wm. H. Gunther, 36 West Twenty-ninth street, Frank D. Hunter, 51 West Thirtieth street, Thomas Young, 20 West Twenty-fourth street, James Purdy, 112 West Fortieth street.

2690. **Transplanting Hemlocks.**—Our choice of season for transplanting any evergreens is early spring, as soon as soil will work up dry and fine. August transplanting is safe provided the season is not too dry and hot, but as these conditions of heat and drouth are usually upon us at that season, it is better not to count on doing the work then. Transplanting in winter when the ground is frozen, by cutting out and removing a large block of frozen earth with the roots, is expensive, but safe for the plant.

2739. **Mixtures for Grape Diseases.**—The most approved formula for Bordeaux mixture is as follows: Six pounds of sulphate of copper, four pounds fresh lime, twenty-two gallons of water. Dissolve the copper in sixteen gallons of water, and in another vessel slake the lime in six gallons of water. When the latter mixture has cooled, pour it slowly into the copper solution, mixing the fluids thoroughly by constant stirring. Prepare some days before use. Stir before applying. This mixture should be used only for the earlier applications. It is strongly adherent, and its presence upon the ripening fruit is pretty certain to attract attention, and may possibly injure the sale of the fruit when marketed. The stains, however, may be removed by dipping the fruit in a mixture of one quart of strong cider vinegar and five gallons of water, allowing it to remain a few minutes, then rinsing once or twice in clear water. On the whole, we think the ammoniated copper carbonate solution will do as well as the Bordeaux mixture in most cases, and as it is cheaper, and involves no risk of discoloring the fruit and giving it a suspicious appearance, should usually be given the preference. Dissolve three ounces of carbonate of copper in one quart of liquid ammonia (strength 22 degrees Baume) by stirring rapidly for a few moments. This will form a clear blue liquid, and thus prepared may be kept indefinitely in an air-tight vessel. For use dilute to twenty-eight gallons.

2676. **Root-Lice on Apple Trees.**—During some winters at the south these lice are very numerous, and occasionally the ground appears to be full of them. It often happens where there is a thick growth of the lesser chickweed, these lice will be found in great numbers on its roots. The ground is often very damp, and this appears to be favorable to their welfare, and it may be that tile draining would do much to help destroy them. Perhaps the best plan of all would be to give the land a dressing of nitrate of soda, kainit or wood-ashes; common salt would, at great distance from the sea, be found to help in some measure. Plowing frequently does not in any way appear to inconvenience them. Where only one or two trees or plants are infested, they might be freed by pouring boiling water around the roots, but not so near the stem as to scald the bark. If you fear to try this remedy, dissolve a quarter of a pound of kainit in a gallon of water and pour this around the tree, or strew the kainit on the ground and allow the rain to wash it in. Wood-ashes may be used in the same way.—H. W. S.

2758. **The Buffalo Tree-Hopper.**—This insect has lately developed into a serious orchard-pest in several of the western states. It is a small greenish or yellowish creature, about one-third of an inch long, and generally rather common during the late summer and early autumn months. Its form has been compared to that of a beech-nut. Its mouth consists of a sharp beak which it inserts into the bark, to suck the sap. The eggs are laid in the upper part of the twigs of apple, pear, maple and various other fruit and shade-trees, mostly late in summer. They hatch the following May into small, active greenish hoppers, somewhat like the adults in appearance, which insert their tiny beaks into the tender bark and suck out the sap. They become full-grown about mid-summer, and feed in both the young and adult states on a great variety of plants. The female punctures the bark by means of its ovipositor, leaving scars, which constitute the principal injury suffered from the pest. On old trees this is not so serious as in young orchards, where it causes an unsymmetrical and unhealthy growth that is often quite injurious. It is always more difficult to prevent the injuries of an insect that feeds upon a variety of plants, both wild and cultivated, than one which is confined for food to the single crop injured. As a rule it is also more difficult to fight those insects which get their food by sucking, than those which bite. The Buffalo tree-hopper combines both of these characteristics, so that from the nature of the case we may expect it to be a difficult insect to overcome. In the larval state, says Prof. William Sanders, before the power of flight is acquired, the insect is easily caught and destroyed; but it is not easy to suggest a remedy for so active a creature as the perfect insect is. It can not be killed by any poisonous application, as it feeds only on sap. It has been suggested that where they are so numerous as to injure fruit-trees they may be frightened away by frequently shaking the trees, as they are very shy and timorous. It seems to me that the insects might be successfully fought, just after hatching from the eggs, by spraying with kerosene emulsion. The infested trees should be carefully watched during May, and as soon as most of the eggs are hatched the trees should be thoroughly sprayed. In those cases where the trees are infested by bark-lice as well as the present pest, the same spraying may be made to kill both. By destroying the progeny of the eggs in this way, the crop of egg-laying specimens will be reduced, but it will not necessarily prevent the hoppers which develop in neighboring localities from invading the orchard to lay eggs.—CLARENCE M. WEED, *N. H. Agricultural College.*

2698. **Catalpas for Timber.**—In "Bulletin No. 1, Forestry Division, Department of Agriculture," is the following: "In Mississippi county, Missouri, 250,000 catalpa-plants are in cultivation by the railway company, and the experiment promises satisfactory results; but sufficient time has not elapsed since planting to speak with certainty." A large section has also been planted in Kansas. "In 1877 C. P. Huntington sent a box of catalpa-seed (*C. bignonioides*), with a strong recommendation that it be tested with a view to cultivating a plantation for tie-timber. The wood of the catalpa is coarse-grained and light, but it has the reputation of being the most durable under ground of all timber. Cases are quoted of its lasting in the ground eighty years and

upward without showing signs of rot (Ohio Agricultural Report, 1871). I learn from the report of the company's agent that these trees, which are now seven years old, have attained a height of from 50 to 60 feet and are from 8 to 12 inches in diameter." Bulletin No. 1 is a report on the relation of railroads to forest supplies, forestry, etc., and can be obtained free of charge by merely requesting it of Hon. J. M. Rusk, Secretary Department of Agriculture, Washington, D. C.—JAMES SHEPARD, *Cl.*

2734. **Willows Poisoning Water.**—Allow me to say positively—*It is not true.* There are 230,000 varieties of willow, none of which are poisonous. During the lifetime of the writer there have been added more than 100 species to the already existing 116. Some of the varieties are used medicinally. "Salicin" is a well-known remedial agent extracted from the willow, used as a febrifuge. In some instances efficacious in chills and fever, where quinine is objectionable. In Egypt a decoction of the willow catkins is used as a remedy in malarial fevers. Among all, there is not one species of poisonous character; and the conclusion may surely be drawn that in planting trees by the water-side nature was beneficial rather than deleterious. In concluding, I propound a conundrum: Why is a weeping-willow like a murderer?—JNO. O. BRONSON, M. D., *Duchess Co., N. Y.*

2709. **Composting of Night-Soil.**—In Marblehead, where every farmer for the past twenty years has used from 20 to 70 cord annually, we first make beds of muck if possible, but if that is not obtainable then the next best absorbent that we can obtain. These beds are about eighteen inches in depth. We surround them with a bank of similar material, about four feet high, and into the receptacle thus formed we shoot the night-soil from a water-tight box. When filled, barn and sea manure is thrown on top; the whole mass is pitched over and roughly mixed together early in spring, the frozen lump found being thrown on the outside. In a week or two the mass is again thrown lightly over, which usually causes it to develop heat by the introduction of air. No trace of night-soil can be detected in it by the eye. We use this compound on all our crops with excellent result.—J. J. H. GREGORY.

2687. **Pruning the Marechal Niel Rose.**—The latter part of February or beginning of March would be about the best time to prune this rose in the section of country mentioned (eastern Virginia), or it could be pruned any time after New Year, and before growth begins. The way is so to plan the operation that the tender shoots miss the late severe frosts. The spur system gives about the best results. The leading shoots should be trained in their full length, and not be shortened at all. These long shoots produce laterals which in turn yield roses. After these laterals have flowered, they are cut back at pruning-time to one or two eyes, according to the option of the pruner. Occasionally one of the old leaders is cut out to encourage the growth of younger ones.—H. W. SMITH, *La.*

2675. **Rose Mildew.**—Hyposulphite of soda is used at the rate of half an ounce to ten gallons of water. If the roses are growing outdoors, the mildew may be kept in check by the use of the ammoniacal solution of copper carbonate applied faithfully with a sprayer about every three weeks or oftener, as the case may seem to require.—H. W. S., *La.*

2727. **Prevention of Plum-Rot.**—The rot is a fungus disease, attacking plums, peaches, etc., and can best be prevented by giving the proper soil, manure and cultivation, and by thinning the fruit to prevent over-bearing. All specimens showing the least sign of rot should be gathered and destroyed at once to prevent the spread of the disease. Spraying the fruit with the ammoniacal solution of copper carbonate will undoubtedly tend to check the disease also.

2724. **Fruit-Trees for Missouri.**—Samuel Miller recommends the following list, viz.: *Apples* (mostly for winter).—Ben Davis, Winesap, Jonathan, Jennetting, Yellow, Bellflower, Willow Twig, Clayton, Missouri Pippin, Newton Pippin. *Pears*.—Doyenne d'Ete, Gifford, Osband's Summer, Bloodgood, Clapp's Favorite, Sheldon, Seckel, Bartlett, Buffum, White Doyenne, Howell, Duchesse d'Anjou. If wanted to come into being early, plant dwarfs. *Plums*.—Wild Goose, De Soto, Lombard, Weaver, Imperial Gage, German Prune and Damson. *Cherries*.—Bowman's May, May Duke, Elton, Reine Hortense, Gov. Wood, Napoleon, Early Richmond, English Morello, Late Duke. *Peaches*.—A few Alexander, Hale's Royal, Early Beatrice, Early Rivers, Baltimore Beauty, Royal George, Foster, Stump the World, Old Mixon Cling and Free, Crawford's Late, Wonderful, Picquet's Late, Heath Cling, Park's Late, and for latest of all Nix Cling.

2669. **Pears for Louisiana.**—The varieties of pears mentioned in the query will thrive vigorously in the latitude stated. Le Conte and Kieffer should be added to the list.—H. W. SMITH, La.

2666. **Strong Growth in Roses.** The most successful treatment of roses I have ever seen was in the grounds of G. W. Tresey, of this place, who is an enthusiastic admirer of fine flowers, and spares no pains nor expense to produce them. He keeps a horse and cow, and his barn is built into a bank so that the liquid manures and the water from the roof settle in a low place under it, and as early as the roses need water in spring he applies a pailful of this liquid to each plant, and three or four times at intervals during the season, with the result of a rank growth and abundant bloom. The plants used in this case were such as are popularly known as "tree-roses," that is, they were grafted two or three feet from the ground; but Mr. Tresey says this class of roses are not generally proving very durable, for the reason that it is natural for a rose to renew itself by throwing up new shoots from the ground, and as the top-grafting precludes this, when the stems get old and hard, a large portion of them fail.—WM. F. B.

2620. **Raising Lily-Bulbs.** Lily-bulbs may be increased by seeds, which should be sown as soon as ripe in light sandy soil; but all lilies do not come true to seed. Small bulbs, or bulletts, form on the old or mother bulbs; these may be detached and planted in beds in the open ground, or in flats or seed-pans in the house. The plant can also be increased by bulb-scales, which are removed from the parent bulb; ten or twenty may be removed from the outer rows of a single bulb without apparent injury. These scales are planted in light, well-drained soil, large end downward and deep enough to be even with the surface of the ground. The best time to commence operations is February or March

in the greenhouse, planting the scales in flats or seed-pans and keeping them in a temperature of from 55° to 65°, and in moist but not wet soil. In from six to eight weeks small bulbels will be found at the base of the scales. In May the flats or pans should be plunged in the open ground even with the surface, keeping them free from weeds, and on the approach of freezing weather they should receive a generous covering of leaves or straw. By this method blooming bulbs can be grown in two or three years, if the scales are not planted too close. Some lilies divide themselves into two or more parts. These parts may be carefully separated and treated the same as the original bulb.—THEODORE JENNINGS, Westchester Co., N. Y.

2759. **The Hardy Orange as a Hedge Plant.** *Citrus trifoliata*, when used for hedging purposes, should be planted in a single row about eighteen to twenty inches apart. The plants will need very little pruning, as the growth is naturally dwarf and dense. They have a habit of throwing up strong erect shoots late in summer, which continue to grow until checked by hard frosts. These strong growths should be cut back to a uniform height in the late fall, so as to induce a strong break below in spring. Supposing that one-year seedlings are used for planting, I should let them grow untouched until late in November, or after they have dropped their leaves, as, unlike most oranges, this species is deciduous. I would cut them back to a uniform height of one foot. The next season let them gain another foot in height, and so on until they are four feet high. Each season clip the sides slightly, as may be needed, to preserve a broad base and narrow top to the hedge; but little pruning will be needed, however, in this direction, unless a perfect outline is desired; for the plant makes such a dense growth, by merely heading down the late growth annually, that it soon becomes a defensive hedge of the most perfect description, even when planted wider apart than I have named. I consider this orange the most perfect hedge plant yet found for all parts of the country. It is provided with long spines of the sharpest and most persistent character, in comparison with which the thorns on the osage-orange are mere prickles. Then, too, it will make one of the most ornamental of hedges, giving a great profusion of sweet orange-blossoms in spring, and lots of little sour oranges in October. Its roots will not ramble all over the land and sucker as the Maclura does, and if you want to get rid of it you can do so at once. But woe to the man who digs up an osage-orange hedge. The more he grubs the wider it gets, usually. No one need have the least doubt as to the perfect hardiness of the *Citrus trifoliata*, at least anywhere south of Albany, N. Y., and perhaps further north. The only trouble yet is the cost of the seed. There are not enough bearing plants in the country to affect the seed-market, and the seed must still be gotten from Japan. I feel sure that if some of our nurserymen would get up a stock of this plant at reasonable prices, a brisk demand would soon be created for the plants, for I believe that for all parts of our country it combines more of the desirable qualities of a perfect hedge plant than anything I know of. I do not know the prices at which plants are held. Nurserymen who have them should advertise them.—W. F. MASSEY.

2754. **Transplanting Large Trees.** This and a similar inquiry in a former issue can not be answered in a better and more thorough way than by quoting from an illustrated article which recently appeared in *The Rural New-Yorker*. In moving large trees, say those ten to twelve inches in diameter and twenty-five to thirty feet high, says the writer, Edward Hicks, it is well to prepare them by trimming and cutting or sawing off the roots at a proper distance from the trunks, say six to eight feet, in June. The cut roots heal over and send out fibrous roots, which should not be injured more than is necessary in moving the trees next fall or spring. Young thrifty maples and elms, originally from the nursery, do not need such preparation nearly as much as other and older trees. In moving a tree we begin by digging a wide trench six to eight feet from it, leaving all possible roots fast to it. By digging under the tree in the wide trench, and working the soil out of the roots by means of round or dull-pointed sticks, the soil falls into the cavity made under the tree. Three or four men in as many hours could get so much of the soil away from the roots that it would be safe to attach a rope and tackle to the upper part of the trunk and to some adjoining post or tree for the purpose of pulling the tree over. A good quantity of bagging must be put around the tree under the rope to prevent injury, and care should be taken that the pulling of the rope does not split off or break a limb. A team is hitched to the end of the draft rope, and slowly driven in the proper direction to pull the tree over. If the tree does not readily tip over, dig under and cut off any fast root. While it is tipped over, work out more of the soil with the sticks. Now pass a large rope, double, around a few large roots close to the tree, leaving the ends of the rope turned up by the trunk to be used in lifting the tree at the proper time. Tip the tree in the opposite direction and put another large rope around the large roots close to the trunk; remove more soil and see that no roots are fast to the ground. Four guy-ropes attached to the upper parts of the tree, as shown in the cut, should be put on properly and used to prevent the tree from tipping over too far as well as to keep it upright. A good deal of the soil can be put back in the hole without covering the roots, to get it out of the way of the machine. The latter can now be placed about the tree by removing the front part, fastened by four bolts,

placing the frame with the hind wheels around the tree and replacing the front parts. Two timbers, 3x9 inches, and twenty feet long, are now placed on the ground under the hind wheels, and in front of them, parallel to each other, for the purpose of keeping the hind wheels up out of the big hole when drawing the tree away; and they are also used while backing the hind wheels across the new hole in which the tree is to be planted. The machine consists of a hind axle twelve feet long and broad-tired wheels. The frame is made of spruce 3x8 in. and 20 ft. long. The braces are 3x5 in. and 10 ft. long, and uprights 3x9 in. and 3 ft. high; these are bolted to the hind axle and main frame. The front axle has a set of blocks bolted together and of sufficient height to support the front end of the frame. Into the top timbers, 3x6 inches, hollows are cut at the proper distances to receive the ends of two locust rollers. A windlass or winch is put at each end of the frame by which trees can easily and steadily be lifted and lowered, the large double ropes



TRANSPLANTING LARGE TREES. READY TO LIFT.

passing over the rollers to the windlasses. A locust boom is put across the machine under the frame and above the braces; iron pins hold it in place. The side guy-ropes are made fast to the ends of this boom. The other guy-ropes are made fast to the front and rear parts of the machine. Four rope loops are made fast inside of the frame and are so placed that by passing a rope around the trunk of the tree and through the loops

two or three times, a rope ring is made around the tree that will keep the trunk in the middle of the frame and not allow it to hit either the edges or the rollers—a very necessary safeguard. As the tree is slowly lifted by the windlasses, the guy-ropes are loosened, as needed. The tree will pass obstructions, such as trees by the roadside, but in doing so it is better to lean the tree backward. When the tree has arrived at its new place, the two timbers are placed along the opposite edges of the hole so that the hind wheels can be backed over it. The tree is then lowered to the proper depth, and made plumb by the guy-ropes, and good mellow soil is thrown in and packed well into all the cavities under the roots. When the hole is half filled several barrels of water should be poured in; this will wash the soil into the cavities under the center of the tree much better. When the water has settled away, fill in and pack the soil till the hole is little more than full. Leave a depression so that all the rain that may

fall will be retained. The tree should now be judiciously trimmed and the machine removed. Five men can take up, move and plant a tree in a day, if the distance is short and the digging not too hard. The tree should be properly wired to stakes to prevent the wind from blowing it over. The front part of the machine is a part of our platform spring market-wagon, while the hind wheels are from a wood-axle wagon. A tree ten inches in diameter with some dirt adhering to its roots, will weigh a ton or more.

2665. **Manure-Water for House-Plants.**—The best plan is to buy the specially prepared manures offered by florists and frequently advertised in this magazine. If these manures are unattainable, then a preparation may be made by dissolving a tablespoonful of guano in a gallon of water, or half an ounce of nitrate of potash or of sulphate of ammonia may be dissolved in the same quantity of water. Liquid manure should not be applied to pot-plants until the soil is filled with roots, and the plant begins to show evident signs of want. In the hands of a skillful grower, liquid manure becomes of great value, but the novice must go carefully or disaster may result.—H. W. S.

2667. **Manure for Annuals.**—There is nothing better for this class of plants than thoroughly decayed manure, either from the cow-shed or stable. Of course it is understood that I don't mean manure that has laid for a long time exposed to the weather. This may be decayed, but the plant food will have been

largely washed away by the heavy rains. Often soil obtained from the woods will be found to be as valuable as anything can well be for this section of plants. Annuals should be sown where they are to flower, and if the plants come up too thickly, they must be trimmed.—H. W. S.

2717. **Nitrate of Soda on Onions.**—I have made use of this fertilizer on my onions for several years past, but have never depended on it alone for the crop. My plan is to plow in about eight cords of good barn-manure and rake or harrow in 1,000 to 1,500 pounds of onion-fertilizer before planting my seed, and when the crop begins to bottom to scatter 200 to 300 pounds of nitrate of soda to the acre and slide it in. The effects of the nitrate on the crop will be visible in a few days.—J. J. H. GREGORY, Marblehead, Mass.

2736. **Pine Sawdust for Manure.**—It is used largely

in this vicinity as an absorbent in the cow-barn, but the general sentiment is, that for some reason, possibly owing to its resinous properties, it does the manure no good. People who hold this theory still continue to use it, because of its handiness and cleanliness. There is no vegetation under pine trees.—J. J. H. GREGORY, Marblehead, Mass.

2664. **Best Hedge Plant.** Probably the best hedge plant to combine ornament with protection is *Pyrus Japonica*. The plants will cost about \$5 per 100, and should be planted two feet apart. Land that is in good condition for a crop of corn will give a good growth of these plants. The ground on each side should be kept mellow by the occasional use of a cultivator, and the plants cut to a regular form once a year: With this treatment it should make a good hedge in four to five years; or, if two strands of wire are stretched above it, it would afford considerable protection in two years.—

Wm. F. B.

2665. **Manure-Water for House-Plants.** The concentrated fertilizers which are put up for house-plants always have full directions for use printed on the packages. Home-made manures vary so largely in bulk and strength, that it is scarcely possible to give directions suited to all cases, but a teaspoonful of pulverized hen-manure would be enough for a quart of water. Apply this once a week or two, and coarser manure might be used in large quantity; but it is always best to apply liquid manure in a very weak state and sparingly, unless one knows by careful practice just what the plants will bear.—Wm. F. B.



TRANSPLANTING LARGE TREES. READY TO MOVE.

2765. **Remedy for Pear Curculio.**—Both the plum and the quince-curculio attack pears. There are only two remedies which appear at all practical. One is the old jarring process so often recommended for plum trees. Spread a sheet or sheets under the tree and jar it by means of a smart blow or two with a wooden mallet against the trunk, preferably against the stub of a removed branch. The insects will fall to the ground, and can be collected on the sheet and destroyed. The other remedy, not superior to the older jarring process, consists in spraying the trees shortly after the leaves unfold, with Paris green water, 1 lb. of Paris green to 300 gals. of water. Keep well stirred while applying. To spray with a solution of saltpetre, 1 lb. to 3 gals. of water, only wastes material and effort.

CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

The Bermuda Onion.—The temperature in Bermuda from November to June ranges from 50 to 75 degrees—never higher, never lower, with never a greater monthly range of temperature than 23 degrees, or a greater daily range than 14 degrees. It is in such a climate as this that the onion grows with that mild and delicate flavor which gives the Bermuda product a special value on account of quality, apart from the advantage it has of coming at an unusual season. The seed of this onion is all grown in Teneriffe Island. The white variety matures from two to three weeks earlier than the red, but is not quite as sweet. No other seed seems to be worth planting in this climate. The seed is thickly sown in rows eight inches apart, in seed-beds three feet wide, these beds being prepared with the most scrupulous care, and enriched with enormous quantities of well-rotted cow or pig-manure. The failure of these seed-beds means the failure of the crop. The first sowing is usually made the last week in September, and kept up with seed of both varieties until the first week in November. This gives a succession of plants for transplanting into the fields. Transplanting begins in December and continues until the middle of January. The fields are little pockets of earth scattered here and there over the island, and seldom contain an area of more than two acres. These fields are usually surrounded with oleander hedges to keep off the winter gales. The soil is prepared with great care, by plowing or spading-in stable-manure, sea-weed and every artificial fertilizer known in the market. Beds three feet wide are made by treading paths through the field, and in these beds the little plants, about as large as a goose-quill, are transplanted from the seed-beds. This is a rather slow process, but the onion makes a better growth and forms a better bulb when transplanted, and not two out of a hundred plants are lost by transplanting. Again, it takes from four and one-half to five months for the onion to mature for the market from seed, and from two to two and one-half months of this period, while the plants are in their tender growth, is spent in the seed-beds, where one man can weed and care for enough plants for ten acres. Therefore much labor is saved.

When the onion is ready for the market, men, women and children, mostly colored, are employed to pull, pack and cart to the steamer, packing the onions in bushel crates, made from box-stuff brought in shooks from

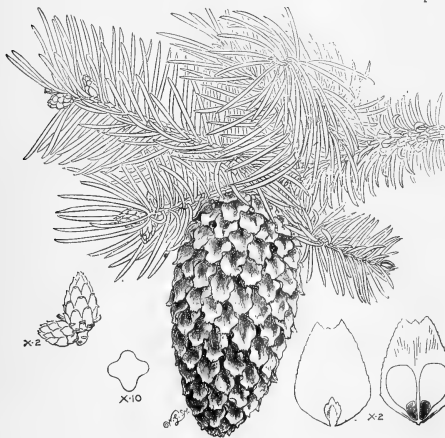
Maine. These crates, when ready for packing, cost about 12 cents each. In the crop season a steamer is loaded and departs for New York every Thursday. The number of crates harvested from an acre varies. I have known 800 crates to be gathered from an acre, but probably 200 is nearer the average. The price varies, usually opening in January at \$2 a bushel-box here, and rapidly dropping to \$1.50, and then on down to \$1 and to 75 cents in May. The average price paid here for the past six years is as follows: 1886, \$1.35; 1887, \$1; 1888, \$1.65; 1889, 53 cents; 1890, \$1.44; 1891, \$1.28. —*Garden and Forest.*

Flavor of Grecian Wine.—A traveler in Greece writes: "The best wine is made from grapes grown on the mountains, and it is the pure stuff—no logwood nor burnt sugar to color it, nor stems crushed to give it a bitter taste—but the pure grapes are put in a vat and stamped with the bare feet (which gives it a fine flavor) and the wine, when one year old, is immense." This statement will doubtless tend to discourage California wine-producers, for we will never be able to compete with the class of machinery mentioned; and by the processes in use in this state it will be impossible to impart the peculiar foreign flavor which our correspondent refers to!—*California Fruit-Grower.*

Propagating the Japanese Persimmon.—Almost any skillful budder or grafter can multiply the Japanese persimmon by grafting on the native stocks, but preference is given to small stocks, budding or grafting near the ground. When the scions are inserted into large stocks or the branches of old trees, they are not so likely to unite; besides, the stock in a few years will outgrow the scion, and what is called strangulation follows. Stocks one-half inch to an inch in diameter are preferable to larger ones for either budding or grafting. —*A. S. Fuller, in New York Tribune.*

Apples in Ontario.—The soil I have to deal with is a marl, with a clay subsoil. The manure I have used is barn-yard and ashes. Thirteen years ago last spring I planted the ground with Oldenburg and Wagener apple trees. The Wagens give me full crops of fine fruit, but the trees are unhealthy and are dying out. This variety does not succeed in any soil in this locality. The Duchess presents an appearance in growth, quality and quantity of fruit not to be surpassed. This year from 53 trees we picked and shipped 146 barrels of No. 1

fruit. We sold to a house in Winnipeg at \$3 a bushel here. Sixty Duchess were planted 20 feet apart each way; three trees had no fruit this year, and four had been replaced with other varieties.—*W. R. Dempsey, in Canadian Horticulturist.*



CONE OF *PICEA PUNGENS*.

Picea Pungens.—We here show the cone of this beautiful spruce. *Picea pungens* is now gradually becoming known, but it is worth while mentioning that it varies in color from dark apple-green to the most beautiful silvery tint, as in the variety known as *P. argentea*, which is even more beautiful than the variety *P. glauca*, originally known as *Parryana glauca*. It is widely different from, and in this climate far inferior to, *P. Engelmanni*, which is often confounded with it. *P. pungens* is perfectly hardy, and its color remains throughout the year, though naturally brightest in spring. It does well even in the vicinity of towns, so that we can strongly recommend its extended culture as an ornamental tree.—*Gardener's Chronicle.*

Asparagus Culture.

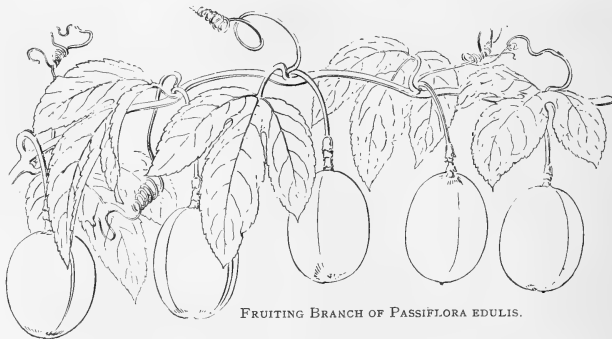
—When I had to grow asparagus with plenty of manure in a cold and heavy soil, I was utterly disheartened with the result, as during the wet winter the plants frequently died, while in the summer the grass

rarely exceeded a height of four feet eleven inches. When making a new garden, taken in from an arable field two years ago last April, I planted a bed of asparagus without any manure, simply digging the ground one spit deep. The result is that I was able to cut a pretty good supply of grass during the season just past. In proof of this, I send to the editor with this note a single stalk, that measures six feet three inches in height, having a stem large enough to please any person of reasonable wants, while there are more even of a greater height. Better asparagus can be grown on land that is naturally well-drained without manure than where the ground is well-dressed, but of a retentive character and badly drained.—*J. C. Clarke, in Gardeners' Magazine.*

Killing Greenfly.—I use a small oil-stove, place a piece of tin over it, and strew some tobacco-dust on the tin. The stove being lighted gives off a very strong fume, which destroys greenfly quickly and does not injure the plants, neither does it require watching, as there is no flame. In a rose-house 60x12, in which the aphid was quite thick, they were entirely destroyed in one hour. The stove which I use has only one burner, but I would recommend a two-burner stove for a larger house. The amount of tobacco-dust used for a small house was a 5-inch pot full.—*George Staffinger, in American Florist.*

Passiflora edulis, says *Gardeners' Magazine*, is a delicious fruit, wholesome, and handsome on the table. It was mentioned in a previous issue as succeeding well in some parts of England. Its growth and habit of fruiting is shown in illustration, reduced from the journal before mentioned.

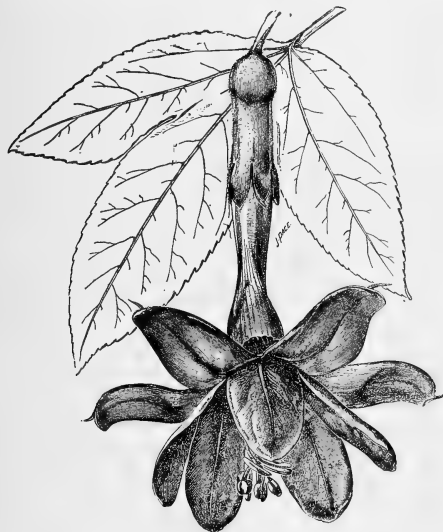
Setting Permanent Posts.—Lately, in digging a pit for a greenhouse, I dug down beside a post set in water-lime cement three years ago, and had a chance to see



FRUITING BRANCH OF *PASSIFLORA EDULIS*.

how that work looked. In setting heavy chestnut posts for a greenhouse I dug holes 32 inches deep and 8x18 inches in size, the broad way being in the direction of

the wall. The posts were set perpendicularly in the centers of the holes, and blocked in position with bits of stone, when the holes were two-thirds filled with cheap cement-mortar, made of one part cement to six parts sand. Coarse gravel was then poured in, filling the hole until the mortar ran out at the top. Result: The post became fixed in a solid block of puddingstone, 8x18 inches, and presented a face of 18 inches by 32 to the outward pressure of the roof, instead of the narrow one of the post itself. The method is valuable in setting gate-posts, and not too expensive to use in ordinary fence, where the holes are but little larger than posts. It fits the post securely and perfectly to the surrounding soil, and if the bottom of the post and hole are slightly larger or irregular, prevents heaving by frost.—*L. B. Pierce, in New York Tribune.*



TACSONIA SMYTHIANA.

Tacsonia Smythiana.—Our illustration represents a new tacsonia raised by William Smythe, who tells us that he raised it from *T. manicata* crossed with *T. Exoniensis*. The three bracts were $1\frac{3}{4}$ inches long and united for the greater part of their length into a tube split down one side, with the free tips ovate-lanceolate. The splitting of the tube, reminding one of a datura, might have been accidental in the specimen. The calyx-tube was cylindrical, slightly widened at the base, and a little twisted upward. The flower was about three inches across, with oblong, obtuse sepals $1\frac{3}{4}$ inches long and $\frac{3}{8}$ -inch broad, slightly keeled on the back, with the midrib running out

into a little point below the apex; the outer face of two of them was green, another was green on one side of the midrib and salmon-red on the other, while the remaining two were salmon-red with the exception of the midrib only; the inner face of all was salmon-red. The petals were ovate-oblong, broader than the sepals, but of the same length, very blunt and of a deeper color—almost scarlet. The corona was reduced to two rows of small white tubercles, variegated with violet at the base, and the throat was white. The filaments and style were flesh-colored, the anthers yellow and the one-sided stigma green. The leaves were deeply three-lobed, leathery, deep green above, pale and finely downy beneath, moderate in size, and the lobes were lanceolate and finely serrate. The plant has been grown in a ro-inch pot plunged in the ground against a south wall, and in this position Mr. Smythe says it has been flowering with great freedom ever since July, and is quite distinct from anything else he has. The large flowers stand out conspicuously from the foliage, and are all the more prominent owing to the small size of the leaves.—*Gardening World.*

Modern Fruit-Rooms.—The most approved method is to have the building wholly above ground, and to double or treble the walls. In climates where the temperature does not go much below zero a well-constructed double wall, double doors, and double window-sash would be quite safe. For greater security, supposing the walls to be wood, the inside faces of the double wall should be lined with felt. The roof should be also double, with provision for a ventilator if it should be found necessary to use one. This may not be required if windows are so arranged that there can be a current of air passed through now and then. Air should not be given except when the temperature outside equals that within; otherwise there will be a troublesome condensation of moisture, which is what we should try to avoid. The interior should have as many shelves as can be conveniently placed, on which the fruit is to be spread, and so arranged as to be easy of access for handling and observation. The fruit may be several courses thick on the shelves, even heaped without injury, provided we secure the best conditions for preserving it; hay may be placed over the fruit if there is danger of frost penetrating, but this should be avoided if possible, because a fruit-house should be a show-house equal to a greenhouse of pretty flowers; and indeed there are few more beautiful sights to which to invite friends than a well-ordered fruit-house, with every variety on its own separate shelf and presenting to the beholder the most glorious reasons for its existence.—*Ohio Farmer.*

Variegated Oleasters.—The leaves of the Japanese species (*Elaeagnus pungens*) are oblong, wavy at the margins, leathery, deep green above and more or less covered with scurfy scales above or almost naked, while the under surface is silvery from a dense layer of small

scales, dotted over with larger rusty ones. The variety *E. p. variegata* has a narrow yellow margin to its leaves, and is highly ornamental in winter. Sometimes a few of the leaves on the small shoots are wholly yellow. On the other hand, *E. p. aurea marginata* has a broad, irregular, yellow band along the margin. Altogether different is *E. p. maculata*, which has a broad, irregular band of pale yellow along the center, fading to creamy yellow or silvery white after the leaves have reached maturity and during the winter. A narrow green margin bounds the large central blotch, and sometimes the upper leaves on small branches are wholly yellow. Our illustration gives a good idea of the appearance and variability of the variegation. The shrub is of dwarfer habit than the



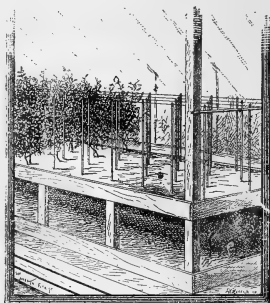
ELÆAGNUS PUNGENS MACULATA.

above-mentioned kinds, and being bushy and very freely branched, it might be put to a variety of purposes with good effect, especially in winter, when rich coloring outdoors is comparatively scanty.—*Gardening World*.

Osage Hedges.—In the best farm districts of Pennsylvania the progressive farmer still sticks to the osage-orange fence. They are by all odds the cheapest, but the leading objection is the robbing of the earth by the roots. The roots of trees grow no further away than the top is allowed to grow. A well-managed hedge only throws out the roots to about ten feet on each side. But even this is begrudged by a good farmer, who can plow to within two or three feet of a post-and-rail fence.

The Chester-county farmer trims with a corn-knife or hook. They are cut twice a year—hay-time and harvest. A man can cut a mile a day.—*Mechans' Monthly*.

Staking Roses.—Most growers at present use cane stakes, and though they are by far the neatest in appearance of all kinds that can be used, being light they rot off quickly at the surface of the soil, and along toward spring, when the sun begins to get pretty hot and heavy, and syringing is necessary in order to keep

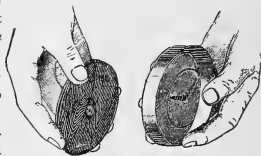


STAKING ROSES.

down the red-spider, and they are liable to be knocked over and look bad. To avoid this and keep them always upright, even though they do rot off, I stretch a heavy wire directly over each row of plants, three and one-half feet above the surface of the soil, to which the top of each stake is fastened with a piece of fine wire, which holds it in position firmly, always cutting the stakes four feet long, which, with four inches of soil, will allow the stakes to extend two inches above the wire.—*American Florist*.

A Mailing-Case.—This is made of tin, with a screw in the center inversely fixed; the wooden lid is then screwed down tightly to the case, so as to be readily opened if desired by the post-office officials. It is just the thing for sending cut-flowers, specimens of leaves affected with disease, or any small samples that are perishable, and yet require to be sent a long distance. There is no evaporation at all, and nothing is required in the way of packing to envelop the articles. We have sent perishable articles of this kind so far as Australia without any packing whatever, but just the article itself put in a tin case. These tin cases are made by the Howe Mailing Co., of Detroit, Mich. The appended illustration will make the arrangement plain.—*Canadian Horticulturist*.

A Rock-Garden.—In too many cases, owners of gardens seem to hold the view that a rockery is a place for the display of rocks, and we have seen many instances where a mass of large stones or clinkers, heaped up



A MAILING-CASE.

together, with two or three sickly-looking ferns struggling for existence in the interstices, formed the chief ornament of a front "garden." The illustration will point out that which is necessary for the cultivation of alpine plants is not a heap of stones piled promiscuously together, with little or no soil between them, but a situation that will resemble somewhat the stony ground in which such plants are found growing naturally. A rock-garden is a difficult thing to make. Failure generally results from attempting to do too much. A man who simply half buries five large stones in a heap of earth will secure a much better effect than he who makes one of the ordinary "rock-works," in which hundreds of stones stick up as closely as teeth in a dentist's window. It would, in many cases, be better to put alpine plants in a smooth, exposed plot of sandy loam, than to attempt to grow them in the absurd rockeries that are wrongly supposed to represent something in alpine or mountainous countries. In the garden here shown are to be found, in perfect health, fine specimens of *Androsace* (*carnea* and *lanuginosa*), *Campanula*, *Saxifraga* (*longifolia*, *Bursonaria*, *oppositifolia*, etc.), alpine and glacier pinks (*Dianthus alpinus* and *glacialis*), and numerous other alpine plants and rock-ferns.—*London Gardening Illustrated*.

An Iris Garden.—Near Cambridge, England, is an interesting iris garden. The irises are not grouped together, but here a terrace and there an enclosed spot

have gone out of flower, so that they may be protected from wet and thoroughly ripened; and to this system Professor Foster, the owner, claims that he owes no small share of his success in growing and flowering



A ROCK GARDEN IN ENGLAND.

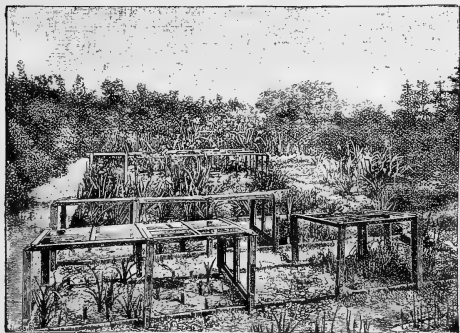
many of the choicer and shy-blooming irises. In speaking of iris seed and sowing, Professor Foster is particular in impressing upon the tyro the virtue of patience; as, for example, he says that he received from Persia some seeds of iris in 1884, and the first year after sowing one seed germinated, and in the year 1890 he was rewarded for his patience by six other seeds germinating.—*Gardener's Chronicle*.

Ashes vs. Insects on Roses.—A simple remedy was recently recommended by *La Nature*. It consists in taking crushed wood-ashes, and sifting them dry in a fine condition over the heads of the trees immediately after they have been syringed with water. The wood-ashes adhere to the leaves, and on account of their alkaline nature soon make it uncomfortable for any insect pests that may be there. The ashes do not injure the trees; on the other hand, when they have been syringed off with water again they fertilize the soil.

New Conservatories at Lincoln Park.—

We present an engraving from the architect's drawing of the new conservatories now in course of construction at Lincoln Park, Chicago. The height will be 54 feet at the center and 30 feet at the ends, and that of the orchid and New Holland division, 20 feet. The building will stand seven feet above the lawn and the ground will be terraced down to the flower-

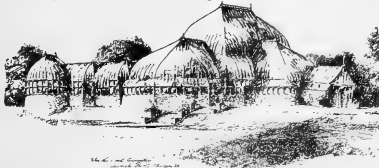
garden in front. Hot water will be the system used in heating, and to overcome friction in the long length of pipe used a steam-pump will be connected with the



VIEW IN A NOTED IRIS GARDEN.

contain many rare and scarce species and varieties. The cut represents one of these sheltered spots, and glass sash has been placed over those plants which

return-pipe near the boiler and thus the water will be impelled into a more rapid circulation, which can be increased or retarded at will by increasing or diminishing the speed of the pumps. The pressure system will be adopted whereby the temperature of the water can



NEW CONSERVATORY AT LINCOLN PARK, CHICAGO.

be increased to 25° if required. The radiating surfaces in the houses will be cut into independent sections, each controlled by automatic heat-regulating devices. The houses are constructed entirely of stone, iron and glass; trusses, rafters and purlins of wrought iron. The bars are of the Hellewell patent (steel and zinc) and the glass rough ribbed plate. The construction of a fernery alongside of the conservatory, 90x60 and 25 feet high, is deferred until another season. The house will be of stone walls with glass roof and will be lower than the palm-house by six feet and will have masses of rock filled in a picturesque fashion along its walls, and with running water, cascades and ferns planted among the rocks will simulate the fern-turfed rocky dells of nature.—*American Florist*.

The Evening Primrose.—Of all the plants seen last summer, the evening primrose (*Oenothera biennis*) interested me the most, and I gathered many specimens and watched the flowers open from evening to evening. Until my acquaintance with the evening primrose I never saw a flower in the very act of opening, and truly it was well worth the careful watching bestowed upon it. One specimen opened at least one flower regularly every evening, and sometimes two or three, for nearly a week.

The first one I watched opened very quickly, coming into full bloom in about five minutes after once beginning to split. First the bud split the least little bit at the sides; then the slits gradually widened and the petals inside began to expand; then the points of the sepals separated from each other in two pairs, each pair tightly fastened together. It seemed almost as if the flower was breathing—panting to be free. Very soon after the sepals parted they sprang back suddenly with a jerk, and slowly settled into their reflexed position, again splitting as they did so. After the first night the operation was not nearly so rapid, but took usually from a half hour to an hour and a half or two hours.—*Popular Science Monthly*.



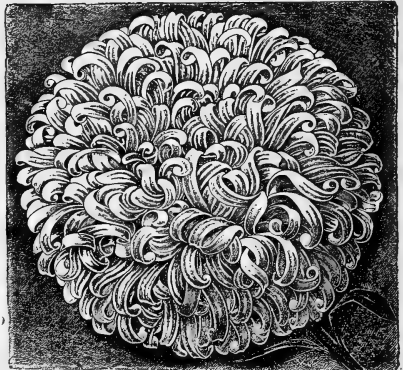
EVENING PRIMROSE

A Winter Window.—A broad shelf is fastened a few inches below the window-ledge by stout iron brackets. Upon this is placed a window-box, four or five inches in height. The front of this box can be made ornamental by fretwork, paint or other device. It may be used to contain the low-growing plants, the delicate little ferns and others that meet one's fancy. At each end of this box, at the corners, are two uprights that are mortised into the broad shelf and extend upward a little higher than the window. Cross-pieces at the top complete the framework. The whole is held firmly in place by a light iron brace extending from the inner upright on either side to the casing of the window near the top. The shelves can be varied to suit the taste. Plants placed upon these will each receive a proper share of light, as will those in the box below; while the view from the window will not be obstructed, nor will the whole structure occupy much room. This arrangement is capable of accommodating climbing vines on a light lattice-work of wire, arranged between the uprights and between the cross-pieces above the window. All the woodwork should be well painted. Water will cause warping and splitting unless the grain of the wood is well filled.—*Youth's Companion*.



WINTER WINDOW.

White Comet Aster.—The flower, which resembles very closely a pure white large-flowered Japanese chrysanthemum is larger and more double than is usual, the



WHITE COMET ASTER. (About two-thirds natural size.)

petals being much longer and more twisted. Each petal is ribbed, giving thus to the flower a peculiarly elegant appearance. The color is glossy satiny white. No doubt this aster will become a favorite.—*Gardener's Chronicle*.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.



A Successful Chrysanthemum Show.—The Florists' Club of Buffalo deserves great credit for its efforts in making a fine annual exhibit. The last show far exceeded all previous efforts, and was well attended. It was an exhibit purely by retail florists,

and the specimens are such only as are grown for the cut-flower trade. From this point of view, it was really a wonder to see such an extensive and really fine exhibit. The arrangement of 'mums, and all the other plants—begonias, ferns, carnations, geraniums, coleus, bouvardias, etc., being remarkably fine, giving easy access to every part of exhibit and showing everyone to best advantage. Palms and other tall plants interspersed with lilies and other flowers were freely used along the sides. Pitcher & Manda had sent specimens of some of their new seedlings, among them worthy of especial notice Hicks Arnold, Ada McVicker, Mrs. W. S. Kimball, etc. William Scott's orchids, among them *Stanhopia oculata* and *Lycaste Skinnerii*, although few in number, were as fine as anything that could be seen in any special orchid exhibit. Prof. John F. Cowells exhibited several seedling chrysanthemums not yet introduced, among them a remarkably fine one, namely "Erie." His manufactured "blue chrysanthemum" under a glass globe attracted much attention. Floral crosses, pillows and other pieces on the stage formed a fine background to the main show. In this specialty Buffalo florists are leaders. In first premiums William Scott made almost a clean sweep, some of them however, going to Mr. Rebstock, D. B. Long and others.

American Pomological Society. (Continued from page 776.) J. Van Lindley, in speaking on "Small Fruits in East and Middle North Carolina," says he has seen a great increase in the value of land from cotton-growing to strawberry culture, and claims that small-fruit growing is an inviting field. Cotton-seed is available, and largely used for manure. Pine straw is used as a mulch to keep the fruit clean.

PEAR-BLIGHT THEORIES.—G. B. F. Leighton's paper attacks the teachings of Prof. Arthur and other scientists, and claims that while the professors are wrangling over theories, he presents the fact that pear-blight invariable sets in on the ninth day after a sudden drop of 30 degrees in temperature in spring.

LECTURE ON PRUNING.—Prof. Taft of the Michigan State College Experiment Station explains the purposes and methods of pruning fruit-trees. No operation, he says, requires greater foresight than pruning. No branch should be removed for whose removal we cannot give a good reason. The chief reasons that justify pruning, are (1) the removal of dead or dying branches; (2) thinning; (3) assisting the growth of one part by the removal

of another. The first is a simple matter, and requires neither particular skill nor knowledge. Pruning for thinning, however, cannot be done without a knowledge of plant life; while good judgment should guide us in cutting out one part for the sake of assisting another. A few well-developed branches are of more value than a number of times that many which are crowded together without light and air. The removal of large healthy limbs should be avoided as far as possible. The injury is in proportion to the amount of loss of leaf surface, and the size of the wound. The question whether to remove a limb or not, can be answered affirmatively only when the benefits expected from pruning are larger than the necessary injury. Knife and thumb are better pruning-tools than saw and ax. Every blow of the ax or push of the saw in the removal of large limbs is a threat at the tree's life and vitality. By lessening the leaf's surface we lessen the digestive apparatus, and consequently the absorption of food.

In transplanting nursery-grown trees in orchard, we should cut back the tops to make them correspond with the size of the roots. Such trees often have very little root. The best time for pruning trees in orchard is soon after the leaves have fallen. Pruning in spring involves a greater check to the tree, and pruning after growth has commenced is still more injurious. There is no particular objection to pruning in winter, when the trees are frozen, except the discomfort of the pruner. Pruning may be done after the formation of dormant buds in summer, as any damage at that time is quickly repaired. When the wounds are large, the injury is lessened by coating them with clay, paint or grafting-wax. Judicious pruning gives us the means of thickening growth, or elongating it, and making it more open and spreading. Root-pruning can be resorted to for the purpose of checking rank growth in a tree of bearing age, thus hastening its fruitfulness, but on the whole, Prof. Taft did not deem it advisable to resort to such violent means. The cause of many failures in apple-growing may be found in the bare stems six or eight feet high to the lowest branches. Low-headed trees are usually preferable. In a general way, pruning should be done frequently with knife and thumb.

Prof. Brunk's radical method of cutting back a young tree to a short whip and its roots to mere short stubs before planting it out in orchard, has already been mentioned and illustrated in our November number. Mr. T. T. Lyon, speaking about the time of pruning, stated his preference for early spring when the frost just begins to draw out of the ground. This has given him best results.

FINE NEW FRUITS.—Among those favorably mentioned in the report of the fruit-committee are the Colerain grape, of medium size and good quality; the Brilliant grape, a large, long, compact bunch, medium-sized berry of very good quality, coming soon after Concord; the Lincoln pear, medium-sized, pyriform-obtuse, of good quality, a free grower and hardy; Harrison's black raspberry from Chase & Co., very promising for market.

That the Green Mountain (or Winchell) is a valuable early grape was generally admitted; but President Berck-

mans objected to its merits being discussed by the society, and to its being placed upon the official fruit-list, for the reason that the rules of the society exclude from consideration any new fruit sold under restrictions.

J. H. Hale was in favor of letting people sell their new fruits in any way they please even if a deviation from the old beaten track. The society made a mistake, he said, by its refusal to recognize or list a good new fruit, merely because people have their own ideas about selling it.

☐ **Fruit-Notes from Canada.**—L. Woolverton, secretary of the Ontario Fruit-Growers' Association had sent a paper telling of the great prosperity of the Canada Society, which has a membership of 2,500. It is a great aid to the fruit-grower.!

The apple industry, especially for export, is growing very rapidly. While in 1881 not much over 3,000 barrels were exported, the number had increased in 1889 to about 1,500,000 barrels, and more will be produced and shipped abroad in future. Reform of present methods of judging fruits at fairs is one of the aims of the association. The first remedy proposed is the employment of one judge instead of three—a judge who should be fully posted as to varieties, and receive good pay for his services. Some standard of values should be placed in his hands. The society is now engaged in getting out a fruit catalogue for this very purpose. All varieties are supposed to be perfect specimens, and such perfect specimens of a perfect variety are rated at 10, and of imperfect varieties something less than 10. Imperfect samples are reduced one or more points for the various disqualifications. Another aim of the association is the appointment of national fruit-inspectors, being under the authority of the government. All fruits should be examined and branded by them at point of shipment.

Mr. Woolverton gives the following notes on varieties: Early Harvest and Fall Pippin, formerly the principal summer and fall sorts, are no longer of value, on account of their being subject to scab. Northern Spy and Greening have been badly affected of late. The society feels greatly indebted to the United States Department of Agriculture for its efforts to find valuable remedies.

Among Russian fruits some good ones have been found; for instance, the Golden White. The Wealthy, an American seedling, has also proved of value. Renaud's seedling is very promising. Bartlett is the great market pear for profit in Canada. Beurré Boussock is one of the best for canning also, free from the musky flavor of the Bartlett, and just a little acid. Early Green is a new plum of medium size, roundish in form, with dark skin and marbled in two shades of green; pit smooth and free, stem black, three-quarters inch long. It is in prime condition early in August. Baker's German Prune is an annual bearer and wonderfully productive, of excellent flavor. At the secretary's home (Grimsby) the following strawberries have given most satisfaction, viz., Bubach, Haverland, Saunders and Eureka. The Williams, a Canada seedling, promises well. In the

Russian Ostheim and Vladimir cherries it is hoped to find suitable varieties for the northern part of the Niagara district.

A Great Apple-Orchard.—Mr. F. Wellhouse, of Kansas, writes to the society about his success in apple-growing. The orchards are a piece of good, well-drained soil, about 1,000 feet above sea-level. The trees were planted in trenches rather than in holes, the trenches being made by plowing out furrows nearly or fully ten inches in depth. This avoids all danger of surplus water standing around the roots of the trees. These are thirty-two feet apart east and west, and twelve feet apart north and south. This close planting shades and protects the orchard from winds. Corn was planted between the trees while young, and is considered the best crop for the purpose. After the trees have come into bearing, the ground is sown to clover. This is cut down every year when seed is ripe. The process is repeated in September. The tool used in the operation is a home-made rolling cutter, consisting of a stick of timber twelve or fifteen inches square and ten feet long. The corners are dressed off so as to form an octagon, and eight knives, running the whole length, are inserted, one at each corner. This stick of timber is fastened in a frame, and revolves in it when pulled over the ground by teams, its own weight being sufficient to chop up the clover and chance weeds.

The trees are all low-headed, trained in pyramidal form, with limbs starting out about one foot from the ground. This is best, as the bodies of the trees must be protected from the fierce sun-rays, otherwise they will be sun-scalded and ruined. An ordinary box-trap is used for the rabbits, which are very plentiful. Most of the insect enemies are destroyed by spraying with London purple.

The gathering forces use ordinary seamless two-bushel bags, with one bottom corner fastened to a top corner by means of hook-and-eye, and a hoop put into the mouth to keep it open. This is swung over the shoulder in the same manner as used for sowing grain by hand. This arrangement leaves the picker's hands free. The sacks are filled from the trees and then emptied into boxes on platform wagons and taken to the packing-house. Almost five-sixths of all the fruit thus grown can be reached by the pickers while standing on the ground. In the packing-house the apples are carefully assorted by hand. Three and even four grades are made. All unfit for other use are left in the field or fed to hogs.

The yield on the 225 acres in 1880 was 1,594 bushels; in 1890, 79,170 bushels. The Missouri pippin is the best yielder, followed by Wine Sap, then by Ben Davis, Jonathan, and lastly, by Maiden's Blush and Cooper's Early. The last named is not profitable. The most fruit and most money has been obtained from the Missouri pippin, but the trees are becoming exhausted and fruit small. Ben Davis is now the leader.

The expenses up to the time that the trees came into bearing (in 1883) aggregated \$20,352, or about 35 cents per tree. Rent of land is not included in this, however.

The total amount thus far sold comes to \$125,118.08, while the total cost of picking, packing and getting into market aggregates \$44,737.30; leaving a net income from the eleven crops of \$80,380.78. This year's crop is probably equal to that of last year.

The Best Currants.—Samuel Edwards had twenty-five varieties of currants on exhibit before the Illinois State Horticultural Society. He prizes Victoria and White Grape above all for the table, and the Black English for jam and jelly. Long-bunched Holland seems to be adapted to the climate of Nebraska. Prof. Budd informed him that the currants noticed by him on the steppes of Russia were all of that type. No one claims that it is equal here to Victoria, but it is desirable for its hardness and late maturity, in dry climates, where other varieties lose their foliage in summer.

Spraying and Bees.—Many cases of bees having died from the effects of spraying fruit-trees with arsenical poisons while in bloom were reported at the recent meeting of the North American Bee-Keeper's Association. R. McKnight, on the other hand, stated that after putting Paris green on potatoes, he found 26 dead bees. As bees go out early in the morning to these and other plants to collect water from the leaves, he believes there is more danger in this quarter than from spraying. A resolution was finally passed condemning the practice of spraying during blossom-time.

Why Carnations Degenerate.—Propagation is not reproduction; it is only a part from the old plant grown to an individual again. This process gives new life, but by following it up year after year the stock must degenerate. We grow the first plant from seed, and then in an endless multiplication of plants, we grow it from year to year until it dies. Grow a plant from seed, give it all the best requirements to grow and bloom, and its life will be but two years at the longest.—*Fred Dörner, before the Society of American Florists.*

The Best Grapes.—The New Jersey State Agricultural Society two years ago, balloting for the best three grapes for general use, one of each color, decided in favor of the Brighton, red, Worden, black, and Niagara, white. This list can not be easily improved upon even at this day.

Lower Transportation Rates Demanded.—In view of the facts that the shipments of fruits and vegetables in the United States are much greater in volume than the shipments of grain, and that from the style of the packages the former are easily and quickly unloaded, and do not detain the cars so long as is usual with the shipment of grain, the Missouri State Horticultural Society at its recent session adopted a resolution declaring it to be the belief of the members that the horticultural products of the country are justly entitled to the same classification and rates as grain; and respectfully asking the managers of the railroads of the country to place these products in the same class as grain, and give the same rate, feeling certain that the increased volume of business will amply compensate them for doing so.

Autumn Coloration of Foliage.—Many of our plants

put on their brightest dress and gayest colors in the fall. October is the artist among the months. She seems to paint by the sun by day and the frost by night, making every landscape picturesque and beautiful. In some seasons the painting is much better done than it is in others; and this can be well shown by making a collection of leaves from the same plant for a succession of years. Among the plants in Central Ohio that give the richest tints, may be mentioned the oaks, the red and silver maples, the dogwood, the burning-bush or wahoo, the liquidamber or sweet-gum, different species of the genus rhus, like the sumac and poison ivy, the Virginia creeper, and a few others. Our cultivated plants are frequently of bright colors. The leaves of the peach, pear and blackberry are particularly noticeable in this respect. We may say in general that these autumnal changes appear to be quite analogous to the ripening process in colored fruits.—*E. E. Bogue, before the Columbus (O.) Horticultural Society.*

Kentucky Horticultural Society.—The annual meeting was held in the Board of Trade hall, Louisville, on December 2 and 3, a large number of the most prominent people interested in horticulture being in attendance. Judge W. L. Dulaney, of Bowling Green, presiding. Col. Bennett H. Young delivered a very eloquent address of welcome. He alluded especially to the introduction of the Catawba grape from the swamps of North Carolina some fifty years ago, the hopes held out for successful competition with foreign countries in the production of wines, the rude awakening when the grape-rot came, and the recent successful efforts at its extermination by the uses of spraying-compounds. He also dealt generally with the difficulties experienced in the raising of new varieties of fruits, the numerous failures and the great patience necessary to achieve success, and concluded by calling attention to the great resources of our state for fruit-growing. A. D. Webb, of Warren county, read a very interesting paper, "Suggestions to Fruit-growers." "The Importance of Disseminating Horticultural Literature Among the People," by Miss Hortense Dudley, should be published in all horticultural journals. Many other instructive papers were read. The election of officers for the ensuing year resulted as follows: A. P. Farnsley, Jefferson county, president; Jesse L. Talbott, vice-president; J. C. Howes, Jefferson county, secretary, and A. D. Webb, Bowling Green, treasurer. The next meeting will be held on the third Thursday in September, 1892, at Elizabethtown, and in the meantime a meeting of an appointed committee will be held for the purpose of forming a Shippers' Protective Organization.—*G. D. C. Ellis, Lyndon, Ky.*

Product of Your Fruit-Field.—Use freely of it. Have plenty of it in the fresh state. Have plenty of it stored away in the cellar. Have plenty of it canned. Give plenty of it away to your neighbors. Take plenty of it to market. Bring plenty of money home from the sale of it. You have been generous in its use. You have been liberal to your neighbors. What should be the cash

returns? Two hundred dollars would be a fair result. No, that would be below the average.—*Henry W. Ash, before the Iowa State Horticultural Society.*

The Pleasures of Horticulture.—The man who makes his thousands in a single deal in real estate, who has added nothing intrinsically to the value of the land, may, because of his dollars, cut a wide swath in the community; but I count of far greater value to the world one who, through the study of nature's possibilities, brings out an added flower or fruit of value to mankind; and while dealers in stocks and bonds and lumber and land, may laugh in derision at our enthusiasm over a new peach that fills a place in the succession of fruits, or a new chrysanthemum with added attractions of form or color, we can in our ecstasy sorrow a little that so few of the people in this world know how to get the highest pleasure out of life by living near to nature's heart.—*From Charles A. Garfield's address to the Grand River Valley Horticultural Society.*

Missouri State Horticultural Society.—The following officers were elected at the recent meeting: President, J. C. Evans, of Harlem; vice-president, N. F. Murray, of Oregon; secretary, L. A. Goodman, of Westport; treasurer, H. Nielson, of St. Joseph.

West Michigan Horticultural Society.—The election of the new officers resulted as follows: President, J. Lannin, of South Haven; vice-president, F. J. Russell, of Hart; secretary, C. L. Whitney, of Muskegon; treasurer, W. A. Smith, of Benton Harbor.

How the Family Fruit-Garden Pays.—A patch of ground as large as an ordinary kitchen-garden—say an eighth of an acre—if given the same care that is usually bestowed on a well-kept garden, planted with the different kinds of berries (including currants and grapes), will furnish all the fruit of that kind a family can use during their season, and enough to can for winter use. Now, have you a piece of ground on your farm five times that size, that will repay you so well for the labor bestowed upon it, and furnish you and your family so much pleasure, profit and luxury, providing as it does a healthy life-giving, invigorating and luxurious diet?—*A. D. Selby, before the Columbus (O.) Horticultural Society.*

Low-Pruning of Fruit-Trees.—This has the following advantages over high-pruning: 1. There is no danger of the trunk and larger limbs becoming sun-burned and infested with borers, which will, in time, destroy the usefulness of the tree, if not kill it. 2. The fruit is nearer the ground, not requiring so much labor, a saving of fifty per cent. in the cost of harvesting the crop. 3. The lower branches are the oldest and produce fruit first. If cut away to raise the "head" of the tree it does not come into bearing as soon. 4. A low-branched tree will furnish the largest bearing surface in a given time. It will be the largest tree at a given age. 5. It is less at the mercy of winds, not so likely to have its branches broken and it will never blow over. 6. When the outward-inclined branches of the main limbs are

trimmed off as they should be, the plow and cultivator can work as close to the tree as is possible under any other method of pruning. 7. High-pruning has been the cause of more loss and disappointment to fruit-growers of California than any other one cause.—*Byron O. Clark, before the California Pomological Society.*

Reading the Peach-Yellows.—The Horticultural commissioners of Yuba county, California, have issued the following circular: "It is of the utmost importance to the future of fruit-growing in California, that every purchaser of peach trees, or prune, or other trees, grown on peach roots, should know that the stock is grown on this coast from home-grown pits. The most insidious and deadly foe to peach-growing, the yellows, is rapidly spreading over the peach-growing region of the east, causing the ruin and abandonment of all orchards where it once obtains a foothold; and, if trees are imported from those sections, we will most assuredly get the disease with them, and quite likely also the peach-borer."

Farmer's One-Acre Fruit-Patch.—A farmer's home, with house-plants in the window, flowers in the yard, and a succession of fruits, planted, pruned, and cared for by you and the boys, will do more to make them love the farm and keep them on it than all the advice ever given. In managing your one-acre fruit-patch there are certain essentials you must follow. The ground must be rich and well prepared. The plants and trees must be young and adapted to your needs. The roots must be well spread and earth firm about them; the ground frequently cultivated and free from weeds. Winter protection for small fruits is an absolute necessity for best results.

West Michigan Fruit-Growers Discuss Orchard-Fertilizers.—Mr. Sheffer: I have tried ashes for peach trees but never found any advantage. A neighbor has bought ashes by the carload, but I could never see any advantage from it. I would sow rye with clover, and if I could get muck I would compost. Mr. Houck: I have had some experience in raising the fertility of soil. I put on ten loads of ashes, two barrels of hen-manure, and one barrel of lime to the acre. If a man fertilizes with ashes he must put something else with it. Two crops of clover plowed under go a great way in this direction. Some of our land does not need manure. You should make the soil good before setting out trees. Mr. Hutchins: You can not make soap from grease alone, and you must supply the missing one or more of the three elements that the plants need—potash, phosphates and nitrates. Ashes is a valuable fertilizer, and if you see no good result, then your soil certainly needs some other elements. Mr. Wadsworth: I have made some efforts to use muck on heavy clay, and I found it a grand good thing. Mr. Morrill: I have found that on sand, ashes are valuable, and it may be so on heavy clay. I can get a good catch of clover by following ashes with clover. Mr. Whiting: I do not believe we should throw away one pound of manure. They used to say in Illinois they did not need manure. Now they are buying.



A VIEW IN THE GARDENS OF MONTE CARLO, MONACO. (See page 130.)

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A SOUTH CAROLINA ROSE GARDEN.

DURING the long blooming season, one of the most curious and attractive sights in Charleston is Prof. Shepard's rose garden on Meeting St. Seldom does a passer-by fail to stop to admire the wonderful wealth of roses and rose-vines of the richest and

rarest varieties. Along the street a trellis about 40 feet in length and 12 feet in height is heavily laden with the most resplendent and fragrant beauties, including *Maréchal Niel*, *Marie Henriette*, *Devoniensis*, *Cloth-of-Gold*, *Madame Eugenie Verdier* and other aristocratic relations, so that the whole front of the garden is obscured yet brightened by the lovely display. All, however, draw life and nourishment from a common parent—a *Lady Banksia* stem about 50 years old and a foot and a half in diameter at the base. From 12 to 15 feet from the ground, among its branches, may be seen the bulbous formations where the budding or grafting was so skillfully performed. With all the added vines the tree now covers not only the 40-foot trellis along the street with a profusion of beauty, but the vines have been trained up on the piazza, which is about 65 feet in length and 45 in height. The square area of the piazza is covered, and the topmost shoots are making their ambitious way to the roof. On the east side of the piazza is another trellis with almost as large an area as that on Meeting street, and that, too, is completely hidden by the progeny of the grand old tree. On this latter trellis the vines cling fearlessly to copper wires. Though Prof. Shepard had been informed that copper wire would be the death of his roses, he risked the ex-

periment, and the hundreds of gorgeous roses and the healthy green of the vines demonstrate every season that the theory about the death-dealing property of copper wire is a botanical fallacy.

In another part of the garden *Blairii* No. 2, a standard rose, has contradicted the general impression that standard roses cannot be satisfactorily grown in that section. Its stem, on *Manetti* stock, is three feet in height and from three to four inches in diameter, while the almost round grafted rose which rests thereon has a diameter of at least seven feet.

The climbing *Madame Eugenie Verdier* has proved a great success, especially when budded on *Lady Banksia* and *Manetti* stocks. True, it blooms only in the spring to any considerable extent, but its great beauty and profusion of flowers make it a very valuable acquisition. It has a fairly vigorous growth, and is suitable for a trellis or pillar. The best stocks for budding upon in that climate are the *Lady Banksia* and *Manetti*; indeed, they are probably the only ones. The former should, if possible, be planted in the spot where it is intended to grow the rose, and be allowed to get well established before the budding is attempted. It does not tolerate moving about after attaining any size.

In Charleston the most remunerative roses are of the climbing *Noisette* class, and none is more so than the chaste and elegant *Devoniensis*, which is easily the queen of Charleston gardens. When properly budded it grows with great vigor and yields its exquisite buds or fully developed roses in the greatest profusion. *Cloth-of-Gold* is very difficult to bring to perfection, but is superb when successfully grown. *Reve d'Or* blooms freely, particularly in autumn, when the large size of its flowers and



their gorgeous color attract great attention. Maréchal Niel, under favorable conditions of weather, proves magnificent, but it is readily discolored and torn by rain and wind. Reine Marie Henriette produces its cherry-red buds of great size in profusion where the weather and exposure to the sun are favorable; but as one of these conditions is so often unfavorable, it is well that in every large garden there should be several specimens of this free-blooming rose under different conditions of exposure.

These charming roses demand not a little care even in Charleston. Their period of most profuse blooming is followed by one of prostration; and the early summer is apt to be too dry for their ready

recovery. Prof. Shepard has successfully endeavored to counteract these difficulties by abundant manuring in winter; by supplying water to the roots of the plants through a system of rather superficial pipes with open joints, and a yet deeper system for the removal of any stagnant water; and by regular, persistent pruning several times a year, whereby the dead and weak wood is removed. But it is well to remember that, excepting the very vigorous Reine Marie Henriette, none of the above-named roses will bear haphazard pruning. One should remove only the whole stem, beginning away back at the main trunk. The clipping off of the ends of the shoots is not permissible. The whole plant beams with recommendation of its cultivator's method.

THE TERRACE GARDEN OF MONTE-CARLO.

AN ACCOUNT OF A LITTLE WORLD OF EVERGREENS AND TROPICAL PLANTS IN A LIMITED CORNER:
INTERESTING INFORMATION ABOUT A SMALL COUNTRY.



HE SEASON at Monte-Carlo practically begins in the middle of December. The hotels, which have been closed since the preceding spring, open on December 1 to receive the multitude of visitors who flock from Paris to the Riviera.

While Nice is the society capital of the Riviera, Monte-Carlo is the amusement capital of the whole littoral. To strangers who have never been near it there is a ring of romance about the name of Monaco; but this disappears after a few weeks' acquaintance with the place.

Newspaper correspondents describe the weather in the little state during December and January as like that at Paris in May and June. So far as the middle of the day is concerned, this is about true; but the evenings are chilly and the nights often damp and cold. Then there are occasional drizzling rainy days, three or four in succession, when everything is wrapped in gloom and one is forcibly reminded of disagreeable English weather. It is impossible then to get about without being ankle-deep in mud, except on a few of the principal roads.

There are fairly long stretches of fine days, and the beds of roses everywhere seen are pleasant proofs of the mildness of the climate. Workmen employed on the gardens and on the numerous villas that dot the hill-sides in all directions, take their noon nap on the bare ground in the sun.

Although nominally open all the year round, Monaco is not a summer resort, though professional gamblers are always at Monte-Carlo. From the towering heights back of the principality the views are magnificent, but

there is not a single hotel on them; though there would be a fortune in one. An essential requirement, however, would be a railroad to the summit, and nobody cares to shoulder the enormous cost.

Quite a botanical garden encircles the magnificent Casino, which is a salient spectacle viewed from the sea or land. The grounds are really a horticultural museum of evergreen trees, plants and shrubs. The directors always seek plants which remain in foliage all the year round, so that there should never be any sign of a fall at Monte-Carlo. To secure as much variety as possible they have imported specimens of evergreens from every corner of the globe. Laying out the grounds and caring for the plants, etc., have cost enormous sums. Not many years ago the place was as wild and rocky as a savage African coast; and the marvelous change has been effected mainly from the profits of the gambling tables. Among the most noteworthy evergreens are *Pritchardia filifera*, *Coccolus laurifolius*, menispermums from Nepal, *Metrosideros albicans*, myrtuses from Australia, *Aralia Humboldtiana*, aralia "American Republic"—a beautiful tree with large leaves; *Yucca baccata*, *Brachychiton populcum*, apocynum—a native of Algeria; the small and scraggy *Buddleia Lindleyana*—scarcely worth importation from Chili, the Nepal boxacetrisc—an ugly affair consisting of a lot of wiry wood with scant foliage; *Agave xalapensis*, and thousands of others of a cosmopolitan character.

In another part of the grounds, forming a permanent horticultural exposition, are *Pittosporum Chinense*, bright-leaved viburnums, *Habrothamnus Nigelli*, solanums, *Casuarina stricta*, *Lagunaea Patersoni*, malvacæ from Norfolk Isle, *Chamærops humilis*—an interesting palm from Africa; *Bonaparthea histrix glauca*, bromeliacæ from Mexico, *Senecio platanifolius*, *Deeringia celosoides*, amarantacæ—resembling the speckled holly,



A MULTI-GRAFTED LADY BANKSIA ROSE-STALK IN A CHARLESTON GARDEN.
[From a photograph sent by Prof. C. U. Shepard.]

Ptilosporum nigrescens—a very bright colored diminutive-leaved growth from the land of the Mikado. There are hundreds of other species and varieties and thousands upon thousands of plants.

Of the 400 persons on the staff at the Casino, 60 are engaged in the gardens. J. Vandendoelle, a Belgian, is the chief horticulturist, and B. Bonafede the secretary.

A good many of the workmen are Italians from just over the border. Their pay is miserably small—from 3½ to 5 francs a day. The latter is considered excellent wages; the average is about the first figure. Men with families just manage to exist. In winter they work from 7 A. M. till 5 P. M., and in summer from 5 A. M. to 10 P. M.

W. LODIA.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XVII.



FROM "A Subscriber" in Berks county, Pennsylvania, we have received a diagram of his home grounds, with the following explanations and a request for assistance in laying them out in a handsomer manner:

"The narrow space east of the house is the only part where I have been able to grow flowers well, as the winds on the other sides of the house, to the west especially, are so strong. To the west there is a slight slope, with a terrace and a sharp but low declivity at I. What would you suggest as a screen against the prevailing

assortment, but I want to arrange them as becomingly as possible; and for this I feel the need of your help. I should be glad to consider suggestions of any changes in the course of the walks and drives looking to the remodeling of the grounds. The features of my diagram may be explained as follows: A, residence; B, barn; C, orchard; D, highway; E, E, vehicle-entrances from the latter; F, walk-entrance from it; G, front yard; H, rear yard; I, terrace and slope; J, west yard; K, vegetable plot; L, barn-yard; M, rose and flower beds."

The first step to recommend in the way of improving these grounds is the breaking up of the system of straight and square-angled walks and drives which

are such a marked feature, substituting some gracefully winding passage-ways, and fewer of them. Next in importance is the introduction of some heavy masses of evergreen or other trees to the west of the house and home buildings to break the wind in that direction, making it possible to grow many flowers and ornamental plants on that side of the house, where now it would be difficult to do so. Our suggestions in these and some other directions are embodied in the diagram, Fig. 2. Let us consider these somewhat in detail.

Not only is the present walk system open to the objection of stiffness and angularity, but there are decidedly too many paths, needlessly cutting up the lawn into many small patches. A high ideal of rural beauty is a broad landscape in

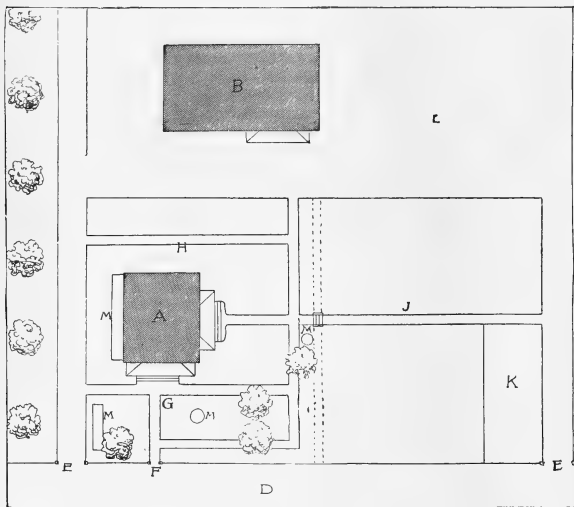


FIG. 1.—DIAGRAM OF PLACE TO BE IMPROVED IN BERKS COUNTY, PA.

winds that come up this slope so forcibly? I would like to use as much as I could of the grounds for flowers of all kinds. Not only do I desire to introduce a large

which there is a considerable degree of openness, creating delightful vistas skirted by masses of trees, and with some woody growths scattered at intervals over the

surface. It may not be possible to work out landscape effects on a very grand scale within the limits of a good-sized door-yard, but this much may safely be said: it is often astonishing how near this thing can be approximated in such areas if we but keep the ideal in mind when arranging the garden. In our subscriber's case, and in the line with this principle, we would take up every one of the present walks and arrange others, with the view to making them more direct, while several broad grass-plats could be provided that would afford some excellent landscape effects. It will be seen by reference to Fig. 1 that the following features of the walk system are considered essential to its completeness: Entrances from the highway in front and the drive, E, to the east of the house, leading to the front veranda; walks from the side veranda to the west drive, E, and to the barn-yard. The other walks have no objective points, hence it is assumed that they were provided either for ornament or merely to give access to other parts of the grounds, or for both purposes.

Keeping in mind what appears to be the essential features in the walks, there is provided in the new plan, at Fig. 2, an entrance from both the east drive and the highway, but this is in the shape of one continuous walk of easy sweep from gate to gate, and touching the veranda steps of the house, 1, at its farthest bend. In a very simple manner the same walk from near its street entrance is continued along to the west of the house, with a bend touching the west veranda, and then it extends by a graceful sweep to the right, meeting the curved carriage-way near where the latter enters the barn-yard. Thus one simple, short, handsome walk gives access from the west veranda both to the drive and the barn-yard, whereas by the old plan two walks fully four times the length of the one here suggested were needed to serve the same end. In place of the walks of the old plan besides those referred to, what can be desired more pleasant to walk upon in reaching the various parts of the grounds than an even, closely-clipped green-sward? Such walks are the cheapest, handsomest and most comfortable that can be provided for the purpose.

Mention must be made of the change suggested for the course of the west drive. The one now proposed is in the form of an easy curve, as against the straight drive

of the old plan. The advantages are several: As a curve, it possesses the quality of beauty in a degree impossible to the straight course; it is more direct between the barn and the entrance; it permits of a shorter walk between the latter and the dwelling; and lastly, it serves to separate the vegetable garden from the lawn, while the old drive runs beyond the former.

In deciding on this particular course, the introduction of a belt and some masses of trees to break the west wind, of which our correspondent complains, was kept constantly in mind. It has also been taken for granted that if a windbreak would be desirable for sheltering the house and yard, it would be well to extend it so as to shelter the barn and its yard. Accordingly, in Fig. 2



FIG. 2.—THE EDITOR'S SUGGESTIONS FOR THE IMPROVEMENT OF THE PLACE (FIG. 1).

is shown an irregular line of trees from the street back as far as the barn or beyond, occupying the line of the old carriage-road as far as it goes. By this means the vegetable-garden also becomes sheltered from the west winds, instead of being exposed as in the former design. The screen also affords another advantage—it provides a balance to the general planting in the way of offsetting the orchard that is to the left of the buildings.

This screen might consist of a variety of growths, such as Austrian, white and Scotch pines, Norway and hemlock spruces, larches, etc., which can be bought very cheap at the evergreen nurseries. It will be observed that at the street end the screen projects considerably to the left, and that it is wider just back of the vegetable

plat than elsewhere. The object of this was twofold—to add to its effectiveness as a windbreak, and to introduce the quality of irregularity in its appearance. In the form suggested it would be much more pleasing to the eye than if kept of a uniform width throughout. A seeming relation between it and the other growths in the west part of the grounds is also promoted by its jutting irregularly out into the lawn at several points. Where this plat extends to the left between the curved drive and the barn-yard, the introduction of a group of trees is suggested. These might be any ordinary kinds of shade or forest trees, such as in time grow to a large size. To the rear of this group, in the barn-yard, might be planted a clump of about three trees, as shown, to serve for shade and in maintaining a balance in the planting, as well to figure in a measure as a back ground. In case live stock are permitted to run in this yard, the trees should be inclosed by a wire or other fence, and so should the screen along the west end.

Of the other features in the new plan, the large central plat, 7, must be looked upon as the chief, on account of its breadth and dignity. The terrace and low slope we would advise the owner to get rid of by grading down. In that case, if the surface over the entire plat were so shaped as to keep the center somewhat curving, the effect would be for the better. It is rarely indeed that a terrace and slope can be used to improve appearances across the center of a lawn, as this is located. The embellishments suggested, besides the three trees now present, are three bold masses of shrubs along the west and south bend, a smaller one towards the house, and some trees, including several evergreens, near the street line. Although it would be several years before the screen along the west side could prove much of a barrier against the wind, there could be no objection to setting out these masses of shrubs at once, for growths of this class are not easily injured by winds. By this means our correspondent's love for flowers could be gratified in an increased measure, for the selection might embrace such a variety as would afford a continuous succession of bloom throughout the entire season. In such a list we would suggest *Daphne mezereum*, golden bell or forsythia, Japan quince, flowering plum, flowering almond, flowering currant, bush honeysuckle, lilac, plum-leaved and Thunberg's spiræas, calycanthus, mock-oranges, deutzia, roses, viburnum, weigelia, *Rhus cotinus* or smoke-tree, althæa, corchorus, Ledebour's honeysuckle, panicled hydrangea, *Spiræa callosa* and *Billardi*. The shrubs should be set out from three to four feet

apart on an average. Provision might be made for setting some hardy perennial flowering plants alternately with the shrubs next to the grass-line. Let it be understood that in all cases where shrubs, trees and plants are set in masses, whether isolated as in the present shrub clumps, or continuous as in the screen, the soil should be kept carefully tilled for at least half a dozen years after they have been planted.

Attention is invited to the improvement shown by Fig. 2, over the condition of affairs at Fig. 1, respecting the parts immediately about the house. Take the plat between the house and street; how handsome and reposeful it can be rendered by following the new plan, as compared with its marred appearance when cut up by the numerous straight lines and angles of the walks and the square-cornered flower bed to the extreme left, after the old plan. By keeping the center of this plat open and in the form of a well-attended lawn, the scene as beheld not only from the veranda, but also from the street, would be immeasurably more satisfactory than in the old plan.

To the rear of the house, also, by getting rid of the needless straight walk, there is a chance for working in an effective bit of gardening. Here, too, it is advisable to keep the center of the area open and in grass, with some rather bold masses of hardy shrubs and flowers towards the extremities. If the border around the southwest corner of the house were planted with handsome shrubs such as weigelia, forsythias and lilacs, it would have special value in relieving the regular proportions of the house. The margin of this bed, which is on the sunny side of the house and veranda, would be a delightful place for setting some of the early-flowering crocuses, hyacinths and tulips. The present flower bed against the house to the east we would like to see relieved of its angularity, by rounding the corners and varying the width somewhat, as shown by the new plan.

Thus have we undertaken to point out certain marked improvements that could be made in our subscriber's grounds. The work would involve many radical changes; but we are satisfied that were it undertaken, even though all should not be carried out at once, in time so much garden and landscape beauty would be developed that the outlay and trouble would be quite lost sight of. It is usually the case that for every dollar invested in judicious improvements of this nature, there is a five dollar or more return in satisfaction to the owner, and in the actual enhancement of the value of the property on which the improvements are made.



SOME PROMISING NEW FRUITS.

WORDEN'S Seckel pear, of which life-size illustrations appear herewith, has been repeatedly mentioned at recent horticultural gatherings. It was originated by S. Worden, of Worden grape fame, and is a seedling of the Seckel. We make the following extract from a letter written by Smiths & Powell to *The Rural New-Yorker*:

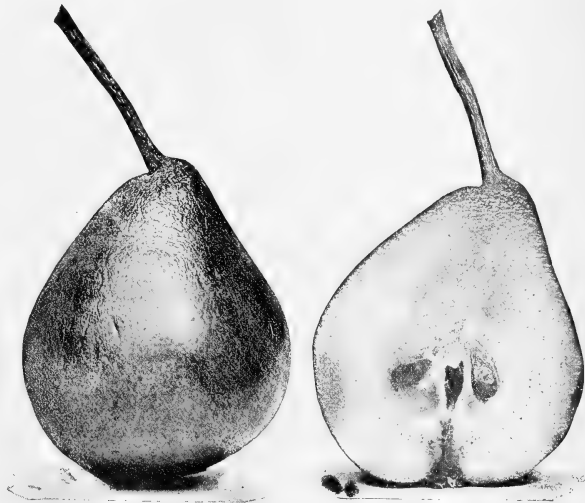
"It seems to us very promising, on account of its beautiful color and very high flavor, as well as of the hardness of the tree, and its remarkable bearing qualities, and the fact that the fruit promises to be a superior keeper. The tree, which we judge to be about three and one-half or four inches in diameter, bore, this season, five bushels of pears, and over thirty props were needed to support the limbs, some of which, notwithstanding this precaution, were broken. On this account the pear is of but little over one-half the size it would be if properly thinned. As we stated, the pears were picked on September 24, and have been kept in a warm place, most of the time in the house where there was a stove. Had they been properly cared for, we think they could have kept nicely until the holidays."

The Rural New-Yorker considers it a remarkable pear. Half (or nearly half) is a bright crimson, the other half a golden yellow. The stock is one and one-fourth inch in length, not curved, inserted with very little if any depression, often with a wrinkle or slight fold at the base. The calyx is very large and open, and set in a shallow basin. The flesh is a dull white, very juicy, buttery, melting and fine-grained, with an aroma even higher than that of its distinguished parent. It will be seen that it surpasses the Seckel in its beautiful color, in size, and probably in its keeping qualities.

Another new pear, of which specimens come from Ellwanger & Barry, has not yet been named. Three specimens weighed exactly two pounds, or over ten

ounces each. The shape, as may be seen in illustration on page 136, is between that of the Anjou and Clairgeau, with a neck rather more marked than that of either. The skin is much the color of the Anjou, inclined more to a golden and less to a greenish yellow. The dots are crimson, and so numerous and large on the sunny side as to give it a crimson shade. The stalk varies from slender to short and fleshy, and a half to an inch in length, obliquely set in a small irregular basin. The flesh is buttery, melting, juicy, but less sprightly and rather firmer and more granular than that of Anjou, though less so than that of Clairgeau.

Ellwanger & Barry consider it a cross between Anjou and Clairgeau. The texture of the flesh, they say, "is not quite so fine as that of the Anjou, and the quality, perhaps, is not quite equal to that variety; but the flesh



WORDEN'S SECKEL PEAR.

being more firm, the fruit is less liable to injury from rough handling. The tree is a vigorous grower. The seedling seems to possess admirable qualities as a market fruit, and we think there is a place for it. Among recently introduced sorts we have not found any which is so promising."

Specimens of a new apple, the Boardman, were received about November 12. The color is crimson,

splashed, dotted and streaked on a light yellow ground. Stem short, calyx open in a rather deep basin. Flesh crisp, sub-acid, juicy, and as white as that of Fameuse. Quality very good to best. (Illustrated on page 137.)

E. F. Purington, who forwarded the specimens from Franklin county, Maine, where the seedling was raised, writes that Mr. Van Deman named it the Boardman in honor of the secretary of the Maine Pomological Society,

and adds: "The tree fruits every year. Where Baldwin's winter-kill, it comes out all right. During ten years I have never seen a bud killed. When my sister was sick and other food distressed her, she could eat Boardman with impunity. Let the editor try them, and if he can eat enough to hurt him, I will let him try a barrel next year." We recently had an opportunity to see and taste the apple, and were favorably impressed.



A NEW PEAR.



A NEW PEAR—Half Section.

(See page 135.)

PLANTS AND TREES IN NORTH CAROLINA.

THAT SHOULD BE TRIED FURTHER NORTH.



THE last number of *The American Florist* has a handsome picture of the umbrella china tree, a seminal sport of the old china tree, *Melia Azedarach*, which comes true to this form from seed. We have in Raleigh many fine specimens of this beautiful

tree, one of which, not far from my residence, though not more than fifteen feet high, makes a dense leafy arbor over a circle thirty feet in diameter. While this tree is doubtless tender at the north, I

am sure it can be grown much further north than it is now commonly seen.

Many years ago I knew in a town in southern Maryland a large china tree of the common species, which was as handsome as any I have ever seen south. This is the only specimen that I saw in Maryland, and it was never injured by frost even when the ponds in the neighborhood had ice a foot thick on them. This tree was destroyed by a fire that swept a great part of the town years ago. Does any one know of china trees northward and how far north they can be grown? * * *

We have in Raleigh another handsome and remarkably rapid-growing shade-tree that I am persuaded is much

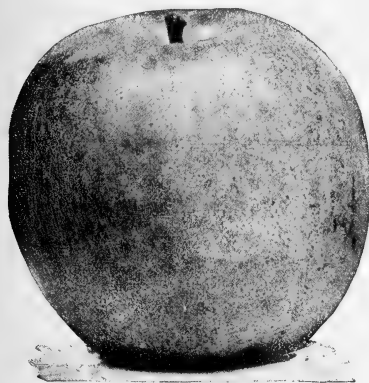
more hardy than is commonly supposed. This is the *Sterculia platanifolia*, the plane-leaved silk-cotton tree. Most of the genus are tropical trees, but this is a Japanese species, and is called here the Japan varnish tree. The only botanical authority I find that says anything about it calls it "a Japanese species that has been

bulbs in winter. They make great clumps of bulbs, and produce a profusion of bloom which is never seen on the pot-nurslings at the north. And then our native *Amaryllis Alamasco* (*Zephyranthes*) which makes acres of low lands gay here in spring, is well worth cultivating for the wholesale trade. * * *

Fig-culture is developing in eastern North Carolina, and promises to be one of our leading fruits for canning and drying. It is a curious fact which I learned last season for the first time, that in southern South Carolina fig trees are more frequently killed to the ground than in North Carolina. This is doubtless because of their being more easily excited into untimely growth there by the warm February weather. Figs are being largely planted here, and when once the canning and evaporating houses enter the business, ought to be profitable. They paid well here in the home market last year ever at 75 cents per bushels. * * *

We have had this month (January) the worst weather I have yet experienced here, a constant succession of freezes, rains, some snow and little sunshine. My Oonshiu or Satsuma orange trees have suffered more than they did last winter, having lost some of their leaves. But the wood is still green and sound to the tip of the shoots. I would say that 15° above zero will be found to be about the limit of the safe endurance of this orange, when fully exposed. I feel pretty well satisfied that in sheltered localities here it will be a perfect success, for my trees are in as exposed a location as I could find for miles around, and yet I believe they will come through.

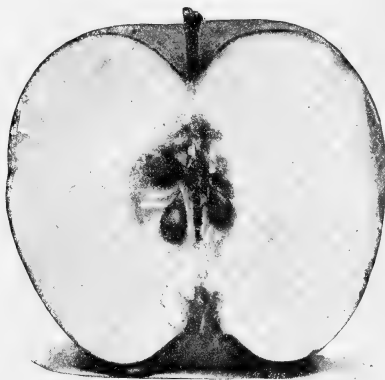
Few people appreciate the value of a slight protection in a mild climate. I pass daily a large clump of oleander,



THE BOARDMAN APPLE.

found to succeed at Savannah, Ga." It is as hardy as an oak here. In winter, when leafless, it attracts attention by its smooth green bark, which retains its green color even on the trunks of trees eight or ten inches in diameter. In summer its great sycamore-shaped leaves (much larger than any sycamore) and great panicles of flowers makes it a conspicuous object. It grows to a height of four or five feet in one season from the seed, seldom making any branches until the second season, and in places where it might not stand the winter, it would make a fine subject for subtropical bedding. This tree, too, is well worth experimenting with further north. There is one tree in Raleigh in an old garden, which is probably the parent of all in the city. This is 40 to 50 feet high, and has a stem 15 to 18 inches in diameter. * * *

A writer in *American Agriculturist*, speaking of the great tuberose industry in eastern North Carolina, where the bulk of these bulbs are now grown for the trade both in this country and in Europe, mentions the adaptability of this soil and climate to the culture of many other bulbs now imported, particularly narcissus and lilies. I have long been impressed with this fact. We have in eastern North Carolina vast areas of deep black, peaty soils of inexhaustible fertility on which bulb-culture would be extremely profitable. Lilies could be grown here, I believe, to greater perfection than in Bermuda, and all the fine sorts of amaryllis, too. Here in Raleigh where the winter's cold is more severe than it is in these eastern lands, no one thinks of lifting amaryllis-



THE BOARDMAN APPLE—CROSS SECTION.

which has never had any protection. The old stump shows that it has more than once been frozen to the ground, and the multitude of shoots has finally formed a cluster which protects some of those within. I noticed yesterday that the leaves on the outer shoots were

browned all over, while inside the clump they are still un hurt. A few pine bushes stuck around it would have saved the whole. A little further down the street an old lady grows her favorite oleander in a large tub. In her yard is a dense growth of low branching *Magnolia grandiflora*, and the evergreen cherry (*Cerasus lauro-cerasus*). Under them she pushes the tub with the oleander in winter. I saw it yesterday without a singed leaf.

This beautiful glossy-leaved laurel cherry, too, ought

to be tested a little further north. It makes a handsome low-growing tree here, and is covered with short racemes of small white flowers in February. I believe it would succeed well in the coast country of the eastern shore of Virginia and Maryland, as I believe it is fully as hardy as the crape myrtle, as to its wood, though its flower-buds and leaves might be cut in the northern limit of the lagerstrœmia.

W. F. MASSEY.

North Carolina Experiment Station.

THE FILMY FERNS.

BEAUTIFUL EXOTICS AND HOW TO GROW THEM.

AMONG the throng of beautiful ferns that enrich the flora of tropical and subtropical regions, none are of a higher interest than those minute transparent forms known as the "filmies."

Deep shade, a moisture-laden atmosphere, and an even temperature are essential to them, and although widely distributed over the earth's surface, they are always found in localities that furnish these conditions—the West Indies, South and Central America, Asia and Australia, and even as far north as the British Isles.

Variable in form, delicate in texture, and requiring but little space, they are of unusual interest to lovers of rare plants. Their structure is peculiar; the transparent veins serve to expand a thin, smooth, translucent membrane. The sorus terminates a single vein, and is surrounded by a cap or chalice-shaped involucre. Fig. 1 represents



FIG. 1.—FRUCTIFICATION OF HYMENOPHYLLUM.

the fructification of the genus *Hymenophyllum*, and Fig. 2 a small portion of trichomanes, showing two sori, one sectionally cut.

Hymenophyllum includes over 70 species and trichomanes perhaps 80, while only one or two species of *Todea* can be classed among the "filmies." These vary considerably in size, from the two or three-lines-long fronds of *Hymenophyllum parvifolium* to the rather large *Todeas*. They are as variable in form; some have entire foliage, while the fronds of others are very finely cut. Most species are epiphytes, growing on stems and decayed wood.

Hymenophyllum polyanthos is a well-known slender species, widely diffused throughout the tropics; usually four or five inches high, with one-inch broad pinnate fronds. *H. javanicum* is about as large, but with broader and feathery fronds. *H. densissimum* is



FIG. 2.—FRUCTIFICATION OF TRICHOMANES.

a larger and more robust form, but similar to *H. polyanthos*. *H. ciliatum* (Fig. 3), *H. aruginosum* (Fig. 4) and *H. lineare* are all delicate and beautiful species. *H. Tunbridgensis* is a hardy and beautiful British plant.

Trichomanes elegans, articulatum (Fig. 5), *stellatum, crispum, pyxidiferum* (Fig. 6), *alatum, radicans* and *auriculatum* are all very beautiful and delicate but rather large species. *T. venosum* is a very handsome slender pinnate form, and *T. parvulum, digitatum* and *Lyalli* are very minute, the first with fronds only half an inch long. *T. reniforme* is interesting, because of its entire, reniform fronds; it grows about six inches high.

Todea superba is a magnificent species, with fronds about 18 inches long, deeply and finely cut. *T. hymenophylloides* grows about as large, but it is of a more delicate texture. Another equally beautiful kind is *T. Fraseri*.



FIG. 3.—HYMENOPHYLLUM CILIATUM.

The culture of these ferns is by no means difficult. They all require a moist, shady place, and can, with a few exceptions, be grown in a temperate house. *Todeas* do better in a cool greenhouse. A few good Wardian cases, pieces of sandstone and trunks of tree-ferns to plant the epiphytal kinds on, and peat and moss for the more robust forms, are all the material required. Plenty of sphagnum should be used with the peat. Most of the epiphytal kinds require no moss, growing best on clean stems or rocks when the moisture is sufficient. The cases should be placed so as to exclude all sunshine, and must be kept free from draughts. When the plants are well established, the watering should be done so carefully as not to touch the leaves. The bottom of the case should be covered with clean pebbles, and these must be sprinkled as often as necessary to

saturate the air with moisture—perhaps twice or thrice a day. On warm days the house must be thoroughly ventilated and the plants carefully syringed with a fine syringe. Sudden and great changes in temperature, too

much and intense light, and dry air, will speedily cause the destruction of any and all of the filmy ferns. Nothing is prettier or daintier than these exquisite forms. N. J. Rose.

WILD-FLOWERS FOR TOWN GARDENS.

HOW TO HAVE FLOWERS FROM APRIL TO NOVEMBER.

THERE are thousands so fond of flowers that when they see nature's wild beauties in woods or fields they long to bring some of them to their home gardens. Many do; but where one succeeds fifty fail, and the only results for their trouble are a few miserable plants that scarcely last out the summer.

In most of such lots is a long strip, shaded by a high fence or wall, and the general complaint is that nothing will grow there. Now, I propose to show that all you need to fill the strip can be grown there, and with a little care it can be made a thing of beauty and delight. Dig up a good-sized strip the whole length of the shady side of the garden, even if you have to encroach on the grass-plot to make a walk. Any ordinary soil will do, if not clayey or filled with lime and bricks. Don't manure it—it will be rich enough if you only follow nature's teaching. If you want to cover the fence, grow a honeysuckle that will fall over the top, and leave the bed free below, and trim it in spring. If it is an open one, have a light foliaged clematis such as Jackmanni or Helena, or any other hardy kind.

Then in summer get baskets and trowels, and go to wood and field and swamp; and be sure that every plant you dig up has a ball of the earth it grows in attached to it, for therein lies one secret of success. Don't wrench out the plants and bring them home all wilted, but take them up carefully, and with the help of a few newspapers they can be kept fresh and nice till planted. Procure every kind of fern, from the

large *Osmunda cinnamomea*, or cinnamon fern, to the dainty maidenhair, or adiantum; and remember, small plants are more likely to succeed than large ones.

Golden-rods, blue and purple asters, the black-hearted cone-flowers, rudbeckias and asclepiadaceæ, especially the pink and orange milkweeds, will all thrive. Any one who knows the leafage can find bloodroot, hepatica, Jack-in-the-pulpit, the cut-leaved *Viola pedata*, and wild geraniums. Especially must the *Lobelia cardinalis* and wild lilies be hunted for. The *Lilium superbum* and *L. Philadelphicum* are common in most swamp lands. Great care must be taken in digging up the root of the *superbum*. Just below the ground is a white stem with what looks like a fringe of rootlets; but you must go much deeper for the small scaly bulb. Of course, these cannot be procured all at once; indeed, it may take many a hunt before all are secured.

Plant the golden-rod, asters, asclepiads and cone-flowers alternately with the large ferns in the background. Hepatica and *Viola pedata* will make a lovely edging to the bed in spring, when their flowers open so early. Scatter the other plants over the bed, with ferns between. The rich crimson-flowered *Lobelia cardinalis* can be planted among your cultivated flowers.

If you put it between taller plants, such as larkspurs, canterbury-bells, or any that will screen the roots, the vivid spikes of blossoms will add greatly to the beauty of the garden; only don't forget to water it.

We will suppose the bed is filled with everything that can be got in the fall, and that everything is looking well. Late in October things begin to look not so well, but you have only to follow nature's teaching and your bed will well repay you. Nature does not put a heavy load of



FIG. 4.—HYMENOPHYLLUM ÆRUGINOSUM.



FIG. 5.—TRICHOMANES ARTICULATUM.



FIG. 6.—TRICHOMANES PYXIDIFERUM.

manure on her wild beauties, but covers them up with a soft warm coat of dead leaves, and in spring the bright blossoms come forth. Now do the same; save all the dead leaves you can, and put them in between the plants. They will rot, and if you dig them in with your fork in spring you give your pets just what they want, and your bed will soon have a rich suitable soil for wild-flowers.

When you set out your house-plants put down cuttings of bright-colored geraniums, alyssums or dwarf nasturtiums, and it will certainly be through lack of care only, if you have not a bed the delight of yourself and admiration of your neighbors.

I have named only the commonest, simplest kinds of wild-flowers, some of which may be grown anywhere in the garden; but for those who have deep lots there are greater possibilities. There are two ladies in Oxford street, Brooklyn, who have had a wild garden for years, and in addition to all the above, they have succeeded in flowering those mentioned hereafter. Part of this garden is in a wide alley-way between two tall houses, so it shows what can be done with care. The exquisite kalmia and the dwarf sheep-laurel, the white azalea and *Rhododendron viscosum*—all have bloomed for them with time and infinite patience. There are the *Iris versicolor* and *Virginica*, claytonia or spring beauty, Solomon's-seal, wild sunflowers, blue-eyed grass, coral honeysuckle, eupatoriums, some orchids, wintergreen, wild phlox, and many others. Last season they had 90 spikes of blossoms of the *Lobelia cardinalis*, which was a truly regal show.

I have said nothing about the orchidaceous plants as yet, because they require different treatment. They grow mostly surrounded with fibrous earth. When taken up a good-sized piece of it should be cut out with them, so as not to expose the roots; for good by to your orchids if this is done. They must be set between other plants so that they can be screened, and only the heads of the flowers should be in the sun. In the spring the mat of fibrous earth around the roots must be slightly stirred, and fresh soil brought from wood or swamp and put around it to keep up the supply of nutriment. Never let the roots get thoroughly dry.

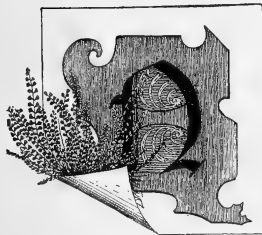
Believe me, a wild garden will well repay you. "All labor hath profit," and truly nothing yields so large an interest in health and pleasure as a garden. But care for your pets yourself, for they will never thrive unless you love them enough to treat them as Eva did Topsy, instead of leaving them to the precise but harsh rule of the hired man. Beware of his spade! Keep your wild bed sacred from his diggings. Take one of the handy little forks and dig around your wild plants to loosen the earth and bury the dead leaves, and even while you are doing it, in early April, the little harbingers of spring—the dainty blue, white and pink hepaticas—will have their bright eyes open watching you.

What has been done can be done again, and I do hope I may hear of some ladies who have taken my hints and succeeded with a wild garden. Why not report the results in AMERICAN GARDENING.

Brooklyn, N. Y.

M. L. P.

PALMS FOR HOUSE CULTURE.



OUR HOUSE is complete in its appointments without one or more handsome palms. We give the names of a few of those most suitable for general house and room decoration. Every woman of taste and refinement loves to

make her home beautiful and attractive. Elegant furniture, rich paintings and costly bric-a-brac help to produce this effect, still there is not much of life in all these; but the introduction of a few choice palms gives a cheerful aspect to all about them. A few years ago these plants of royal grandeur and historic fame were considered great luxuries, such as only a few of our wealthiest people could afford to enjoy; but, through some of our enterprising florists who now cultivate them by the hundreds of thousands, they are brought within the reach of

every lover of beautiful plants. A single fine palm transforms a plain room to a spot of beauty.

Formerly, all palms were imported from European nurseries, but now we can export them and supply Europe to a great extent, and with better varieties, too, than we used to import. The best-known varieties, illustrated on page 141, can now be had in all sizes and at moderate prices (\$1 and upwards). The kentias are natives of Australia, growing upon high, rather rocky and naturally well-drained slopes. On Lord Howe's Island there are several sub-varieties. *K. Belmoreana* is really the most graceful and best-furnished sort, with dark green foliage. *K. Forsteriana* is somewhat taller, and has lighter green, graceful, weeping and curved leaves or fronds. *K. Australis* is much like the last named, but it grows stronger and is of more robust habit. The foliage of these kentias is of a tough, hardy, leathery texture. The several other varieties are not so well adapted for house decoration.

Next to the kentias we put *Areca lutescens*. This beautiful species is a native of India, and is often described as the plumed or feathery palm, having long, tall and highly graceful curving fronds. Being well furnished from the base, it is a great favorite, and thousands of specimens are annually used for house



(1). *Latania Borbonica*.
 (3). *Areca lutescens*.
 (5). *Phoenix reclinata*.

(2). *Cycas revoluta*.
 (4). *Kentia Belmoreana*.
 (6). *Phoenix rupicola*.

From photographs sent by Henry A. Siebrecht, New Rochelle, N. Y.

decoration. Its pinnæ are narrow and numerous, and of a delightful fresh green, while the stems are an almost golden yellow when properly matured.

Phoenix reclinata and *P. rupicola*, species of the date palm, are of a distinct character, quite hardy and durable. They can stand much hardship, are excellent for house decoration, and can also be used outdoors on the lawn or in vases as center plants. *P. reclinata* is of an upright habit, while *P. rupicola*, often called the fountain palm, is more graceful, inclined to be weeping, and with finer foliage, which curves more from the center.

Latania or *Livistonia Borbonica* is the real fan palm, of which many thousands are annually used for indoor and outdoor decorations. It is a native of China and Japan, and from it are manufactured the regular Japanese fans. It is a noble and imposing species, and perhaps the best known palm in cultivation.

Cycas revoluta, the sago palm, also called the palm of victory, is a native of China, Japan and east Africa. Its leaves or fronds were anciently used in decorating conquerors, and it is supposed to be the palm frequently referred to in the Bible. The stem or trunk as well as the leaves are of a hardy nature. Before it is developed the former has the shape of a lily-bulb, but as it grows old it forms a tree-like stem, from which sago is taken. The leaves, which are as tough as whalebone, are extensively used for funeral decorations. A pair, a cluster, or even a wreath of them forms quite a handsome de-

sign, especially when tied up with a bunch or cluster of flowers or a sheaf of wheat. For house decorative purposes the plants are everlasting, and under proper treatment will bring forth new sets of leaves every year. Not only are they good house plants in winter, but they are also well adapted for the lawn or veranda in summer. Smaller plants of this species with several leaves can be had for from \$2 to \$5 apiece, while as much as \$500 has been paid for grand specimens.

In addition to the five species above described, we also show a pretty palm of rather dwarfish habit, with fine fern-like fronds, especially well adapted to table decorations. This is *Cocos Weddeliana*, a native of Brazil. It is an excellent little palm for house culture, and it has often been observed by practical florists that it does better in a dwelling-house than in a greenhouse, because it thrives best in a dry atmosphere.

All that these palms really need to make them thrive well in house culture is that they be regularly watered. Their wants are regulated more or less by the temperature of the room they are in, and they need to be watered only when the soil begins to get dry—but it must never be allowed to get very dry. Then a sprinkling or a shower bath can be given them in the bathroom or even in a basin. Frequent washing or sponging of the fronds or leaves is also essential to their welfare. A regular and moderate living-room temperature is best suited to all of them.

HENRY A. SIEBRECHT.

HARD-STEMMED GREENHOUSE PLANTS.

SOME SPECIAL DIRECTIONS FOR THEIR CULTIVATION.



NOW that hard-stemmed greenhouse plants seem doomed to forgetfulness, and we find but few good collections, and these outside of botanic gardens, let us try to revive a love for some of them. There are among them some of great value to florists' and amateurs' collections, both for profit and pleasure.

It is true that there are many other plants, especially soft-stemmed kinds, which can make a strong growth in about half the time required by hard-stemmed sorts, and which, therefore, may be sold at a lower price; still, many of the others, if reintroduced into our markets, would be found to repay the cultivator well for his trouble and outlay. See what beautiful flowering kinds these hard-stemmed plants include—for example, the order myrtaceæ, with its callistemon, genetyllis, Beaufortias, calliandras and others, and what beauties are found in the orders proteaceæ, leguminosæ, etc. There are hundreds to select from, many of high value.

The general method of propagating hard-stemmed plants under glass is by cuttings; but many may be raised from seeds sown in February and March, which will

soon vegetate and produce strong plants before the following winter. The pots or seed-pans should be clean and well drained, with a thin layer of moss or litter at the bottom; fill with mold suitable to the species, and cover the surface with a layer of sifted soil. For soil use a compost of loam and leaf-mold, or peat and leaf-mold, the latter being suitable for most plants. Do not neglect to add plenty of silver-sand, which keeps the soil open and quickens the development of the young roots.

If in want of room, sow several different kinds in one pot, and if the quality of the seeds is doubtful, sow them thickly. Usually, however, it is better to sow thinly, and it is preferable to sow every kind separately and give doubtful seeds a chance to grow comfortably. Cover the seeds, if large, with a thin layer of mold; very fine seeds need no covering.

With reasonably moist soil it is not necessary to water the seed-pans at once, as there is danger that the seeds would be washed out of place. Too much moisture causes a greenish growth on top of the soil, which prevents the seeds from germinating; and when it is removed, some of the finer seeds will be removed with it.

Place the pots in a pit in an airy position, but not exposed to the sun. Protect from the burning sun with a

few sheets of paper, or give other shade. If the shelf is kept damp by pouring water between the pots on the gravel, they will not dry out quickly; but examine every day, and if the top soil is dry, water with a fine rose.

The small plantlets may be pricked off into other pans or small pots. Early potting is desirable, as later the young roots mat together and might be injured or weakened by parting the plants from each other.

These plants do well in a coldframe, where they should be put on sand or ashes to prevent worms and snails from eating them. They should be stood close under the glass, and have all the light possible. Shield from sun with a piece of muslin on a frame raised to al-

keep the house dry, as any dampness causes the young shoots to damp-off, and to prevent this, heat will be needed. While they are in their winter quarters keep them free from insects, especially thrips, snails and slugs.

Some seeds from warm and dry countries require the aid of a hotbed. After they have germinated they may be hardened off, potted, and, when established in pots, placed in the open air and treated like the hardier kinds.

Propagation by cuttings is adapted to almost all rapid-growing plants, and must be resorted to when seed fails. For striking them, a cool shady place is needed. A deep frame or the shady side of a pit may be used. In both cases they have to be kept cool as possible, and moist.



DAVALLIA MOOREANA. (See page 145.)

From a photograph sent by John Dallas, Fairfield Co., Connecticut.

low a current over the glass. Harden off gradually. Later, put outside in a border, plunged to the rim to prevent drying.

The young plants should be potted before August 15; if later, they cannot get established before winter. Keep them in the seed-pans in the pit during winter, and pot them in single pots in spring. Besides, some seeds will not germinate before the following spring.

Potted plants put outside should be taken to their winter quarters in September or early in October. They must have a light and airy place. During bright and warm weather the pit should be well aired, and the plants must, if necessary, be shaded during the middle of the day until cooler weather sets in. During winter

Plunging the pots in sawdust, etc., will do very well to keep the soil moist. Myrtles, camellias, laurus and others should not be covered, as they will drop their leaves when kept too close. Cover the others closely with glass and shade carefully, especially after they are first put in; but the shading should not be left on too long in the afternoon. In the morning look the glasses over, and wipe them with a dry cloth. An hour's airing is useful, as it removes excessive dampness. Water the pots or pans which require it; keep a medium between wet and dry, and the cuttings will strike root freely. Take care that the cuttings do not touch the glass, for if they do, they are likely to damp off.

Royal Botanic Gardens, New, Eng. PAUL LESSER.



ADIANTUM FARLEYENSE.

GROWING SPECIMEN FERNS.

AN IMPROVEMENT ON FORMER METHODS.



IN NO department of plant-growing is there more enjoyment to the lover of fine foliage than in growing ferns, and without fear of contradiction I may say that they are universal favorites wherever they are seen in good condition, and grown to the largest size possible with the different varieties. Our conception of the beauty of ferns is limited when we see them only in a small state, and although for commercial purposes they must necessarily be small, private growers should aim to bring them to their greatest perfection, as herein lies the charm of the order. I believe we have yet to learn a good many points about the cultivation of the ferns known to us and grown by us for years.

As an example, take *Adiantum Farleyense* (*A. tenerum Farleyense*, according to Nicholson); how often do we see this, the finest of the species, grown to anything like

perfection? I believe that any one can grow *Farleyense* well; I know that it can be grown to dimensions that would astonish those unfamiliar with the rank growth of this fern under proper treatment.

In my apprenticeship days we would have been well laughed at to have advocated manure as an ingredient in the cultivation of ferns. I am not so very sure but that this may be my lot now. Anyhow, I can point with some pride to a plant of *A. Farleyense* grown in manure and fibrous loam of equal parts, and its dimensions justify me in advocating a rich soil for at least some of the fine ferns. The specimen referred to is five and one-half feet in diameter, equally furnished on all sides, has no particular care, and is invariably watered with a hose. One other assential necessary to success is thorough drainage, which can be accomplished by broken crocks, and plenty of good clean sphagnum moss packed tightly to prevent the soil from getting to the crocks. The accompanying figure, from a photograph, will give some idea of how the plant looks.

We will now consider an entirely different class of ferns, requiring an entirely different material to grow them successfully. *Davallia Mooreana* is grown with fair success in an open, porous soil, but in no case have I been able to grow it to such dimensions as by using sphagnum moss with a little leaf-mold, as the potting material; and for growing large specimens of any of the davallias, I am convinced that this is superior to any other material. A large specimen requiring potting was broken up into four pieces last spring and grown as above; one of the pieces now measures seven feet in diameter. The engraving on page 143 will give some idea of the beauty of this fine fern.

There is perhaps no other branch of the profession so fascinating as growing ferns from the spores, and none that requires more care or delicate handling. The spores should be sown in a glass-covered frame. The soil may be composed of finely-sifted leaf-mold and

loam in equal parts, and a little sand. They will germinate more freely on rough, lumpy peat, but the injury caused in removing the young plants from this material more than counterbalances their better growth. Give a thorough watering when the bed is prepared, before sowing; and thenceforth, until the plants appear, supply moisture by means of saucers of water in the frame. Keep close unless excessive moisture should necessitate airing. After the plants appear, more air should be given. It is unnecessary to raise them in this way where only a plant or two of a kind are required, save of varieties unobtainable otherwise; but for commercial purposes, where large quantities of a variety are desirable, growing from spores is decidedly the better method of propagation. They make shorter, more stocky and better plants than divisions, were that mode of supplying the quantity practicable.

Connecticut.

JOHN DALLAS.

FRUIT AND VEGETABLE NOTES.

CONTRIBUTED BY WIDE-AWAKE GARDENERS.



FOR BACK in the days of boyhood, in my grandmother's garden, was the first cultivated strawberry-bed I ever saw. As near as I can recollect, it measured about 12X12 feet. The berries were white, and must have belonged to the alpine family. The largest picking I remember was a pint-bowl half full. This happened on an occasion when the house was full of company. The berries were too scarce and precious to be distributed among small children like myself. It must have been more than 60 years ago. My father used to take me with him to New York when he had a load of produce to sell, and as soon as he thought it safe used to send me alone.

I well remember the first cultivated strawberries I ever saw in Washington Market, at that time by all odds the greatest fruit and vegetable market on this continent. It was some time before 1840. I have no doubt that more cultivated strawberries are now carried into that city in a single day during the berry harvest than were ever seen within the city limits during its entire history previous to 1840. I do not know whether the receipts of New York exceed those of Chicago, but a few days since, one of the large dealers of the latter city told me that last summer the receipts of strawberries during one week averaged 100 cars per day. What a change! It seems like one of the wildest of dreams. If some good spirit had come to me when I was ten years old and told me that I should live to see strawberries in their season

just as plentiful and free on my table as potatoes and bread and butter, and that I would sometime pick for market more than 100 bushels in a day, and further, that I should also be a member of Congress, governor, foreign minister, or even president, I might in my youthful ambition have thought the prophecy all possible except the strawberry part.

Hovey's Seedling was introduced more than 50 years ago, and the Albany Seedling followed a few years later. The introduction of the Hovey was the first great forward stride in strawberry cultivation in this country. The Wilson made its first appearance in the west about 1860. Since that time new varieties have been introduced and lauded as better than their predecessors, until any one who undertook to keep the best only, and relied upon reports of the friends of the new kinds for his information, would be about sure to lose all his pocket-money, and do fairly well if he kept out of a lunatic asylum. During these years we have had many new varieties of raspberries, but it may well be doubted whether we have to-day any red raspberry that in quality will excel the old red Antwerp.

Less improvement has been made in blackberries than in any other kind of small fruits. The Kittatinny used to grow wild on my father's farm in the east, and it seems to me that I have never seen any blackberry elsewhere that excelled it either in size or yield.

So far as cultivation of garden crops is concerned, perhaps the greatest advance has been made in implements. The improvements in cultivators, barrows, hoes, shovels, spades, rakes, etc., over those used 30 years ago, have made it possible to produce crops very much cheaper. Then I was compelled to rake 15 to 20 acres of my garden by hand. We used the best steel rakes I could buy. Now they lie in their racks in the tool-house, almost untouched. Their work is all well done with

horse-harrows, while our special purpose hand-cultivators cheapen the cost of production.

The decline in prices has been gradual, and with it have come the better tools. My years of experience have enabled me to cut off expenses and to systematize thoroughly, and all the time to keep my land improving so that each year has shown a balance upon the right side; and even in short years we had the pleasure of knowing that all of our hired help was paid, and a nice living provided for ourselves in our own comfortable home. Still, it is not safe for anyone to go into the business expecting to become a millionaire.—J. M. SMITH, *Wisconsin*.

SETTING STRAWBERRY-PLANTS.

I have always found it difficult to get a new hand to set a plant just right. The crown should be left exactly on a level with the soil; but most people, after scooping out a hole, loosely insert the roots in a spread-out manner, throw in dirt and crowd it down along with the roots with both hands and full force, leaving the crown *below* the surface. The process as here given is the true mode of setting, but the crown must not go below the level of the soil. To do the work properly a little knack, experience, patience and care are needed. These are exactly what the average hired man lacks, and you must either set your plants yourself, or watch the process closely. Your bed will not thrive unless attention is paid to this point. Having scooped about the plant more than enough soil to fill the hole, I always press down with both hands till the exact level of the adjacent surface is secured. The trick is soon learned. Not only do strawberry-plants, but all others depend for success on being crowded down. Do not fear to get the ground too much packed, unless it is wet and sticky, when plants should not be set at all. If possible, set them before a shower or when the soil is mellow. If you must set them when the soil is dry, pour into each hole at least a pint of water; let it soak in, and then plant. After crowding down a plant, brush over the pressed soil a little dressing of loose dirt, which must not be crowded or touched at all. It serves as a mulch, and will retain moisture about the roots and prevent the soil from cracking. If a dry time follows planting, never water a *little*, but dig a hole near each plant and slowly pour in a quart of water; then brush a handful of dry dirt over the wet spot, and you will save your plants and probably keep them growing at full speed. Nothing does any sort of plants more harm than a light surface-watering. Get plenty of the water down about the roots once for all, stop the evaporation with a mulch, and the work is done for a week.—E. P. POWELL, *Oncida Co., N. Y.*

THE WATERMELON IN TEXAS.

The culture of the watermelon is simple and easy, especially on new sandy loam. We use one or two shovelfuls of well-decomposed stable or cow-pen manure to each hill, and have about 300 hills to the acre. Cottonseed meal is used by some growers after the plants are up. The hoe is used freely around the young plants

until they begin to run; then we substitute the harrow cultivator for the plow in working the land between the rows. Our aim is to leave the surface of the earth smooth and well-pulverized. Proper cultivation after the vines commence to run has as much to do in bringing large and well-shaped melons as the fertilizer, if not more. Our line of action is, briefly, to apply the proper fertilizer and give one good deep plowing, followed up at the right time with the harrow. This will insure a remunerative crop with a net return of from \$50 to \$75 per acre, if the grower ships only his good melons.

One thousand melons generally constitute a carload, and weigh about 24,000 pounds. These are loaded in ventilated cars. Two hundred pounds of hay strewn over the bottom of the car is all the packing material used; the melons are then put in about four layers deep. They rarely fail to bear transportation well for from 1,000 to 2,000 miles, and some of our best shipping varieties keep 30 days after delivery. We use a stock-car, slatted up to prevent people from cutting the melons from the outside during transit. This form of car has some disadvantages, but it prevents damage by heat, and we are satisfied. The bulk of our shipping occurs within 40 days—from June 15 to July 25. The express companies are coming in for a share of the melon trade to points where carload lots would be more than the market demands. The melon crop pays better than the cotton crop where suitable ground can be had convenient to a loading point. The net returns from a carload of melons, if good, is usually more than from two bales of cotton, and the cost of raising and marketing is much less.—E. CREW, *Texas*.

MARKET-GARDENING.

For years I have successfully used inverted sod, still very generally recommended, for growing and transplanting melons, etc.; but the cost of cutting the sod and of other labor amounts to almost as much as the extra prices received. Of course, the gardener, to be successful, must use all improved methods as well as the best implements and seed, and be a good salesman himself or employ one. I have a regular retail trade, besides furnishing growers, etc., and ship only to points close by, and consequently get the best prices. I take common three-pound tomato-cans, throw them into the furnace and melt the tops, bottoms and sides, then tie them together by wrapping each twice around with cheap twine. They can then be set in a coldframe, hotbed or greenhouse. If placed close together the plants in them will be four inches apart. I use them for cabbage, cauliflower, tomatoes, celery, beans, cucumbers and melons of all kinds. My cabbages are one-third grown when transplanted. The cans are full of small roots, and there is a quart of soil to each plant; by untying the cans this is set out unbroken. When ready to be set out, my tomato-plants are always in bloom, and frequently bear fruit as large as a hen's egg. By lapping the cans one-third they can be again used for celery, and by their use large stocky, strong plants can be best secured, which can be transplanted at any time of the day, and will not

be at all injured by the transfer. I throw out a furrow with a small plow, place the plants in it, and fill up by turning a furrow with a hand-plow, afterward firming the soil with the feet.

One spring I had 500 extra cans, and in them planted early sweet-corn for a trial. For the lot I received 20 cents per dozen ears more than I have received per dozen since. From 1,000 hills of butter-beans I sold two pickings at 30 cents per gallon more than I have ever received for ordinary outdoor plantings. The hotels save their empty cans for me. When not in use I place ten, one over another, and store them away. I use several thousands, and they last from six to eight years. One man and boy can transplant at least 2,500 a day. By the use of them all trouble from frost is avoided, and when set out the plants are so large that injury from the bugs is easily escaped.—J. W. OLDS, *Illinois*.

HOW A BOSTONIAN GREW CAULIFLOWERS.

Either cauliflowers are easily grown or I had wonderful luck with them. I grew Henderson Snowball, and 100 per cent. made good heads. The seeds had a good start; first, some good loam was sifted fine and put into a shallow box three or four inches deep, some strong liquid manure was strained and boiled in an otherwise useless old kettle. This boiling hot tea was poured on the soil in the box, and just as soon as it was cool enough not to injure the seeds, they were scattered over it. A very little dry sifted soil was put on to cover the plants, and the box was left in a warm bathroom for the seeds to germinate at leisure. The plants were soon up, and as soon as large enough were set out at the northwest side of a shed, where no gardener would have put anything he wanted to grow. They had plenty of water from the hose, and every one grew into a fine head of cauliflower. I think anyone can grow them. The green cabbage-worms were picked off when found. Last summer when raising cabbages I scattered a mixture of flour and red pepper all over the heads, and it seemed to stop the ravages of the pests.—BOSTON SUBURB.

HOW AN ELDER'S WIFE PLANTS HER GARDEN.

For some years I have sown seeds in combination to some extent, and shall do so more extensively in the future. After the drills are made I sow about as thickly as I want the plants to stand, seeds of beet, carrot, salsify, cabbage, cucumber, etc.; then retracing my steps, I sow radish-seeds as thickly as they should be, and cover. In three or four days every row in the garden is plainly visible if the weather and soil have been in a favorable condition, and cultivation may begin at once and be kept up as occasion demands, without waiting for the slow-germinating varieties to appear above ground. The radish-seeds I sow are a mixture of turnip and olive-shaped summer sorts, in all varieties, and Chartier—two-thirds of the former to one-third of the latter. From the one sowing these give a nice variety in form, color and flavor for a long time.

Sometimes I have sowed lettuce instead of radishes, but the plants give too much shade and are not out of

the way so soon, and I have discarded it in favor of the radishes, which meet with ready sale if pulled fresh and if the roots are set into a pail of cool water while in transit from my garden to the customer's door.

I prefer to plant everything in drills, even cucumbers and squashes, and cultivate well until the vines begin to run. The drills are made closer or farther apart, according to the growth of the plants, though to economize space and keep the vines separated I usually alternate a row of vines with one of small-topped vegetables, like carrots or salsify. When the vines start to run, I keep them turned lengthwise of the rows, which tends to cover the ground and keep it moist and cool, and is more convenient and tidy than to let them run all over.

Of course, after much vine has been made, cultivation cannot be continued; but if the garden spot was plowed once in the fall and twice in spring, and given a little early cultivation, few weeds will start, and those that do can be successfully pulled up by hand.—ELDER'S WIFE.

A DENTIST'S SUCCESS IN HOME GARDENING.

In the fall of '89 I built a house on a blue-grass lot, on which there wasn't a tree or plant. Practising my profession from 9 A. M. to 5 P. M., I could give only a few hours in the morning and evening to my planting and gardening. Early in '90 the ground was broken. My lot is nearly square, and contains slightly more than an acre. My aim was to set the apple trees and let them be coming up; but to get fruit in one or two years I must "make things hum" in the line of strawberries, raspberries and grapes. The apples were set 30 feet apart, and raspberries planted in line with every row of apple trees, and strawberries, corn and vegetables between the apples and raspberries.

Near the house dwarf pear trees were planted, with grape-vines between them. Grapes were set along a woven wire fence between the yard and garden. Plums were put in the poultry-yard, and cherries in front of the house. Peach trees were planted in the center of a square made by four apple trees. After every hard rain we took pains to stir the surface around everything.

Here are my main varieties, chosen from reading and inquiry: *strawberries*, Haverland, Bubach and Crescent, with Mt. Vernon as a fertilizer; *raspberries*, Turner, Cuthbert, Shaffer and Ohio; *grapes*, mainly Concord, with a few vines each of Catawba, Martha, Brighton, Worden and Norton; *pears*, Clapp and Duchesse, with two standards each of Bartlett, Anjou, Seckel and Kieffer; *plums*, Wild Goose, Green Gage, Lombard and Bradshaw; *cherries*, Early May, Governor Wood and Napoleon; *peaches*, mostly Stump-the-World and Old Mixon. Of apples I planted too many sorts, and not enough of winter kinds. Everything was kept reasonably clean by the use of a horse-hoe. To offset all this work I had an abundant supply of all sorts of vegetables throughout the season; and after reserving potatoes, turnips, beets, etc., for winter's use, sold \$19 worth of stuff. My strawberries were "laid by" for 1891 after they had been covered with straw.

Now for my yield 14 months after planting. My patch of strawberries was 30x208 feet. Of raspberries there were ten rows 208 feet long. From May 20 to June 20 my family of six had great heaping bowls of berries three times a day. All my neighbors received a mess or two, and my mother and sister, who live near, said they never in all their lives had as many strawberries as I gave them. They each own farms of more than 150 acres, and have as much fruit as our average farmers. Besides all this, \$20 worth were sold to neighbors and in town. The raspberries came in before the strawberries went out, and we had them almost a month more. As we had not enough pickers, and the price was not enough to hire them, we ate, canned and jammed raspberries until my wife said the very smell of the

Shaffers made her sick. With the help of a flock of young chickens we managed to save them. A few bunches of grapes were bagged, and gave us a taste of the good things to come in that direction next year.

I tell all this to show that no one need hold back from planting a place through fear of expense. Pitch in and make the expense! Of course, I would make many changes were I to start again; but if I had waited I would probably not be any better prepared, and the growth of the trees would be two years behind. One of my neighbors, in looking over my fruits, paid me this compliment: "You have more small fruits in a year and a half from planting than I have ever had or ever expect to have, and I've been living on my place for 20 years.—WALTER STUART, D. D. S., *Clark Co., Kentucky.*



AN EXPERIENCE IN ELECTO-HORTICULTURE.

AN EVERY-DAY CORROBORATION OF SCIENTIFIC WORK.



HAVE two greenhouses exposed to an electric arc street lamp of 2000 candle-power, burning every night and all night, situated 325 feet from the ends of the greenhouses. These houses are 16 feet wide, and in each there are three benches, the middle one 5 feet and the two side ones $3\frac{1}{2}$ feet wide. They have a span of 10 feet 2 inches and 8 feet 6 inches, with 10x12 glass, and are heated by hot water under the closed system, each house having four 2-inch pipes overhead and two under the benches.

Between the lamp and the houses are some trees, which shaded the houses until the leaves fell. One of the houses was planted with Essex tomatoes, about three-quarters of which were exposed to the light rays from the electric lamp. These grew apparently with greater thrift, were of a very dark green color, and made thick, stocky, heavy vines, many measuring an inch in diameter. The flowers were large, some measuring more than a silver dollar, and quite numerous, in two instances 20 to the set. But the trouble was that they did not set fruit to any satisfactory extent. I did not expect all to set; if a quarter of them had done so I would have been satisfied. The only reason I could see for their failure

was the electric light. I fertilized them with a brush in the ordinary manner. Next I adjusted a draw-curtain so as to screen the plants, and not until then did I get satisfactory results. Since then I have found a larger proportion of tomatoes to the cluster.

The other house was planted with radishes on the south, lettuce in the middle, and spinach on the north benches. As far as Professor Bailey's experiments went, mine corresponded with his; for the plants acted in the same way with me at 325 feet as they did with him at less than 30. The radishes drew more to tops, the lettuce grew faster than some planted the same day under the same conditions, and kept at the same temperature in another house not exposed to the lamp. I will be able to market this lettuce two weeks earlier than that from the dark house. I have done in this case as I did in the first house, namely, adjusted a draw-curtain. The spinach did not grow nor draw as fast with me as it did with Professor Bailey, but the radishes did, and the spinach would if given time. The curtain prevented the radishes from growing to top and the spinach from going to seed. But for the curtain I believe I would not have been able to market one per cent. of the radishes, and probably fifty per cent. were ruined. The soil of both houses is a sandy loam, well enriched with stable-manure.

Orange Co., N. Y.

ED. A. LORENTZ.

VEGETABLES, FRUITS AND FLOWERS

IN THE EDITORS' GARDENS.



THE NEW TOMATOES.—One of the most striking novelties in tomatoes recently introduced is Henderson 400, now being sent out as Ponderosa. It is truly ponderous in stalk, foliage and fruit. We grew some plants from seed and set them out with other varieties in the ordinary way. We also received some plants from the introducer; the latter arrived in bad order, all broken to pieces and apparently worthless. We managed to find two sound tip-ends in the lot. A handful of cotton batting was wrapped around their butt-ends, and they were placed in an ordinary glass tumbler, with water enough to saturate the cotton. The tumbler was placed in a sunny window, and forgotten for nearly two weeks. The cuttings were then found to be well rooted, and were at once planted out, each by the side of an eight-foot pole. They were kept trimmed to single stalks and trained to the poles. By September they had reached the top, and before frost two feet or more of drooping growth had been added.

The few fruits were of monstrous size. One of the clusters is illustrated on next page; its weight was considerably over three pounds, but we had single specimens weighing much more than any of these three. In solidity the fruit leaves nothing to be desired. The seed-cavities are small and often hardly noticeable, and the seeds few in number. Twelve bushels, it is said, give only one pound of seed. Quality good; shape reasonably smooth and uniform; color a pinkish red. It has one great fault outside of its lack of productiveness—it does not ripen up well and evenly, even if bagged. A specimen may be dead ripe at the apex, and still green around the stem end. It also cracks badly. In spite of all that it is an interesting variety, and we shall plant it again. Ponderosa has some similarity to Mansfield's Tree, Anna Dine and Ruby Queen; but it is by far the best of that type.

The most noteworthy of the other novelties of 1891 are Red Potato-Leaf, Thorburn Long-Keeper, Bon Ton, Ithaca, Stone and Potomac. All these are good and reliable. Red Potato-Leaf is evidently nothing more or less than a red sport of the older purplish variety of the same name. Thorburn Long-Keeper has pleased us much. It is perfect in form, and ripens up evenly and beautifully. Color a deep purple; flesh solid and qual-

ity excellent. We shall give it another trial on a larger scale. Ithaca and Bon Ton also ripened up well, and did not develop any serious fault. Potomac is regular in form and firm in texture, with small seed-cavities. It was sent out under the claim that the bulk of the fruit would ripen together, thus being of special value for canning. To judge from its behavior on our grounds the past season, the claim has some foundation.

Our favorites for general purposes are Matchless and Ignotum; and if every seed of all others of the same type, as Red Apple, Red Cross, Brandywine 45, McCullom's Hybrid, Early Ohio, Stone, etc., although all good, were lost, the injury to the American gardener would hardly be worth mentioning, so long as the two first named were saved to cultivation.

DO TOMATOES MIX?—Our last season's experience teaches forcibly that it is not safe to save specimen fruits for seed from a patch containing more than one variety, when pure seed of any particular variety is wanted. We have always made it a practice to save seed of a number of varieties for planting the following season, rather than depend on seedsmen for a new supply; and we thought we were reasonably safe in doing this, as we have seldom noticed crosses among our plants. It was therefore a surprise to see in King of the Earlys from our own seed of 1890 an endless variety of shapes and sizes, with scarcely a half-dozen plants of the true type. Of course, the provocation for the production of crosses the season before was great, as we had 30 varieties of 6 to 18 plants each in the lot.

LESSONS IN THINNING FRUITS.—A more impressive lesson of the value of a thorough thinning of the tree-fruits could not have been easily given than that furnished by last season's crop in the apple orchards of the whole district. The bloom on most varieties was not over-abundant, or was damaged by late spring frosts. When the fruit was set it appeared so scattering that everybody estimated about one-quarter of an average crop. As late even as the end of July the general opinion was that the apple crop would not exceed one-third of the average. The half-grown specimens on the trees then looked somewhat far apart; but they kept on growing larger and finer than in many years, and they filled the intervening spaces on the limbs. When the time of picking came, the trees appeared well loaded with large fine apples. The outcome was that our own crop, instead of being 20 or 30 barrels, as at first estimated, consisted of 80 barrels or more. As the actual yield of the orchards in the entire district exceeded the earlier estimates in just about the same ratio, the crop turned out to be not less than two-thirds of an average, and the fruit was of unusual size, form and coloring.

This result should encourage us to thin fruits more thoroughly. It takes a brave man to break or knock off a large part of apparently good fruit when only partly grown. What grower would have dared to thin his quarter-grown apples in a manner even to approach the example set by nature last summer! Few have ever practiced thinning any kind of fruit to a quarter of that extent. We now have a substantial proof that even apparently extreme thinning is profitable, as it results in a full crop of salable fruit.

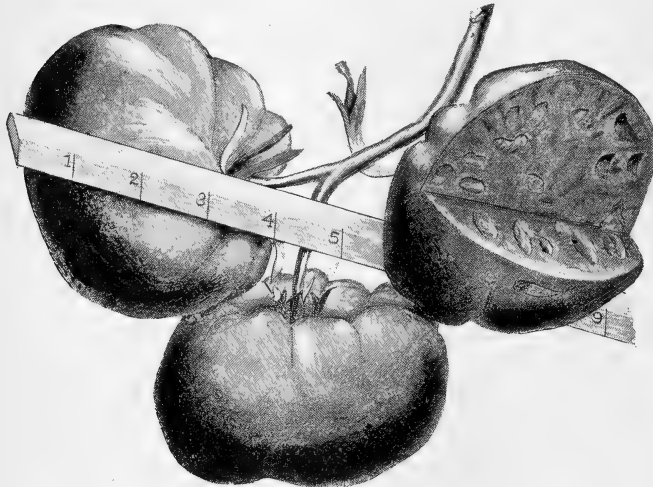
The owner of the largest peach orchard in the state, in a conversation the past summer, stated that he had men provided with long cedar poles go all through his orchards and knock off a large part of the fruit where the trees seemed to be overloaded. Yet this man left 15,000

plants. We have learned that the only safety here lies in prompt thinning. Every plant above the number required to give a full crop must be considered a weed, and pulled up or cut down without delay. A great surplus of plants, as an excessive number of fruits left to grow, will render the individual vegetable or fruit undersized, poor in quality, less attractive, and generally less valuable and salable.

CRAB-TREES FOR ORNAMENT.—We have never indulged in the practice, quite common among farmers, of planting pear, apple, cherry, plum and quince trees on lawns for ornament. This has not been because of our not recognizing the qualities of beauty in orchard trees, but rather because we have always had to provide places for so many other subjects in the line of shade and ornamental

trees which very fittingly belong to the lawn, that we have been quite content to enjoy the beauty of our fruit-trees in the fruit-plot.

But there are certain fruit-bearing trees that possess such marked beauty as to be well-entitled to consideration purely for lawn embellishment. One of these which has given satisfaction second to none afforded by any other tree in our ornamental grounds, is a Hyslop crab. This is a tree of moderate size, extremely handsome in flower and fruit,



CLUSTER OF PONDEROSA (HENDERSON 400) TOMATO, AS GROWN ON EDITORS' GROUNDS.

bushels of peaches on his trees to rot, simply because they were so small, in consequence of too many being left, that it would not pay to market them. What a waste, and this simply because the men with the poles had been too timid!

This principle holds good in vegetable-growing. We used to leave pretty nearly all the radish-plants that came up in the rows, both in hotbed and outdoor cultivation. We know better now. The plants are thinned early to not less than one inch apart in the row, and we get a far better and more even crop. In growing celery and cabbages we have of late been even more anxious to thin the plants at an early stage, and thoroughly. Often we cut out ten plants and more where we leave one, and all this for the purpose of insuring good, strong, stocky

while the habit of growth and the appearance of the foliage is attractive. The bloom, of light pink color, is more profuse, larger and rather more delicate in outline than that of the common apple. It is also more fragrant, the odor being wafted to a considerable distance when the tree is in full flower. But the height of its beauty is reached in early autumn, when the prettily-shaped apples assume their remarkably handsome deep crimson color, slightly obscured by a delicate bloom. The fruit will hang all through the fall if not picked. For fully six weeks last fall, during which many persons visited our grounds, no one other object attracted all eyes as did a single handsome specimen of this crab, prominently located on the lawn.

Another tree of the crab race which deserves special

mention for ornamental planting is our native garland-flowering crab (*Pyrus malus* var. *coronaria odorata*). The great charm of this species is its large, deliciously fragrant, blush-colored flowers, which appear in handsome loose corymbs of five to ten blooms each. The fruit lacks the attractiveness of the Hyslop crab, being yellow, hard and sour; but the delightful flowers more than compensate. The tree in its wild state grows along the borders of woods, and reaches a height of ten feet and upwards, with spreading branches.

THE INFLUENCE OF EVERGREENS IN WINTER.—Besides several large masses of evergreens now in their third year from planting, on our grounds, the effects of which as windbreaks are even this winter apparent, there is on an adjoining place a belt of spruces, about twelve years planted, that is now fully 20 feet in height. In passing these evergreens daily through the winter, we never fail to be impressed with their influence in subduing the force of the winds. The contrast between the cold felt back of the screen on a raw, wintry day, and that felt beyond it in the full blast, is quite remarkable. If this could be duly appreciated by land-owners everywhere, there would soon be fifty evergreen screens where one is to be found now. Young evergreens are cheap, and nothing is easier than to raise a magnificent wind-

break of this kind. Its province is to promote an earlier garden, to enable us to grow many plants and shrubs too delicate for open exposure, and to save fuel in keeping the home at a comfortable temperature.

A HANDSOME VERONICA.—One of the more recently introduced hardy veronics in our collection is the Japanese species, *Veronica subsessilis*. It is, without doubt, the handsomest of the genus, and, judging by its behavior here, it deserves to be ranked among the best hardy plants in cultivation. It is of robust habit, with rich deep green foliage that gives it character in any collection. The flower-spike is remarkably handsome, being large, with the florets of a brilliant amethystine blue—a rare color in the flower garden, and which in this instance contrasts beautifully with the foliage of the plant. Coming into flower, as this species does, along with the double perennial sunflower of golden hue, the two plants are well suited to enhance each other's attractions if planted near together. The height of the veronica is one to two feet. Being of lower habit than the sunflower, if used for an outside line to a bed composed of the former, the effect would be fine. A merit of the veronica is that it blooms in full beauty for some weeks in succession. We recommend this plant for trial.

La Salle-on-the-Niagara, N. Y.

HOW TO MAKE A HOTBED.

BY THE AUTHOR OF "WALKS AND TALKS ON THE FARM."



N ORDINARY hotbed consists of a quantity of manure, which in fermenting produces heat. The bed is covered with soil five or six inches deep. The heat from the manure warms the soil, and seed sown in it germinates as rapidly as it would if sown outdoors in June. To protect the plants after they are started, a frame made of inch boards, a foot or fifteen inches wide, is placed on the bed and the edges pressed an inch or so into the soil. Glass sashes are placed on this frame to admit the light and heat of the sun and keep out the cold air. The sashes are so arranged that they can easily be slid up and down, so as to admit of ventilation.

A frame for four sashes is usually about 12 feet long and five feet wide. The quantity of manure needed for such a frame depends on the weather, and on the plants you wish to grow. If you have plenty of manure it is better to use too much than too little. It is an easy matter

to cool off the bed. The more manure you have and the more it is trodden down into the bed the longer will the heat continue. For a frame of four sashes we usually draw out for our first hotbed in February about five tons of fresh horse-dung. This quantity of manure contains about 7,000 pounds of water and 3,000 pounds of dry matter. During fermentation half a ton or more of the organic matter is consumed, giving out about as much heat as would be obtained from burning half a ton of coal. In practice, however, more heat is lost in burning the coal than from fermenting manure. The organic matter of the manure which is converted into carbonic acid and water during fermentation, and which is lost, has no manurial value. The manure that is left after we have done with the hotbed is worth as much, provided none of the plant-food has been washed into the ground, as the original five tons. All we have lost is the labor of hauling it; and in our opinion the increased availability of the rotted manure more than compensates for this labor. The heat derived from the manure, therefore, costs us nothing.

In making the bed, our main object is to get the manure to ferment evenly throughout the bed. In forming bread or beer, or "buckwheat-cakes," we mix "yeast" with it. The active ingredient of yeast is a microscopic plant that grows and decomposes the flour or dough. The same is true of manure. The only difference is that we do not take pains to get the yeast. It depends

on the microbes that exist in the manure. We usually do the same thing in fermenting cider. But if we take the scum that is thrown up by forming cider and mix it with new sweet cider, fermentation will proceed much more rapidly. In making buckwheat-cakes we add yeast to the batter, but if any of the fermented batter is left and fresh flour and water are stirred up with it the new batter will ferment. The fermented batter contains thousands of these little plants that we call yeast, and these, mixed with new batter, start to grow and decompose the flour, forming carbonic acid gas, which makes the cakes light. Heat is produced by the process in proportion to the amount of carbon consumed. The same is true of our hotbed. As yet we have no separate yeast. We must get it from fermenting manure. Wherever you see in a heap of manure a little that is hot, you may be sure that there are hundreds of these yeast-plants in active growth. If the manure is very cold they will not start to grow of themselves. Like other plants they require a certain amount of heat, moisture and food. But if you can get them started to grow, they create their own heat and grow rapidly, spreading out in all directions. If the manure gets too dry or too hot, growth ceases. This is called "fire-fang." The better the horses are fed and the more urine there is mixed with the solids, the more readily will the manure ferment. This is because it contains more nitrogen. We can make the manure rich in nitrogen, and consequently make it ferment better by mixing with it hen-manure, blood, fish-scrap, or any other animal matter.

Our own plan is to draw the manure and make a heap four or five feet from where the hotbed is to be. We draw the manure two or three weeks before we wish to start the hotbed; but if the manure is already fermenting nicely, a less time, say a week or ten days, is needed. In such a case it is an easy matter to make a good hotbed. All that is needed when making the heap (not the bed) is to take a little pains in breaking up the manure and mixing the warm, fermenting parts all through the heap. It is these parts that contain the yeast. If the manure has been outdoors, it will probably be moist enough. If not, and it is dry, you must wet it. Get the water fresh from the well and do not use water containing ice or snow. The former will probably be about 55°, the latter may be 33°, and must be warmed by the fermenting manure before the yeast-plant will grow rapidly. It is not easy to convey an idea of how moist the manure should be. It should not contain as much water as it will hold without leaching. This should exclude the air and check fermentation. But it may be almost up to the saturating point.

If the manure is cold, with more or less of it frozen, when drawn to the heap, it will be some time before the yeast-plants can commence to grow. If a little fermenting manure can be found, use this to start the fire. If you have some hen-manure, make it moist with warm water and put it in a barrel in a warm place and it will start to ferment in a few days and will soon give you the required yeast. Take this yeast and mix it with the

manure in the heap. If the horse-manure is very cold or frozen, you should not mix much manure with the fermenting hen-dung, or you may check the growth of the yeast-plant or put out the fire. Proceed as you would in making a fire with wet or frozen wood. You use plenty of kindling to start a little of the wood, and as it burns add more and more till you get a good fire started, and then it is not difficult to make the wet wood burn. In making the heap of manure it is desirable to keep out the cold, or more correctly to keep in the heat generated by fermentation. The less the manure is exposed the better. The best form is a cube; the common form and the worst is a cone. The average man will simply throw the manure on the top of the heap. If the heap is long he will make it like the roof of a house. If round, he will make it, or rather let it make itself, like a big cock of hay intended to shed water. A sharp frost will freeze the manure on the top and sides. The heap should be square on the sides and flat on top. We usually make them five feet high, and welcome a warm rain that will moisten the heap. If the heap ferments only in the center it may be well to turn over the manure before making the hotbed. But in our experience this is rarely if ever necessary.

The hotbed should be from eighteen inches to two feet longer and wider than the frame. The point of most importance in making the hotbed is to shake out and break the manure, so that the parts that are fermenting shall be thoroughly mixed with those that are not. These warm parts contain the growing yeast-plants, and our object is to give them a chance to penetrate into every part and particle of the manure in the bed, and thus create a steady, uniform and continuous heat. Much of the success of the hotbed will depend on the thoroughness with which this work is done. We want a steady bottom heat, and this is the best of all methods of getting it. In a carelessly made hotbed the heat is apt to be too great in the center of the bed. This is because the yeast is not evenly distributed. If the manure is quite warm when put in the bed, it should be trodden down firm; not merely on top, but every layer should be trodden down while the bed is being made. The center of the bed should be trodden down more than the sides. The treading retards fermentation. The heat will not be so strong, but the bed will last longer. The soil for the hotbed should have been prepared in advance, and it is now too late to talk about it. It is not necessary to get specially rich soil. We want a soil that will not bake on the surface or become hard from the necessary watering. A loose soil that the young roots can easily penetrate is desirable. We have had excellent results for several years from a mixture of garden, sandy soil and dried and sifted moss, in about equal parts by measure. We work into this soil and moss two table-spoonfuls of superphosphate and three or four handfuls of wood-ashes to each sash. Work it well into the soil with a hoe, not merely on top, but in all parts down to the manure. The moss has several advantages. It makes the soil very light and porous. It will hold water like a sponge.

After the plants are well started we put a little moss between the rows, and water can be sprinkled on from a much coarser rose and even poured on from the spout of the watering-can. It saves more than half the labor of watering. And when you come to move the plants you will find the roots holding a great mass of soil and

moss. By thoroughly soaking the soil and moss before forking up the plants we have had small, stucky tomato-plants that would hold by their roots more soil than others do when removed from the ordinary three-inch pots.

Moreton Farm.

JOSEPH HARRIS.

THE FROST-KILLING OF FRUIT-TREES.

W

HEN the tree that was thrifty in the fall is found dead, or part dead, in the spring, we commonly say it was winter-killed. Perhaps it was; perhaps fall-killed or spring-killed. It was fall-killed if the first freeze found the new wood tender and immature. It was winter-killed if the cold was severe and protracted enough to dry the life out of it. Perhaps low temperature alone

killed it, but as outdoor temperature is not under control, this cause need not be considered here. The tree may be spring-killed when a warm spell in late winter or early spring is followed by a freeze. Here on the Gulf Coast it is most likely to be spring-killing that ails it. The loose, light soil warms up with the warm rains and sun of February and March, and then may come a "norther" that cuts off the crop; sometimes the tree. In the prairie northwest it is most likely to be winter-killed. With small annual rainfall, the usually dry fall leaves but little moisture in the soil, and this little is lessened by steady and long cold, often on snowless ground, accompanied by high winds. The moisture is dried out of the tree and the soil in which it grew. East of the prairie country, where fall weather is sometimes warm and wet, the tree is more likely to be fall-killed than in the dry west or the warm south.

The orchardist does not control rainfalls or temperature, but may to some extent control the condition of the soil and of the growth of the tree; and on these lines must do what is done to prevent or mitigate frost-killing. On the condition of growth depend to a great extent fall-killing and spring-killing; on the condition of the soil, winter-killing. For instance: the red-oak, which grows as far north at least as Manitoba, and endures a temperature of 50° or 60° below, is not reckoned a tender tree, while the orange is; yet in March, 1890, a freeze came that killed red-oak here in Mobile county, but did not hurt the orange trees much. For weeks the

weather had been warm. The orange, which scarcely stops growing in winter, was well along on its season's journey, while the red-oak, always tardy in starting, was just at that tender budding state when freezing hurts most.

The orchardist who would ripen the wood of his trees before the freeze will neither cultivate nor apply fertilizers late in the season. To prevent too early a start in the spring is not so easy. By underdraining some soils the roots may be encouraged to go deeper where they will not be so readily awakened by a little warm weather. Mulching the ground may help by keeping the surface cooler than a clean surface would be. Digging away soil in the fall from the base of the trunk so as partly to expose the tops of the side roots is said to delay the spring start. This delaying the too early starting of trees is worthy of more attention and investigation than it has received. Throughout all the vast section known as the "piney woods," a belt 1,000 miles wide and extending from the Mississippi eastward along the gulf to the Atlantic, it is the too early start, or the too late frost that frequently cuts off the crop, and sometimes the trees as well. As mentioned, there is no practical preventive for the winter-killing that comes directly from a low temperature; but winter-killing is more usually the secondary result of long-continued cold, and cold winds following a light annual rainfall, as it dries out the trees. Species of evergreen that thrive far inside the arctic circle, where the rainfall or snowfall is abundant, winter-kill in northwest Iowa where the rainfall is light and the cold has little snow to hinder it from drying the ground. To lessen the winter-killing that comes from winter-drying, something may be done by such cultivation as will allow the rainfall to run into instead of off the ground. Cultivation, too, lessens evaporation. A grass sod will evaporate about two and a half times as much moisture as a cultivated surface. Underdraining in some soils will help to husband the moisture and tend to send the roots down out of the way of frost and frost-drought; this is one only of the many beneficial results of this practice.

Where it is winter-killing and not fall-killing that is to be prevented, a light cultivation about the time of freezing will tend both to retard evaporation and prevent deep freezing. The railroad contractor who has to make a deep cut in winter has the bottom plowed up every evening, and is not hindered by the freezing of the coldest night. Mulching helps in much the same way. The



humus put in the soil by turning under a green crop helps to retain moisture. A row of close-growing trees on the side of the prevailing winter winds lessens the cold weather evaporation from the trees. But what will help in one soil or climate may be worse than useless in another. All that is intended here is to suggest

some of the causes of frost-killing and some of the most palpable preventives. The particular line of treatment will be best marked out by each orchardist for himself, as his own observations give him facts for his guidance.

JUD. PIERCE.

Mobile Co., Ala.

TIMBER-TREE PLANTING.

IN SECTIONS SIMILAR TO MISSOURI.



In a recent article on our black locust it was stated that this species was almost extinct, and that the posts of this wood were scarce and high-priced; also that it was a precarious tree, not flourishing in all places. Experience and observation have not shown me a tree that will thrive more generally except in low wet ground. Far back—say about 1830—I helped to plant locust-seed in black mellow soil among limestone rocks, on a ridge not fit for the plow, or to grow farm-crops. We usually put three or four seeds in each place, and when they were well started, took up all but one. Of course, we kept the grass and weeds away, and the ground loose around the young trees. They were about six years old when I left the place, but on returning after twenty years I found some of them nearly a foot in diameter, and fifteen feet to the first limbs. This shows that the trees may be relied on as fair growers in good soil.

The scarcity of this tree need not continue long, as it is so easily grown. In the spring when the ground has become warm, about corn-planting time, sow the seeds in drills six inches apart in rows four feet apart, so that they can be easily cultivated. The seeds should have been treated previously by pouring scalding water on them and allowing them to soak for 24 hours. If they do not swell, give them another dose of the hot water. Cover them with one inch of soil and press it firmly on them. If well cultivated in good soil they will often attain the considerable height of four and five feet the first season. The seedlings are then ready to be set out permanently in a forest, or they can be left until two years old.

When designed for timber, I would plant them just four feet each way, and cultivate both ways, thus doing away with most of the hoeing. In five years they will be large enough to make strong stakes or light posts, and half can be cut out for the purpose. Cut diagonally one way. This will give the remaining trees room to grow three years more, when another half can be cut

out cross-wise from the first cutting. The timber is then large enough for posts to support barbed wire fence. Now the trees are eight feet apart each way, and may stand five years more. Then renew the cutting both ways as before, and the remaining trees will be 16 feet apart and they will have room enough to spread out to a good size and attain a diameter ranging from 9 to 12 inches.

The value of the timber taken off the ground up to this time will be more than all the work or land has cost, and on an acre of the ground there will be about 170 trees, worth at least \$5 a piece when 15 years old from the saving of the seed.

The osage orange may be treated in like manner; it may not grow quite so fast as the locust, but in point of durability it is equal if not superior. I have used stakes of young osage orange not over two inches in diameter which after having been in the ground five years were as sound as when put in.

The catalpa, whose timber is said to be equal to locust, is a much faster grower than any of the others, and may be the most valuable of the three. All these require planting pretty thick, so as to make an upright instead of a spreading growth. They need but little pruning, but when limbs are removed from the locust, it is necessary to oil or wax the wound to keep out the flat-headed borers whose attacks are the chief objection to growing this tree in some localities. They are even charged with attacking the sound tree, but I have my doubts about that. Assuming that the charge is true, the trouble and expense of spraying the trees with some arsenites about the time the insects lay their eggs would be well rewarded.

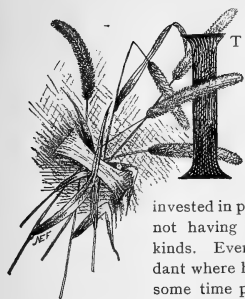
Here the red cedar is our post-timber tree, and the hills are covered with it. Twenty-four years ago I helped to put in cedar stakes where the town lots were marked off, and some of them are still sound. They are two inches square, and were driven into the ground a foot deep. The timber question is a very important one, and by far too few people concern themselves about it. Now, while we still have timber enough to last awhile, it is time to plant for the future generations. Trees do not grow up to maturity in a year, nor in ten; they take a lifetime and more. When I leave this world I think I will leave thousands of trees for every one I ever cut down.

Montgomery County, Mo.

S. MILLER.

SOME EASILY-GROWN VARIETIES.

MAXIMUM RESULTS FOR MINIMUM OUTLAYS.



IT MAY be put down as a rule, perhaps, that the dearth of fine trees and shrubs about the average American home is due not so much to the fact that the owners have never invested in planting-stock, as to their not having invested in the right kinds. Everywhere cases are abundant where home-improvers have at some time paid considerable money for high-priced trees, etc., for which, five years later, they have had little or nothing to show. The probabilities are, that in their readiness to invest for embellishing their grounds, they have fallen easy victims to the misrepresentations of unscrupulous agents or exaggerated catalogues. Inquiring into particulars will almost certainly reveal that the things purchased were "novelties," the chief characteristics of which were the extraordinary claims made for them and their high prices. It seems to be a weakness of our race, which unscrupulous dealers always take into account, that those who avowedly have had the least experience in gardening are the most ready to venture on testing high-priced so-called novelties. And the worst feature about the matter is, that they become so infatuated with these that little inclination or means are left for setting out reliable, standard kinds that would be likely to give permanent satisfaction, and which are always to be had at reasonable prices.

Now, it is not assumed that the readers of this magazine are, as a class, among those who are prone to become victims of greed. We believe the reverse is decidedly the case; still AMERICAN GARDENING is widely increasing in circulation and influence, and is taken by many new home-improvers, who will be tempted to buy highly-lauded but worthless novelties, and these we would be glad to see investing in plants of real merit. We have, accordingly, been at some pains to make up certain lists of reliable stock which it would be well for the average planter of home grounds to keep before him when ordering a selection from a nursery or from agents. While it is not claimed that these lists embrace all desirable kinds, we assert that a place might be completely planted with those alone here named, which might with propriety be called "no fail" lists.

While certain distinctions as to comparative values have necessarily been observed, we are not disposed to insist on these arbitrarily. With regard to hardy herbaceous plants, for instance, it has often been difficult to decide in which of two lists a particular strain or variety should come; and then, personal taste also has something to do with the matter. The sorts named may be considered sufficiently hardy for the latitude of Niagara Falls.

TWENTY-FIVE MOST RELIABLE EVERGREEN CONIFERS.

The failures arising from planting evergreens are chiefly of two kinds: those due, first, to making unsuitable selections, and second, to ordering large-sized trees, which are always risky to handle. If trees two feet or less in height are planted, the risk is greatly reduced. In the following selection it will be observed that nearly all the varieties are composed of four genera noted for hardiness. Fortunately, the varieties within these genera are now so many that no one need be at loss to plant a most effective and varied collection of these valuable trees by confining himself to this list alone:

White spruce (<i>Abies alba</i>).	Tamarack-leaved savin (<i>J. savina tamaricifolia</i>).
Alcock's spruce (<i>A. Alcockiana</i>).	Red cedar (<i>J. Virginiana</i>).
Hemlock spruce (<i>A. Canadensis</i>).	Glaucous red cedar (<i>J. Virginiana glauca</i>).
Norway spruce (<i>A. excelsa</i>).	Austrian or black pine (<i>Pinus Austriaca</i>).
Conical spruce (<i>A. excelsa conica</i>).	Dwarf Mugho pine (<i>P. Mughus</i>).
Ellwanger's spruce (<i>A. excelsa Ellwangeri</i>).	Dwarf mountain pine (<i>P. pumila</i>).
Maxwell's spruce (<i>A. excelsa Maxwelliana</i>).	White, or Weymouth pine (<i>P. Strobus</i>).
Dwarf black spruce (<i>A. nigra pumila</i>).	Erectyew (<i>Taxus baccata erecta</i>).
Colorado blue spruce (<i>A. pungens</i>).	American yew (<i>T. baccata Canadensis</i>).
Balsam fir (<i>A. balsamea</i>).	American arbor-vitæ (<i>Thuja occidentalis</i>).
Nordmann's silver fir (<i>A. Nordmanniana</i>).	Globe-headed arbor-vitæ (<i>T. occidentalis globosa</i>).
English juniper (<i>Juniperus communis vulgaris</i>).	Siberian arbor-vitæ (<i>T. occidentalis Siberica</i>).
Irish juniper (<i>J. communis Hibernica</i>).	

TWENTY-FIVE RELIABLE SHADE AND ORNAMENTAL TREES.

The following list does not include the larger-growing native forest trees, such as the elm, maple, oak, beech, tulip-tree, chestnut, etc., all of which are desirable for street planting and for use in large grounds, parks, etc:

Snowy mespilus (<i>Amelanchier</i>).	Horse-chestnut, Double white.
Alder, Cut-leaved (<i>Alnus</i>).	Horse-chestnut, Red-flowered.
Ash, Aucuba-leaved.	Larch, European.
Ash, Weeping.	Linden, European white-leaved. <i>Magnolia speciosa</i> .
Apple, coronaria odorata.	Mountain ash, Oak-leaved.
Birch, Cut-leaved weeping.	Maple, Norway.
Beech, Cut-leaved.	Maple, Wier's cut-leaved.
Beech, River's blood-leaved.	Oak, English.
Bird-cherry, European.	Poplar, Weeping.
Cherry, Double-flowering.	Thorn, Double scarlet.
Crab, Double rose-flowering.	Willow, Kilmarnock.
Elm, Camperdown weeping.	Judas tree (<i>Cercis</i>).
Elm, English.	

TWENTY-FIVE EASILY-GROWN HARDY FLOWERING SHRUBS.

This list is chiefly of kinds under which there are numerous attractive varieties, mostly desirable.

Althaea, or Rose of Sharon.	Mock-orange, or Philadelphia; all are desirable.
Barberry; all are desirable.	
Calycanthus, or Sweet-scented Shrub.	Plumed Hydrangea (<i>H. paniculata grandiflora</i>).
<i>Colutra arborescens</i> .	Lilac; all are desirable.
Corchorus, Silver variegated-leaved.	<i>Mahonia Aquifolia</i> .
Currant, Flowering.	Privet, Californian.
Deutzias; all are good.	Plum, Double-flowering.
Dogwood, <i>Elegantissima</i> variegata.	Plum, Japan blood-leaved (<i>Prunus Pissardii</i>).
Elder, Cut-leaved, also Golden.	Purple Fringe (<i>Rhus cotinus</i>).
<i>Euonymus Europæus</i> (Burning-Bush).	Quince, Japan; all are desirable.
Forsythia; all are desirable.	Tamarix, African. (ball).
Honeysuckle, Bush.	<i>Viburnum plicatum</i> (Japan Snow-Weigelia); all are desirable.

A SELECT LIST OF RELIABLE WOODY CLIMBING VINES.

<i>Ampelopsis quinquefolia</i> .	<i>Clematis Jackmanni</i> , and other varieties.
<i>A. Veitchii</i> .	
<i>A. bipinnata</i> (Pepper-Vine).	<i>C. Virginiana</i> .
Chinese wistaria.	<i>Tecoma radicans</i> (Trump't-Vine).
<i>Lonicera sempervirens</i> .	<i>Aristolochia siphon</i> (Dutchman's-Pipe).
<i>L. flava</i> .	
<i>L. Canadensis</i> .	<i>Celastrus scandens</i> .
<i>L. Halleana</i> .	<i>Akebia quinata</i> .
<i>Clematis</i> , Scarlet.	<i>Actinidia polygama</i> .

THE CHOICEST HARDY HERBACEOUS PERENNIALS.

Of these justly-esteemed garden plants, which are growing in popularity every day, we present two lists, the first embracing a selection of the choicer and most easily-grown kinds, and the second a list of sorts which do not rank quite as choice as those of the first. As in the case of shrubs, the name in some instances stands for many choice varieties, mostly desirable.

Twenty-five First-choice Hardy Garden Perennials.

<i>Anemone Japonica</i> , in variety.	Peony, in variety.
Crocus, in variety.	Lily, in many species and var's.
<i>Dianthus deltoides</i> .	Phlox, Upright, in variety.
<i>Dicentra spectabilis</i> , or Bleeding-Heart.	Phlox, Creeping (Moss Pink), in species and varieties.
<i>Chrysanthemum maximum</i> .	Plantain-lily (Funkia), in species and varieties.
Day-lily, yellow (Hemerocallis).	Poppy, Perennial.
Delphinium.	Pyrethrum, in variety.
<i>Eutelia Japonica</i> , in variety.	Sedum, Showy (<i>Sedum spectabile</i>).
<i>Helianthus multiflorus plenus</i> .	<i>Spiræa palmata</i> .
Hyacinth, in variety.	Tulips.
Iris, or Flower-de-Luce.	<i>Veronica subsessilis</i> .
<i>Lychnis viscaria fl. pl.</i>	<i>Yucca filamentosa</i> .
Narcissus, in variety.	

Twenty-five Second-choice Hardy Garden Perennials.

Achillea (Milfoil).	Lily-of-the-valley.
Anthericum.	<i>Lychnis chalcidonica</i> .
Aquilegia.	<i>Monarda didyma</i> .
Autumn Monk's-hood (Aconitum).	Pea, Everlasting.
<i>Aster Amellus</i> .	<i>Primula elatior</i> .
Campanula, in species and varieties.	<i>Pulmonaria maculata</i> (Lungw'rt).
Hepatica, or Liver-leaf.	<i>Sanguinaria Canadense</i> .
Candytuft, Perennial (Iberis).	Scilla, or Squills.
<i>Clematis tubulosa</i> .	Spiræa, in species and varieties.
<i>Gaillardia cristata grandiflora</i> .	Sweet-William.
<i>Helianthus ogyalis</i> .	Tradescantia.
	<i>Vinca minor</i> (Periwinkle).
	Violet, in species and varieties.

SELECT LIST OF RELIABLE EASILY-GROWN TREE-FRUIT.

Apples.

Winter:	Winter.*
Yellow Transparent.	Baldwin, for market.
Primate.	North'n Spy, m'k't and dessert.
Red Astrachan.	R. I. Greening.
Sweet Bough.	Roxbury Russet, late-keeping.
Autumn:	Talman Sweet.
Alexander (Fall Pippin).	King (Tompkins Co).
Fameuse, or Snow.	Twenty-Ounce.
Gravenstein.	Seek-no-Further.
St. Lawrence.	Wagner.
Oldenburg.	Crab:
Pumpkin Sweet.	Transcendent.

* For western New York, Prov. Ontario, Michigan, etc.

Pears.

Summer:	Autumn, cont.:
Bartlett.	Bosc, double-worked on Louise Bonne.
Giffard.	Bonne.
Autumn:	Winter:
Tyson.	Anjou.
Duchesse (Angouleme).	Lawrence.
Boussoc.	Winter Nelis.
Louise Bonne.	Easter Beurre, for very late.
Seckel.	

Cherries.

Heart:	Duke and Morello:
Black Tartarian.	Early Richmond.
Coe's Transparent.	Montmorency.
Windsor.	Reine Hortense.

Plums.

Bavay's Green Gage.	German Prune.
Bradshaw.	Lombard.
Coe's Golden Drop.	Botan, or Abundance.

Peaches.

Hyne's Surprise.	Crawford Early.
Mountain Rose.	Crawford Late.
Early York.	Stump-the-World.

Apricots.

Harris.	Rea's Mammoth.
Acme (Shense).	Apple, or Orange.

SELECT LISTS OF RELIABLE EASILY-GROWN SMALL FRUITS.

Grapes.

Green Mountain (Winchell), green.	Delaware, red.
Concord, black.	Moore's Early, black.
Worden, black.	Eldorado (for amateurs), green.
Brighton, red.	Foreign grapes for forcing:
Catawba (rather late), red.	Black Hamburg, white.
Woodruff, red.	Red Chasselas, red.
Niagara, white.	Alexandria, white.

Blackberries.

Ancient Briton.	Taylor.
Kittatinny.	Erie.
Snyder.	Lucretia, Dewberry.

Currants.

Red Dutch.	Cherry.
White Dutch.	Fay.
White Grape.	Black Naples.

Gooseberries.

Whitesmith.	Downing.	Houghton.
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Raspberries.

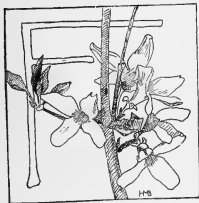
Red:	Yellow:	Blackcap:
Hansell.	Golden Queen.	Souhegan (Tyler).
Cuthbert.		Ohio.
Turner.		Gregg.
Marlboro.		

Strawberries.

Bubach (pistillate).	Sharpless.	Crescent (pistillate).
Wilson.	Cumberland.	Parker Earle.
Haverland (pistillate).		

WHAT THE AUTHORITIES SAY ABOUT COMMERCIAL FERTILIZERS

FOR THE LAWN, THE FLOWER-BORDER, THE GARDEN, AND THE ORCHARD.



OR fifteen years, more or less, the editors of this paper have been free users of commercial fertilizers and chemicals. In some cases we were disappointed in the results; in others we noticed striking, and often remarkable effects—effects that astonished not only ourselves, but all to whom they were pointed out, or who had a chance to observe them. On the whole we are satisfied that in their proper places fertilizers are a decidedly good thing. If we were compelled to operate without them, our enjoyment of outdoor operations, and our enthusiasm in horticultural pursuits, would be materially impaired, even if we concede that the abundance and cheapness of fairly good yard manures in this vicinity has been an inducement for us to rely very largely on that kind of plant-food, and much less than formerly on chemical fertilizers. But we do not feel even under these circumstances, that we can get along without them entirely. We have been anxious to know the experience of leading horticulturists with such commercial manures. In the following we present their replies to our inquiry:

PARK SUPERINTENDENT PARSONS ON LAWN-MANURING.

For use in the city of New York, I do not feel prepared to say that I would use artificial fertilizers when I could obtain well-rotted stable or barn-yard manure that had been properly composted. I do not consider that such manure is specially offensive to either the eye or nostrils. The use of fresh manure on lawns around or near houses is objectionable.—SAMUEL PARSONS, Superintendent of Parks, *New York City*.

CEMETERY SUPERINTENDENT NICHOLS FINDS CHEMICAL FERTILIZERS OF BENEFIT.

My experience has caused me to believe that whilst chemical fertilizers are of great benefit, yet their lasting qualities are not to be compared with well-rotted horse-manure. At Fairmount Cemetery we have used phosphate with good results. We apply it early in the spring so that the rains will give the grounds the needed fertilizing to obtain a good, healthy growth of grass. Where it has been applied, the growth of grass is notable, and

has a fresh appearance. We generally apply about one ton to the acre. The cost of the phosphate is \$32 per ton, less 10 per cent. In case of using manure we would probably use about 50 loads of manure to the acre, and to get this delivered at our cemetery would cost about \$1.50 per load, which would be much more expensive than the phosphate. Yet we must bear in mind that the lasting effects of manure will be much greater than the phosphate.—CHAS. NICHOLS, *Newark, N. J.*

CEMETERY SUPERINTENDENT SIMONDS IN FAVOR OF BONE-DUST.

We used for a number of years a compost made by mixing manure, leaves and muck with very good results save the exception of the introduction of a good many weeds in our lawns. On account of the weeds, we have lately been using a commercial fertilizer consisting principally of ground bones. This does not seem to produce so marked a result as the compost, but is fairly satisfactory. Some of our lawns have remained in good condition over ten years, without the use of any offensive manures, and I believe the use of any manures can be wholly dispensed with around dwellings. We have used 300 to 500 pounds of bone-dust per acre.—O. C. SIMONDS, *Chicago, Ill.*

JOHN THORPE SPEAKS OF QUICK EFFECTS.

We have used a certain brand to some extent, and find, if used in small quantities, it is very good. It gives the plants something to work on right away, while it takes some time before stable manure shows its effects. In starting our "Jack" rose houses we always give the ground a slight sprinkling before putting stable manure on. We also use this fertilizer in our carnation beds, and also for pot-plants, when repotting them. For top-dressing and repotting we use a five-inch poftul to a wheelbarrow of soil.—JOHN THORPE, *Pearl River, N. Y.*

EBEN E. REXFORD USES FOOD FOR FLOWERS.

My experience has been confined chiefly to the "Food for Flowers," manufactured by an eastern fertilizer company. In using this preparation, to the exclusion of others of a similar nature, I have been governed by the "stick-to-a-good-thing-when-you-get-it" principle. There may be other preparations of equal merit, for all I know, but this one has worked so well with me that I have not cared to try them. It is clean, inodorous, and easily applied, and produces prompt and satisfactory results. It is not a mere stimulant, but a real "food." I have used it on plants that required repotting, whose foliage was pale in color and lacking in vigor because of the little nutriment left in the soil, and very soon after

applying it a new and vigorous growth resulted. It seems to be prepared on a scientific plan, and to contain the elements necessary to a healthy plant-growth.

I have advised a great many persons to use it on house and greenhouse plants, and I have yet to hear a complaint against it. For those living in towns and cities it "supplies a long-felt want"—to use a handy old phrase, because such persons find it difficult to obtain natural fertilizers. There is another reason why I not only use this "food" extensively in my own greenhouse, but advise its use to others. Everyone who makes use of barn-yard manure knows that after a little the soil in the pot becomes infested with little white worms. They breed in the manure. Not a day goes by that does not bring to me letters from parties who say that their plants are being injured by these worms, and asking how to get rid of them. Of course they do not *always* come from manure, but in a majority of cases they do, and I have of late advised complaining amateurs to use the "Flower Food" instead, as it never breeds worms, and is, so far as I can see, quite as effective and satisfactory in its results on most plants as barn-yard manure.—EBEN E. REXFORD, *Wisconsin*.

DR. HOSKINS A FREE AND JUDICIOUS USER OF FERTILIZERS.

I have been using fertilizers on my fruit farm and market-garden very freely for 25 years, often buying a car-load at a time, and have found the standard brands to be as reliable, and on the whole, quite as cheap as the stable manure from neighboring villages. Yet I buy a good deal of the latter, partly in the way of trade. I should not consider that I was risking anything by using a first-class fertilizer exclusively on any crop, unless, perhaps, on celery.

An advantage not sufficiently considered is the freedom from weed-seeds. To be sure, the rule is to hoe before we are weedy; but under currant and other fruit-bushes, which I grow between trees in my young orchards, I had just as lief not sow any weed or grass-seeds. As to lasting effect, I consider the fertilizer that yields up all its value the first season to be the best, or should do so if I knew of any besides the nitrous salts. But on my dairy farm I have ample proofs that it takes at least three years to get back all there is in our commercial fertilizers. It is only when an unprofitably small quantity is applied, that the proof of this statement fails to make itself known. As to quantities applied per acre, a ton annually is none too much for the market-garden. On the farm I would not hesitate to apply the same quantity, when made without the nitrogenous element; but with it there would be a loss. So after considerable experimenting, I prefer for an ordinary rotation of potatoes, grain and grass to give only the phosphoric acid and potash for the whole three years at once, and add the nitrogen salts each year, according to the supposed need. That word "supposed" indicates our most injurious lack, an absolutely correct knowledge of the needs of the land. Only by degrees, as we get to know our friends, can we attain to knowledge of what the different

lots do really need, and it is a life-long and very interesting as well as profitable study. It is just like studying human character, except that the will element is excluded in the case of the land.—DR. T. H. HOSKINS, *Vermont*.

ROBERT NIVEN USES FERTILIZERS FOR CELERY.

I have raised over \$2,000 worth of celery to the acre by manuring at the rate of about 15 cords of manure and two tons of fertilizers. The plants are set seven inches apart each way, growing over 100,000 plants to the acre. I find fertilizer and water in abundance indispensable factors in growing large crops. The results are very satisfactory, and I find the ground growing better crops every year.—ROBERT NIVEN, *Providence, R. I.*

S. D. WILLARD THINKS HIGHLY OF WOOD-ASHES.

We have made no tests in our orchards for the purpose of deciding upon the relative merits and economy in use of the different manures referred to. Barn-yard manure composted with dry swamp-muck, and Canada wood-ashes, I have used for some years with satisfactory results.—S. D. WILLARD, *Ontario county, N. Y.*

D. W. BEADLE ALSO IN FAVOR OF WOOD-ASHES.

My business has been that of a nurseryman growing fruit-trees, not fruit for market. My soil was deficient in lime, therefore about once in five years I applied slaked lime at the rate of 50 bushels to the acre. I also applied ashes, unleached—ashes of beech, maple and elm—at the rate of 50 bushels to the acre once in three years. I did not use any commercial nitrogenous or phosphatic manures. The results of these applications were highly satisfactory, but as I also used barn-yard manure freely, and put on ashes and lime to supplement the other, I cannot make any comparison as to benefit or cost.—D. W. BEADLE, *Ontario, Canada*.

JOHN CRAIG USES VARIOUS FERTILIZERS.

An abundant and cheap supply of barn-yard manure and unleached wood-ashes precludes the necessity of purchasing chemical fertilizers in this vicinity. In orchard work my practice is to use barn-yard manure and wood-ashes in alternate years, using 12 to 18 tons of the former and 50 to 75 bushels of the latter each application. I have found nitrate of soda and muriate of potash of great service in hastening the growth of vegetables, and strengthening and improving the foliage of strawberries.—JOHN CRAIG, *Central Experiment Farm, Ottawa, Canada*.

W. E. WELD GROWS POTATOES WITH FERTILIZERS.

I find chemical fertilizers a perfect substitute for barn-yard manure, but more especially so when the soil is in a suitable mechanical condition. And to secure this condition, I used both according to the needs of soil. I find chemical fertilizers cheaper than farm-yard manures, cost and lasting effect considered, provided always that the mechanical conditions of the soil are right. I have used nearly all brands of phosphate in varying quantities, from 200 pounds to one ton per acre. I once applied

broadcast in early spring 400 pounds of kainit per acre on inverted sod and very ordinary soil, and obtained 400 bushels of potatoes per acre. I will add, that as a rule I have not found the use of superphosphate alone to pay in growing potatoes. All these remarks are intended to apply to garden vegetables in general.—W. E. WELD, *Steuben Co., N. Y.*

WHAT T. V. MUNSON IS IN FAVOR OF.

In tree-growth, cotton-seed or cotton-seed meal is a much more convenient and economical fertilizer than barn-yard manure, providing the soil is already well drained and porous; but in a cold, stiff soil the barn-yard manure gives best results as compared with chemical fertilizers used alone, so far as I can discover. However, I have not made a crucial test of this matter. I have used here on sandy land in my nursery, cotton-seed meal at \$20 per ton, that appears to give better results for cost than anything else, even when we get stable manure at 25 cents per ton. An evaporated product from the glue and tannery works, costing, laid down here, \$20 per ton, comes next to cotton-seed meal. Wood-ashes and the ashes from the lime-kilns, when fresh, produce excellent results in our sandy soil. Have used some bone-meal, but its effects are slow, apparently better in the bearing vineyard and orchards than elsewhere. It is most expensive. Cotton-seed meal is used in melon-hills, along nursery rows, etc., at the rate of from 200 to 1,000 lbs., per acre; tannery product at about same rate, with less wood-growth, but very effective; ashes, if unleached, at the rate of a ton to the acre. This, combined with either the cotton-seed or tannery product makes quite a complete fertilizer for worn-out soils. The stable manure is used at the rate of 50 to 100 one-ton loads per acre, and costs, when distributed from 50 to 75 cents per load. The lime-kiln product can be distributed at about same cost as the stable manure, but needs additions of other ingredients, such as cotton-seed meal and bone, to make a fine fertilizer for thin sandy soils.—T. V. MUNSON, *Texas*.

BONE-DUST AND ASHES USED FOR FRUITS BY J. F. WHITE.

For fruits I use wood-ashes and ground bone with good results, also barn-yard manures. For vegetables I use a fertilizer manufactured in Buffalo. This has given me results equal to average barn-yard compost, and where one has to buy and haul compost any distance, the fertilizer is cheaper. As to the lasting effect, I think manures of some kind must be used every year. Of the fertilizer I use from 300 to 500 pounds.—JOHN F. WHITE, *Livingston Co., N. Y.*

H. R. KINNEY GROWS FINE VEGETABLE CROPS MOSTLY ON CHEMICAL FERTILIZERS.

I have proved to my own satisfaction that both fruit and vegetables can be grown to perfection on chemical fertilizers without the use of barn-yard manure, and for a number of years in succession on the same field. Several years ago we tried raising vegetables on chemical fertilizers, and my market-gardener friends thought it would take only a short time to convince me of the im-

practicability of the scheme. But now after having treated one piece with chemical fertilizers for four years, raising two crops a year, the last season beets and celery, and both perfectly satisfactory, I have no reason to doubt the possibility of growing excellent crops without the use of barn-yard manure. We have been using less and less stable manure on our small fruits for several years, until at the present time we are using none on grapes, very little or none on raspberries and blackberries, and none on strawberries. When we come to the comparative cost of chemical fertilizers and stable manure there are many things to be considered. It is unnecessary to speak of the fertilizer made on the place, or to compare it with chemical fertilizers, but to look to the comparative cost and value of what we must buy to supplement the home supply. My own practice is to draw what stable manure I can get for a fair price during the winter when we have men and horses that are not busy, and then buy fertilizers, using both the manufactured and agricultural chemicals. And while we are only three or four miles from plenty of stable manure, we usually pay twice as much money for fertilizers as for manure. We also use fine ground bone, muriate and sulphate of potash, nitrate of soda, and sulphate of ammonia. The amount used and the lasting effects depend on the crop and the chemicals used, but the market-gardener is not looking for more than two crops from one manuring, and he wants them both in one season. I have used as high as two tons of fertilizer to the acre in a season, for two crops, with very satisfactory results, but have the best results when the fertilizer is applied at two or three times during the season. Just now there is a great deal being said about home-mixing of the fertilizers, and while we use the raw materials some, we always apply them separately and almost always broadcast.—H. R. KINNEY, *Mass.*

FRANK WHEELER'S EXPERIENCE WITH FERTILIZERS.

I have used chemical fertilizers alone, and in connection with barn manures, for ten years or more. Grapes, the only fruit that I grow to any extent, I have fertilized entirely with chemicals for more than ten years, with satisfactory results. In market-gardening, where I use it the most extensively, it is in connection with barn manure of my own make, from highly grain-fed milking-stock mostly. I think I get the best return for my outlay by using them together, than with either alone. Asparagus I have grown on chemicals continuously for seven years, on poor sandy land, that had not been cultivated previously for years, with better results than with barn manure, on the same land and with same treatment otherwise, and more cheaply than if I had bought barn-yard manure, and allowed a fair price for my labor in handling it. I have always bought the chemicals and mixed them as I thought best, differently for different crops. My formulas called for much more potash and a little more nitrogen in proportion to phosphoric acid, than nearly all of the ready mixed goods on the market contain. I apply from \$15 to \$20 worth

per acre per year to grapes, and as high as \$40 per acre per year to asparagus and other heavy feeders. Almost all of it is applied broadcast, and harrowed in thoroughly. For most garden and farm crops, I think I get the best returns for the outlay where I use about half fertilizers and half barn-yard manure.—FRANK WHEELER, *Mass.*

WALTER F. TABER LIKES QUICK EFFECTS.

I find barn-yard manure is necessary to give the vegetable matter and to insure porosity of the soil, if not supplied by turning under green crops. Chemical fertilizers afford the best and surest means of supplying plant-food to the crop because of their soluble condition. Are they as cheap as barn-yard manure or cheaper? I believe them to be cheaper, taking into account the cost of applying. How do they compare in cost for results obtained and in lasting effect? Sufficient vegetable matter being incorporated with the soil by the applications of barn-yard manures or the plowing under of green crops, I get better results in growth by applying chemical manures than by additional barn-yard manures at same cost, and also in quality in some things, especially potatoes. I never take into consideration the lasting effects when applying chemical fertilizers, as I am looking for immediate effects; but if from any cause the crop should fail to use the fertilizer, I know where it is, and that the soil will return it for the succeeding crop. I use high-grade complete fertilizers and nitrate of soda. For potatoes I apply from 800 to 1,500 pounds in the drill over the seed-pieces. I believe best results will be obtained by using it at two different times—in the drill at planting, and when the tubers begin to grow. For corn I apply from 500 to 800 pounds per acre, and for other vegetables as much as seems necessary, perhaps an average of 1,000 pounds or more. I use chemical fertilizers entirely in the growing of the strawberry plant the first season, thus avoiding seeds and weeds that always are produced from stable manures. I also use chemical fertilizers on my grapes to insure quality. Would use stable manures to increase growth of vine if necessary. I grew the past season on 90 square rods of land 200 bushels of R. N.-Y. No. 2 potatoes, or at the rate of 354 bushels per acre. From $\frac{3}{4}$ of an acre I sold 13,000 ears of sweet-corn, and averaged over \$500 per acre from my strawberry-ground of $4\frac{1}{2}$ acres.—WALTER F. TABER, *Poughkeepsie, N. Y.*

MANSFIELD MILTON SAYS, APPLY WHAT THE SOIL NEEDS.

It is only by experiment that any market-gardener can determine what fertilizer is beneficial on his land. What may be of considerable value to one may be of little use to another on different soils and different crops.

My soil may be deficient in phosphoric acid, while my neighbors may be well supplied with it, but deficient in potash; therefore it would be needless for me to expect to realize as much benefit as my neighbor from a fertilizer having a large percentage of potash but deficient in phosphoric acid. For the last 18 years I have used commercial fertilizers more or less in the production of fruits and vegetables, and while in some seasons I could not see I had reaped any benefit from them whatever, in other seasons they have paid me large profits on my investment. Last year, although remarkably dry during the months of July, August and September, I used a fertilizer on my tomatoes, parsnips, carrots, onions, beets and pickle cucumbers, which gave better results than anything I ever tried before, the formula of which was: Ammonia, 3 to 8 per cent.; available phosphoric acid, 6 to 8; sulphate of lime (from bone), 20 to 25; potash as sulphate, 8 to 10. I used this in two applications, one at seed-sowing time and again when crops were half grown.

The above fertilizer, with the addition of 200 pounds of nitrate of soda to the acre, is excellent for early cabbage and cauliflower, but for late crops of the same the nitrate of soda has no apparent effect. I do not consider these fertilizers have any effect on the crops the second year, nor do I think they pay unless used on ground which has been kept in a high state of cultivation, and well-supplied with either animal manures, or a good crop of clover plowed under. The best fertilizers for strawberries, I find, are pure ground bone finely crushed, and wood-ashes, both of which with me are lasting in their effect, often better the second year than the first. In this connection I may state that the only fertilizer I have found to prevent club-root in cabbage is clover sown in the spring with some grain crop. After harvest allow the clover to make as strong a growth as possible, and plow it under just before freezing weather. If early varieties are used, give an application of 200 pounds per acre of nitrate of soda. Too many gardeners are not liberal enough in their application of commercial fertilizers. I have often seen 200 pounds per acre of apparently no use, while an application of half a ton on the same land and similar crops paid big profits. But under no conditions would I advise the use of any of these fertilizers largely until they have been tested on small areas, to determine the brand most suitable for their particular soil. I find that all succulent vegetables of which the leaves or roots are used require manures rich in phosphoric acid; while all fruit-bearing vegetables, such as tomatoes, egg-plants, melons and cucumbers, require such as have a high percentage of potash.—MANSFIELD MILTON, *Ohio.*



WHAT VARIETIES ARE PLANTED

IN SUCCESSFUL MARKET-GARDENING.



THE PAST year was exceptionally dry here. From March 13 to November 15 my help lost no appreciable time on account of rain. Wells became dry; people borrowed water of those better favored; those having wells dug larger ones in more promising places after consulting the "witchhazel-

man"; clay gardens could not be made in spring, and in some cases were not made at all; the supply of milk and the size and quality of small fruits and vegetables were sensibly affected, while all kinds of tree-fruits were so cheap and abundant as to make it a question whether the growers were not in misfortune. In spite of all this, there was a sense of plenty, and the wonder was that crops did so well with so little water.

ASPARAGUS goes far to cover the cost of spring work. The first outlay is considerable, and so is the annual expense for manure, but this once incurred, one is never sorry. It often seems as if the money from a permanent plantation of any kind were the easiest money made. Conover Colossal and Moore Cross-bred are the sorts grown here. It is claimed for the latter that it sends up fewer small shoots than the other. This is a point with the packers, who do not want to make any second-class goods; but to one who sells to the consumer it is some pleasure to have something for all sorts of customers. Barr Mammoth and Palmetto will be tested later.

PEAS.—I plant Alaska for first and earliest. It does not rot, no matter how soon you get it into the ground. American Wonder is liable to rot if planted with Alaska, and is sure to come before you are quite done with the earlier and poorer pea. I know of no pea that is such a joy as the American Wonder planted closely on rich and suitable ground. Premium Gem, when you can get the true dwarf sort, is quite as good as American Wonder, and later. Horsford Market Garden is another delicious sort, and does better for very late eating than American Wonder planted for that purpose. Large quantities of the latter have been grown here for the canners; but the first cost for seed is a considerable item. Peerless and other sorts sold

cheap are having a trial. The crop of celery, cucumber, cabbage, or Hubbard squash following the earliest peas is often worth more than they are.

ONIONS I raise in the new way, and know no other. People who see my transplanted onions often wonder at the beautiful "stand" I have. Yellow Globe Danvers and Spanish King are good enough for me. Early Barletta is a delightfully little early white sort, and just fills a woman's eye bent on pickling. It is rather pleasant nibbled with salt at the table.

SQUASHES.—There is small place for summer crook-necks. Hubbard is the standard here, and is raised in car-load lots. Twenty-pound specimens are sometimes shown, but mine do not weigh over ten pounds. Pike's Peak, or Sibley, was a surprise and joy last year, being true to form and color, sweet and very enjoyable. Fordhook is smaller than I anticipated, not true to form and a little stringy when ripe; not bad but far behind the best. I shall buy no second-rate sweet-potatoes as long as I have Pike's Peak squash in the cellar.

CELERY.—I have raised Boston Market, Dwarf Golden Heart, Kalamazoo, White Plume, Giant Pascal, Golden Self-blanching, Giant White Solid, New Rose, Nellis Self-blanching, and a sort sent me by our congressman. Of all these, White Plume is the one to sell and Henderson New Rose the one to store and eat. There is little use in raising it to sell, unless you are determined to be a horticultural exhorter at your own expense. It keeps well, and grows more crisp, nutty and toothsome when stored. The pink edges of the creamy stalks are pleasing to the eye, while the greenish stalks are tender and sweet to the base of the leaflets. When eating it, I thought I was eating the best celery I had ever tasted. Nellis Self-blanching and Kalamazoo are particularly coarse varieties. Golden Self-blanching is especially light and spongy, otherwise it is an ideal sort. I have no muck in which to raise celery, and of course it rusts more or less. New Rose is the only sort that does not rust. This is going to be my celery for home use.

BEANS I don't know, except in a small way. I have raised Limas for five years by planting them in the forcing-house about May 1 and transplanting them as soon as danger of frost was over. I have found a small quantity remunerative. Of all the Limas advertised, Bliss Extra Early has suited me best. Year before last I was surprised to see King-of-the-Garden earlier than Bliss. Last year it proved a heavier and later cropper. Henderson Bush Lima has been tried here for three years. A considerable breadth was planted early in May last year. It was a good bean-year, and there would have been a good stand if the plants could

have been evenly distributed. They probably yielded as well as they ever will in field-cultivation. The quality is not nearly as good as that of the pole sorts. The canner who raised them found the cost of shelling them too great for his purposes. Lazy Wife pole-bean was slow to germinate, and slower at climbing the poles. The yield was small, and as a shell-bean we found it rather strong. Another pole-bean, a large and coarse-looking sort, sometimes called Champion or State Lima, but no true Lima, was also tried and found nice, even after the pods had become dry on the poles. I shall not experiment with any pole-beans except Limas next year. Burpee New Bush Lima must have a trial.

TOMATOES.—Ignotum was the largest, earliest and most productive I had last year; and I had Favorite, Beauty and Stone. From one year's trial I think Atlantic Prize and Early Ruby utterly worthless. They behave alike, if they are not identical; and what is the use of small, early, sickly sorts when one has a greenhouse to give the better sorts an early start? A moderate crop of large, smooth tomatoes, grown on plants started in January and twice transplanted into pots and cans before they were finally planted outdoors, have sometimes averaged a dollar a bushel. There are some uncertainties attending this method of culture, and the hotbed folks sometimes "get there" in time to spoil the market. Our superheated September brought the main crop forward in a heap, and made it a drug and loss in some cases.

Stone is a solid tomato, and though started later than the other large sorts, it was made to give fruit quite as early. After the plants had made a fair growth, they were pinched vigorously to limit the number of fruits, but I could not see that the main crop was hastened. The darker color of Beauty makes it a favorite with canners.

RASPBERRIES.—Tyler and Souhegan, the earliest and best blackcaps, have been driven out of the gardens hereabouts by a trouble I have no name for. The oldest plantings seem to outlive the younger. I am trying the Palmer. The canners will not have the later, larger and healthier Ohio; it is too red in the bottle. I set some Marlboro when it was a novelty, and, though the first public verdict was against it, I have added to my patch from time to time, and am not sorry. It is early, of good size, and bright-looking. It needs the constant stimulus of stable-manure. It is not even quite hardy, and I think best to cover it in winter. I am alone in my choice in this. Cuthbert is more popular, for it is more vigorous and seems to require less manure.

BLACKBERRIES.—I can never speak knowingly of some blackberries as long as my garden is in a valley where the winter temperature always goes below zero, and sometimes to 30° to 34° below, killing our petted things in sheltered spots, and either killing or injuring almost everything in the open. Lawton, Kittatinny, Stone Hardy, Western Triumph and Erie have been tried and found wanting. Snyder, Ancient Briton and Taylor

Prolific are the most reliable, taken in their order. There have been years when Ancient Briton seemed to be the hardest, largest, most prolific and best-flavored of all. It is always preferred as a dessert fruit; but clean cultivation and special manuring do not enable me to keep it in the front rank for profit. It is later than Snyder, and if drouth does not arrest development, as it often does, the crop has to go to a sated market and compete with the wild berries. Taylor Prolific is a good berry, and I have seen it justifying its name, but not when growing in solid rows as do my Snyders. I think it might do better if kept in distinct hills, well apart, and if no intermediate suckers are allowed to grow. Snyder is my sourest and surest berry. If well-developed and four days' ripe, it is good eating; but a man with zoo crates does not want four days' ripening on his hands any one day.

I keep my briar-patches clean with plow, hoe and cultivator. A neighbor of mine who writes very freely, and sometimes inspiringly, has told his readers more than once that the blackberry now can be left pretty much to itself. I shall want to go home when my briars get into that state!

CURRANTS.—Last year was a splendid one for this fruit. Fay Prolific was, for once, really delicious. It has been planted extensively here for the canners. It can be picked for three-fourths of a cent a pound—one cent is the common price. Black currants sell for double as much in the cities as red currants at the canneries. Lee's Prolific is a better yielder and later than Black Nipples.

MUSKMELONS.—'There is no money here,' you say. Well, I have raised this delicacy for six years, limiting myself to from 6 to 100 hills a year, and I have not dared to plant on the best soil for melons either. I have tried Christiana, Early and Improved, Perfection, Princess, Surprise, Prolific, Nutmeg, Skillman Netted Gem, Emerald Gem and Golden Gem, and thought each about the best in the world. I have also tried Early Hackensack, Old Hackensack, Montreal, Champion Market, Stairn Favorite, Vick Early Nutmeg, Pineapple, Ward Nectar, Bird Cantaloupe, Osage, Miller Cream, Baltimore and Banana, and not thought them "the best in the world." Some pest destroyed my vines of winter pineapple last year before they were two feet long. We test a good many of the doubtful looking specimens, and eat all of the ideally perfect ones, and save the seeds, too.

I am reluctant to commit myself to the idea that Emerald Gem is delicious beyond compare, it is so small and so difficult to make grow like some other good sorts. I am sure that one can't afford to grow it for any austere and luxury-shunning market. Does it pay to raise Perfection and Princess melons at two and a half cents a pound wholesale? I scarcely care to answer.

GRAPES.—There is no more attractive reading than what our enthusiastic experimenters have to say about their long lists of grapes. In 1855 there were some Isabellas in these gardens, a few Clintons and one Con-

cord. The first never seemed to get very ripe; the second never was sweet; and the last was a long-jointed and partly disappointing affair, but, on the whole, promising enough to make a slight venture on. Since then the hunt for a perfect grape has gone on; and now my nurseryman has 90 different sorts for sale, and half of them have been tried here. While we grape-men have been testing, tasting and talking to one another about our novelties, the democracy of grape-growers have planted and sold Concord till they have filled the market with cheap grapes and educated the public taste. The Worden seems to have stolen in at a side entrance, with the suspicion of being nothing but a Concord under a new name. The number of people who demand "large black grapes" is beginning to be noteworthy, and I always suspect such folks of being really in search of ConCORDS without knowing it.

My market for grapes has been revolutionized within four or five years. Previous to that time I could ask more for red and white grapes than for black, and get it, too; now they have to take the price of black ones, and stand back till they are called for. This has been true even of Delaware and Niagara. I was saying to myself, "Go slow in the matter of white grapes"; and now AMERICAN GARDENING has said the same thing to everybody. You may well say that, when a Concord-grower is delighted to sell a better grape than the Niagara for ten cents per 5-pound basket wholesale.

I had five tons of grapes last year, and while that amount of Concord might have been grown on a much smaller yard than this, I am sure that I am much better

off for my greater spread and variety. A man with a market ought to have fruit early and late, and it should be of the three colors—red, white and blue, or purple, green and black, as some people name them—and the quantity of each should be, some red, a little white, and a good deal of blue Wordens for this place. I begin with Hartford Prolific, Wyoming Red and Lady; next come Worden, Brighton and Diamond, and last, Concord, Agawam and Niagara. You may think Niagara as early as Diamond, but it is a mistake to cut it as soon as people will begin to take it. Lady is really a very unsatisfactory white grape. It is irregular in bearing, it cracks badly, and you lose on it whether you cut it early to save waste, or later to insure sweetness. I am inclined to try Green Mountain for an early white. A good black grape is very much wanted to take the place of that wasteful Hartford Prolific. Who will develop it? If there were any way to make Moore's Early a heavy cropper, the Prolific might go. Brighton clogs the appetite after a while, and I don't see much use for large black sorts ripening with Worden and Concord.

Grapes were abundant, perfectly healthy and delightful in quality, each according to its sort. I must except Norfolk, a large red sort that shriveled while I was waiting for it to become ripe, and was harsh and undesirable. Whether my two applications of Bordeaux mixture were of any use that very, very dry season, I cannot say. They did not prevent the blight or rust which affects the Manchester strawberry.

Madison County, N. Y.

ALFRED BARRON.

A FLOWER-GARDEN IN THE GULF STATES.

EASILY-GROWN FLOWERING PLANTS FOR DIFFERENT SOILS.



SOME timid souls here, weary of profitless labor, have given up flowers "because it is no use to try to raise them," or "the books are all wrong," or else folks fail to understand them.

The books are all right for the north, east and west, but they who live in the south need special directions. Those who live north of the

Gulf States will find most of the cultural directions in AMERICAN GARDENING perfectly practical; but flower-growing in the Gulf States is almost a distinct art. We have, generally speaking, three kinds of soils, the sandy, which predominates, the clayey and the mucky. There are spots of rich hammock, where the thrice-blessed owner can have everything he wants, provided he works for it. Every root must be eradicated before the lighter filaments of shrub and flower enter the ground, or the latter will soon be overrun by the coarser sorts. Then mingle a few fine decorative trees with the smaller growths, taking care that the garden be not too shady.

A striped oleander, white and pink, the Japanese hybrid catalpa, the golden-leaved poplar, the camphor tree, a magnificent evergreen, perfectly hardy here, a Himalayan fir (*Abies Smithiana*) and the royal palm will all flourish in this soil and afford sufficient shade for a hundred square feet of garden.

The Bourbon, Bengal and Banksia roses will be found most successful, and among them are three grand Malmaisons, which any florist will furnish; these are the climbing hermosa, the old agrippina, always to be relied on, and the monthly Cabbage, a good old sort discarded for newer and often inferior sorts. Take any of the polyanthas and certain teas, as the Bride, Catherine Mermet, Meteor, Captain Cook, Waban, Mme. Martha du Bourg and Jeanne Guillaumez.

Plant jasmines if you have none. Cape jasmines should be set back, but not out of sight, just so that the fading blooms may have the enchantment distance lends. A weeping willow is ornamental and suited to the soil. Where hardy vines are needed, use *Clematis Jackmanni*, deep violet-purple; Duchess of Edinburgh, white, and Beauty of Worcester, a violet-blue, bearing

single and double flowers at the same time. When climbers are needed, there is nothing superior to the moon-flower, the new tuberous-rooted variety being preferred. In small flowers the hardy pinks, verbenas, of which there is a fine giant strain, dahlias, chrysanthemums and gloxinias, the latter showing superb new varieties, *Euphorbia heterophylla* and *E. variegata*, should be tried, also *Clerodendron Balfouri*, a handsome vine.

Low mucky soil is here a paradise for a long range of plants, discretion in planting alone being required. In the wet portions all the aquatic plants will grow as freely as in water, and here bananas, violets, narcissus and crotons run up like weeds. Higher, where the ground is only damp, tea roses are queens of the soil; *Sunset*, *Perle des Jardins*, *Gloire de Dijon*, *Cloth of Gold*, *Niphetos*, *Marquise de Viviers*, *Queens Scarlet* and all delicate tender sorts, are at home and riot luxuriantly. *Torenia Asiatica* is an exquisite low-growing plant with pansy-like flowers; the yellow jasmine, the honey-suckle family, all the lilies, hollyhocks and marigolds find a congenial soil.

In clayey soil plant camellias, magnolias, the tulip-tree, carnations (being careful to keep them shaded), helianthus, larkspur, stocks, chrysanthemums, caladiums, the foliage-beets, heliotropes and jasmines.

The ground, however, must not be all clay, but only clayey. When it is all clay it can be rendered suitable by digging out a bed and filling in with muck, manure, sand and native earth, all well mixed. The hybrid tea and hybrid perpetual roses thrive splendidly here, and should be largely planted. Of new sorts we have had a fine assortment the last season, and we may plant any that strike our fancy. Give the roses a cool situation. Where there is a long stretch of fencing, the Cherokee roses can be used with magnificent effect, and will soon run a hundred feet.

In sandy soil there are more possibilities than are dreamed of by amateur gardeners. Mixed with muck and thoroughly rotted manure, partially shaded from

the western sun, and judiciously watered, a very paradise of a garden may be had at small expense. All bulbous plants succeed here except the aquatics, zephyranthes, Bermuda lilies, gladioluses, the new tuberous moon-flower and tuberoses, will grow and bloom in any situation. I know a garden where they are mingled with the roots of orange trees, and still delight the owner with their lovely bloom and fragrance. Coleus, petunias, primulas, candytuft, pentstemons and summer chrysanthemums are among the more suitable plants for this soil.

The *Manettia bicolor* and any of the passifloras make charming fast-growing vines, though climbing roses should be utilized as much as possible; *Maréchal Niel*, *James Sprunt* and *Salfaterre* being the best for this purpose. Put *James Sprunt* away from the hottest sun; but the other two will do anywhere. *Mary Washington* is an old white rose coming to the front, and worth a place in any locality.

Roses should have been trimmed late in fall. If they were not, let them alone until next season. As you cut the blooms take a long stem, always cutting close to the next eye, but not into it. If you are liberal with your flowers you will find them blooming all the better. Geraniums should be bedded out if possible, as they can not obtain their full luxuriance in pots. Select a partly shady spot, and give a good watering every third day.

Chrysanthemums should be arranged in an out-of-the-way, half-shaded spot, where they can thrive, and prove a delightful surprise when you explore the fall garden.

Hibiscus can be planted in the sun, and there are several sorts, all beautiful and easily grown. The new *Hibiscus chrysantha*, a cross between the hibiscus and abutilon, is highly recommended by florists.

All plants need more water in sandy soil than in any other, as it is more quickly drained, and they grow very dry in a short time. The best time to water is very early in the morning or very late in the evening, the former being preferable.

Florida.

STILLWELL.





As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will be judged only by the practical and useful ideas or suggestions in them. Besides this premium, the gain accruing between readers by the telling of experience should be a sufficient inducement to contribute such notes.

I. LITTLE TWIGS.

A QUICK growth makes delicious vegetables.

VERBENAS may be stuck from slips for a month yet.

ON SANDY SOIL the German Iris succeeds well in grass.

YOU CANNOT get sweet-peas into the ground too early.

HAVE you a *Magnolia speciosa* tree? If not, get one.

AVOID EXTREMES; to pot loosely is as bad as to pot over-firmly.

ARBOR DAY started off on Washington's Birthday in Alabama.

WE have seen poinsettia grown successfully as a window-plant.

WHO BOTHERS WITH tile or other artificial garden edgings nowadays?

CLEANLINESS should be the plant-grower's first law. Order is second to it.

BETTER THAN to crowd your plants in greenhouse and window, have less of them.

THE UMBELLED CANDYTUFT is a native of southern Europe. The original color was purple.

EARLY MARCH is about the best time for starting cuttings of the majority of bedding-plants.

THE "NEW ONION-CULTURE" is bound to revolutionize the growing of that wholesome bulb.

THE PEONY CATALOGUE of Krelage & Sons of Haarlem, Holland, contains descriptions of 500 distinct (?) varieties of peonies.

MY CARNATIONS are very nice, grown in rooms heated by coal-stoves. The largest blossom on my Silver Spray measures $7\frac{1}{2}$ inches around.—E. A. B., Ohio.

NUMBO CHESTNUTS—Samuel C. Moon, of Pennsylvania, promises to send us next season some specimens of the Numbo as large as the cut in his advertisements.

IN THESE DAYS when draperies of various fabrics are so much in vogue for interior decoration, let us not overlook nature's beautiful draping material for outdoor use in magnificent climbing vines.

THE GLADIOLUS is very accommodating. Bulbs set just as soon as the soil can be worked up light do well, and they may be set at any time for ten weeks later with perfect success.

GERMAN PRUNES IN PENNSYLVANIA.—This year (1891) I have grown and marketed at our Erie market 95 bushels of German prunes. They averaged a trifle over \$2 per bushel.—P. WAIDLEY, Pa.

SPIRÆAS AND ROSE-CHAFERS.—I wish to endorse A. S. Fuller's experience, that these insects in the morning, when sluggish, will be found close together on the spiræas, and can easily be collected and destroyed.—BENJ. G. SMITH, Mass.

WHY DID PLINY term the mulberry the wisest of trees? In answer to this question a writer in *Gardener's Chronicle* says the reason is not far to seek; it is because it is late in unfolding its leaves, and thus escapes the sometimes dangerous frosts of early spring.

GRAND RAPIDS LETTUCE.—I have determined to grow the Grand Rapids this season. Although I cannot say it is as nice as the Stonehead Golden or Tennis-Ball, still it is surely a fine-looking sort. It stands up well from the ground, and ought to be free from rot and mildew.—ALFRED BARRON, Madison Co., N. Y.

TOOL FOR RASPBERRY-GROWERS.—An old manure-fork with broken tines can be easily transformed into a useful implement for cutting suckers and weeds out of the raspberry patch. Simply rivet a piece of an old bush scythe, say a foot long, on the outer tines, in the way shown in illustration, and the job is done.

ASPARAGUS FROM ROOT-CUTTINGS.—Give us good strong plants, one or two years old, for starting a new asparagus plantation. Those who wish may use root-cuttings of old plants.

TO PRESERVE POTATOES for the table, so they will not sprout, it is recommended to soak them for ten hours in a two per cent. solution of sulphuric acid in water in a wooden tank. A trial is easily made.



THE HORSE GRAPE-HOE made by D. S. Morgan & Co., was planned by a western New York fruit-grower who had more of hard work hoeing and grubbing grape and berry rows on hand than he could do with the old fashioned hand implements.

THE JEWETT PECAN is now considered one of the choicest varieties, superior perhaps even to Stuart or Van Deman. The kernel is large, and often comes out whole. Nuts for planting are advertised for sale. The only trouble is that seedlings are by no means sure to come true to the parent type.

PYRETHUM ROSEUM, the insect-powder plant is not only most useful and interesting on account of its great value as an insecticide, but it is as handsome a perennial as any one can want for the flower-garden. It is easily grown and a packet of seed can be bought for a dime. The flowers, dried and pulverized constitute the insect-powder.

NATURAL ARRANGEMENT of cut-blooms is to be the rule hereafter at the New York Chrysanthemum shows. A rule to the effect that hereafter all flat arrangements of cut-flowers are to be debarred, was passed by the Society of Florists at a recent meeting. And with the flat arrangements must also go the dirty pots containing exhibition plants. Other societies please copy.

HEAL THE BARKED TREES.—If a tree is barked in any way, go to the cow-yard, get some fresh droppings and bind them on the injured part, and leave for three months. On removing the cloth the wound will have healed and the tree will be saved. A little clay added may prove a benefit.—R. M. SPRAGUE, *Mich.* [Grafting-wax will do as well or better and is cleaner.]

BLUE SUMMER FLOWERS.—Were we asked to name six blue-flowering seed-grown plants we should include Imperial Dwarf ageratum, *Browallia elata grandiflora*, Imperial Blue sweet-pea, Emperor William and Light Blue pansies, *Salvia patens*. By sowing the seed very soon now in gentle heat, good-sized plants for bedding should be ready by May. Verbenas might be substituted for one of the above.

NOTHING FOR SALE.—While the editors are glad to have the assurance that their notes, based on actual garden work on their 13-acre place, are appreciated as asserted by many readers, yet when "B. W. O.," and others apply to us desiring to buy seeds of certain flowers and vegetables referred to in these columns we must reply that it is our rule to sell nothing in that line. All such inquiries are respectfully referred to the numerous advertisers in our columns.

SOME SOUTHERN AIR-PLANTS.—Have any of you tried growing the southern gray moss in the window? I have that and the pineapple air-plant, both tillandsias, fastened to an oak twig—the moss fastened upon the smaller twigs and drooping in graceful streamers, the air-plant carefully wired to the central branch, the whole being fastened at the shady side of a warm window, in such a manner as to be readily detachable for the daily sprinkling which is its food and drink. During the summer I give it a shady place outdoors, and it attracts much attention from its oddity.—ELDER'S WIFE.

II. THRIFTY SAPLINGS.

A Continental Insecticide.—Mr. Cazeneuve, in the *Journal d'Agriculture Pratique*, describes the good effects of sulphuret of carbon, mixed with an equal quantity of vaseline, as an insecticide, especially for the phylloxera. The use of the vaseline is to prevent the rapid evaporation of the sulphuret of carbon, the great objection to this otherwise valuable insecticide. Mr. Cazeneuve has tripled his production of grapes since he adopted the treatment. No phylloxera can be found on the roots of the vines.

James Taplin, an accomplished and widely known florist, died on January 9, at his home in Maywood, N. J., aged 60 years. On orchids and hothouse plants generally the deceased has long been considered a high authority. He was the father of Emily Louise Taplin, who is well known by her delightful contributions to the horticultural press a few years ago, and of two sons who have followed their father's pursuit.

Gaillardia cristata Templeana, on moderately poor soil, is a most constant and profuse bloomer. Low and compact in its growth for the genus, it presents a neat and cheerful appearance. It appears to follow the sun as if absorbing its golden color. A bed of it on the lawn south of any porch seeded, in the morning hours, to be looking away from us; while in the evening the ringed flower-heads peered in our faces like so many pheasants. The sun, setting in the northwest, had drawn them in our direction. The plants were always ready to flower, and when frost came they were full of bloom and developing buds, and ready to continue until Christmas if King Frost raised no objections.—W. C. E.

Akebia quinata.—On poor soils this is but a commonplace vine, but give it good cultivation and it will surprise you. It roots deeply and consequently stands drought. It is one of the first in the spring to greet you with its verdure, and among the last in the fall to desert you, bearing company with *Lonicera Halleana*. For porch-pillar decoration I know of no equal to it. Entirely free from insect pests, closely clothed with refreshing, almost delicate verdure from the base up, it adds a grace and airiness to the porch decoration in strong contrast to *Ampelopsis quinquefolia* so often used, or the bare-stemmed wisteria. Its flowers are more curious than handsome, and bear a slight scent. On old stumps or trees sufficiently old to have roots that are too deeply embedded to rob the akebia of its food, it will in time form a drooping garland and show a handsome mass of foliage.—W. C. E.

Plants for the Window.—We find that by planting several kinds of coleus in five-inch pots they do remarkably well, and make a pretty show. I have six pots in the window before me, all containing different kinds of rooted cuttings of several weeks' growth. My greatest trouble is the "mealy bug"; but I intend to hand-pick the pests every morning. The temperature of the room where the plants are kept never varies much from 70°. I have success with begonias in the same temperature

with dry heat, and have a very choice collection. In a small greenhouse on the sunny side of our house where the heat at night is much less, I have, in small, root-bound pots, a large number of geraniums that excite a great deal of admiration on account of their profuse bloom.—S. T. FULLER, *Me.*

Satisfactory Garden Friends of '91.—*Hyacinthus* (*Galtonia*) *candicans* as the center of a bed of gladioluses produced a highly satisfactory effect. Taller and more vigorous than gladioluses, they added stateliness to the group. They flower about the same time, and if the flower-stalk is cut when past its prime, a new one takes its place, if the bulb is strong. They like the lighter soil, so essential to the gladiolus. They do well among low-growing shrubs if the soil is light and dry, and a little shade seems to keep their bloom more firm and fresh. Some planted in a rose-bed did not do well. The bloom was weak, quickly over, and a few rotted off, which I attributed to a heavy soil and moisture under full exposure to the sun. Some bulbs in a shrubbery which were overlooked in the fall before and remained in the ground over winter, came up strong and vigorous, and bloomed well. They were mulched, however, during winter.—W. C. E.

Early Tomatoes without Greenhouse or Hotbed.—A year ago last fall a chance seedling came up in one of my flower-pots. After the fourth leaf had appeared, I pinched out the top, and as often as the branches were large enough I pinched them again. About April 1 I put the plant in a box large enough to allow me to peg the branches down. As soon as they were strongly enough rooted I cut them off, and when it was time to put them in the open ground, I had five large, strong plants with blossoms. We had tomatoes for use and a few to sell before the market-gardeners had any to sell.—E. A. B., *Ohio.*

Quality and Value.—To-day my attention was called to a barrel of Talman Sweet apples. The specimens were large for the variety, fair, with a rich, glossy surface. What a contrast to the Talman Sweets brought to market by one of the largest orchardists of this section! The latter are small, with a pale, dull surface. The difference in quality, as told by the taste, is even greater than in size and appearance. The barrel of superior fruit came from our English market-gardener, who prides himself on furnishing "the best," and who adds to his soil the wealth that produces it. The orchard of a competing grower is so large that it is impossible for him to dress and feed it so as to produce first-class fruit.—JONES.

Standards of Taste in Grapes.—In the January number of AMERICAN GARDENING I find an interesting communication from George W. Campbell, criticising a previous communication from E. P. Powell. Perhaps you may care for other opinions upon this question, the Woodruff Red grape—a grape which has excited much controversy since its advent. Personally, I do not like its quality—it is too foxy in flavor and I should only eat it as a *dernier resort*. So far as I can judge, this is the

only objection to be urged against it—if objection it be. The few vines I have seen are vigorous growers. The branches are large, the berry above medium if not large, and in appearance it is one of the most beautiful of our native grapes. A handsome plate of them was shown in the exhibit of the Orange County Agricultural Society at the late State Fair at Syracuse, and they attracted more attention, because of their beauty, than any other single plate. So, if we are to grow grapes for profit, I am inclined to think the Woodruff Red will pay very well. The time may come (it has not yet) when by a "consensus of the competent" we may be able to establish standards of taste that will be accepted by horticulturists and eventually by the masses of grape-eaters. Until that time comes, the question of what to plant must be largely settled by the answer to another query "Will it sell?" I do not like the Woodruff Red. Not a member of my family will eat Pocklingtons. We worry down a few Wyoming Reds, until the better ones come, and then we drop them for the season. The Lady, which by the way does admirably in the Hudson river regions, we eat sparingly, because it is early, but it, too, is "foxy," and we want but few of any grapes that have that quality. But these are matters of taste, and "there's no accounting for tastes," as a certain old lady is credited with saying when she bestowed an osculatory address on her cow.

We believe Mr. Long recently spoke highly of the El Dorado grape, grown by him at La Salle. If he has found a spot where that grape will do well, we envy him. In the Hudson river regions, it is a most unproductive sort, but when a few bunches are secured they are of exquisite quality, having a distinct pineapple flavor.—E. G. FOWLER.

Wash vs. Rabbits.—Two years' trial of tarred and oiled paper disgusted me with it, for the tarred paper would blacken the bark and the oiled paper was easily destroyed by storms, and either formed a good nesting-place for insects. Last autumn my orchard of about 1,000 trees was thoroughly washed with the following solution: 1 qt. of soft soap (strong); 3 qts. of boiling water; 2 oz. of carbolic acid, applied with an old shoe-brush. This same solution applied thrice yearly proves a good preventive for borers also. Now, about January 12, no trace of injury from rabbits can be found, though thousands have been killed in this section and "the woods are full of 'em."—R. M. SPRAGUE, *Mich.*

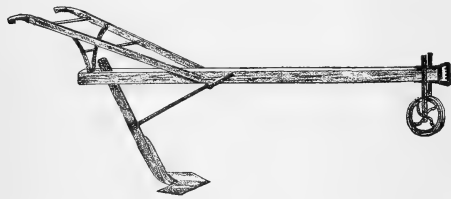
The Wonderful Flower.—Our garden four-o'clock, or Marvel of Peru, is an American plant, one of the flowers that was earliest carried to Europe after America was discovered. It was given the name *mirabilis*, meaning wonderful, because at the time it was found in the West Indies, everything from the newly discovered lands was boasted about on the other side of the water. The zinnia, discovered two centuries later in Mexico, would now be better entitled to be called wonderful.

Insects on Plants.—There is nothing yet ahead of a pointed stick, a stiff brush, a sponge, soap-suds and close hand-work for getting rid of those common plant

pests, mealy bug and scale. Syringing with fir-tree oil and other liquid remedies will kill some, but at points not reached by the spray enough will always be left to bring forth new breeds. Green-fly and thrips are readily destroyed by applications of tobacco-dust, or by heaping moistened tobacco-stems occasionally under the plants for a night. The great point now is to keep down the pests by all means, for there is no season when their increase is more rapid than during the spring months.

Double Cropping.—There is pleasure in seeing how much we can make of a small vegetable plat, in the way of double cropping. Radishes furnish us very excellent material for keeping the ground well occupied. The spaces between rows of beans, early cabbages and cauliflower, peas, etc., are usually far too wide to be left bare during all the earlier stages and growth of the crops. Plant a row of radishes between each two of the others. They are out of the way when the room is needed. On the same principle you can raise early peas or early potatoes in the cucumber and squash patch, etc. If we make our calculations to have a second crop occupy the ground as soon as the first is cleared off, we may have the garden spot in useful vegetation all the time, and a source of the greatest pleasure and profit. This achievement is well worth a little thought, study and effort.

Home-Made Subsoil Plow.—The implement illustrated I have used for the past six years with satisfactory results. The standard is a bar of iron two feet long, two and a half inches wide and about half an inch thick, hammered to an edge at the lower end, and then drawn to a flattened point, so as to admit a half-inch rivet to go through near the point, then up through a



HOME-MADE SUBSOILER.

steel plate (mold-board) about half an inch thick, and riveted down. The steel plate is made sharp in front, and somewhat pointed, in shape and width about like a man's two hands when placed upon the table with the palms down and thumbs out of sight, showing a little of each wrist. A mortice in the beam admits the standard, and another an iron rod for brace. The beam is about 5½ feet long with a wooden roller in front to gauge the depth. One strong horse will draw this tool in the furrow made by an ordinary plow, and stir up the soil three or four inches below the line of the surface plowing. I use it between the rows of strawberries, after picking, with two horses, going as deep as they can draw it, and afterwards I cultivate with a light cultivator. I

also use it with excellent success where rows of potatoes, celery, raspberries or young trees are to be planted, going back and forth a few times in the same furrow.—W. J. NOBLE, *Marshall Co., Ia.*

Carpet-Beds.—Those who admire the striking effects produced by tasteful arrangements of hardy and other flowers planted in beds, will find the following pleasing to the eye if ordinary care be taken in the formation of the bed and the planting of the stock. Shape of the bed should be a six or eight-pointed star. Plant in the center a good strong Gloire de Dijon rose; around that a row of plumbago (cobalt blue); next pink trailing roses, pegged down and kept nipped back short; then heliotrope (lavender), then *Alyssum saxatile compactum* (yellow); next *Companula carpatica* (white), and in the points of the stars put clumps of *Myosotis dissitiflora* (blue forget-me-not), the outer edge to be of *Echeveria metallica glauca*, or some similar plant. If the lines of demarcation in these are not kept too stiff, but allowed to blend slightly, the grower will be agreeably surprised at the beauty of the grouping, and if the flowers are cut the moment they begin to show seed, the bloom will be considerably lengthened and the beauty enhanced.—G. D. C. ELLIS, *Ky.*

Laying Down Grape-Vines.—The editor of *The Vineyardist* is getting quite out of patience, and reasonably so, with much of the talk about laying down vines at the approach of winter. He says that as most of the vines in his section are now from two to four inches in diameter, and as "stiff as a fence post," and that vineyards contain from 10 to 100 acres, he would like to know the practical process by which the laying down of grapevines so much talked of is done. The lesson is to plant the hardiest kinds that will withstand our winters unprotected. But it does not follow that we should not cover young vines for some years after planting. Many vines and other growths that might suffer from winter-killing during a season or two after setting, may prove perfectly hardy beyond thatage.

The Strawberry Leaf-Roller.—According to L. O. Howard, United States Assistant Entomologist, the best remedy for this as for many other strawberry insects, consists in burning over the field soon after the fruit is gathered, which does not injure the plants, which invariably send up new strong leaves and make a dense growth by fall. The repetition of this treatment for two more years will reduce the insects to insignificant numbers. The best plan is to mow the whole field over as close to the ground as it can be done with a mower, and leave the cut leaves and foliage to dry for a few days. Then loosen and rake up the straw mulch, sometimes spreading it over the rows, and fire the field in a gentle breeze. If there is no mulch, scatter straw lightly over the plants.

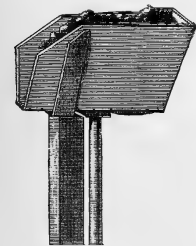
The California Quarantine.—The course of the state fruit-inspectors of California in seizing diseased fruit-trees shipped by eastern nurserymen at large expense

has called forth some vigorous protests from the growers, but without effect on the inspectors. It is stated in defence, by the Californians, that the trees were affected in peaches, by yellows; in plums, prunes and apricots, by curculio, and together by other ailments and pests. The quarantine against eastern trees is further justified on the grounds that some counties of the Golden State quarantine against others, so anxious are they to prevent the acquisition of any new obstacles to fruit-culture. Eastern nurserymen must make up their minds that California horticulturists are wide-awake and are not going to run chances against the importation of any enemies to their fruit-growing industries.

An Extensive Arboretum.—It is refreshing to see a man of great wealth, like George W. Vanderbilt, devote some of his means to the establishment of a magnificent forest and experiment arboretum at Asheville, North Carolina. A tract of fully 4,000 acres, partly native forest, is being devoted to this purpose. It is designed not only to occupy a large part of the estate with a systematically managed forest, having commercial ends in view, but the locating of the roads and the planting of borders adjacent to them will be done with the object of heightening the beauty of the natural scenery, and of affording a display of all kinds of trees from the world over, that will flourish under the local conditions of climate and soil. The roadway borders will be three or four miles in length. There will be but a small space of "kept grounds," surrounding the proprietor's dwelling. Some idea of the extent of the operations on the grounds may be gained, when it is said that there are now growing about 500,000 seedlings and cuttings that were propagated within the domain during the last year.

A Greenhouse Hod.—In our greenhouses no convenient way was provided for putting the dirt into the benches, and as we prefer to renew the bench-soil at least once a year, it is a job of no small size, especially as the houses are devoted entirely to vegetables and require much more soil than is needed for other kinds of greenhouse work. We found we could use no wheelbarrow;

so at first the benches were filled by means of bushel baskets. This method wore out many baskets, and made our shoulders sore. At last at somebody's suggestion we made hods, and they fill the bill. Having used them for over two years, we would not think of using anything else. Carrying dirt is a bad job anyway; yet the use of the hod makes it as easy as can be expected.



GREENHOUSE HOD.

Besides, the hands are left comparatively free, and the work of raising and lowering is reduced to a minimum. Our hods are two feet long, twelve inches deep, fourteen

wide at the top and five at the bottom, and hold about what an ordinary man can easily carry. The sides are of light lumber; the bottom and end of inch stuff. We have found that in using the hod one man with two hods will carry the dirt 30 to 40 feet as fast as another will shovel it from the wagon, or two men with three hods will keep one man shoveling, and carry the dirt 75 to 100 feet; and the hods are so inexpensive that it is best to have more than one, as any one at all handy with tools can make them. They may also be useful in other places. I had occasion to bring some tile to the greenhouse on a muddy day when the cart could not be used, so I put the hod on my shoulder and carried 14 three-inch tiles quite a long distance easily.—E. C. GREEN, *Ohio Agricultural Experiment Station.*

Growing Squashes.—A porous loamy soil is probably best for the crop, but whatever the soil, it should be very rich. Ten cords of manure to the acre are none too much, and more would be better. An excellent plan is to spread broadcast, in the autumn, as much compost as can be conveniently plowed under, repeating the operation again the following spring. Hills may stand eight or ten feet apart upon ordinary land, but if the ground is rich, twelve feet in each direction is needed. To form good squash-hills, dig out the earth, and replace it with a couple of large shovelfuls of well-rotted compost; cover this with two inches of mellow soil, and on it distribute ten or a dozen seeds, so that plenty of plants may remain after the ravages of the bugs. As to the number of plants to be allowed to remain permanently, much depends on soil and season. Two to four is about right. At maturity, the ground must only be well covered with vines; not running together in a thick tangled mass. Cultivation must begin as soon as the plants are up or before, if the land be weedy, and be continued once or twice a week until the vines begin to run. This work is best done with the horse cultivator. The only hand labor required is the "hilling up." Wherever the vine exhibits a tendency to produce axillary roots, by all means encourage it by drawing a little earth over the parts. Plainly, the more roots that are formed, and the greater the area from which plant-food is extracted, the higher the chances of success. It is well to pinch back the runners, after they have attained a length of six or eight feet. This is thought to throw more sap into the channels of fruit-forming, thus increasing the crop.—M. S. PERKINS, *Mass.*

Success with Fuchsias.—Along the north side of our house is a porch, and far enough from the edge to admit of passing is my bed of fuchsias. I plant them as soon as danger of frost is over, water freely, and when the weather is hot and dry I sprinkle them thoroughly every evening. With this care my 15 varieties are a mass of bloom all summer. Every one says that after plants have bloomed so long they cannot bloom in winter. Last year I took mine in before the buds had dropped and they continued in bloom until January, when the last bloom dropped. By February 15, they began to show

buds, and by March 15, there were large clusters of bloom. I use only wooden boxes, seven or eight inches wide at the top, five or six at the bottom, as many deep, and long enough to reach across the window, or so that two will rest in a window. I use good black garden soil enriched with old manure and leaf-mold, and put three, four or five plants in a box according to size. We have no greenhouse or conservatory, and keep our plants in rooms heated by a coal-stove, spray them three or four times a week, and if there are any signs of red-spider, every day. For the green aphid put weak tobacco tea in the spray. Last fall it was so dry and water so scarce that nearly all the leaves fell off before I took them up. I waited for rain as long as I dared and moved them when it was so dry the soil fell off the roots. I gave them a good soaking after I had put them in the boxes and set them away, expecting most of them would die. Only one has done so, however, and the others put forth new shoots and began budding and blooming in November.—E. A. B., *Ohio*.

Advantages of Horticulture.—I have never seen a community where there were too many horticulturists, while in most localities the number might be many times increased, and the profits of each is no wise diminished. The means of transportation and preservation of even the more perishable fruit and vegetable products are now so excellent that a market can easily be found for all first-class articles. I have lived in several of the best developed fruit-growing sections of the country, and I have yet to learn of a single instance of failure where horticulture was energetically and intelligently pursued; while in nearly every instance a moderate competence was secured. I believe there is no vocation that offers a better return for industry and skill than this. Let me not be misunderstood; there are risks in horticulture as in other things, and these ought to be fully considered. Frost, hail, drouth or flood will sometimes wipe out the profits of a year or more of well-directed labor. The hopes of an equally bountiful and profitable harvest may at times be blasted by the devastations of insects and fungous diseases. Some of these disasters are beyond control, but many can be overcome or guarded against by judicious management. The skillful horticulturist reduces these risks to a minimum. He carefully studies the adaptability of varieties; he learns the characteristics and peculiarities of soil and climate; he gleanes all the information possible as to the best methods of warding off insects and vegetable parasites; in short, the aid he receives from science, together with his own well-directed energy and intelligence, makes him master of the situation. The horticulturist is a transformer. By his art the crude useless elements of the soil and air are combined, forming products that please the eye, gratify the taste, maintain and support life.—PROF. W. R. LAZENBY, *Ohio State University*.

Notes upon Apple Varieties.—In case of apples, as of other fruits, it is futile to expect all the ideal qualities in any single variety, and yet a variety, to have any value, must have a certain proportion of the sum total

of the requisites of a perfect fruit. It may fall far short of the ideal standard in some qualities; but it must stand proportionately high in some others; in other words, a variety may be valuable if it has some good qualities, provided others are well marked. It is a popular belief that a variety that does well in one locality may absolutely fail in another apple-growing section. A close study of the facts will scarcely warrant this assumption. The rule is that a variety which presents marked variations in different soils and climates, is likely to present considerable variation in the same locality. If its good characteristics are not well enough marked to withstand reasonable changes of condition incident to change of locality, they are not well enough marked to withstand the changes of one locality. Good and bad characteristics are alike inherent and not determined by environment. It is true that conditions may emphasize or minimize certain characteristics; but they cannot obliterate or radically change them. A variety of apple that lacks productiveness or hardness or keeping qualities under average conditions, may show some improvement, but it will never take high rank in these qualities under the most favorable conditions. With reference to the apple alone, the question of sectional adaptability has comparatively little significance. Certain restricted localities may now have, and may continue for a long time to have favorite varieties not highly regarded elsewhere; but sooner or later many of these will be discarded, and the variety which succeeds well over a wide area will be found to be the most uniformly and continuously successful in nearly all apple-growing districts.—PROF. W. R. LAZENBY, *Ohio State University*.

What is a Sycamore?—Our correspondent W. C. Egan, of Illinois, had this question put to him by a friend, and in order to satisfy his own mind he studied up the subject, with the results which he reports as follows: "The first mention of the tree I find is in the Bible, Luke 19, 4, where one Zaccheus is reported to have climbed up a sycamore tree in order that he might see our Saviour." Authorities seem to agree that this tree was *Ficus sycamor*, commonly known as the Egyptian sycamore, Pharaoh's-fig, an admirable tree, largely planted for shade along the roadsides in Syria and Egypt. So far therefore as my investigation has gone the sycamore is a fig tree and by right of priority it is entitled to the name. In the sacred dramas of the middle ages a tree was wanted to represent that into which Zaccheus had climbed, and as no sycamore was at hand, the artists being full of expedients chose a maple, *Acer pseudoplatanus*, its heavy foliage being about as near that of the sycamore as any they could find, and to complete the deception they called it a sycamore. To these early dramatists we are indebted for a part of the confusion existing to-day. The name followed *Acer pseudoplatanus* into England, and was applied to the Scotch plane tree, and from there it came to America, and soon became attached to our plane tree—*Platanus occidentalis*. Thus far we may conclude that our sycamore is *Platanus occidentalis*; the Englishmen's is

Acer pseudoplatanus, and the Biblical scholar would claim that the sycamore is *Ficus sycamoros*. Investigation also shows that there is a sycamore in New South Wales, *Sterculia lurida*, and a white sycamore of Australia, *Cryptocarpa obovata*.

Surprise Point.—This is a picturesque view overlooking Lake Michigan from the grounds of our correspondent "W. C. E." This gentleman's garden extends some distance to the right of the part shown in the engraving, and also into the valley to the left. We present as an illustration of the commendable course that is open to thousands of persons doing business in our cities, in choosing charming picturesque home spots in the country, instead of settling down in the midst of brick, mortar and stone in a town. For our part we cannot imagine how people can satisfy themselves to be

to allow swine and chickens to eat up all wormy fruit as fast as it falls from the trees. Every orchardist should arrange his fences in such a way that he can turn his hogs into the orchard to devour waste fruit. In this way it will be possible for us to grow sound fruit for years; while, if we allow all wormy fruit to rot under the trees, it will not be long before there will be just as much of that kind of fruit as ever. We have two enemies to fear in our apple orchards, the codling-moth and scab. The latter is much worse on sweet than on sour varieties. Of pears the Kieffer is growing in favor here. It bore a full crop again last season when most others failed. When fully ripe the fruit is good enough for anybody to eat. Grafting or budding our American varieties of pears upon the Mikado seedling stocks, marks a new era in pear-growing. While the Mikado is worth-



SURPRISE POINT: A VIEW FROM "EGANDALE."

Overlooking Lake Michigan. From a photograph sent by W. C. Egan.

closely crowded in the cities, when the country in so many instances affords most delightful spots, at points near to town for residence. What healthful recreation is thus afforded to the brain, tired with close business pursuits! We are glad to observe the largely increasing number of city business people who are considering this matter sensibly,

Apple and Pear-Growing in Texas.—The great question with us is how to follow up the temporary advantage we have gained over the insect world, and keep the pests in check hereafter. Probably the easiest way is

less as a fruit, it is unsurpassed as a stock for thrift and healthfulness. It also grows freely from cuttings, more so than even Le Conte. It does not sprout from the root, and is to all appearance free from disease.—J. W. STRIBENRAUCH, *Texas*.

An Example of Socialism in one of its most agreeable forms is what the *Boston Transcript* calls the Twilight Park Association—a summer settlement in the heart of the Catskills. Here is a cluster of inexpensive but tasteful cottages in the midst of magnificent scenery, where nature's ruggedness has only been slightly modi-

fed, and yet near to most of the civilized conveniences of life. The association, says Charles N. Wingate of New York, who is a leading spirit in the enterprise, began in a small way. First came log cabins, then followed modest cottages, and with the proceeds of these, larger and more costly structures were built. Every penny received was spent in improvements. No one drew any salary and no one expected dividends. Our capital, continued Mr. Wingate, has been turned many times, and the nimble sixpence has brought shillings galore. Three years ago the park comprised fifteen buildings and seventy-five souls; to-day there are nearly 50 buildings, costing over \$100,000, and a population of 300. Lots that originally cost \$10 are readily selling for \$1,000 and \$1,500, and the boom has scarcely begun. A feature of the settlement is a club-house; simple fare is supplied to cottagers at moderate rates, so that families can enjoy all the privacy and freedom of home life without the cares of housekeeping.

Royal Gardeners.—It is well known that Queen Victoria is fond of gardening. A writer in the *English Illustrated Magazine* says of the customs in vogue at Her Majesty's private garden at Osborne: In a certain part of the grounds is the glade of trees which commemorates the marriage of each one of the queen's children. First come two splendid firs in memory of the Prince of Wales' wedding, planted there by the prince and princess after their honeymoon; then two planted by the Duke and Duchess of Edinburgh; and near at hand the budding trees of the Duke and Duchess of Connaught, Prince Henry of Battenberg, and Princess Beatrice, and the Duke and Duchess of Albany. The queen frequently takes her afternoon tea on the lawn amidst these emblems of the happy union of her children. There is only one bed of flowers in this beautiful grass plat, which is in summer fragrant with the scent of pinks and carnations, and this is always watched by the Princess Beatrice, who tends and cares for the flowers for the queen's delight. The queen loves gardening, and all her children were taught to dig and plant flowers, fruit and vegetables in season. Each child had a separate garden and each had exactly the same kinds of vegetables and flowers. These gardens are still kept up exactly as the princes and princesses cultivated them years ago. There are fourteen beds in each garden, consisting of two flower-beds, two strawberries, two gooseberries, two currant, two raspberries, and one row each of beets, turnips, potatoes, onions, carrots, asparagus, peas, beans, parsnips and artichokes.

Peonies and Rhododendrons.—One need not much deplore the absence of the brilliant hybrid rhododendrons throughout the north, when the magnificent peonies succeed so perfectly everywhere. The most effective way to use peonies is in clumps on the lawn. The soil should be deep and rich. Let them stand about three feet apart in the outer line, and four feet apart within. Unlike some choice hardy flowers the foliage of which turns yellow and bad-looking after blooming time, the peonies, with their beautifully divided

dark-green leaves, look handsome enough to grace any lawn all through the season. One of the prettiest species is that known as the fennel-leaved peony, the foliage as well as the flowers of which are remarkably fine. It is no wonder that the gorgeous blooms and handsome leaves of the peony render this plant a great favorite with those aesthetic flower-growers, the Japanese. In Japan a common way of disposing the plants is to set them in clumps quite close to the dwelling, so that their magnificent bloom can be enjoyed as seen from the windows or balconies above. Let a cultivated Japanese be invited to decide between the peony and the rhododendron for garden embellishment, and we are sure his vote would very quickly be for the former.

Horrible Floral Designs.—Flowers are generally understood to represent the highest ideals of inanimate beauty, but this does not prevent some professional florists from combining them into the most distasteful and inappropriate floral designs imaginable. We are glad that the *American Florist* holds up with approval the censures of a California paper on such designs. Among these were floral pieces representing a wagon-load of beer-casks, and a corset with a wreath above, constructed as "appropriate emblems," at the funerals of a brewer and a manufacturer of corsets. Another was the "market woman of Hamburg," an outrageous caricature of the human form, in which, it is said, the eyes were black buttons. Florists can hardly justify themselves on the grounds that their customers demand it. They are the designers and should be the leaders in what constitutes appropriate floral emblems; and in almost every instance could succeed in having something decent and becoming substituted for what is so shocking. We regret to say, as a result of some observations, that we fear it is the florists themselves who too often encourage their patrons to order such monstrosities.

Horticultural Exhibits at the World's Fair.—It is estimated that not less than 50,000,000 people will visit the World's Fair in '93, so that exhibits will be presented to an enormous constituency. It is designed that the planting of hardy trees, shrubs and plants for decorative purposes be completed by May 1, 1892. The chiefs of the horticultural department wish to impress upon all that under no circumstances will poorly grown or badly rooted specimens be accepted. All material must be shapely, vigorous and large enough to be effective; for instance, shrubs like *Deutzia crenata* should be three to four feet high with six to eight canes, *Spiraea callosa* should not be less than 18 inches in diameter. The plans for this section were to have been completed by March 1. In order to insure the harmonious effect as a whole, it is necessary that the department be given full control of such plants contributed. Those used for the general decoration of the grounds, and not planted as grouped exhibits for competition, will be cared for at the expense of the department. A complete list of all material to be supplied must be furnished the department at once, blank forms for which purpose will be furnished upon request. All plants sent must be correctly

named. The lists of hardy trees, plants, etc., embraced, by the plants include nearly all kinds of embellishing material in this line suited to the climate of Chicago. Especial attention is being paid to a unique rose garden to contain not less than 50,000 plants, besides special areas for large groups. This garden will be of classic design, with temples, arbors, archways and trellises. It is recognized that the great mass of people have never had an opportunity of seeing a typical rose garden; now the time has come, and nothing should be left undone to insure a magnificent display. Rose-plants may be on their own roots, budded or grafted. Those on their own roots must be from not less than 3½-inch pots, of the current year's growth; or they may be one or two years old, dormant plants. Well-rooted budded plants, with the buds dormant, will be admitted, thus giving an opportunity for showing a greater variety. The above remarks apply to hybrid perpetual and other hardy roses, teas, noisettes and other kinds will require different treatment, and it is suggested that strong plants in five-inch pots be carried over in coldframes to be planted early in the spring of 1893. It is expected that large and substantial premiums will be offered for roses and many other plants, in addition to the awards that will be offered by the National Commission. The Bureau of Floriculture hopes to make such arrangements as will give to chrysanthemums, cyclamen, Chinese and other winter-flowering primulas, cinerarias, calceolarias,

amaryllis, Dutch bulbs, narcissus and other winter and spring-flowering plants, a magnificent representation during their season of beauty from November 1, 1892 to April 1, 1893. In the case of cyclamen, cinerarias, primulas, calceolarias and mignonette, all the seed from different parties contributing will be sown on the same day; the same treatment will be given to all; the same soil will be used; and at the final potting an equal number of plants from each contributor will be selected and grown together. When in flower it is expected that awards will be made in the order of merit, and all contributors will have the privilege of attaching their business cards and addresses, subject to the rules of the department governing the same. A record of all contributions will be kept and credited to the party supplying the seeds, etc.; all will be treated in the most confidential manner, and such methods will be pursued as will insure perfect justice to all. All seed must be supplied free of cost to the department; thoroughly capable men will have charge of the growing of the various plants, so that the highest state of cultivation may be developed, and the growing and cultivating of the plants will be carried on without expense to the contributor. Seeds in sufficient number should be sent to make it certain that not less than 100 plants of each shall be in good condition at the time of final potting, as by this means a display adequate to the occasion may be insured.—JOHN THORPE.

COMMENTS BY READERS.

[One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

Commercial Fertilizers for Fruits.—In the peach and pear orchard I am inclined to prefer commercial fertilizers, because I think the peach less inclined to yellows, and the pear to blight, when treated with them. For small fruits, and for the apple orchard, I would use the barn-yard manure, if I could get it in sufficient quantity, as I know of nothing superior. But the trouble is, it can no longer be had in sufficient quantities, and hence the great boom to fruit-growers in commercial fertilizers. Then the barnyard manure is so bulky, that if it must be bought and teamed any great distance, it becomes much more expensive for the same results. I had an unprecedented crop of Kittatinny blackberries and Cuthbert raspberries this season, and I attributed the excellent results to a liberal dressing with complete commercial fertilizer. I have had good results in my apple and pear orchard from the use of wood-ashes. In my vineyard, also, I used wood-ashes and superphosphate for two seasons past, and gathered about four tons of Concord grapes per acre. The fruit was unusually large and fine. As a rule, I use superphosphate or bone-meal for the supply of phosphoric acid, wood-ashes for potash, and nitrate of soda for nitrogen.—L. WOOLVERTON, *Ont.*

More About the English Sparrow.—The English sparrows made their appearance at my place over 12 years ago. Their number varies from year to year, but they have not increased during the last three years, nor have they done me any injury so far as I have seen. Other birds are continually increasing in numbers and kinds, nesting and breeding on my grounds. The robins and cat-birds are troublesome during the small fruit and cherry-ripening period. The sparrows are the only small bird we have with us during the winter. I take much pleasure in feeding them. It is more cheerful to have them about. At night they stay in the evergreens, so give no trouble in that respect. The blue-jays do more here to destroy other birds by killing the young and by destroying eggs before sitting than all other birds combined.—A. B. AUSTIN, *Ills.*

I always used to regard the sparrow as a useful bird, although I have not often seen them taking insects. I have been watching them rather closely for several years, and they seem to be most happy when they have plenty of prepared food such as small seeds like wheat, garden seeds, etc. I have seen them by the thousands in wheat-fields which they literally threshed, and instances came under my observation where they stripped

gardens of everything green above the ground. I did not finally declare war against them till I caught them in the act of stripping one of my Lincoln plum trees of the fruit-buds, which they did in such a thorough manner that nothing was left. I have ever since warred against them, and I must see more of their good acts before I can entertain a treaty of peace with the little rascals.—E. B. GOOD, Pa.

I have not observed depredations by the sparrows up to date. In 1890, I lost, as the minimum estimate, 400 pounds of Duchess grapes, destroyed by robins; on very many of the vines the stems were stripped clean, on others the berries were pecked, and rapid decay followed. Last year, on about 100 vines of that variety near the house, I succeeded in saving about 250 lbs., with a vigorous "spraying" of stone and lead. The nomenclature of birds as applied to robins is perfect; when the aforesaid is not *robbin'* you of sleep by his screech at 4 o'clock A. M., he is *robbin'* you of fruit; and he should be stricken from the roll of useful or song-birds. I do not say that the English sparrow is not capable of harm; I do say that he has not harmed me, and I rather enjoy his pugnacious presence.—Wm. H. STEVENS, *Chautauqua Co., N. Y.*

You would like to know what sparrows are good for. I think they are worse than rats or mice. They daub up everything in the barn; they steal chicken-feed. They are like the human foreigners; they drive all other birds off, tear up their nests and take their places.—WILLIAM LAVERICK, *Cayuga Co., N. Y.*

M. Pelicot, a French author, in a book in defence of the English sparrow deprecates the slaughter of the little birds by gun or poison, and gives as a sure protection for fruit-trees and garden crops the stringing of threads of red wool, or of any striking color, on the branches of trees or on small stakes close to the crop to be protected. This simple device he claims to have tested himself, and found to be a perfect protection from the sparrows.—H. W. E.

Plant-Dealers and Weeds.—A recent number of *The Ladies' Home Journal* contains a communication protesting in strong terms against the reintroduction of *Calystegia pubescens*, and the floral editor severely censures plant-dealers for offering and recommending such plants as *calystegia*, *Apios tuberosa*, etc. I also noticed in *Popular Gardening*, some months ago, an item which took similar ground with regard to the introduction of *Helianthus divaricatus*. And yet ("Oh, tell it not in Gath! Oh, publish it not in Askelon") the editor of the journal, in same issue, recommended *Celastrus scandens* as one of the best hardy climbers, and the December AMERICAN GARDEN recommends *Ailantus glandulosus* and the rose-acacia! These are beautiful; but if I had been asked to select, from among all the shrubs, vines and trees I have seen under cultivation, one in each class which I considered most weedy, most aggressive and most difficult to keep within bounds, I know of none which would come nearer to it than the three above named. I have no doubt that some of the readers of those journals will act upon their recommendations and

thank the editors for them. But I ask of our editorial friends, before they indulge in wholesale censure, to stop and consider the situation. Referring to the particular plants to which they object in these items: I had *Calystegia pubescens* fl. pl. in Massachusetts, 40 years ago, and a most beautiful thing it was, climbing a bit of twine to the top of our windows, and filled with its double rose-blush flowers, which, unlike the single varieties, kept open all day. When I came here I found it on the place which I now occupy, under the name of California rose, but it only grew a few inches or a foot high. No ordinary coaxing would induce it to grow over two feet, and it has long since disappeared. Last spring I requested my friends in Massachusetts to send me some roots, but they had considerable difficulty in finding it, and finally got only a dozen for me. Now I do not think these facts indicate that it is very weedy in either place. Foreign lists also include a single form of *Calystegia pubescens*. *Calystegia sepium*, also single, has been a bad weed wherever I have seen it, and it is possible that one of these has been confounded with the double one by some writers. *Apios tuberosa* and *Helianthus divaricatus* both grow wild in abundance here, but I have never seen either of them in a well-cultivated field, they being mostly confined to hedge-rows and thickets. What constitutes a weed? "A plant out of place." Applying this definition, what will wholly escape condemnation? Take our common carrot: straying from cultivation, it has lost its thickened root, which gave it its only value, but has lost none of its vigorous top-growth or abundant seed-production; and acres upon acres are annually appropriated by this now vile weed, to the exclusion of valuable crops; yet no one protests because every seedsman offers carrot-seed in his catalogue. On the other hand, perhaps it would be hard to find a weed more generally detested than our common purslane, and I certainly never tried my hand on any other so difficult of extermination, but many people relish it greatly for boiling as "greens." But what have the public a right to expect from those who make a business of selling plants or seeds? It is useless to deny that there are a few in this trade, as in all others, who value the "almighty dollar" more than the interests of their customers, and willfully misrepresent. I have no word of excuse for such, but they are the exception. Neither do I approve of the more general fault of exaggeration; but this may be considered the general tendency of the times and pervades all kinds of business. I well remember when the simple word "superfine" indicated the highest grade of flour on the market; but a recent purchaser has besides some other marks, XXXX to indicate its quality! When a florist finds a plant which pleases him, and which he knows will please his customers, have the public a right to expect that he will search out all its precedents to learn whether it may not be liable to objections in certain places?—Wm. F. BASSETT, *New Jersey*.

[Because exaggeration is a prevailing tendency is the best of reasons why dealers in products be exact.—ED.]

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Achimenes.—Aim for a succession of bloom, by starting plants at intervals.

Amaryllis in bloom likes plenty of sunlight, and occasional doses of liquid manure.

Annuals of the hardy class, like mignonette, larkspur, sweet-pea, candytuft, etc., may be sown in the border as soon as the ground is in shape for work.

Azaleas now in the height of bloom and thrifty growth should be thoroughly watered whenever the soil gets dry. Excessive heat is not now required. As sunlight gets stronger, and danger of burning the foliage increases, towards last of the months, light shading overhead will be beneficial.

Begonias.—The ornamental-leaved kind urge into strong growth by free applications of manure-water.

Bulbs.—The best use that can be made of forced hyacinths, tulips, etc., after blooming is to allow the foliage to ripen and dry off naturally, then keep the pots dry until fall, and plant the bulbs out in open ground. This will give good material for cut-flowers in spring following. Bulbs planted in the border last fall should have the covering removed gradually from now on.

Callas.—If large plants are wanted, give plenty of pot room, and keep all side shoots removed. Give plants in bloom a top-dressing of fine rich manure and plenty of water, or liberal doses of liquid fertilizer.

Camellias, when done blooming, need a somewhat higher temperature, moist atmosphere and shade from direct sunlight. Shifting plants into somewhat larger pots is timely.

Canary-Bird Flower may be started now singly in pots for planting out later on in light soil and a sheltered position.

Carnations.—The needs of the young stock intended for next winter's bloom are a good supply of light and air, and a moderate temperature.

Castor-Oil Plant.—Start as directed for canary-bird flower. It can often be used to advantage for the center of summer beds.

Cineraria.—Plants that were started from seed in early summer, and now in bloom, love a cool room, plenty of light without direct sunshine, and plenty of water at the root. Keep off the greenfly.

Calceolarias, although blooming somewhat later, require about the same treatment as cineraria.

Dahlias.—Choice varieties may be started up now and increased by division later on.

General Greenhouse Management.—In watering avoid extremes, and give each plant and each part of the house just the amount needed. Keep watch of every plant, so

that none is neglected. It often happens that one plant is suffering from dryness right by the side of others amply or overabundantly supplied with moisture. Be sure to give air freely when the weather permits.

Geraniums not wanted for present bloom, may be cut back and worked for propagation. A good stock of bedding plants is thus easily provided, and the old plants will do all the better for summer bloom.

Gloxinias need heat, moisture and shade. For succession of bloom start some plants each month up to May.

House-plants should be given an abundance of air in all suitable weather, in order to harden and prepare them for going outdoors. The least neglect now is apt to result in an excessive increase of insects. Strict watch must be kept, and water, tobacco-tea and the fingers promptly and vigorously applied whenever needed for the suppression of the pest. Exposure to too much sun this month is apt to injure many of the young growths, especially of such as primulas and camellias. It is well to provide shade during the noon hours of clear days. Too much pains can not be taken with the selection and preparation of the soil for pot-plants. Well decayed turf full of root-fibers has no superior; for roses it may be used clear, for most other plants add one-third its bulk of well-rotted manure. See, also, directions given in January number.

Hydrangeas and other dormant plants in cellars or pits, for which room can be found in the window, may now be brought in. Others may remain at rest until the time when they can go directly outdoors.

Lantanas and *Oleanders*.—Treat as advised for hydrangeas.

Lawn Work.—Provide a good coat of fine manure for borders and beds, and spade it in deeply. Apply fertilizers to the grass-plats. As soon as the ground is dry and firm enough, rake the lawn over to remove the rubbish, then roll and reseed where needed. Large weeds, such as dandelions, burdock, etc., are easily pulled while the ground is soft. Make early provision for supplies needed, such as grass and flower-seeds, lawn-mowers, stakes, etc. Repair roads and walks, or make new.

Ornamental Trees and Shrubs.—Thoroughly examine early. Repair damages done by storms. Cut broken branches off smoothly and cover the wound with paint or wax. Evergreens are frequently injured by the snow lodging in their tops and breaking the branches by its weight. If so you will have no alternative but to cut such branches off. If this leaves large openings, draw other branches together to fill the vacant spot, tying them in proper position, and time will usually repair the damage. When the leader of a young evergreen is broken, select another branch, tie it to a stake in an erect position,

and thus form a new leader in time. Trimming of specimen evergreens should be done before growth begins.

Oxalis like plenty of sun, and should now be doing their best.

Peonies may be planted as early as the ground can be worked. Large clumps already on the premises may be divided and reset now.

Pelargoniums, if strong-growing, should be freely aired, and receive a dose of liquid manure once a week.

Primroses.—The choice double ones may now be propagated from slips.

Propagation.—"Push" now. Cuttings of geraniums, coleus, petunias, and other soft-stemmed plants, now root readily in sand in a bright, warm place. Select slips that are brittle enough to snap off readily when bent over. They are then in best condition for rooting. The stock of coleus and other plants for bedding purposes should now be grown. Increase verbenas, heliotrope, etc., as desired. Let the young slips go into pots as soon as roots appear, using small pots, and light rich soil, potting quite firmly. When using pots larger than three inches across, place broken pots, or coarse gravel, in the bottom for drainage. In pots six inches or more across, put a layer of hay or moss on top of the drainage material, and then fill in the soil. Avoid clogging of the drainage.

Repotting at this time is to be recommended to the professional florist who has good conveniences and a busy season before him.

Richardia.—Start this month for growing in pots.

Roses of the hybrid perpetual class prune now. Remove shoots that appear weakly and sickly. Prune the remainder from six to eighteen inches according to growth. Where black blotches or rings appear on last year's growth cut away below such spots. Prune moderately to about six inches, and strong growers 12 to 18 inches. Do not yet remove all the covering from the teas and bourbons, as they are more tender. Prepare new beds and borders.

Vines.—Trim and tie in their proper places by the end of March. Apply a dressing of good compost about the roots.

Violets.—For winter bloom treat as for carnations.

II. GARDENING FOR TABLE AND MARKET.

Asparagus.—A dressing of some good fertilizer or compost can not be applied too soon. Nitrate of soda 300 to 400 pounds per acre may be given with expectation of good results. We like to hill up over the plants with mellow loam, thus bleaching the shoots. Cultivate and mellow the soil thoroughly and get it in readiness for the crop. For new plantations prepare the ground thoroughly and set the plants early, giving plenty of space.

Asparagus under glass requires free airing and a liberal supply of water.

Beet.—Seed may be sown in open ground as soon as

the soil can be worked. For earliest, use Egyptian, Eclipse, or Edmand. A first-early crop may be grown in hotbed or coldframe in rows six inches apart, or plants may be started under glass and transplanted to open ground as soon as soil and climate permit.

Blackberries.—If any plants were laid down for winter they may now be uncovered, and lifted up. New patches are to be planted early; six or eight feet between rows and two or three feet between plants is about right, and better than less.

Cabbage.—The most important thing to be done with plants wintered in coldframes is to harden them off thoroughly before taking them to the open ground. It is a mistake to treat them too tenderly. Plants from hotbed or greenhouse may be set in flats one inch apart in rows two inches apart, and placed in coldframe for hardening. Begin setting in open ground just as soon as soil and weather permit.

Carrots.—Treat similar to beets. For planting in hotbed or coldframe we like Short-horn; for general outdoor use, the newer Chantenay.

Cauliflowers as advised for cabbage.

Cucumbers under glass, keep in a temperature of 60° to 65° at night, and about 10° higher in day-time. Give air freely in newly made hotbeds.

Currants may be set as soon as the ground is in working order; four feet apart each way. Try White Imperial. Set cuttings early and deep so that only one eye is above ground.

Egg-Plants.—Start early in a strong hotbed and near the glass. Sow in well-drained light soil. Transplant once or twice, the last time in 3-inch pots. Always keep in strong heat and moist atmosphere. For the colder north use the smaller and earlier sorts, like Early Long Purple, and Japanese. When the season is long enough, plant New York Purple.

General Directions.—Fertilizers and other requisites needed should be on the spot; or if not should be speedily procured. Everything should be in readiness for active operation. Take advantage of any opportunity the weather affords to prepare the ground for the crops to be planted next month. Make hotbeds and coldframes.

Gooseberries.—Treat like currants.

Grafting.—Trees should not be allowed to bear poor varieties. If unprofitable, in consequence of injudicious selection of varieties at planting, or of a nurseryman's "mistake," either dig the undesirable tree out, or change the variety by grafting a better one into the branches. At end of this month cherries and plums may thus be operated upon. Cut scions at once. Set root-grafts as soon as soil and weather permit.

Grapes.—Finish pruning where not already done. Apply a dressing of compost or bonedust and ashes to the bearing vines. Tender vines that were laid down and covered for winter protection may now be uncovered.

Grape-Fencing.—Vines with growing fruit are to be kept rather warm and in moist atmosphere. Vines in bloom give a little air when weather will allow, but

avoid cold draught. Do not give water very freely until fruit has set. In late houses, further on, give air freely so the temperature will not rise too high.

Horse-Radish may be planted early.

Hotbeds are to be occupied all the time. When one crop is taken out, plant with radishes, carrots, beets, celery, tomatoes, etc.

Lettuce-plants.—Transfer from hotbeds to coldframes; prepare those in coldframes for setting in open ground by thorough hardening off. Sow seed in open ground for a succession. Try some of the new varieties, like Sensation, California (All-heart), Ohio Cabbage, etc.

Lettuce-Forcing.—Give plenty of air in suitable weather. Water sparingly during dull and cloudy spells. Grand Rapids is a superior sort for forcing.

Mushrooms.—Manure may yet be prepared, and beds sown for succession.

Onion-seed may be sown in hotbeds and coldframes for transplanting. For this purpose we know of no better variety than Prizetaker and White Victoria. For growing onions in the old way, manure and prepare the ground, and sow seed as soon as soil and season will permit. Try the White Globe for a white, and Barletta for a small pickling onion. Sets should also be planted, in drills 12 inches apart and five inches apart in the row.

Orchard Management.—Starvation is probably the foremost cause of the complaint that tree fruits do not pay. Plenty of manure brings plenty of good fruit. Poor fruit never pays. What trees you wish to plant, order at once. Unpack the stock carefully when received, trim properly, severe trimming being better than not enough, and set early in well-prepared soil, pressing the soil firmly about the roots. Select varieties known to succeed in your soil and locality. Do not plant any new thing on a large scale in the hope of getting big profit.

Parsnips of last year's crop should be dug as soon as the ground is open.

Peas.—Plant first any of the first early sorts, like Alaska, etc. The wrinkled sorts may go in a little later.

Pepper-plants.—Start as advised for egg-plant. Ruby King is a good sort. Many of the newer varieties, like

Black Nubian will be found "more curious than useful."

Potatoes.—Make provision for required seed in time, and try to preserve tubers in good condition. Don't allow them to sprout in a dark room, and while together in mass. If there is a tendency to sprout, spread them thinly in a rather light room. This will make short strong sprouts, not the weakly spindling things that are of no earthly use. For first early try Early Ohio, Early Sunrise, perhaps Freeman.

Radish.—Sow in hotbeds and coldframes, also in open ground early. Get plenty of seed and sow freely for succession. There are always vacant spots available, and people might just as well as not have young crisp radishes from early spring until fall. Early Erfurt is good for forcing.

Raspberries.—Treat as advised for blackberries.

Rhubarb.—Give a liberal coat of good compost, if not applied last fall. If extra-early "pie-plant" is desired, place kegs or half barrels over the plants and put heating horse-manure around them. Cover the tops with boards or mats.

Spraying.—A number of new points have been developed by the experience of last season. It is noticed that some of the materials for making the mixtures are often found adulterated. Material can be easily prepared at home, from sulphate of copper and sal-soda. It also appears that we are destined to go through a similar experience, concerning the Bordeaux mixture, as with Paris green. Probably we have been using it far stronger than necessary. If three times the quantity of water is used that the original formula called for, the mixture will be as effective, more convenient to apply, and one-third as expensive.

Strawberries.—For new plantations plenty of good manure should be deeply and thoroughly mixed with the soil. Set plants as early as the season will permit. Try new varieties cautiously.

Window-Boxes.—When you have no hotbed or greenhouse for starting early plants for the home garden, one can do very well by planting tomato, egg-plant, pepper and other seed in boxes containing good soil set in a sunny window.



HE THAT QUESTIONETH

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the fifth of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

- 2776. **Onions for Winter Market.** Which is the best variety? I wish to start seed in a hotbed and transplant.—C. M. S., Nebraska.
- 2777. **Packing Mushrooms for Market.** What method will insure safe carriage for long distances?—H. B. S., Conn.
- 2778. **Strawberries for Home Market.** Is the Jessie a sweet berry, and good for home market? What is the largest early sort adapted to the same purpose?—H. T., Mo.
- 2779. **Bleaching Celery by Tile.** At what age of the plants should tile be put on? What size of tile?—R. S., Ontario.
- 2780. **Mixed Orchards.** Should each kind of fruit be by itself? Will it do to mix nut-trees with other fruit?—C. T. C., Minn.
- 2781. **Vegetable-Plants in Boxes Dying.** Cabbage, tomato and pepper-plants, from seed sown in boxes in the house, fall over and die, the stem near the ground rotting off. What is the trouble, and how remedied?—J. G. K., Pa.
- 2782. **How Soon Nut-Trees Bear.** How long will it take English and Black walnuts, pecans, hard-shell almonds, etc., when planted from seed, to come into bearing? Can the common shag-bark hickory be made to bear in less than 15 or 20 years by extra feeding and care?—W. E. F., Mass.
- 2783. **Sowing Onion-seed in Hotbed.** How much seed per sash. Does thick broadcast seeding make plants too small for best results?—G. E. K.
- 2784. **Remedy for Tree-Cricket.** This insect does much damage to our blackcap raspberries, especially the Mammoth Cluster. How can I get rid of them?—S. M. H., Nebraska.
- 2785. **Cause of Wormy Currants.** My red currants have a worm or grub in almost every berry. Is there any way of preventing it? Is the egg laid in the blossom or in the fruit after it is formed?—C. E. M., N. B.
- 2786. **Plums for Western Ohio.** Is the Green Gage or any yellow variety profitable and reliable to raise here? Are any of the prunes profitable and hardy here?—O. C., Ohio.
- 2787. **Excelsior Peach Trees.** Where can they be obtained.—F. T., Colo.
- 2788. **Kainit and Nitrate of Soda.** What is the comparative value of kainit compared with the other, and for what special crops is it good?—C. W. Y., Ont.
- 2789. **Daphne odorata.** What care does it require?—S. T. F., Me.
- 2790. **Sowing Grass in Spring.** I have three acres of land, cleared and plowed last fall, which I wish to get in grass as a sort of meadow extension to my lawn. Would it do to replot the plat this spring, manure and seed with oats, clover and timothy?—M. W. N., N. J.
- 2791. **Best Street Trees.** Which of the following, elm, maple, or linden, would be the most suitable to plant along roads and avenues? I contemplate making my country place into a park and want quick results.—S. P. S., New York.

- 2792. **Carl Halt Fuchsia Blooming Double.** Is this a common occurrence?—E. A. B.
- 2793. **Trimming Norway Spruce Hedge.** Plants 12 to 18 inches high. When should I begin to prune?—C. M. T., Kansas.
- 2794. **Cost of Hedge.** What would be the cost of planting and caring for a mile of hedge? What plant would you recommend for a useful hedge, what evergreen for prettiest ornamental hedge? Does Chinese Quince make a pretty hedge? G. H. R., Oregon.
- 2795. **Hedge for South Shore of Ontario Lake.** Which is the best hedge-plant for clayey loam, with a clay subsoil? When Honey Locust is selected, is it better to plant in a double row one foot apart, plants nine inches apart, or in a single row plants six inches apart? What after-cultivation and pruning is required?
- 2796. **Best Four Climbing Plants.** Which are they, and which of them are best suited for northern exposures, and which for southern exposures?—C. H., Ontario.
- 2797. **Trees Seeds Wanted.** Where can acorns of best varieties, also hickory, hazel and walnuts, for planting be secured? Do not find them quoted in the catalogues.—A. G. T.
- 2798. **Cross-Fertilizing Chrysanthemums, Roses, Carnations, etc.** Please give some pointers.—J. S. F., Illinois.
- 2799. **Comparative Value of Manures.** I have horse and cow-manure mixed. The animals are well-fed and well-bedded. What is the value of this manure compared with commercial fertilizers?—A. A. W., Mich.
- 2800. **Pruning Peach Trees.** I planted 200 last spring. Some, owing to dry time, did not make heads, but sprouted above junction and along stem. How shall I prune?—A. B. D., Ohio.
- 2801. **Lemon Tree Not Fruiting.** Tree from seed 16 years old; growth thrifty, standing in box 11x14 inches and 12 inches deep. Should it be grafted? And how to be treated generally?—E. E. G., Ont.
- 2802. **Nitrate of Soda on Strawberries.** Commission dealers complained that strawberries, which I treated with nitrate of soda, were soft. Can you explain it?—L. A., Del.
- 2803. **Greenhouse Heating and Ventilating.** My greenhouse is 15x25 feet, 4 feet at sides, and 9 feet to peak. Wish to make it as automatic as possible. How should it be arranged?—E. S. I., Ohio.
- 2804. **Varnish for Muslin to Cover Hotbeds.** How is the white varnish made?—M. L. W., Texas.
- 2805. **Grafting Fruit-Trees.** Will it pay to top-graft the peach? Can the wild plum be grafted with profit?—A. S. K., Ind.
- 2806. **Planting Dwarf Pears.** Should the Angouleme Dwarf be set below the junction of root and scion?—A. S. K.
- 2807. **Mulch for Strawberries.** Is buckwheat-straw injurious?—A. S. K., Indiana.
- 2808. **Growing Peas and Beans in Succession.** How many years is it safe to do this?—W. W. R., Ont.
- 2809. **Wintering Paulownia imperialis.** I have set three salt-barrels, one on top of the other, over my fine specimen

of paulownia, and filled them with hay. Will this save last year's growth?—W. H. R., *Iowa*.

250. **Planting Peach-Pits.** Pits are packed in damp soil exposed to the weather. How shall I plant and treat them in the spring?—E. H. D.

251. **Cooking Henderson Bush Limas.** We sliced and boiled them in the usual manner, but they were not fit to eat. How should they be prepared?—B. G.

252. **Juneberries for Market.** Will it pay to plant them for this purpose? What kinds are best, and how are they propagated?—J. S. L., *Ind.*

253. **Japanese Persimmons.** Will it pay to plant them for market?—J. S. L., *Indiana*.

254. **Planting Onion-Sets.** How large sets of this year's growth may be safely used in order to get a good crop of large onions?—M. L. R.

255. **Growing Lettuce Under Glass.** How long will it take to get a crop from sowing seed?—J. W. O., *Ills.*

256. **Red-Spider in Hotbed.** How can I destroy them?—I. R., *Ohio*.

257. **Root-Knot on Vegetables and Flowers.** How can I prevent its ravages?—*Sub.*

258. **Early Peas for Market.** What kind is best?—W. S., *Wisconsin*.

259. **Paradise Apple-Seed.** Where can I get theseed?—N. L. C. M., *R. I.*

260. **Hotbed and Greenhouse Arrangement.** Will Mr. Kirby please describe arrangement of hotbeds heated with hot-water pipes, also construction of greenhouses in use by Boston market-gardeners?—*Sub.*

REPLIES.

2763. **Nursery Stock from Different Sections.**—On general principles we always advise people to procure their trees and shrubs and plants as near home as they can be got as good and cheap as elsewhere. On the other hand, there is no objection to planting in any part of Ohio, or any other state, nursery stock grown in Delaware or New Jersey, provided such stock is sound and well-grown. Of course, it will in any case be safer to trust your eyes than the conscientiousness or promises of dealers.

2756. **Wood-Ashes for Pear Trees.**—The fertilizing value of a bushel of ashes depends on the quality of the article, and this varies greatly. A bushel of dry hardwood ashes will probably weigh about 45 pounds, and contain in the neighborhood of 3 or 3½ pounds of potash and ½ pounds of phosphoric acid. The former is worth five cents per pound, the latter eight cents per pound. Consequently we can well afford to pay 20 cents or so for a bushel of such ashes. If they have been leached, or are from soft wood, etc., they may not be worth one half the sum named. We have a high opinion of wood-ashes as an orchard fertilizer, and in fact believe that it can hardly be used too freely. If the ashes are leached, several hundred bushels might be used per acre, applied broadcast, and without additional manures. The unleached article has a great excess of potash over phosphoric acid, and consequently, bonedust or superphosphate should be used in addition. Fifty bushels of unleached ashes or upwards, and several hundred pounds of the phosphatic manure, evenly spread over an acre of orchard, will be found a most excellent and effective dressing.

2753. **Pears for Kentucky.**—Kieffer, Le Conte, Garber and perhaps Idaho will prove profitable in favorable locations of the state. All of these, we believe, are

of oriental origin. Le Conte is the one most largely grown from cuttings in the south. Probably the Kieffer is also propagated in the same way to some extent. We would not combine a pear orchard and vineyard in the way proposed. Each one will do better if planted by itself, and then can be more easily and cheaply managed.

2751. **Black Hansell Raspberry.**—We are only acquainted with a red variety under the name "Hansell."

2748. **Fruits for the Family.**—The following is a list that can be relied on in this (Niagara) fruit district: *Strawberries*, Haverland, Wilson, Bubach; *red raspberries*, Thompson's Early, Cuthbert, Shaffer, Golden Queen; *blackcaps*, Ohio, Gregg; *blackberries*, Ancient Breton, Snyder, Kittatiny; *currants*, Red and White Dutch, Fay; *grapes*, Winchell (Green Mountain), Worden, Concord, Brighton, Eldorado, Delaware, Niagara; *cherries*, Coe's Transparent, Early Richmond, English Morello, Montmorency Ordinaire, Black Tartarian; *peaches*, Hyne's Surprise, Mountain Rose, Early and Late Crawford; *plums*, Botan, German Prune, Lombard, Reine Claude, Purple Egg; *pears*, Gifford, Tyson, Bartlett, Flemish Beauty, Louise Bonne, Duchess, Anjou; *apples*, Yellow Transparent, Gravenstein, Oldenburg, Fameuse, R. I. Greening, Northern Spy, Golden Russet, Esopus Spitzenberg, etc.

2651. **Strawberries in Louisiana.**—In your reply to this query in December number you state that there should be no difficulty in growing strawberries, no matter how hot the climate. Any one trying to grow them in southern Louisiana will find that there is a good deal of difficulty attached to the business in several ways. First, that of climate. The winter is very mild, and this causes many varieties—especially the early-flowering kinds—to waste their vitality in flowering before the inclement weather is fairly passed, thus rendering many, often all, the earlier blossoms unproductive. During the exceedingly warm and long summer, the strawberry does not grow, but when the summer rains come, generally about the latter part of August, then the strawberry finds new life and begins to grow vigorously. Many varieties will die out during the summer, even if planted every year; others will produce a small crop and then become exhausted. Where irrigation is employed, of course results will be different. The advice to plant in the shade of buildings could hardly be followed, for it is difficult to find shade on the north side of a building during the middle of summer in Louisiana. Strawberries could be grown in a vineyard, but I think they would be out of place among fruit-trees, as it is essential that the trees be cultivated both ways so as to keep down the coco, crab-grass, Bermuda, coffee-weed, and the pig-weed. These weeds grow in the south with great rapidity. To grow strawberries among cane would, I think, be about the worst method to adopt. If cane did not take up so much room, if the stalks had no crooks, and if it did not need the ground for a whole year, or if its root could be got rid of during the winter, the case might be different. Cane is growing nearly the whole of the year, and when the top is not active the roots are. I have often tried to arrive at the best plan, and I once thought of trying the following: Plant on shallow ridges three feet apart, running east and west, making the lands wide enough for five rows. Plant the two

outside rows near the dead furrows with some vigorous-growing corn, say, Mosby's Prolific, planted in the middle of May. This plan would allow of constant cultivation during the summer, and as soon as the cool weather came the corn could be removed. Land that is very foul with coco ought not to be planted to strawberries before some effort has been made to rid the land of the pest. To do this, several methods have been advocated, but the best is to sow the land for a couple of seasons to cow-peas. When selecting plants it will always be found that those that are raised in the south will stand the heat and drought better, and give more satisfactory results than the plants obtained from the north. The earliest strawberry to my knowledge in the south is Stevens. This variety gave ripe fruit the first week in January last. If I were planting I should choose from among the following varieties: Stayman's No. 1, Haverland, Belmont, Kentucky, Parker Earle, Eureka, Tippecanoe, Henderson, Warfield, Hatfield, Michel Early, Great American, Manchester, Ohio, Enhance, Sharpless, Crescent, Stevens, Hoffman, Bomba, Gandy, Jessie, Capt. Jack. Plants of Kentucky and Wilson obtained from Homer, Louisiana, grew well during the summer, while the same varieties obtained from a northern grower failed. A variety of good promise is Bauer's No. 7. Charles Downing and Excelsior grew well during the early summer, and produced a good crop of fruit, but did not survive the heat and drought of May and June. The following varieties are good and can resist the heat: Ohio, Centennial, Bubach, Corille, Jucunda, Pearl, Louise, Ivanhoe, Cloud, Middlefield. Next to these may be placed Mark, May King, Crystal City, Warfield, Monmouth, Indiana, Pineapple. The following varieties died out during the summer, although they had exactly the same chance as the others: Charles Downing, Excelsior, Carmichael, Lady Rusk, Jewel, Norman, Cornelia, Crawford.—H. W. SMITH.

2747. **Remedy for Scale-Lice.**—The insect referred to has the scientific name *Lecanum tulipiferæ*. "These scale-lice," says Professor Cook, in *Gleanings*, "belong to the true bugs, and, though so small, each is armed or equipped with an effective suction-pump, its slender beak. This it inserts in the tissue of the leaf, and then it commences to suck the sap and life from the tree. Though each one is so small, yet from the millions of sappers, and their constant pumping, the tree soon commences to languish, and, unless relief comes, will die in about three years. Just before the autumn winds carry the leaves to the ground, the now partly grown lice migrate to the tender twigs, and once more anchor by again inserting their suction-pipes, which are now much larger than at time of hatching. As the spring sets the sap in rapid circulation, the lice commence a more rapid pumping, as instanced by their rapid growth. In July the eggs are deposited under the scale, and the parent louse dies; yet the scale, now large, brown, and plump, remains to cover and protect the lice. Thus we understand the full life history of the insect. That these insects would soon kill the trees if left undisturbed, there is no question. Some fine tulips on our college campus did die from this cause; yet this rarely occurs. The very abundance of the lice makes the path of their enemies, birds and insects, a very smooth one, and so

very soon the lice are conquered and our beautiful trees saved. Twice in twenty years our trees have been attacked seriously; but in both cases our insect-friends and the birds have come to the rescue in time to save nearly all the trees. Four years ago these lice were very abundant, and our trees seemed certainly doomed. This year it was hard to find specimens of the scales to show my class. A few trees may be killed, but very few."

2745. **Soot for the Lawn.**—The soot from your boiler, if scattered upon the lawn, may aid somewhat in freshening up the color, and in producing a more vigorous growth. It would not do, however, to depend on it alone. By all means use a good dressing of some good, high-grade complete manure, either one of the special lawn-fertilizers, or a special potato or fruit-tree manure. Any one of these will answer, if applied broadcast in early spring, at the rate of from 500 to 1,500 pounds per acre.

2746. **Acme or 'Shense Apricot.**—This variety is known under three names, viz., Chinese, Shense and Acme apricot. Prof. Budd introduced it from China, and the first plants were sent out under the name "Chinese apricot." The pit from which the original tree was grown came from the Province Shense, which name was afterwards given to the new fruit. Still later, Carpenter & Gage, of Nebraska, sent it out under the name "Acme." Prof. Budd advises that this last name, which has become commercial and best known, should be generally accepted. The tree has been much harder in Iowa than any of the Russian sorts, in wood as well as in fruit-bud and blossoms, and its large, handsome foliage has thus far remained perfectly free from disease.

2742. **Strawberry-Plants from Old Beds.**—We greatly prefer plants from beds that have never borne a crop. Fruit-bearing can not be otherwise than a strain to the vitality of a plant, and consequently runners produced on old plants after fruiting can not be expected to be as strong as those from new beds. This is not only sound in theory, but also in accord with the observation of practical growers.

2743. **Marketing Cucumber-Pickles.**—Farmers and fruit-growers in this vicinity very generally use a handy slatted crate, that holds about a bushel and a peck, for carrying most of the bulky products of gardens and orchards. These open crates are almost invariably used for shipping cucumber-pickles, of which they usually hold from 500 to 600. The empties, of course, are returned. These crates are sold in the flat by local manufacturers, at about 11 cents each.

2744. **Remedy for Flea-beetle and Blight.**—The flea-beetle on potato-vines is hard to fight. We have tried almost everything with little or no success. The only thing that now promises relief, is spraying the vines with a very strong decoction of tobacco-stems or other refuse. Blight of the leaves can be prevented by frequent and thorough sprayings with Bordeaux mixture, or perhaps with the ammoniacal solution of copper carbonate. Still, we are yet very much in doubt whether this treatment pays or not. The applications may cost more than the part of the crop which we thereby save may be worth.

2727. **Preventive for Plum-Rot.**—The brown rot (*Monilia fructigena*) attacks the flowers, leaves and fruit

of the cherry, plum and other stone fruits, and even of the apples. Burn all infested fruit and leaves in autumn. Before buds expand in spring, spray with sulphate of iron (green copperas). When the flowers are opening, spray again with sulphide of potassium, and repeat this application at intervals of a week or two until the fruit begins to color.

2818. **Early Peas for Market.**—Any of the Extra Earlys, or First Earlys offered by seedsmen, or Alaska, may be selected for first early crop. For a wrinkled pea, many gardeners plant American Wonder. We plant McLean's Little Gem.

2814. **Planting Onion-Sets.**—Sets grown last year to be planted out in spring, can not be too small for good results. When larger than a marble or walnut, they are apt to send up seed-stalks to the detriment of size and keeping quality. If the "sets" are seedling plants, grown in hotbed or greenhouse in winter, they can hardly be too large. We like them best when the bulb is about 3-16 to ¼ inch in diameter.

2812. **Juneberries for Market.**—We have reports of growers who find Juneberries a profitable market crop. The general grower will do well to go slow, however. There are difficulties and uncertainties. First you must ascertain by careful trial whether your market will take kindly to the fruit. Next you must get improved varieties, and plants of these are rather high-priced. The plants can be propagated from seeds, also from the sprouts that form freely about the old plants.

2813. **Japanese Persimmon for Market.**—Growers in the south and on the Pacific coast may have some prospect of making Japanese persimmon culture pay. People in Indiana should turn their attention to something else. The Japanese persimmon is not likely to succeed in that state.

2811. **Cooking Henderson Bush Lima.**—Shell the beans soon after the green pods are picked, wash and put them into boiling water with a little salt; when tender, drain off the water. Serve with a cup of sweet cream or milk, with a lump of butter in it. Salt and pepper and let them simmer a few moments.

2810. **Planting Peach-Pits.**—In spring you will probably find the majority of the pits cracked or easily opened. Pick out the meats and plant them in drills in nursery row and cover two or three inches deep, firming the ground well over them.

2808. **Peas and Beans in Succession.**—As a rule it is best to follow a strict system of rotation in order to give less encouragement to insects and diseases. Still, there is not much objection to planting peas and beans in succession just as long as they seem to do well.

2806. **Planting Dwarf Pears.**—The method usually practiced by good growers is to set the trees quite deep so the lower end of graft or bud will be below the surface of the ground. This gives the scion a chance to throw out roots, and will gradually transform the dwarf into a standard. The Angouleme does well on quince, however, and it may be a question whether the transformation into a standard is desirable.

2695. **Sawdust as a Mulch.**—Basswood sawdust is valuable because it decays; but pine sawdust is so full of pitch as to be practically indestructible. Good au-

thorities state that it injures rather than benefits the land. When applied as a mulch, the tendency of the sawdust would be to keep back the plants if put on deeply. They might be retarded too much. I would experiment in a small way with it at first by putting it on after a soaking rain when the berries are about half-grown. Even then I would not put it on over an inch deep.

2722. **White Grubs in Strawberry-Beds.**—Dr. Lintner stated at the Oswego Horticultural Institute that white grubs may be kept away from strawberry-plants by turning burdock or quassia tea around the plants. This tea is made by steeping the leaves of burdock or of quassia wood. It is very distasteful to the white grub, and drives him away from the roots. Of course, this is too expensive to try on a large plantation, but with a few expensive plants it may pay, especially if white grubs are known to infest the soil. A better way is not to plant strawberries on infested soil. Land cultivated in hoed crops for three years will be free from them.

2734. **Willows Poisoning Water.**—Willows growing in and about a pond do not poison the water. On the contrary they help to purify it. Willows are great drinkers; we have known them to run over a 100 feet in search of water. They frequently fill up wells with their roots when planted adjacent to dwellings.

2736. **Pine Sawdust as Manure.** Mr. Heagerty, who has had much experience, stated at the Oswego County Fruit Growers' meeting, that he had tried pine sawdust as a mulch for pears and they all died. He thinks it induces blight. Another member said if pine sawdust were used the soil would soon produce nothing but sorrel. Straw makes better manure.

2621. **Pruning Currants.**—The bush form is preferable to trimming to a single stem. Encourage new shoots to grow from the roots each year, and cut out the old ones when two or three years old. Cut back the new growth about two-thirds every year. This induces a short-jointed stocky growth which is necessary for great productiveness.

2628. **Japanese Wineberry.**—This is soft, like red raspberry, and about the size of blackcaps. The fruit is wine-colored, very beautiful and attractive. It probably will not be grown much for market, because it is small for a red raspberry. But for home use it is worth trying for an ornamental plant, if for nothing else. It grows like blackcaps.

2630. **Stone Hardy Blackberry.**—As the climate of Indiana is about like ours, I think this variety will succeed there. In New York, it is entirely hardy and extremely productive. The fruit is small and belongs to the round blackberry class. It must be rigorously pruned and then the size is quite respectable. The flavor is about like Snyder. In fact, it so closely resembles that variety, that it might be appropriately called a Late Snyder.

2645. **Growing Potted Strawberry-Plants for Market.**—The value of potted strawberry-plants is greatly enhanced if they can be grown to marketable size early in July. Spring-set plants do not begin to run much till then, and it is hard to get good potted plants from them before August 1 to 15. I should set the plants

to grow potted plants from, the previous August or September on a piece of land from which a crop of peas or potatoes had just been taken. These plants should be covered with something heavy, like earth or horse-manure, just before the ground freezes up, to keep them from heaving out. In the spring cultivate them early quite deep, close up to the plants. Hoe frequently and do not let the weeds get started once. If you do, they are unredeemable. Pick off all the blossoms and the first few runners. When the runners show by their size that the plant is strong enough to endure the drain on it, allow them to grow. Fill the pots with soil and sink in the earth—the top on a level with the surface. Put the young plant over this and hold it in place till rooted, with a stone or a handful of earth. When the pot is full of roots, take up and place in partial shade, when they may be watered till hardened off. When, after watering, the plant will not wilt in the sunshine, it may be shipped away or set out permanently. This "hardening off" is very important.—L. J. FARMER.

2724. Fruit-Trees for Northern Missouri.—Of apples, the Ben Davis stands first for regular crops and quick returns, followed closely by Willow Twig and Jonathan. These are the three best commercial varieties. For a succession for family use, Early Harvest, Benoni, Primate, Maiden Blush, Fameuse, Rambo, Missouri Pippin and Limber Twig may be mentioned as reliable varieties for this section. Of pears, plant Anjou, Kieffer, Howell, Duchess and Seckel. Bartlett seems to be the most subject to blight, and soon succumbs. English Morello and Early Richmond cherries are always reliable. Of plums, Wild Goose, Miner, Pottawattomie, the Blue Damson, and possibly the Wolf, are considered the best.—E. L. P., Clinton Co., Mo.

2820. Arrangement of Hotbeds and Greenhouses.—I am familiar with many experiments in heating hotbeds with hot-water pipes, and all have been unsuccessful. The heat generated by this means is difficult to govern. Generally speaking, it affords too much heat, producing weak and sickly plants. Fresh, unfermented horse-manure seems to afford just the genial bottom heat relished by growing vegetation, but, even with this, care must be exercised lest it afford too much heat. The aim should be to make all growth under glass stocky and robust. The greenhouses of Boston market-gardeners are mostly of the lean-to style. The back is from 10 to 15 feet high, studded with 2x4-inch studding, boarded up with matched boards inside, and boarded and clapboarded on the outside. The front or lower elevation is constructed of glass, and four to five feet high. The foundation upon which the structure rests is made with cement puddled with small stone, which is molded in shape by standing on edge two parallel boards which remain until cement is set. This makes a very durable foundation, cheaper than brick. The foundation extends into the ground about 4 feet, and rises above the general surface some eight inches, thus keeping the sills from contact with wet earth.—E. P. KIRBY.

2692. Growing Beans in Orchard.—The following is my method: Plow and thoroughly harrow ground, and plant about May 25, with a two-horse corn-planter, one-horse drill, or hand-drill, or mark off furrows with the plow and drop seed by hand. I plant four or five inches

deep, even deeper in light soil. The rows are about three feet nine inches apart, and hills 14 inches apart. I drop two beans to the hill. Cultivate, clean often, and level not more than two inches deep until blooming; then stir ground only between the rows if necessary. Never touch the ground when there is dew or rain on the leaves. Beans make their growth mostly during the dry season. So level culture is best. Harvest when ripe and dry. I have a variety that drops all leaves when it is ripe; but if leaves still adhere to plants, be sure they are dry enough. I gather by driving a two-horse wagon with high side-boards, astraddle one row, and with three hands, one to each side row and one to the center row, we pull the plants up place them in the wagon. When loaded, I drive direct to a shed or yard and spread out in the sun. Some gather and pile three rows together and leave in field to dry; but I want my beans where I can have them safe from rains. A little work when rain is threatening will get the beans in the shed. They can be handled like hay, and with six-tine forks can be carried in and stacked up in the shed, and spread thinly to dry. When dry, in about one week if they get plenty of sunshine, I begin threshing with the flail. The beans are then cleared in a fanning-mill, and if clean, are then ready for market; but if not, it pays to hand-pick them. Try the home market for sales. I can sell all I raise for \$2.50 per bushel here in our own small town. In planting in orchard do not plant in the tree-rows, but on each side; so as to work between bean row and tree-row, without injuring either tree or plant.—CLYDE CURLEE, Perry Co., Ill.

2175. The Best Yellow Gladioluses.—Some kinds (not many) are found in the catalogues; but yellow varieties whose flower and spike are equal to the best gandavensis varieties of other colors do not exist. Nearly every kind is more or less marked with dull purple; an unpleasant combination in good years and in wet summers positively ugly. Ophir is an old sort, which fifteen years ago was much praised in the catalogues. Eldorado is another, which formerly held a conspicuous place. I think neither variety worth growing, nor were they ever so, except for the scarcity of sorts with yellow grounds. Isaac Buchanan, an American seedling, was sent out as "the best yellow." I grew it three or four years; it was much purple-stained at first, and grew worse year by year, and I discarded it. Yet, at Millis, barely ten miles away, where J. W. Clarke grows those fine seedlings which delight us annually at the shows of the Massachusetts Horticultural Society, I saw it, a thing of beauty indeed. Mr. Clarke uses it much as a parent of his new kinds, and its influence is perceptible in the fine yellow tint which many of his have. Yet even in his soil there is too much purple with the gold. The best undoubted gandavensis yellow I have found is Citrinus, which gives a fine large flower with less stain than any other sort has, but it is of a weak constitution, makes but few offsets and is hard to keep. There is one sold as a true species, *G. sulphureus*, which is of a soft, pure unmarked yellow, and this I regard as the best of its color, since it is always pure in hue. I am not sure of its status in the genus; its flowers are identical in shape with those of the gandavensis hybrids, and I do not find it as a species in Baker's revision of the genus; on the other hand, it

does not vary from seed, and its habit of growth is peculiar. Whatever it may be botanically, it is the best yellow, although it is too small both in spike and in flower to be wholly satisfactory. *G. primulinus*, from Caffraria, is a pure yellow, but is smaller than *G. sulphureus* and is not yet in commerce.—W. E. ENDICOTT, *Norfolk Co., Mass.*

2704. **Propagation of Clematis.**—The best method as far as my experience goes is to layer by pegging down the lateral branches as soon as sufficient growth has been made. The process of propagation is much hastened by making an incision half way through the branch lengthwise about half an inch, and covering with soil.—MRS. E. L. P., *Crawford Co., Pa.*

2721. **Wintering Cannas.**—Cannas can be wintered by putting the roots in boxes, and shaking a little dirt through them and storing them in a cellar free from frost.—H. C. T.

2729. **Roses Failing to Bloom.**—Your last statement no doubt explains the true cause of their not blooming. Stop the rampant growth by severe pruning, and you will have plenty of roses.—H. C. T.

2732. **Winter Storage of Bulbs.**—Why did you keep your tulips in the house? They should be planted out in the fall to bloom in the following spring, and only kept in the house during the summer months. Tuberoses should be wintered in a warm place where the temperature does not go below 50°. Callas can be grown in the house during winter, and will cheer you with many blooms, or may be dried off and wintered in a warm cellar. Pancratium or Spider-Lily is to be wintered in cellar. Plant your freesias in the fall; they bloom luxuriantly during the winter. Iris and ranunculus should have been planted out in the fall, and protected from severe frosts. Easter Lily should always be kept in the soil, both when growing and when at rest. Leaving them out of the soil weakens the bulbs. Chinese Lily should be forced in water and afterwards planted out in the garden and protected during severe frosts.—H. C. T.

2717. **Nitrate of Soda on Onions.**—It will more than pay to use 500 lbs. of nitrate of soda on 1¼ acres. You had better get 700 lbs. for that amount of land and sow it broadcast, 100 lbs. at a dose; and repeat the application every 10 or 12 days, according to the dryness of the season.—ANDREW S. MUSSER.

2738. **The Ventilated Barrel.**—We believe this is a good thing for shipping vegetables in summer. In Canada it is manufactured by the Joseph Williams Co., of Goderich, Ont., who tell us that they could sell the barrel complete, but not put up, at 17 cents each by the carload. It costs about 2 cents apiece to put the barrel together. In the United States, the chief factory is at Muskatine, Iowa, I. A. Kerr, of that place, being the patentee.

2804. **Varnish for Muslin to Cover Hotbeds.** Try a mixture of raw egg and raw linseed-oil, giving two coats.

2776. **Onions for Winter Market.**—Long-keeping varieties are best, such as Danvers Yellow, Yellow Dutch, White Globe, Red Wethersfield, etc. For starting seed in hotbed and transplanting, the best varieties are Prize-taker, Spanish King, and White Victoria. All these had better be sold as soon as possible after they are fit for market.

2802. **Nitrate of Soda on Strawberries.**—An excess of nitrogen in the manure applied is generally supposed to increase size of fruit at the expense of solidity. Under average conditions, it is doubtful whether nitrate of soda is a desirable manure for strawberries, except, perhaps, when applied sparingly very early in the season to promote early development of foliage, and thus perhaps earliness of fruit, or when applied on new plantations to stimulate plant-growth.

2800. **Pruning Peach Trees.**—The kind of pruning that we consider most beneficial for peach trees that have barely escaped death during the first season after setting, consists in tearing them up and replacing them with new sound ones. No peach tree received in good condition from the nursery, and properly planted in good soil, will succumb to any ordinary drouth. If a tree does, it seems that something was not just right with the tree, the planting or the soil. On the whole, we would rather set another tree with all its vitality intact, than try to nurse one back to life again after its vitality has once been greatly impaired.

2799. **Comparative Value of Manures.**—The manure from well-fed horses and cows, not injured by leaching or burning, put down on the ground, is worth \$2.50 per ton, when compared with the usual rates paid for plant-foods in commercial fertilizers. For special purposes, as, for instance, to obtain quick results, or supply certain elements of plant-food separately, or in different proportions from those found in stable manures, the grower can afford to pay the full price for special manures, when stable manure could be had at a comparatively low rate. The manure-buyer and uses has considerable need of good judgment in this matter. When dry muck is easily available, it is the best and cheapest absorbent in stables, etc., to be found.

2790. **Sowing Grasses in Spring.**—When the ground is in good condition and well prepared, the inquirer will find no difficulty in getting a good "catch" of clover and timothy without planting anything else. If he desires to get "something" off the soil, he may sow grain—oats, barley, spring wheat, or whatever it may be—but rather thinly. If the grain crop is wanted, as a protection to the young grass, and for no other purpose, buckwheat sown at the rate of one peck per acre might be tried.

2788. **Kainit and Nitrate of Soda** can hardly be compared. Kainit supplies potash; nitrate of soda supplies nitrogen, and each one occupies an altogether different place in the economy of plant-growth. Kainit has 12 or 13 per cent. of potash, consequently has a value as plant-food, of \$11 or \$12; while nitrate of soda, having 15 or 16 per cent. of nitrogen, is worth \$40 to \$45. Kainit is valuable as a manure for tree and small fruits, potatoes, etc., when supplemented with the other elements that may be needed. It is also excellent on mucky grass-lands. For vegetable crops, if used at all, it should be applied during fall or winter.

2783. **Sowing Onion-Seed in Hotbed.**—We sow seed this month, at the rate of about 1¼ to 2 ounces to the ordinary hotbed-sash. Usually we sow in the rows 2¼ or 3 inches apart; but if the soil is free from weeds, the onion-seed might be sown broadcast, thus giving each young plant the best possible chance of development.

CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Vegetation Without Foliage.—As a general rule the life of a plant is not long prolonged without the aid of its foliage. "Recently," says the *Bulletin d'Arboriculture et Floriculture, etc.*, "we noted the persistence of life in a fir tree, of which the trunk, broken a yard above the soil, and immediately deprived of its branches, has continued to live in this state for eighty-six years. The *Revue Horticole* reports an analogous fact, except that the duration of vegetation has not been so long. Some trees of *Abies excelsa*, growing too closely together and already having a thickness of six inches, were felled at eighteen inches above the soil. Ten years later one of the spruces in question, being quite deprived of its branches and leaves, was found furnished with a cushion-like outgrowth all round the cut. According to the journal cited, that was explained by a sort of union or grafting by approach amongst the roots of the subject cut down and those of the tree remaining upright about nine inches distant."

Preserving Greenhouse Benches.—About ten years ago I read, dreamed or discovered that water-lime was a great preservative of wood, and I am sure I have saved several hundred dollars by its use. The life of a common pine or hemlock bench one inch thick is with me about four years, used for ordinary purposes. Nine years ago I first tried the cement on a bench which has been used summer and winter ever since, some times with six inches of sod, other times with sand and ashes. That bench has never had a board repaired in it for nine years, and I think it is good for another year at least. It is safe to say the cement will preserve a bench twice as long as without it. The expense is one dollar per barrel and a barrel will do at least 3,000 square feet of bench surface. It should be put on just as thick as it can be spread with a whitewash brush, and not much mixed at a time, as it soon "sets" in the bottom of the pail. It is time and money well spent to apply it to all parts of the benches, tops of the legs, surface of the cross-pieces, in fact wherever the wood comes together. With a little common lime added it is an excellent thing to put on the inside surface of the greenhouse walls. It makes the walls plenty white enough and will long outlast paint or common whitewash made of quick-lime. Why the cement should be an excellent preventive of rot is, I think, plain to see. The particles of cement entirely fill up the sur-

face pores of the wood and stop there to prevent water from getting in.—*William Scott, in American Florist.*

How a Little Garden Helps.—Last fall I hired a house and lot of perhaps one-third of an acre. On it some thrifty person had set an apple tree, two plum trees, a peach, two quinces, four pear trees, that ripened from early to late, two cherries in front, half a dozen grapes of two sorts, currants, raspberries, blackberries and strawberries. All these had been growing long enough to bear well during the last summer and fall. Without going beyond this small piece of ground my family have had an abundance of luscious fruit for four consecutive months. Besides this, a small plat was devoted to vegetables. I estimate that we have obtained fresh, appetizing, healthful food to the extent of at least \$30 already, and we still have quite a quantity of fruits, carrots, parsnips, cabbages, salsify and other things that will help along this winter. Never before have I so fully realized how far a small piece of land economically planted will go toward supporting a family. If every laboring man in the country could be settled as happily as I have been during the past year they might save a little sum yearly which would put them in comfortable circumstances in old age. Some one asked me why I did not pick a part of the grapes and sell them; they would bring \$1.50 per bushel. I replied truthfully that I thought them worth more to hang on the vines for my family's use till late, and so it has proved.—*New York Tribune.*

Sex in Strawberries.—Some say they want a variety that will fertilize itself; others contend that the pistillates, as a rule, are the most productive. To some extent this is true; but what pistillate will excel Captain Jack and Vick in this respect? If a variety is good and productive, though a pistillate, I am satisfied with it, as the planting of staminate alongside is an easy matter. Hereafter, if I can have the different sexes, equal in value, my aim will be to plant at least two-thirds of pistillate, to one-third of staminate for the good reason that the staminate varieties are more likely to be nipped with frost on the same grounds with the pistillates. In a letter from a pretty extensive grower, he states that his staminate varieties were injured to at least two-thirds of the crop, while the pistillates escaped; so his crop was cut down to the extent of only 400 bushels. I think he did pretty well to get that quan-

tity. This reminds me of a most signal failure I had some years back, when I had nearly all staminates. A

tural Society. Naturally they attracted considerable attention. There are not many species of primula with the flowers arranged in several whorls on an erect scape. In cultivation we have only four, viz., *P. Japonica*, *P. prolifera*, *P. Poissoni*, and *P. imperialis*. The last named may be called a yellow-flowered gigantic form of *P. Japonica*, for the two are much alike in general characters. *P. imperialis* has leaves eighteen inches long by five inches wide; a scape half an inch in diameter at the base and from three to four feet high, bearing four to six whorls of from twelve to twenty flowers each. The tube of the flower is half an inch long, and the expanded portion is three-quarters of an inch across; the color is rich deep yellow tinged with orange. It is not unlikely that *P. imperialis* will prove as hardy in England as *P. Japonica*.—*Gardeners' Magazine*



FLOWER-WHORL OF PRIMULA IMPERIALIS.

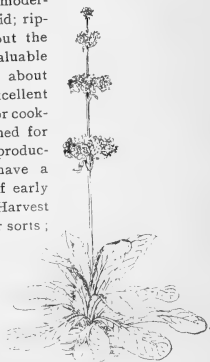
late frost made an almost clean sweep, yet left considerable fruit on the pistillates.—*Samuel Miller, in Gardening Illustrated.*

Primula imperialis.—Numerous attempts were made to introduce this Javanese giant into England. But the plant could not be brought over alive, nor would imported seed germinate. When Alfred Wallace visited the Malay Archipelago he saw this primula growing on the summit of Mount Pangerango, in Java. At 9,000 feet we first met with the beautiful royal cowslip (*Primula imperialis*), which is said to be found nowhere else in the world but on this solitary mountain summit. It has a tall, stout stem, sometimes more than three feet high; the root-leaves are eighteen inches long, and it bears several whorls of cowslip-like flowers instead of a terminal cluster only. It only exhibits its elegant blossoms under the damp shade of the thickets. Seeds of the Java plant were now and again sent to Kew, and by way of experiment some of these were soaked in hot water at the time of sowing. The result was that some of them germinated, and in June last a group of plants in flower were sent to a meeting of the Royal Horticul-

ture Society. Naturally they attracted considerable attention. There are not many species of primula with the flowers arranged in several whorls on an erect scape. In cultivation we have only four, viz., *P. Japonica*, *P. prolifera*, *P. Poissoni*, and *P. imperialis*. The last named may be called a yellow-flowered gigantic form of *P. Japonica*, for the two are much alike in general characters. *P. imperialis* has leaves eighteen inches long by five inches wide; a scape half an inch in diameter at the base and from three to four feet high, bearing four to six whorls of from twelve to twenty flowers each. The tube of the flower is half an inch long, and the expanded portion is three-quarters of an inch across; the color is rich deep yellow tinged with orange. It is not unlikely that *P. imperialis* will prove as hardy in England as *P. Japonica*.—*Gardeners' Magazine*

Apples Along the Roadsides.
—The pleasure derived from watching the growth and the fruitage of the different varieties is a delight that the uninterested know not of. A marvel of productiveness is the Yellow Transparent apple, a tree of which fruited the first time on my grounds last season. The clear whiteskin becomes pale yellow when mature; flesh crisp, tender and moderately acid; ripens about the

last of August; truly a valuable acquisition. Primate, ripe about the same time, is another excellent variety. Sufficiently sour for cooking, it is also much esteemed for eating out of hand; very productive and hardy; should have a place in every collection of early apples. The old Early Harvest belongs with the early sour sorts; its merits are well and widely known. The old-time Sweet Bough, Early Strawberry and Golden Sweet are worthy attention; all ripening a little later than the foregoing, form a succession of early apples that afford pleasurable satisfaction to those having exercised the proper forethought. I have trees of all of the above planted by the roadside; vigorous and productive; of



PLANT OF PRIMULA IMPERIALIS.

easy access to the dwelling; also many of the later fall and winter varieties. All together give notable reward in a financial way; as farm-ornamentation they are unique and cheerful, and they afford to the passer-by the opportunity to test the eating-qualities of fruit so conveniently near.—*Irving D. Cook, in New York Tribune.*

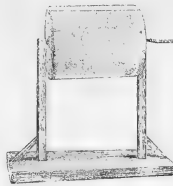
The Conference Pear.—This variety is a seedling submitted to the committee of the National Pear Conference in 1885. Fruit large and pyriform; skin bright yellow for about one inch below the stalk, beyond which it is yellow covered with bright russet; stalk one inch long, inserted without depression; eye open; sepals erect, placed in a shallow basin; flesh salmon-colored, by which the pear may be readily distinguished. Rich, melting, very juicy and buttery. This is a dessert pear of first-rate quality, equally vigorous on the pear or quince-stocks; on the pear-stock it begins to bear fruit



THE CONFERENCE PEAR—A New English Variety.

three years from the graft, and is therefore well-adapted for orchard and garden culture. It is a vigorous grower and an abundant and regular bearer, and likely to take rank as a standard pear in England.—*Gardeners' Chron.*

Peat-Sifter.—This sifting-machine is shaped like a drum, with ends made of wood. Three iron bars connect these ends, while the outer circumference is composed of fine wire netting, an aperture of the same material being provided to open and shut like a door for filling and extracting. The peat placed inside is tossed about in a ruthless fashion by driving a handle much the same as driving a revolving churn. It is ingenious



PEAT-SIFTER.

and useful, and at the same time is simplicity itself.—*Gardening World.*

Market-Gardening near Boston.—There has been a marked tendency of late for people to buy up the old farms in the vicinity of Boston and carry on market-gardening extensively. People who want to farm find that they can do it as well near Boston as in the west, besides getting all the benefits of living in the east. Since the collapse of the endowment orders there has been a healthier feeling in regard to investments, and many people are desirous of securing country homes for themselves. This accounts for the fact that the sale of farms has not been this season so dull as other departments of the real-estate trade.—*Boston Transcript.*

A New Turf-Cutter.—Where large breadths of turf require to be cut it has hitherto been a tedious process, and it is also difficult to cut the turfs to an equal depth, and perfectly square. The cutting part of this machine

is a round steel disc, with a socket for inserting into the handle; this disc is made to shift by a screw to cut any depth from one to three inches. The guiding-wheels are attached to the casting at a convenient distance on either side of the disc, and when it is cutting, these wheels keep the disc in proper cutting condition. The main casting is so constructed as to give the required weight needed for making the disc cut the grass freely. In cutting a turf a line is laid down from end to end, the disc inserted on the line, and the machine moves along quite freely. The sides of the turf are cut perfectly square and at an equal depth, which insures perfect accuracy, say for a tennis-green. The machine can be worked easily at a walking pace.—*Gardeners' Chronicle.*



A NEW TURF-CUTTER.

Preserving Fruits for Show Purposes.—The secretary of the World's Fair Commission for New Mexico describes the method to be used in preserving the immense fruit exhibit of that state in 1893, and by which the fruit can be kept without the loss of color, form or taste for an indefinite period. Take any good water-

at about six inches apart, in early spring. During the first summer pinch out the points of any shoots which may be growing away from the others, when they are about six inches long, repeating the operation as necessary to induce uniform growth. At the winter-pruning



PRESERVING FRUITS FOR SHOW PURPOSES.

tight barrel, closed at both ends. Insert a faucet at the bottom, and on one side saw an opening shaped like the one in the cut. Make the lower part of the opening to fit an inch board; the upper part to fit a saucer. Insert a piece of board about eight inches in length so that it extends at least six inches into the barrel. A cleat should be nailed across the outer end to prevent its slipping into the barrel. Fill the barrel up to the level of the opening with water. Now place a saucer two-thirds full of ordinary yellow sulphur on the board. Sprinkle over it a little common potassium chlorate. Light the sulphur and push it along the board till it is inside the barrel; then cover the barrel closely with an old blanket or quilt, winding it around so as to prevent the escape of the sulphur-fumes. Repeat this burning several times, till the water is strongly impregnated with the sulphur; then draw off the water in glass jars. Add an ounce or two of powdered alum to each gallon jar. The preparation is now ready for any fruit, and will preserve it indefinitely, although to obtain the best results sound fruit should be used.

A New Grafting-Device.—The cut gives a correct idea of the grafted as it is set on the stub ready for use.

The concave back-piece is set and held in place by the trigger working in the notches. To cut, the top handle is turned over to the right, and, acting as a lever,



HOIT'S GRAFTING-DEVICE.

drives the knife in, cutting the slot. It is quickly loosened and removed, the whole work being done in an instant.—From Catalogue of Hoit, Taylor & Co., of Cal.

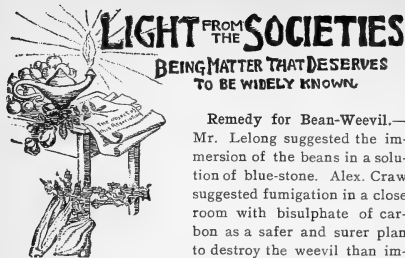
Some English Filberts.—Gardening Illustrated names the following as good kinds: Downton cob, here figured, a fine prolific kind; Bond-nut, excellent; Lambert filbert or Kentish cob, prolific, of fine flavor; Pearson's prolific, excellent; Cosford, excellent, early; and the purple and frizzled filberts. These nuts are commonly raised from suckers, but cuttings are better. The cuttings are made of the upper wood when of moderate size and well-ripened. Plant in a bed of rich sandy soil,



DOWNTON COB-NUT.

cut back to four or six inches. During the second summer the stronger shoots should be stopped occasionally to equalize the growth. At the end of the second year they should be large enough to transplant to permanent positions.

The Instincts of Trees.—Every one has observed how certain kinds of trees in a forest reach upward and outward for the sunlight. They cannot exist without it, and amid the crowd of competitors by which they are surrounded, they have a hard struggle to obtain the life-giving beams. Some kinds of trees which do not require much sunshine often envelop and half-smother those which require more, and which are compelled to run up their trunks to a great height in order that their crown of leaves may be exposed to the light. Frequently such trees resemble tall columns when viewed from the aisles of the forest below, as no branches appear upon their trunks until they have attained the top of the surrounding foliage. But if one would use his eyes to the best advantage, it is not enough to observe merely that some trees reach after the light more eagerly than others do. The differences in the kinds of trees that behave thus should be noted. Poplars, walnuts, hickories, willows, birches, pines and locusts thirst for the sunlight, and can not thrive unless they have plenty of it. Yews, beeches and spruces thrive in the shade. The reader would find a most interesting study in noting the preferences shown by different trees in this respect. Their instinct in following nature sometimes appears almost as surprising as that exhibited by animals.—*Youth's Companion*.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES
TO BE WIDELY KNOWN

Remedy for Bean-weevil.—

Mr. Lelong suggested the immersion of the beans in a solution of blue-stone. Alex. Crow suggested fumigation in a close room with bisulphate of carbon as a safer and surer plan to destroy the weevil than immersion in a solution of blue-stone, which is likely to have a detrimental effect upon the germs.—*California*

Entomological Society.

Spraying Apple Trees.—Before a recent Ohio meeting Mr. Ford exhibited photographs from the Ohio experiment station, showing the effects of spraying apples. Of two apple trees in close proximity, one was sprayed at the proper season and one left unsprayed. When the apples were ripe, 100 of them were promiscuously picked from each tree, great care being taken to be perfectly fair in the test. Of those picked from the sprayed tree, 85 were classed as perfect, 8 as second-class, and 7 as third-class. Of those from the unsprayed tree, 4 were perfect, 58 second-class, and 38 third-class. This experiment would seem to show, beyond doubt, that spraying of apple trees pays.

Starting Melons.—In April I prepare my bed where I intend to raise my crop of melons, without manure heat. It lies undisturbed until the soil is of the right temperature, not too wet. Then I plant the seed, about May 8. When they are well up, and before they show the third leaf, I transplant into hills under glass, four plants to each hill, and 32 hills under each sash. When they get so as to have four or five rough leaves, about June 5, I transplant to the field, using rings of sheet-iron to press down around each hill and hold the earth together, and then lift the hill, ring and all, on an eight-tined dung-fork, and carry it to the field, where it is easily planted without disturbing the roots of the plants; they hardly know that they have been moved.—*Mr. Frost, before a Boston Farmers' Meeting.*

How Potato Yields May be Increased.—Why is the average so low? The following causes, next to inattention to insects and diseases, are among the chief ones: (1) Planting in check rows instead of drills, and often at greater distance than needed. The best width of the rows, under average conditions, is three feet. This gives all the space needed for cultivation. Thrifty-growing vines will meet between the rows at midseason, and thus keep the ground shaded, cool and moist, and choke out weed-growth. If seed is planted 12 to 18 inches apart in the rows, rather than in checks three feet apart as usually done, the three or two plants to the yard, respectively, will yield more than the one to the yard. A common practice is to plant two seed-pieces of three or four eyes each into each check row. Every thrust of the knife into a seed-potato is a stab at the

plant's vitality. Whole potatoes always give the largest plants and consequently the largest yield of tuber. Cutting seed dwarfs the plant. We are obliged to resort to cutting, to some extent, in order to avoid the necessity of using an excessive amount of seed, but we should not carry the cutting practice to extremes, nor cut unnecessarily. Instead of planting two small pieces in a hill, we should leave the two pieces together from the start, and plant the one larger piece, thus obtaining stronger stalks and fewer to the hill. (2) Insufficiency of seed. I prefer a whole potato to a cut one for seed, for reasons stated. By using large seed we can often grow crops two or three times as large as those grown from very small pieces. I have never found it profitable to plant single eyes, no matter how rich the soil, nor how carefully prepared. When seed-potatoes are superabundant in the spring, and often they are on hand almost as an encumbrance, and fed to the cattle to "save them," we can use them to good advantage as "food" for the young plants. In such case I always plant whole potatoes. (3) Poor seed. A full crop can only be grown from fresh, plump seed-tubers that have not spent much of their energies in bearing a crop of foot-long, spindling sprouts in cellar or pit. "Poorness" may also be inherited. The vitality of any strain is severely injured by continued close cutting. Most growers misuse and weaken their potatoes in just this systematic way, and then complain that their potatoes "run out." We should take more pains with our seed-potatoes, and grow them separately and on a different plan from table potatoes. Why not grow our potatoes from seed invariably from whole tubers, and thus keep the original vigor of the strain or variety intact? When planting for table or market, we may safely cut the seed for once in the ordinary way without seriously diminishing the yield. The best of our newer varieties, coming more directly from the true seed, and being not yet weakened by injudicious treatment, usually have greater vigor, and consequently yield heavier crops than the older sorts that have been made to suffer under the merciless hand of man. (4) The common practice of ridging up the rows into great mountains with deep valleys between, especially in wet seasons or on wet soils. In a dry season, the ground, with its greater surface under the ridge system, dries out much faster than ground kept reasonably level, and under the protection of a few inches of well-stirred soil that does not allow capillary action to extend clear up to the outer surface. Cultivation is more convenient and can be continued longer on level ground than on excessively ridged land. With proper attention to these details, and avoidance of the mistakes pointed out, the potato crop can be made quite a different thing from what it has been in the past.—*T. Greiner, before a Welland County (Canada) Farmers' Institute.*

Rotation in the garden; safe but not always necessary.—Good land for any class of plants can be kept in condition to grow them as long as the cultivator proves himself smarter than the insects and fungi. It is said that cabbages cannot be grown on the same land two years in succession, but they are. Peter

Henderson had a piece where he grew cabbage six years in succession and had fine crops every year. I have seen fields in New Jersey where cabbage and cauliflower had been grown for twelve successive years without a failure. They used wood-ashes and marl for fertilizers, and trimmed the roots of the plants when set out, to avoid club-foot.—*Mr. Kinney before a Farmers' Meeting in Boston.*

Canada Fruit-growers and the World's Fair.—The following was adopted at the last meeting of the Ontario Fruit-growers' Association, viz: *Resolved*, That the Dominion Government be requested to provide the cost of transportation of our Ontario fruits to the exhibition, and for the maintenance and care, including boxing. *Resolved*, That the Ontario Government be requested to provide the cost of making a collection of the fruits of Ontario, and also for commissioners to superintend the same while on exhibition. *Resolved*, That this Association send a delegate to Ottawa to co-operate with the delegations from the Agricultural and Art Association and Stock-Breeders' Association.

Apple-Growing in New England.—At a meeting of the Massachusetts Horticultural Society it was stated that Dr. Hoskins raises his own apple trees, and considers budded or root-grafted trees equally good, provided they are well-grown. On level ground he plants trees 35x15 feet apart, removing every alternate tree at the end of twelve years. His trees are largely of the "iron-clad varieties," which come early into bearing. He prunes so as to give them all the light and air possible, as this adds much to the beauty of the fruit. O. B. Hadwen remarked that apples were very particular as to their soil and location. The Yellow Bellflower does well in many sections of New England. Apples grown in grass-land keep longer than those grown in cultivated land. If apples are wanted to keep late they should be grown in grass, but the land must be kept rich enough for both crops. If top-dressing is properly attended to, good crops of late-keeping apples can be secured from grass-land. He plants his trees 40 feet apart each way, and finds that this gives opportunity for grass to grow, and for teams to carry away the crops. He advises this distance on good land, but on less fertile or hilly land he would plant closer.

Iowa Fruits at Chicago.—The Iowa fruit-growers, at their last meeting, elected the Hon. C. L. Watrous superintendent of the horticultural display to be made by that state at the Columbian Fair in 1893. The exhibit is in good hands.

Does Small Fruit Pay?—My experience leads me to suggest that there is money in it for the thorough, intelligent, persistent, industrious grower, having a good location, a fair market and reasonable shipping facilities. The essentials are, good soil, well-drained, highly fertilized and always well-cultivated; a limited variety of best hardy plants, producing large, firm, high-colored fruit throughout the season; proper mulching, nipping, pruning, thinning of fruit, and winter protection; a knowledge of fungous and insect enemies, and

remedies for same; neat, uniform packages, well-made, fruit carefully picked, boxes well-filled, and above all, of uniform quality throughout.—*M. A. Thayer before Wisconsin Horticultural Society.*

Practical Points Wanted.—What we are looking for in reports of horticultural meetings, are points and suggestions concerning cultivation, varieties, or general management, as gathered from the papers and discussions; not a list of the papers read, nor a general and vague characterization or criticism of these papers. Our kind friends, secretaries of societies, etc., who favor us with reports, will please bear this in mind.

On Grape-growing.—In pruning my grapes all depends on the vine. I leave 25 or 30 buds on a vine. Copper carbonate is the best remedy I have used. I apply it about six times, beginning with the swelling of the buds in the spring. Bagging is all very well for a small area of vines, or if you want something nice for exhibition. I used the Bordeaux mixture on 1,100 vines, the whole expense not exceeding \$7.—*From Discussions of the Alton (Ill.) Horticultural Society.*

Paper-making Wasp using Grape Bags.—For a number of years the practice of inclosing the clusters of grapes in paper bags, to exclude the spores of black-rot, has been generally followed in the vineyards in this vicinity. In 1890 a peculiar shredding and perforation of the exposed sides of many of these bags was attributed to the poor quality of the paper. Last season a different and better quality of bags was procured, but early in July I again noticed the same appearance of wear. A few days after my sister announced that she believed she had discovered the author of the mischief in the rust-red social wasp (*Polistes rubiginosus*). While standing near a grape-vine she had been attracted by the faint sound of the tearing of paper. Supposing it to be a bird, attempting to peck the fruit, she made a motion to drive it away and was surprised to find that instead of a bird it was the insect above-named. In a few minutes, however, it returned, and alighting on the same bag began again, with the utmost energy, stripping off with its jaws, fibers and layers of the paper. These were rapidly gathered, by the aid of the front tarsus, into a compact packet and finally borne away. These observations were, in the course of the next two weeks, repeatedly verified. A critical examination of the fruit at that time, still hard and green, revealed not the slightest puncture, even when exposed through the holes gnawed in the bags. The unavoidable conclusion, therefore, was that this wasp had made the important discovery that working over ready-made paper into nest-building material was easier than to manufacture it *de novo* from wood-fiber. It may be added that as the paper used in the construction of the bags was probably made from wood-pulp, the original material was the same, but the insect in appropriating it reaped the benefit of the initial processes of manufacture. No other species of *polistes* or *vespa* have as yet been observed to make use of the bag paper, nor have all individuals

of rubiginosis learned the labor-saving trick, as I repeatedly saw them during the summer still gathering fibers of wood from fence-posts and boards after their time-honored fashion.—*Mary E. Murfield before the Biology Section, A. A. A. S., Washington, D. C.*

Fruit-Growers and Transportation Companies.—I noticed in one of our late issues a great complaint by growers that the transportation companies get the lion's share of the proceeds from the fruit-growers' efforts. We have had a great deal of like experience. In 1887, we organized the Arkansas Fruit-Growers' and Shippers' Union. Through this we have secured better rates and facilities from time to time, but we still have been subject to the difficulty of conflicting with other sections and glutting markets. By the organization of the Mississippi Valley Fruit and Vegetable Growers' Association recently effected, we expect to obviate the trouble materially, and finally overcome it entirely. Its success depends on complete co-operation by the growers in the sections embraced.—*R. J. Winn, Secretary.*

Missouri State Horticultural Society.—At its last meeting they adopted the following: *Resolved*, that the following measures be adopted as the standard: For apples, a barrel 28½ inches in length with chimes ¾-inch at the ends, diameter of heads 17¼ inches and diameter of center, inside, 20½ inches; for peaches, a 6-basket crate for fancy and ½-bushel box for medium to small peaches; for small fruits, a full dry measure quart-box shall be used, except for red raspberries, which shall be a shallow pint-box. The standard size of apples must be as follows: Ben Davis and other large apples, not less than 2½ inches in diameter. Winesaps and others of that class shall not be less than 2¼ inches in diameter and all shall be free of worms, scabs and bruises. In nursery stock Stark Bros. made a wonderful display from their 1,000-acre nursery. This firm believe in whole roots for grafts, and their exhibit of trees grafted on whole roots and on pieces gave a visible and substantial support to their belief and claim.

New Jersey Horticultural Society.—The following officers were elected at last meeting: T. J. Blackwell, Titusville, president; E. O. Beebe, Elizabeth, vice-president; Wm. R. Ward, Newark, secretary. Executive committee: J. M. White, E. O. Beebe, D. A. Vanderbeer, W. H. Goldsmith, J. B. Rogers.

Soils for Potting Plants.—Fibrous loam of good texture, with sufficient coarse sand for the purpose of giving the degree of porosity required by the character of the roots of the plants to which it is about to be applied, forms the best compost in which to grow the greater number of pot-plants in general cultivation. Heaths and plants having similar roots are, of course, excepted, and instead of the loam they require a good fibrous peat. Leaf-mold and well-decomposed manure are useful in the earlier stages of the growth of most plants; and in case of those annuals which are considered worthy of pot-culture, and require the protection of glass to bring them to perfection, both materials are of much service in promoting their healthy and early development; but

I have a decided objection to either leaf mold or rotten manure being employed, in however small quantities, as part of the compost intended for the growth of plants the balls of which are not to be disturbed, it may be, for years. For all such plants a compost of more durable materials is necessary. Although the former may for a short time produce a quicker growth in the plant, their power of sustaining it is limited in comparison with that possessed by good fibrous loam. In reference to large plants I would recommend broken potsherds or crocks equal to half-inch bones being mixed with the compost to ensure a good drainage; and as to manures, I prefer an artificial one. In reference to moisture, it is agreed by all who understand the matter that all potting-materials should be kept under cover, either in open sheds or beneath some material capable of protecting them from drenching rains. At the time of using they should incline to over-dryness rather than to the reverse. This is a good practice, and for this reason, that when a little over-dry they may be made as firm in the pots as possible without fear of undesirable consequences following therefrom.

There is a difference of opinion as regards the length of time turf should remain in a heap before it is fit to use on the potting-bench. My opinion is that three or four months is quite long enough. If left much longer the fibrous or organic portions of it will have become considerably decomposed, and these while undergoing decomposition contribute much to the health and vigor of the plants, the roots of which are in contact therewith.

Destroying the White Grub.—Mr. Race had used wood-ashes very freely in the fall, and thus had kept his ground free from them. Mr. Turner had had no success with ashes. Mr. Rice advised the growing of buckwheat whenever possible. Mr. Willard had found that his most effective way of dealing with them was to pay boys ten cents per hundred for all they could find, and that it did not take long to clear a piece of land of them. A preventive that is nearly as good if not better than a remedy, is to keep the ground clear, free from weeds and rubbish; the beetle never deposits her eggs on clear ground, but under shelter of some kind. James Fletcher, government entomologist, said that nearly all the available accounts of the transformation of white grubs contain inaccuracies which particularly affect the question of a remedial treatment. The eggs are laid by the female in June, she burrowing a short distance beneath the surface of the ground for the purpose. These hatch out in a few weeks, and the young grubs grow very slowly and are only a quarter of an inch long when the first winter sets in; at the end of the second growing-season they are about two-thirds their full size, and during the third season of growth (about July) they form a smooth cell in the earth and turn to pupæ, and before winter sets in they change to the perfect beetle, but remain in their cells until the following May or June. The difference between this life-history and that which is given in nearly all the published accounts is

chiefly in the time of year when the larva reaches full growth and ceases feeding; but small as this difference may at first sight appear to be, as was pointed out by Professor Forbes at the last annual meeting of the Association of Economic Entomologists, it might lead to unfortunate practical mistakes. It was thought that land found to be badly infested in the spring with active larvæ would, for that year, be useless for the cultivation of all such crops as are liable to their attacks. But this we now know is not the case, because nearly all full-grown grubs found in the spring, by the end of June will finish their distinctive larval feeding and turn to pupæ. But we also know that grubs that are found in an active state late in autumn, will also be active and injurious the following spring and well on into the summer. The greatest injury by white grubs is done to most crops during this last stage of their growth, as for the first year they are too small to do harm, and in the second also unless they occur in very large numbers, and only then to such crops as (like strawberries) are of a perennial nature.—From *Discussions of the Ontario Fruit-Growers' Association at last meeting.*

Western New York Horticultural Society.—The large attendance, the spirited discussions, and able, rather scientific papers, and fine display of fruits, again justified the national reputation which the Western New York Horticultural Society enjoys, of being the most wide-awake association of its kind. Ellwanger & Barry had their usual exhibit of numerous plates of pears, especially of fine Anjous, apples and other fruits. Herbert Jones exhibited a few baskets of the Fitzwater pear, which, though appearing rather diminutive in size compared with the enormous high-colored specimens imported from France, on a plate next to them, gave indications of being valuable on account of pretty fair quality. Samples of pure unfermented juice of the Niagara grape were shown by C. J. Baldrige, Kendaia, N. Y.

We recommend the suggestions in President Barry's annual address to the earnest consideration of fruit-growers. Ours, he says, is indeed a fascinating pursuit—one which always exerts a refining influence on mankind. It brings us in direct contact with nature in her loveliest forms and moods, and places before us at all times, in the most attractive manner, objects of beauty and interest, which, if examined and studied, excite wonder and admiration. It is an industry which, in addition to the advantages it confers from a business standpoint, contributes largely to the health, pleasure and comfort of mankind. To those engaged in it, it affords endless opportunities for experiment and investigation, and opens a vast field for improvement. Inseparable from the toils, anxieties and responsibilities it involves, there are peculiar delights, charms and surprises, and when the day's labor is accomplished we can turn from the serious and tedious work of money-getting to the consideration of subjects so beautiful, so wonderful, so interesting, that temporarily we are lifted

from the scene of our labors here to a new world. I often think that we do not fully appreciate our occupation, and that we fail to enjoy much that we could, were we as observant and studious as we should be.

Mr. Barry warns against packing and marketing inferior fruits, and recommends that trial be made in putting up choice, high-colored apples in smaller packages. Each specimen might be wrapped. His experience has shown that such a course pays with pears, and very likely it will with apples. Fruit-growers lose thousands of dollars in consequence of their neglect to thin their fruits. To maintain proper fertility is essential. Various difficulties present themselves, but the most formidable is the expense and the anxiety lest the fertilizers purchased may not accomplish the desired result. We must experiment.

The society has never had sufficient funds to meet the expense of publishing more than a fraction of the number of reports that could have been placed to good advantage. Now Secretary Smith, of the State Agricultural Society, proposes to incorporate the full report in that of the state society, at state expense; giving the report a largely increased circulation, and thus enlarging the scope of the society's usefulness.

W. S. Little names desirable evergreens hardy in western New York. The list is short. Many classed as hardy in the catalogues are not hardy here. This is not a question of temperature alone, but of soil, exposure, etc. Even our hardy white pine and hemlocks often suffer. The following will succeed without special protection. *Pinus montana* (dwarf pine), which is quite common and inexpensive; *P. cembra* (Swiss stone pine), more rare, distinct in form, compact and rigidly upright; retinospora, or Japan cypress, especially *R. pisifera*, *R. plumosa aurea*, *R. squarrosa*, *R. filifera*, and *R. obtusa*; hardy junipers; dwarf arbor-vitæ; blue spruces; *Abies Engelmanni*, more easily transplanted than the blue spruce; *Abies concolor*, if anything more beautiful than either of the others. The tint of the foliage is more silvery than blue, and the same above, as underneath. The tree is, however, more difficult to transplant.

James McMillan had a number of blue spruces for three or four years. They seem to be entirely hardy. D. S. Willard speaks highly of the blue spruce and tells of a specimen 25 feet high on the place of Mr. Maxwell, who probably would not take \$500 for it.

George T. Powell gave a history of that memorable show of fruits at the State Fair. French growers said that the fruit exhibit at the World's Fair in Paris did not compare with this in extent or quality. There were 671 entries, and 7,000 plates of fruit.

Lee C. Corbett, of the Cornell Experiment Station, said of asparagus, that the staminate plants have been found to produce earlier and heavier shoots than the pistillates. In cauliflowers a great step in advance has been made by the successful production of seed near the Pacific Coast. This seed is larger and plumper than imported seed, and has given great satisfaction. It is

also claimed that seed can be produced here cheaper than it can be bought in Europe. Egg-plants are grown to a limited extent at the north; yet there is no obstacle in the way of their successful production, if early-started, vigorous plants are set in warm, rich, rather moist soil, and properly protected from potato-beetles. Lettuce under glass is subject to mildew, and should be grown at a low temperature. The "new onion-culture" found favorable mention.

The potato-stalk weevil is the larva of a snout-beetle and bores into root and stalk. Then the leaves begin to turn brown, and as a result the tubers are small and few in number. Burning the affected stalk is recommended.

A. N. Prentiss says that there are few plants of economic value among the 100,000 flowering plants now known. Yet there may be some not yet known more valuable than any now made use of. We are placed before the question whether the introduction of new species be not more desirable than the perfection of those we already have. The production of seedless fruits might be worth consideration. We have seedless fruits now, as the banana, pineapple, etc. Are seedless grapes, as good as Concord, seedless raspberries, strawberries, etc., among the possibilities of the future?

Nurserymen will be delighted to learn that one of their worst enemies, the powdery mildew which attacks apple, peach and plum seedlings can be successfully fought at a cost of about 10 cents per 1,000 trees. Professor S. A. Beach, of the New York Experiment Station, gives as the first indication of the disease the appearance of cobweb spots on the leaves in spring. These spread until the whole leaf is covered. The disease attacks both the upper and under surface, but does not enter the tissues. It can be kept in check by five or six applications of the ammoniacal solution of copper carbonate at intervals of about 12 days, the first to be made when the leaves are about half developed. Both upper and under surfaces should be thoroughly sprayed.

The apple-scab is of more importance to orchardists. Professor Scribner estimates the loss by this disease to be $\frac{1}{2}$ to $\frac{1}{4}$ of every crop. In Professor Galloway's opinion the damage resulting from this source in 1890 was at least \$6,000,000. Cool, moist weather, and wet undrained soil favor the development of the fungus. It checks the growth of the skin; the apple grows one-sided or deformed, and perhaps cracks. The disease also interferes with the leaf-growth. The fungus passes the winter on the infested fruits, perhaps on buds and leaves. The cost of the treatment with carbonate of copper is about 25 cents per tree. Early applications are important. As a combination mixture for scab and codling-moth, the reduced Bordeaux mixture is now recommended, viz., 2 lbs. of sulphate of copper, $\frac{1}{2}$ to 2 lbs. of lime, 2 ozs. London purple, 32 gallons of water.

The apple-rust attacks mostly the foliage, more rarely the fruit. The greater part of the fungus growth is concealed within the leaf-tissue. The fungus is the

same which produces the cedar-apple, and may be fought by destroying the cedar-apples in the vicinity.

The apple ripe-rot is found to yield readily to applications of potassium sulphide or copper carbonate.

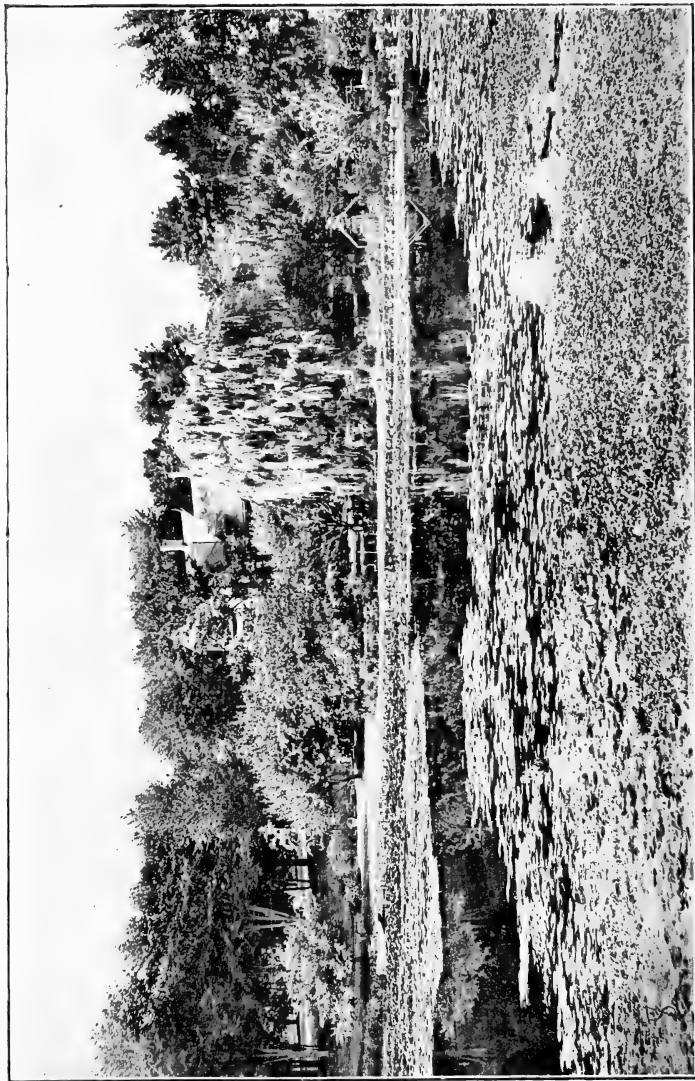
The gooseberry mildew resembles the apple powdery mildew, and is a good spore-yielder. It comes when the leaves are unfolding, and spreads rapidly. Plants of English varieties have been kept practically free for two seasons and good crops produced without injury to the foliage, by applications of sulphide of potassium in solution. This remedy is cheap and has now been well-tested. The formula is one oz. to two gallons of water. Dissolve in hot water and dilute; then apply with the knapsack sprayer. Give the first spray as soon as leaves begin to unfold, and repeat at three weeks' intervals, or after every rain. The cost for one application is about one cent for each 25 bushes. The effect is lasting, and better healthier growth will result next season.

A Michigan Pear-Grower's Experience.—The first mistake I made was in planting some varieties in which there is no profit for me. The next was in not planting dwarfs deep enough, nor keeping them headed back properly, and in earlier years in not being prompt to cut out the blight. Another was in planting varieties on soil not adapted to them. My experience and observation is, that there are but few varieties which, if planted on soil suitable for them will not be successful and profitable. Usually a strong, clayey soil is best for pears, but there are a few varieties that do well on the lighter soils, if kept well fed and cultivated. Of these there are the Bartlett, Howell and Louise Bonne. It will not pay to plant Duchess, Anjou or Sheldon on any but strong, fairly heavy soil.

The ground should be well-fitted before planting, by being worked very deep by the use of a subsoil plow. Make it rich with fertilizers, if it is not so naturally, and work or underdrain it so that no water will stand on the surface very long after heavy rains. I have an orchard of 1,000 trees, most of which are twelve years old, and it has been thoroughly cultivated every year during that time, except a portion of it that was left in grass for two years as an experiment, which was very unsatisfactory. The past season I had but one tree that showed signs of blight, while trees within three miles of my place, standing in sod, were nearly ruined the past two years.

The standard pear needs but little pruning, but cut back nearly two-thirds of the young growth of dwarf trees. If this is not done, and they are not planted deep enough, they will become a sort of half standards, and they will get top-heavy and tip over.

The past season my pears were sprayed thoroughly with the Bordeaux mixture before they blossomed or leaved out. After the fruit set, I sprayed three or four times more, at intervals of a week or two, according to the weather. In the later sprayings I put in Paris green at the rate of 1 lb. to 200 or 300 gals. of water, to destroy the codlin-moth and the curculio.—J. N. Stearns, to the Michigan Horticultural Society.



A LOVELY COUNTRY HOME: BEDS OF NYMPHAEA ODORATA IN THE FOREGROUND.
From a photograph sent by James Shepard, Hartford Co., Conn.

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FLORAL BEAUTIES OF OUR BOGS AND PONDS.

WATER-LILIES AND OTHER AQUATIC PLANTS.



THE MOST wonderful and curious, the most interesting and fascinating, the most beautiful and lovely of all our native plants are to be found among those that soak their feet in the waters of the bog, that wade or float in lakes and ponds, or waltz merrily in rippling brooks. Yet, with all their attractions these plants are the least known of all large classes, not because they are so rare, but because we so rarely go where they are.

One of the greatest charms of a dense swamp, which we penetrate only with extreme caution and in rubber boots, is its solitude. Perhaps no human being has visited it before in this season, or at most only a stray gunner or some crank of a botanist. Strange birds there hide away from their worst enemy—man—and one after another flutter up and away with shrill cries. The hungry but not solitary mosquito rejoices at another chance to present his little bill. But in spite of all this busy swamp-life, there is a death-like stillness here,

"Where hardly a human foot can pass
On the quaking turf of the green morass."

We only realize how great and loud is the din of civilization when we are where we cannot hear it. As we walk along, the beautiful green sphagnum, carrying ten times its own weight in water, yields gracefully to our feet and peeps into the tops of our boots. The tall ferns bend their tips in elegant arches over our heads. The liverworts, the lichens and the mosses vie with each other in

doing most to beautify the place, and thereby each lends beauty to the others. The pitcher-plants hold their wonderful seed-receptacles far above their curious cup-like leaves, whose lining of downward-pointed bristles converts them into insect-traps. All efforts to escape only force the prisoners farther down, and finally into the liquid at the bottom of the cup. Come here in winter time, and one may see where birds have made holes in the cups to get the insect food that nature has thus stored up for their winter use. The rank leaves and fruit of the wild calla (*C. palustris*) are preparing the plant for sending up, next spring, its delicate little white spathe, which we erroneously call the flower. Its cousin, the arrow-arum (*Peltandra undulata*), shows in summer time a similar but much longer spathe of a dark green color; and lucky is the intruder who can find the longer and greener spathe of that rare Jack-in-the-pulpit, which is also called the "great green dragon" (*Arisæma dracontium*).

There is one shrub or small tree, from 3 to 30 feet high, often found in swamps, sometimes on dry land, that commands our respectful attention. Its erect and abruptly ending branches are slightly spreading toward the top, but never drooping. Its bright green leaflets are in rows upon showy red stems, and its long, drooping thyrsoid racemes of greenish white flowers are followed by grayish white berries. It is *Rhus venenata*, or poison sumac. When one knows it by sight he quickly recognizes it at a glance, in summer or winter, and he who is susceptible to its venom will not desire a closer acquaintance. The dense foliage keeps the wind from carrying away the poisoned air with which the sumac, standing guard over some rare and beautiful plant, punishes any one who dares to wrest it from its hiding-place. It is not necessary to touch the sumac to get punished. Merely to venture into that poisoned air on a warm day is sufficient to receive the penalty, which lasts for days or weeks, sometimes becoming chronic; one case having been reported as lasting 30 years. It is well that our swamps are thus made difficult

of access and dangerous, otherwise some of our choicest plants would soon be exterminated.

Of all water-plants, the common white water-lily is probably the most generally known; and yet scarcely a single summer passes but that some visitor at Lakeside says they first saw them growing in the Lock-shop pond,* and in one or two cases they are said to have seen there the first flower. Water-lily is a name for several distinct genera, formerly placed in three different families, but now included in one. It is far removed from the lily family proper. This beautiful genus was

dedicated by the Greeks to the water-nymphs. It is generally tropical or subtropical, and its species have been themes for poets and designs for sculptors. The flowers have four sepals, herbaceous on the outside, but petal-like within. The petals are arranged in several rows, growing gradually narrower as they approach the center, until they pass into stamens. The fruit is berry-like and pulpy. About 20 species are known, 3 of which are natives of the United States. *Nymphaea odorata* has the greatest range of all, extending from Florida to Canada.

It is more particularly abundant along our coast, and yet if the tide breaks over the banks of a lily-pond so as to fill it with sea-water, the plants will all die. Those which naturally originate in a given locality often have features by which an expert, on seeing the flowers, can tell the location from whence they came. These features are not materially modified by a change in location, for we can easily assign each variety to its original location upon inspection, where several

varieties have been growing for years in the same pond. The fleshy root-stalks, several feet in length, creep along near the top of the soft mud, and are anchored by fine rootlets that extend deeper down into firmer soil. At short intervals side shoots or eyes extend, and from these and the end of the main root the blossoms come. The plant has no stem proper, but the peduncles and petioles which we call stems extend directly from the root-stocks to the flowers and leaves, and both have four canals or tubular passages from end to end. The leaves are round and parted to the center, making them somewhat heart-

shaped, the larger ones being over 15 inches in diameter. The white and showy flowers are often over six inches in diameter, sometimes seven.

The leaves and flowers float on the surface of the water, accommodating themselves to its depth, whether six inches or six feet. They thrive best in from one to two feet of water. When they grow in very shallow water, or are thickly crowded, some of the leaves will stand up above the surface. They like good soil, the richer the better, and will not live and thrive in very cold or swiftly running water. Still and warm water is just as essential to their



WHITE WATER-LILIES (*NYMPHÆA ODORATA*) AT "LAKESIDE."

growth as is running or cold water to our wild forget-me-not (*Myosotis palustris*). They are easily grown from a bit of root having one or more eyes, by tying it to an anchor and throwing it into the water. Some dealers say: "Do not tie a stone to them and throw them in, but press them firmly down into the mud." My experience is that they do best when anchored with a stone, or pinned down by sticks, with the root barely covered with soft mud. They are so light that they float unless fastened down, and if buried deeply enough to fasten them they are likely

* A private pond with water-plants at New Britain, Connecticut.

to die, for there is no surer way to kill them than by covering. When the roots have not been disturbed after planting, I have never known an instance where tying on a stone or brick anchor and throwing them in was not successful.

When once established water-lilies are very persistent. I once had the roots dug out of a little pond to exterminate them, but they only grew thicker. Thinking the work was not well done, we next year bailed out the pond and dug out every root we could find; but still they grew, for it was almost impossible to dig or pull them without some little pieces breaking off, and remaining to grow into large plants next year. I finally covered them with earth, and thus succeeded in killing them. Valuable plants are often lost by having the roots covered with the washing of floods. They will do well in a tub or tank, but a natural or artificial pond is better. The breeding of mosquitoes can be avoided by keeping one or two roaches (sun-fish) in the tub.

In Canada the fresh leaves are boiled and eaten as "greens"; the fresh roots are used as a part substitute for soap, and the juice of the roots, mingled with that of lemon, is used to remove freckles from the face. They have also been used for dyeing fabrics deep brown, the color being retained admirably. The purple stain is noticeable with much handling of either the root or stem. This species has also some repute as a medicinal plant.

With us the plants begin to bloom the last week in May or the first in June, and continue until the first week in October. Everything else being equal, those in the most shallow water will first come into bloom. One writer says that they open about eight o'clock in the morning and close about noon; but, in fact, the time of opening

and closing depends largely upon the weather. In a hot summer day they may open at five o'clock in the morning and close before noon, while in a cool and cloudy day they may not open until after nine o'clock, and will stay open all day. In a sunny day they are generally all closed by one o'clock. The older flowers first open in the morning, and are the last to close; and thus a person sometimes begins to pick so early or late that he gets nothing but old flowers which have opened for about the last time. Each flower opens four days in succession, and finally wholly or partly closes, never to open again.

The stem then curls up into a spiral form and draws the old flower under the water, where the fruit is ripened, sinking to the bottom, finally falling to pieces, the seeds escaping and drifting away to some lodging place where they may grow, generally in among a cluster of established plants, so that the increase from seedlings as well as from the growth of the roots is generally in the spreading out or expansion of the various old clusters or beds. New beds coming up in clear water are exceptional. If we would cover



A SUMMER DAY'S GLEANING.

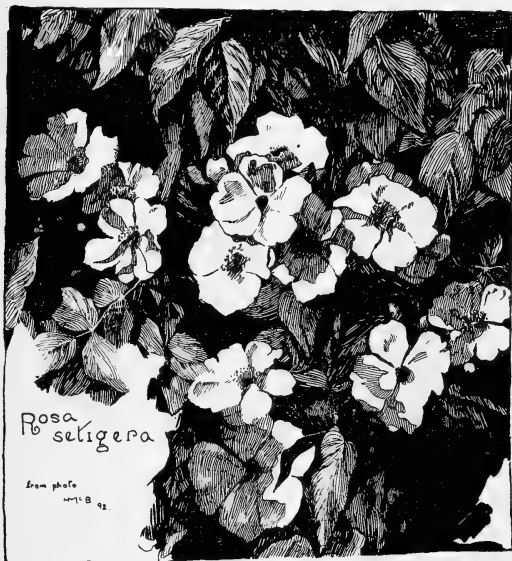
new ground, we must break them up and replant them. A row was thus planted entirely around the Lock-shop pond, and in some places several rows have been planted.

The first day that a flower opens there is a broad, deep, cup-shaped space in its center, the tips of the petals curving gracefully outwards. Each succeeding day the petals gradually draw near together, until they touch and wholly fill the center, and sometimes on the last day they begin to turn black. The change from day to day is so marked that one can tell by sight the age of each open flower in days, as readily and accurately as a child's age in years.

When closed, it is impossible to distinguish with any certainty a young or old flower; therefore, if choice fresh flowers are desired, the importance of picking them in the forenoon is apparent.

Dealers sometimes pick the buds for market, instead of the flowers, but when this is done they are picked clean every day, so that there are no old flowers among them.

E. D. Sturtevant says of gathering: "Handle them tenderly, as if you loved them. Do not grasp at the open flower as if it were a peony or a hollyhock, for then it will come off stalkless in your hand; but coil your thumb and second finger affectionately around it, press the extended forefinger firmly to the stem below, and with one steady pull you will secure a long and delicate stalk."



To keep the flowers long after picking, let them float on the water, and do not crowd them thickly. If placed in a shallow dish the stems should be so short as not to hit the bottom and make the flower tip over, for, well as they like to float, they do not like to be swamped. If the petals remain long immersed, they become water-soaked and spoiled; and even the leaves are sensitive to water on their upper surfaces, and always repel it. We must take hints from nature if we would meet with success in keeping flowers, and let floating flowers float. Three or four lilies floating on the water in a roomy platter are far more pleasing than a much larger number crowded into a pitcher or vase, far from the water.

Although the flowers ordinarily close about noon, the fact that they remain open longer in a dark, cool day is nature's hint to us to keep them open artificially. If we place freshly opened flowers in a dark, cool place on the ice in a refrigerator, and let them stay there until wanted for use, they will not close until they have been exposed to the open air long enough to receive their natural amount of heat. In this way we may use them for a few hours at an unnatural time. Although they generally open only four days when in the pond, if kept in the house the periods of opening may be prolonged so that the flowers last a week.

In most varieties the stems of the leaf and flower are round, in others they are oval; some are smooth and clean, others are thickly covered with a bristly growth that is unclean; some are green, others are pink and red. The petals in some are long and narrow, in others broad. Petals 3 inches long in some varieties are only $\frac{3}{8}$ of an inch wide, while others of the same length are $1\frac{1}{4}$ inches broad. In some the outer petals are sepal-like, being tinged with green on the outside.

Notwithstanding the name *odorata*, some are odorless. This is generally the case with those growing in Florida. The leaves are generally green above with a tinge of red beneath. In others the leaves are nearly solid green on both sides; and some are reddish purple throughout, while still others are green above and a bright wine color underneath. In some the sepals and outer petals are both tinged on the outside with pink. In some they are striped with pink on one or both sides, and so on in various shades until they pass into the variety *rosea*, the pink water-lily of Cape Cod. There are many unnamed varieties of *N. odorata* whose character is just as marked and distinct as those which have been named. The variety *rosea*, with solid pink petals, was originated from a wild seedling, but is by no means the first or only one. Our first pink water-lily came to us from its native waters in New Hampshire; but, unfortunately, after two years it was destroyed by muskrats. The pink water-lily sent out from Hyannis is very different from the Sandwich lily. Although colored throughout, it is somewhat shaded in stripes of light and dark pink. Benjamin Grey advertises a variety called "exquisita," which has rosy carmine flowers of a deeper color than *rosea*; and another called "carnea," with flowers of a tender rose color, also "superba," with large flowers, the leaves and stems of a deeper green, tinged with crimson.

The latest novelty, and most unlike the others, is variety

"sulphurea," with yellow flowers and deep green foliage, beautifully mottled with reddish purple or brown spots.

Variety "minor" is mentioned in text-books, and often advertised. It generally grows in more sandy soil, and, in fact, is nothing but a less vigorous grower with smaller leaves and flowers, the latter being from 1½ to 2 inches across. All of these varieties are of the one species, *Nymphaea odorata*, and in general appearance some of them differ from each other to a greater extent than *N. veniformis* does from our common lily. It is called the "Tuber-bearing water-lily," and was identified and de-

scribed as a distinct species in 1865 by Dr. J. A. Paine, of Oneida county, New York, who called it *N. tuberosa*. It is said to have larger leaves, with cup-shaped flowers 4½ to 9 inches across. The petals are broader and blunter, nearly scentless, but with a slight apple-like odor. It differs more especially in bearing numerous simple or compound tubers upon the root-stock, which resemble Jerusalem artichokes, and spontaneously detach themselves.

Connecticut.

JAMES SHEPARD.

[TO BE CONTINUED.]



A CLUMP OF *ROSA SETIGERA* AT THE KANSAS AGRICULTURAL COLLEGE. (From a photograph.)

THE CLIMBING PRAIRIE-ROSE.

ROSA SETIGERA, the climbing prairie-rose, is indigenous to the central states, and is found growing wild to the south and west. Its western limit runs through the southeastern part of Kansas, where it is often found in old pastures and along the edges of timber-belts. The plant has a loose, running, rank, and withal a graceful habit of growth. In early July it loads itself with bunches of pretty pink single flowers, and is then quite as attractive as many of the more improved varieties of the species. Over 20 varieties, including such common ones as Baltimore Belle and Prairie Queen, have been derived from this species, and are in more or less general cultivation. But we prefer to direct attention to the original species

as it is found growing wild on the American prairies. In this form it is one of the most interesting of all those indigenous plants which are being used more and more by gardeners who attempt tasty natural effects rather than the more elegant artificial constructions, such as necessarily involve the highly improved cultivated varieties. *Rosa setigera* is always worthy of the attention of the planter who wants something pretty rather than something rare.

Its graceful, free-growing and peculiarly wild appearance preclude its use on a smoothly shaven lawn, along a straight front walk, against the front veranda, or in any other formal surroundings; but the same habits will equally recommend it to places where propriety in the

selection of varieties planted is quite as desirable. Over old fences, in fence corners, along winding drives and against out-buildings which it is desirable partly to hide, the *Rosa setigera* is one of the prettiest plants imaginable. The foliage is naturally fresh and bright, though Mr. Mason, of the Kansas Agricultural College, tells me that it is sometimes severely attacked by a fungus which spots the leaves so badly as greatly to injure their appearance. The original species as it grows wild in the pasture is kept by the best nurserymen.

The accompanying illustrations (pages 196, 197) represent a plant growing singly against the foot of some Austrian pines, in the bend of the long drive which winds up the hill to the main building of the Kansas State Agricultural College. These illustrations show the profusion of flowers, which last upon it for some time, and the characteristics of the individual buds, flowers and leaflets. The plant in all its parts is most attractive to anyone who sees beauty in informality.

Kansas.

F. A. WAUGH.

A PLEA FOR MORE STREET TREES.

WITH HINTS FOR SELECTION AND MANAGEMENT.



WITH the improvement of American highways arises the tree question. For a quarter of a century our Rural Art Association has had the planting of trees when the people neglected their duty. The result is an unusual number of elms, maples, pines, etc.; but most of them exhibit decay. The maple has been most planted, and is the most defective; not one in thirty is sound. The maple is symmetrical and has fine foliage, yet it is not healthy for street planting under ordinary conditions. If transplanted when not more than 10 feet high, a maple will develop handsomely and wholesomely. I can find a row thus set that shows but two defective trees in fifty. When the trees are set, at fifteen to twenty feet high, and cut back and new heads formed, the new growth rarely has sufficient health to prevent decayed spots or enfeebled limbs. Nor will the maple endure the ordinary cutting of large limbs. Some authority decides that our shade-trees must be "trimmed up." The saw is set to work in the hands of men incapable of sympathizing with a tree. Rot sets in, and in ten years a fine row is in its decrepitude. Good trees should be in prime condition for a hundred years. I have seen the planting, growth and ruin of rows of street trees inside of fifty years.

Our avenues of elms are in much better condition. These wounds have healed better, and seldom has decay set in at the point of excision. The chief care needful with the elm is to select a free-grower, and so to time the trimming that there will not be a main crotch. If this occurs, the tree may split under great weight of limbs. Elms possess marked individual characteristics. Some send off long graceful limbs; others of the same variety grow stocky, or even bushy. A few send out their main limbs quite horizontally, and are worse than worthless. Those that grow too erect are also to be rejected. Select those of clean growth, not too bushy, and with limbs of fine drooping contour.

My choice of street trees would lead to a free use of the American linden, or basswood. It is one of the grandest trees we have. It bears transplanting well, takes on a fine full head, has foliage unsurpassed for

shade, and grows with great rapidity. And what is finer than the fragrance of a grove of lindens in bloom? It is a wholesome odor that delights a tired mortal. Why plant an ailantus, which offends and annoys, instead of a linden, which charms and soothes? The color of the linden is fine, and the shade dense. Further, if the linden were generally planted our honey crop might be increased by millions of pounds. The music of the bees in the blossoming season would alone pay us for trees.

White ash has the one disadvantage of greening very late in spring, and becomes bare again early in the fall. It grows with moderate rapidity, takes on a fine form, and, best of all, its wounds heal. It has been occasionally attacked by borers, as have also the maples and beeches, but these may be prevented by piling coal-ashes about the roots, and by scraping the bark. It is a healthy, stout, noble tree. As to early loss of foliage, we need shade in summer and sunshine in autumn.

The beech is not generally suited to our streets, because for perfection it should branch quite low. It is a perfect park tree. A beech park is a paradise. The tree is tough, healthy, wholesome and sweet.

The whitewood or tulip-tree is another noble candidate for public favor wherever it thrives, and that is over a wide territory.

The oak is worthy of all possible praise if set when quite young and carefully protected for a few years. I know specimens of the scarlet oak that are as fine as anything ever planted along a highway. This tree can be obtained of nurserymen, in large quantities at reasonable rates. Its bright color lasts only a short time in the fall; but its summer green is beautiful, dense, and fully equal to that of any other oak.

Norway maple deserves especial notice as surpassing all the rest. It grows with astonishing rapidity, and I have yet to find any tree of any sort that shows such deep dark green. It inclines to lower its limbs with age, making a superb lawn or park tree; but it is almost as good for the street. It grows fully twice as fast as the sugar-maple, and yet is stout and solid.

More care is necessary in selecting street trees. In planting they should be staked, tied and mulched. The best mulch is coal-ashes, put on liberally. Street trees

are definitely for shade, and should be set rather closer than is necessary for perfect individuality; yet thirty feet apart is quite near enough. I have seen great mischief done by cutting every other tree in a dense row. The free access of the sun to the bark soon does damage, and more trees die; then the row is spoiled. Better set at a reasonable distance to begin with. Few people seem to realize that the foliage is needed to shade the tree itself. They consider it merely as a gift to men and animals; but the economy of foliage is primarily to protect the tree from too sharp assaults of the drying sunshine.

My plea is for more and better street trees. With the improvement of drive ways let us have the tree question thoroughly discussed. One may drive fifty miles anywhere outside of towns and not find a mile of good shade for pedestrians, and almost none for carriages. Our villages are better supplied, but the trees are badly selected. I believe we shall have to get over our national passion for planting maples. There are several others not enumerated above that are locally superb. The chestnut may be planted over a large territory without rival for

beauty and health. I am glad to see that it is being pushed by some of our nurserymen. In flower it is interesting, and in fruit valuable. The butternut is admirable where it thrives. In winter its limbs are a glorious study. Its fruit is always in demand at good prices. It is a grand tree to be around our houses. There is no reason why nut-trees should not be generally grown along the highway. There are no serious defects about the growth and habit of either the chestnut, walnut or butternut.

The custom is general of planting a single variety along a road. In a village or suburban town a fine effect is produced by introducing a diversity on some streets. There are at least twenty sorts that may be used to advantage. Among those I have not named are the Kentucky coffee-tree, *Virgilia lutea*, black ash, catalpa, *Magnolia acuminata*, paulownia, oaks in variety, and several sorts of fruits. Upright-growing apples and the tall-growing cherries are very beautiful on quiet open streets, where there is not too much smoke or gas.

Clinton Co., New York.

E. P. POWELL.

THE TOMATO IN THE SOUTH.

HOW TO GROW AND PROTECT PLANTS.



OR securing the earliest plants hotbeds are not at all essential in the south, and they are not used by the best gardeners. There is only one crop for which bottom heat is found to be advantageous in securing early plants, namely, the sweet-potato. Well-managed coldframes are all-sufficient in

growing good peppers, egg-plants and tomatoes.

The main crop of tomatoes is not planted in the latitude of middle Georgia (33°) before April 10, and seeds sown in coldframes in early March furnish plants large enough to be set out by that date. A small planting is usually risked in March, from the 20th to 25th, but this is generally endangered by frosts. Now and then there is no frost severe enough to damage the plants after March 15, but it will not do to depend on this.

Market-gardeners, by making due preparation for warding off the effects of frost, can plant a patch on March 25, but without such preparations the risk is too great. A few loads of fine straw distributed at intervals over the patch of early plantings render it easy to protect the plants, if the gardener is enough of a meteorologist to interpret the signs of weather changes, or has the benefit of the signal-service warnings. Two or three hands—men, boys or girls—can cover many thousand plants between three and six o'clock in the afternoon if a cold wave is threatened. With a big cotton-basket a double handful of straw can be rapidly put over each plant, and will suffice to protect it from an average March frost in middle Georgia. The straw should remain all the following day and night, and until the thermometer and vane indicate a temperature

high enough to preclude frost. In this way we have safely carried through plants put out as early as March 1.

Ordinarily the coldframes are put in good condition about February 20, some good old compost being worked in and the soil being left in a porous condition. The glass sash is kept on for a week before the seeds are sown, so that the soil may become well warmed up. It is then leveled and firmed, the seeds are sowed in shallow drills four or five inches apart and the soil pressed firmly upon them. The soil is then well moistened with moderately warm water, and the sash replaced. In a week or so the plants will be well up, and in two weeks more large enough to be transferred to other frames protected with cloth covers instead of glass. The little plants are set three by three inches apart and allowed to remain until stocky and well-developed for transferring to the open ground. This extra transplanting, for the amount of time involved, will pay a tremendous profit in the end.

If, by any mischance, the plants have become in any way spindling, it is well to pinch off the ends when transferring to the open ground. Transferring the plants with balls of earth is commended. This is not always practicable; and generally the roots are dipped in a groud of clay-dust and cow-manure to which a little kerosene has been added and well stirred in. The soil is pressed firmly to the roots, and plants set a little deeper than they grew in the beds. For the large-growing sort put the rows four feet apart and the plants three feet. This gives 3,630 plants per acre, which under favorable conditions produce 200 to 500 bushels of merchantable tomatoes. A new mode of culture, which has given great satisfaction, will be described in a following number.

Georgia.

SAMUEL A. COOK.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XVIII.

A HALF-ACRE HOME LOT MADE BEAUTIFUL—A PLAN THAT THOUSANDS MAY WORK TO.

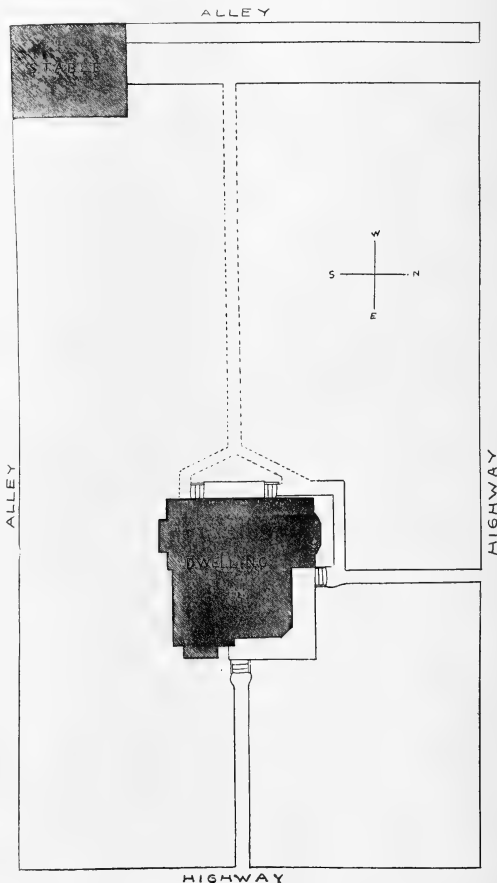
A TOWN LOT, a trifle less than half an acre in extent, situated at the corner of two streets of a village in Columbiana county, Ohio, is the subject of the present paper. The accompanying

diagram of the grounds shows a straight walk leading from the dwelling to each of the streets—front and side. The owner desires as much beauty introduced into the place as possible, with no provisions to be made for growing culinary vegetables, as these can be conveniently bought from peddlers at the door. The owner sensibly remarks that whatever shrubs or trees may be recommended, he hopes may be such as will thrive without special petting, as he has a great liking for things that grow readily and are as hardy as common trees. He has an idea, moreover, that there are enough of such to adorn his grounds handsomely, if only they can be secured. He does not object to a few specially choice kinds, even though there may be a little risk in planting them. He is quite willing that graceful winding walks should take the place of the straight ones, provided they can be introduced with tasteful effect. In short, he is willing to consider, with a view to adoption, any reasonable course looking to the conversion of his home grounds, now stiff and angular in outline, into a handsome garden abounding in hardy, easily-grown ornamental trees and shrubs, with a few fruit-trees besides.

The results of studying this case, with a view to improvement, are set forth in the next picture. The main features of the place, which should be kept in mind, are these: A is the dwelling, with an ample front veranda at B and a rear one at C; D, stable; E, greenhouse; F, front walk leading to the highway; G, walk leading to the side street; H, walk from the dwelling back through the grounds to the rear drive, I, near the stable; J, southeast lawn; K, corner lawn; L, side lawn; M, main lawn; N, rear lawn; O designates a varied and somewhat heavy plantation in the direction of the barn; P is a vine-arbor at the junction of the curving grape-trellis and walk, Q; and

R and S are plats occupied by apple, pear, peach, cherry and apricot trees; the beds marked T summer flowers.

In the arrangement of the walks no great departure has been made from the straight walks of the diagram,

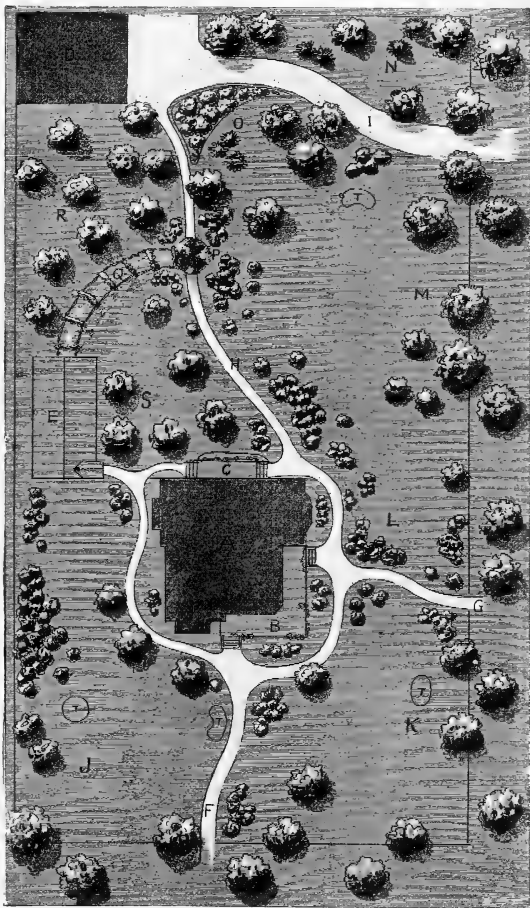


A CORNER LOT SHOWING THE ANGULAR STYLE OF LAYING-OUT.

except that graceful curves take the place of straight outlines. While in most cases it may be best not to break up with a walk a lawn-space directly in front of a house, in the present instance there appear to be good reasons for so doing. First, the lot being a corner one, and much travel passing in various directions at this point, it appears that the portion of the lawn towards the corner is really more in sight from passers-by than the part straight out from the front of the house; hence it is considered best to favor that part of the grounds towards the corner by keeping it open, rather than the front part. Second, with the width of about 90 feet possessed by the lot, a sufficient area is left in plat J to provide breadth and dignity; beyond, the greenhouse is seen, looking back from the street. Taken as a whole, the present arrangement of walks and drives affords a fine balance of the various lawn-plats and their embellishments. The fact that the ample veranda, B, is in the direction of the street corners is another good reason why an unbroken stretch of lawn to the corner is desirable. From an architectural point of view there is a gain rather than a loss in giving this plat the preference in openness; for it is well-known that a house appears to better advantage when seen from a corner with two façades in view, than from directly in front.

Proceeding to the embellishment of the place with hardy trees, shrubs and vines, we would suggest the following selection and arrangement: Beginning with plat J let the trees at the street-front be American elms, with the exception of one Norway maple at the side of the walk. Proceeding back near the south line set a European bird-cherry and a mugho pine or two. In the large clump further back let a Judas-tree (*Cercis Canadensis*) and a ring-leaved willow be placed somewhat centrally near the fence, surrounded with several plumed hydrangeas (*H. paniculata grandiflora*), two specimens of *Colutea arborescens*, three of *Calyculthus floridus*, with three or four of *Spiraea Thunbergii* near the street end just in from the edge, and about three tamarisks at the further end of the group. The two shrubs standing out from this mass might consist one each of *Viburnum ru-*

gosum and the blood-leaved filbert, or plumed hydrangeas, if preferred. Between these masses and the greenhouse E, two clumps of shrubs are shown, the smaller of which might consist of three dogwoods, embracing *Cornus sanguinea* and its variety, *elegantissima variegata*; the other clump near E might be made up of four plants of the effective Japan blood-leaved plum, *Prunus Pissardii*. On the opposite side of the plat, and near



SUGGESTIONS FOR IMPROVEMENTS OF THE PLACE SHOWN IN OPPOSITE DIAGRAM.

the house, is a small bed in which might be planted three German irises and three day-lilies (*hemerocallis*) in variety. On the house side of the walk here, but in the direction of the street, a small clump of hardy perennial phloxes might be placed. Two trees are indicated in this plat, across the walk from the corner of the house. These should be European cut-leaved birches. A little further on towards the street a Camperdown weeping elm might be located, and midway between here and the street a *Magnolia speciosa*. In the bend of the walk at this point would be a suitable location for a bed of bright summer plants, such as geraniums, coleuses, etc.

As to plat K, the trees located near the street may well be American elm, maple and horse-chestnut. Just outside the winding walk, near the corner of the house, a Rivers' blood-leaved beech might be planted. In this plat there are shown four masses of hardy shrubs. Beginning with the one near the front entrance, F, put two each of the following: purple-leaved barberry, European barberry and Thunberg's barberry. The mass nearest to the front steps may consist of four or five weigelas in variety; and if one *Weigelia candida* were placed across the front walk from the present mass, and near the weeping elm, the effect should be pleasing. Across the other walk from this mass, and near the veranda, we would like to see about four to six specimens of the pretty variegated-leaved corchorus planted in a small elongated bed. This is a handsome dwarf shrub of the easiest culture, and among the prettiest of objects provided a little attention is paid to removing any green shoots that may start up among the silver-leaved ones that prevail in this plant. The third shrub mass from the front, in plat K, may consist of four of the golden-bells (*Forsythia viridissima*), and the remaining mass near the side entrance of three dwarf spruce trees—Maxwell's or the conical varieties preferred. Opposite the clump of golden-bells alluded to, about three plants of the beautiful *Mahonia aquifolia* would look well. This is an evergreen shrub, which, here near the house, would receive in winter the shade required to prevent the leaves from suffering by winter sun-scald.

The large plat designated by L, M and O is made to support quite an extensive planting of ornamental growths, mainly in masses. Near the side entrance it is designed that two specimens of the conical spruce shall stand, just in from the walk; while back of these a clump, consisting of two each of scarlet Japan quince and double-flowering almonds, may appear. Beyond the last-named mass, appearing somewhat isolated, may be a tree of Wier's cut-leaved maple. In the bend towards and near to the side door is a compact mass of shrubs: one specimen each of double-flowering plum and *Forsythia suspensa* centrally in the clump, and, surrounding these, three *Deutzia gracilis*, three double-flowering deutzias, three plumed hydrangeas, two *Spiraea Billardii* and two Japan viburnums. Beyond this bed stand a thorn-bush and two mock-oranges. Somewhat further along, and near the walk, H, is an irregularly-shaped bed of good size, which is designed for roses. The small bed before this

is intended for annual flowers. Across the walk from the rose-bed, and near the veranda, C, is a clump of peonies. Towards the highway, to the right from the roses, are three small trees, separated from each other by lawn: Royal willow (*Salix regalis*), golden catalpa and Hyslop crab-tree. Of the trees in or near the street from this point back, the first mass comprises American elms; the second, near to the drive, I, are sweet chestnuts.

Returning to the rose-bed and looking towards the stable, the next four shrubs, in two pairs with an open space between, are to be lilacs. Beyond the further pair, and near the vine-arbor, P, is a bed of shrubs containing one *Elæagnus hortensis* in the center, surrounded in irregular order with two althæas, three bush honeysuckles, and one mock-orange at the further end. Two mock-oranges also stand away from this bed, toward the center of the grass-plat. Another clump, one each of *Khus cotinus*, privet and thorn, or *Spiræa sorbifolia*, is a little beyond this point, towards the stable. In the same vicinity are four apple trees and one elm, the latter overhanging the drive about midway between the street and the stable. The clump of shrubbery between the elm and the street may consist of the ornamental elders, with one bush of the fern-leaved variety in the center, and two each of the golden-leaved and cut-leaved varieties besides. In the rounded point formed by the junction of the walk, P, and the drive, I, is a large bed designed for a variety of evergreens, among which might be included Norway and white spruces, red cedar, American and Siberian arbor-vites and hemlocks. A little back from this bed is a clump of several dwarf mountain pines.

Plat N, to the rear of the drive, I, is to be devoted mainly to strong-growing trees. At the street we suggest two scarlet oaks, the remaining four trees consisting of two cherries and two apples. In the corner of the lot here is a group of four Austrian pines, and about midway between these and the stable, several white or Weymouth pines.

In plat R there is, besides the fruit-trees, a small clump near the vine-arbor consisting of plum-leaved and Reeve's spiræas. Opposite these, in plat S, is a similar clump composed of half a dozen plants of *Spiræa callosa*. Toward the house from the last clump are several flowering currants. The remaining trees in this plat are fruits.

Places for ornamental vines are found about the veranda at the house and the vine-arbor at P. The kinds suggested are the ampelopsis in variety, wistarias, honeysuckles, clematisses, trumpet-vine, Dutchman's-pipe, *Akebia quinata* and *Actinidia polygama*, besides tender and seed-grown kinds. It is believed that the grape-vine walk extending by a curve from the arbor to the greenhouse will be esteemed among the more pleasing features of the place.

There, kind reader, is not that a basis to work upon for rendering your home a charming garden spot? If you desire to elaborate by introducing an assortment of hardy perennials at any time, they can be readily accom-

modated as to space by enlarging the various shrubby borders by a foot or more in all directions, and planting them there. When one sets himself about the task of seeing how much interesting plant-material can, with good taste, be brought into a small area, he is sure to grow enthusiastic over the task. The wonder is, that in

the millions of homes throughout civilization, more attention is not bestowed on the growth of hundreds of choice flowers and plants. Nature offers these; it is for man to appropriate and enjoy them; and enjoyment consists not in possession alone, but in such practical and artistic uses of the gifts of nature as make them truly valuable.

GRAPES FOR WINTER CONSUMPTION.

CREATING NEW DEMANDS FOR BIG CROPS.



IGANTIC proportions have already been reached in the aggregate annual output of American vineyards; yet the enormous sales of grape-vines reported by leading plant-growers for years, and even for the last planting season, indicate that there is "more to come."

With a full crop of this fruit, the grower will have to hunt up new markets or new uses for it, or face the fact that the demand remains behind the supply, and that grape-growing no longer pays. The latter calamity will happen, if growers continue to create prejudice against the product of the vine by marketing the early abominations like *Champion* and *immature Ives*, or imperfectly ripened clusters of any sort, or fruit suspiciously stained by the improper use of the *Bordeaux* mixture.

The greatest care in the production and marketing of the crop, and earnest efforts in the direction of excluding all inferior and objectionable grapes from the markets, will be needed to prevent a very disastrous glut. If, however, we find means to stimulate and increase consumption, the danger may be averted.

We are glad to see that greater attention is being bestowed upon the production of "unfermented grape-juice." We are in hearty sympathy with this move. The fresh juice of the grape is, next to good new milk, perhaps the most wholesome of all beverages. We would like to see it come into general use. It could, to some extent, be made to take the place of coffee and tea at our meals, to our own great physical improvement, and at the same time affording a most welcome outlet for the surplus of the grape-crop. We have already mentioned Mr. *Baldridge's* exhibit of unfermented *Niagara* grape-juice at the last meeting of the *Western New York Horticultural Society*. We are informed that this juice, the product of a 100-acre vineyard in *Erie* county, is simply heated, carefully filtered, and bottled while hot; consequently it is free from all drugs or other admixtures. The price is reasonable.

While this new industry extends the season of grape consumption over the whole year, there may also be a possibility of increasing the use of the fruit itself by growing and holding a greater part of it than heretofore for winter sales. This idea came to us with some baskets of *Vergennes* grapes sent by E. *Willett*, of *North Collins*, *N. Y.*, which were received on *February 10*, in excellent

condition. This variety is evidently one of the best keepers among grapes, having an exceedingly tough skin, besides being of superior quality, rich, with sugary, pure, but not hard pulp. The large berries adhere firmly to the stem. The color is a rich amber with a beautiful bloom. One of the bunches is illustrated in outline on page 204. No matter what this grape may be when it first ripens, it must be considered an excellent thing in winter. We believe the general grower will find it profitable to cultivate the *Vergennes* more largely with a view to winter sales. In our locality we would not hesitate to graft it upon any unprofitable sort.—*EDITOR A. G.*

OPINIONS OF GROWERS.

Mr. *Willett* writes: With us the *Vergennes* has a place that no other variety can fill. Its only weakness is its liability to attacks of *anthracnose*, sometimes severely; although at other times it is quite free from it. It does not produce large or very compact bunches, but makes up for this in the great number of clusters which it nearly always bears. As a keeper it is unsurpassed. It ripens with *Concord*.

My method of preparing grapes for winter-keeping I have never seen in print. It is as follows: Pick the clusters, carefully place them in trays and let them stand in the packing-house a few days to allow the stems to wilt and the moisture to evaporate. Line the baskets with paraffined paper, so that it will lap over the top of basket. Place the cover on and fasten down tightly to exclude the air as much as possible. In this way *Vergennes* can be kept all winter, *Niagaras* till after the holidays, and the season of nearly all varieties can be much lengthened.

From *S. S. Chrissey*, Secretary of the *Chautauqua County Horticultural Society*, we have the following note: "I think *Catawba* the best variety for winter-keeping; probably *Diana* comes next. *Vergennes* lacks quality. As to methods, dry cold-storage is no doubt the best, but I cannot speak from actual experience. The keeping quality of the same variety is influenced by location and soil. Our best keeping grapes grow on the rocky shales considerably back from *Lake Erie*. To keew well, they must not be allowed to get too ripe. The subject is an important one, but very little has ever been said on it in our horticultural society.

Mr. *W. C. Barry*, of *Rochester*, writes us under date of *February 19*, as follows: We do not think that grapes

are fully appreciated as winter fruit; nevertheless they are consumed in large quantities in New York city and other places. The Catawba is the favorite. This fruit is raised principally on Lake Keuka, and growers in that vicinity have houses in which they keep it in perfect condition until quite late in the winter. On the tables of the best hotels in New York can be found, until nearly spring, the very choicest grapes, mostly of the Catawba variety. The Iona is a long keeper but is not grown extensively. Ver-
gennes is another long keeper, to be valued on that account. Every cultivator should have a place of his own where all kinds of fruits can be kept in good condition during the winter; very few people have good pears after November or December, whereas they could just as well as not, if they had places to keep them, have an abundance of splendid fruit until almost April. The farmers throughout the country suffer great losses on this account. This is a question which deserves consideration, and we think more fruit is annually lost through lack of proper places to put it than would build a good many storage-houses.

DR. STAYMAN PREFERS
CANNING.

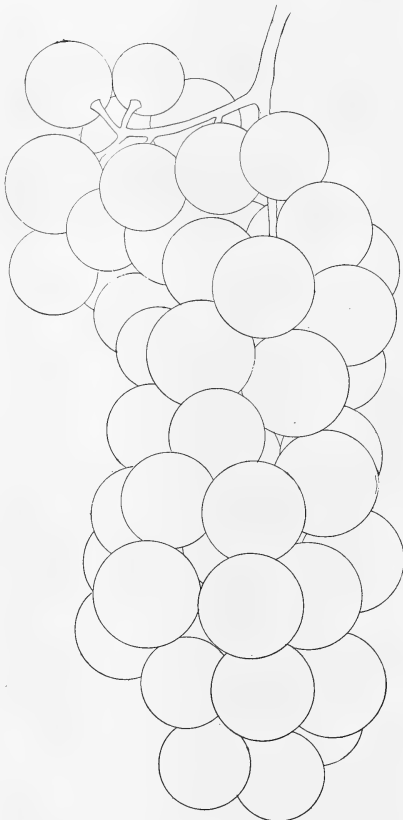
I know no way of keeping grapes all winter except by cold-storage. The Vergennes or any other grape presented in good condition would no doubt find a ready sale at fair prices. The difficulty appears to be that when fruits are kept in cold-storage, they soon deteriorate when taken out, and cannot be kept and shipped long distances in a good salable condition. The cold-storage business can be carried on successfully only in good grape-growing locations near large cities. The general grape-growers of the country cannot make it pay. The only general and feasible means of having grapes in winter or out of season is by canning. This I consider even better than cold-storage

age; and it is decidedly cheaper, for the fruit in the glut of the market can be procured at the lowest price, while the best can be selected. Moreover, grapes which are not palatable fresh from the vines can be canned and put up so that they will be good. But, of course, some varieties are better than others, even for that purpose. There is another advantage. We consume the skins of canned

grapes, which are lost in eating them fresh. This is a very important matter, as every wine-maker knows from experience, since the skins contain the bouquet. But few persons know exactly how best to can them, so that they will be extra-fine.

The following is my method, which, from more than 30 years' experience, I think the very best, as we all prefer grapes canned in this way even to fresh fruit in the grape season. In fact, I very often prepare them during the season and put them on the table. They are welcomed in preference to the fresh fruit.

Take clean grapes, "pop them," that is, burst the pulp out of the skins, put the pulp with the seeds in a kettle to boil until tender, so that the pulp can be rubbed through a fine sieve or colander to separate the seeds, as they should never be put with canned fruit. Then put the skins, with enough juice, or, if there is not enough, some water, in a kettle, and bring to a boil; then add the seedless pulp to the skins, with enough granulated sugar to make them just right according to individual taste. Stir the whole mass together until the sugar is entirely dissolved, and just as soon as brought to a boil, can and seal air-tight at once. Never continue the boiling after the sugar is added, or you will convert the sugar into glucose, thereby destroying the sweetness as well as the fine fresh taste of the grapes. Foxy grapes, like the

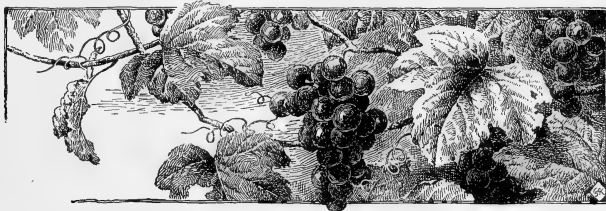


THE VERGENNES GRAPE. (See page 203.)

Dracut Amber, Mansula, Woodruff Red, and even "wild fox-grapes," put up as above, are good and palatable, while they could scarcely be eaten fresh from the vines.—J. STAYMAN, *Leavenworth Co., Kansas.*

[Another successful method of preserving grape-juice fresh and unfermented is that recommended by THE AMERICAN GARDEN some years ago. It consists simply

in boiling down the juice to a thick syrup and bottling. This keeps for years. When wanted for use, mix a table-spoonful in a glass of water. Nothing that we have ever used is a more refreshing drink than this, which of course is entirely harmless, being simply unfermented grape juice. It is likewise wholesome and nutritious. A good sale might easily be worked up for the syrup.—Ed. A. G.]



ABOUT GRAPES IN LOUISIANA.

THE CROP PROFITABLE EVEN IN BAD SEASONS.

PERHAPS this portion of Louisiana—Tangipahoa parish—is better adapted to the cultivation of the vine than Georgia, and indeed is not behind the most famed portion of the United States. My own experiments in this direction afford better results than those mentioned by your Georgia or Michigan correspondents. A wide-

spread interest is developing in this part of the country for the cultivation of grapes, which I hope will not be short-lived.

My experience dates from March, 1888. In that year I planted 1,300 one-year-old vines, consisting of 250 Worden, 250 Catawba, 750 Concord and 17 Niagara. These were set in typical soil—a sandy clay with a sprinkling of pebbles. The land had been cropped with strawberries for several years, and was consequently in good heart. The vines were set out in March, a warm winter having started the buds very early. Shortly after they had been set, the new shoots, then six or eight inches long, were killed by a late frost; but those that were dormant when put out made a magnificent growth, some canes making as much as 30 feet. Concerning the after-treatment, most of the vines were allowed three canes, which during the season attained the size of a man's finger. They were cut back to the second wire of the trellis the following spring (1889), and during the season entirely covered the trellis with a dense foliage, yielding about 20 cases, of 20 pounds of fruit each, which sold in the New Orleans market for \$15 net. But the fruit was inferior, as it cracked badly and the birds had injured the bunches.

The following is a statement of the yield in 1890-1:
 1890—300 cases, 20 pounds each, net proceeds \$500.
 1891—71 " " " " 50.

These results were obtained in very bad seasons, in both of which the entire first crop was totally destroyed by the untimely frosts of March, 1890, and April, 1891, respectively. But in 1890 the vines started dormant buds and made nearly a full crop, many single vines yielding 20 pounds of magnificent grapes; the bunches were perfect in form, and some weighing over a pound each. In 1891 the vines were slow to recover from the shock of the late freeze in April, and it was some time in May when the dormant buds started. Then they went with a rush, so that my trellises in mid-December, 1891, were a mass of magnificent vines.

The after-effects of the freeze on the vines differed in the varieties. The Concord came out in full vigor, and made a free growth; but the Wordens and Catawbas both showed that they had been badly hurt, some vines being killed outright, and others lingering during the season until they finally died. The small lot of Niagara showed great vitality and recuperative force, even more than the Concord. My 17 vines yielded a net profit of \$20 in 1890; but in 1891 they yielded nothing, as I cut them back severely to get a fresh start. To-day they are a marvel of splendid growth, and I expect a large yield from them next season. Many bunches of this variety weighed one and one-half pounds apiece. But for the freeze last year (an unprecedented season), I feel confident that my 2½ acres would have yielded over five tons per acre, and I could have sold every pound of them in New Orleans for from 5 to 7 cents per pound.

Louisiana.

H. R. BUCK.

THE TRILLIUMS.

EARLY WOODLAND BEAUTIES WORTHY OF CULTIVATION.

AMONG the loveliest of our spring wood-flowers, and not at all such sluggards as their common name of "Wake-Robin" would seem to indicate, are the trilliums. Early in April the dwarf white *Trillium nivale* uncurls its small, wavy, white petals in the edges of rich woods, all over our eastern Alleghany slope and westward from Ohio to

The dark-flowered trilliums are next to bloom, the great purple "Benjamin" among the first. This is *T. erectum*, the largest and brightest-colored of the purple trilliums, but having no odor, which leaves much to be desired.

The Latin name of trillium, referring to the structure of the flower and plant, fits the family well, for it has only three leaves, sepals and petals. The ovary is three-celled, and the number of stamens is twice three. But "Benjamin's" specific name of *erectum* is not so well applied, for instead of standing erect the peduncle is usually nodding, giving to Benjamin a thoughtful attitude.

T. sessile and *T. recurvatum*, the other two best-known forms of purple trilliums, are smaller in flower than *T. erectum*, and of a darker color. They are also sessile upon the leaf-stem, while *T. erectum* has a peduncle one to three inches long.

In cold damp woods and bogs of New England, and southward among the higher Alleghanies, is found the pretty painted trillium *T. erythrocarpum*. Its petals are pointed, wavy and widely spreading, with bright markings of pink. Its leaves are petioled, and the peduncle nearly erect.

Trillium stylosum is a shy little beauty, hiding its wavy pink petals under its top cluster of three sessile leaves, so that you must look closely to find it. The leaves are oblong, tapering to both ends, and the rose-colored petals of the flower are much longer and broader than the greenish sepals. I believe this species is not common north of Virginia.

The queen of all trilliums is *T. grandiflorum*, or "white wood-lily," as it is sometimes called. It blooms later than the

others, and in the northern states is somewhat rare, but in the southland is perhaps the commonest of all the species. The plant is usually about a foot in height, with only one stem, springing from a tuberous root-stalk. Its three leaves near the top are of a bright, shining green,



Wisconsin. Though smaller than most of the other species, the little nodding flower of this trillium, with petals only an inch long, is quite pretty, and is eagerly sought for and gladly welcomed by young botanists as a herald of the spring awakening of the other "robins."

deeply veined, a little longer than broad, and barely sessile. On a peduncle two to three inches long is borne a single nodding white flower, showy and handsome. The petals are often two inches long, and change with age to rose color.

Three other white trilliums are sometimes found in our woods—*T. cernuum*, another nodding wake-robin hiding beneath its leaves, and *T. album* and *declinatum*, varieties of *T. erectum*. The last two are not clear and snowy, like *T. cernuum*, *nivale* and *grandiflorum*, but are somewhat clouded with pink or yellow.

T. grandiflorum is somewhat given to sporting, and besides its snowy white form with sessile leaves, it has been found in various states with petioled leaves and pink flowers, marbled with yellow and deep rose.

The trilliums are truly American plants, only one species being known outside of America; this is found in

Japan. If we were obliged to import trilliums from Japan or Holland or Asia, instead of merely digging them in our own woods, we might appreciate them better and plant them oftener in our gardens. English gardeners import these American plants, and besides using them for lawns and shaded walks, are trying to naturalize them in half-open woods and moist, rich places.

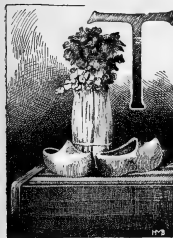
The trilliums adapt themselves readily to garden culture. The only special point to be observed in their cultivation is that they need partial shade for full leaf-development, without which large perfect flowers are an impossibility. *T. grandiflorum* likes a drier soil than most other varieties, and under cultivation gives flowers as large as the white lily of our gardens. From this variety, by sporting and cross-fertilizing, it would seem easy to grow some fine garden forms.

North Carolina.

L. GREENLEE.

THE IRRIGATION PROBLEM.

AS SUCCESSFULLY SOLVED BY A WESTERN CELERY-GARDENER.



THE judicious selection of soil and fertilizers, and good cultivation, will enable one to raise satisfactory crops of most garden vegetables in a somewhat dry season. We give the preference to a mellow loam resting on porous subsoil, and apply wood-ashes if we can get them, as they seem to preserve moisture. We further aim to plant just close

enough, where practicable, to keep the ground pretty well covered with vegetation, and what is not thus protected, with a layer or mulch of well-pulverized soil a few inches in depth, in order to prevent rapid evaporation.

All these means, however, are sometimes not sufficient for best results in growing celery and cauliflower. These crops need a great deal and a constant supply of moisture, and always suffer more or less during a drouth of even moderate length. If we can arrange a system of irrigation, and thus supply moisture to the growing crops during a time when the fountains from above fail us, we have at our command the means to insure the greatest yields, superiority of product, and satisfactory financial returns.

One mode of irrigation, in practical use and usefulness on John F. White's celery farm in Livingston county, N. Y., and practicable in many other places if growers would only see their opportunities, was described in an earlier issue of *Popular Gardening*. The tract is a piece of muck land, with a ditch all along the upper side, and a number of smaller ditches across the patch, ending in a ditch that serves as outlet. All these ditches, except the last, are provided with a number of flood-gates. The main ditch along the upper side can be filled to overflowing by turning a little mountain stream into it. By attention

to the respective flood-gates, one section after another of the cross-ditches may be filled to the very top; and the water allowed to soak into the loose earth, until the whole 20-acre patch is thoroughly saturated.

Another and quite original method of utilizing a convenient water-supply for irrigating purposes is told in *Farm and Fireside*, by H. A. March, of Washington, who has made a name for himself as a grower of excellent cauliflower-seed:

"On the south side of our farm," he says, "we have a never-failing spring of water that gives us about 45,000 gallons every 24 hours. It is situated about 20 feet higher than any of our tillable land. This water is brought down in open troughs to the tanks on the upper side of the field to be irrigated, holding 20,000 gallons each. We turn the water into the tanks in the heat of the day, and the sun warms it up to about 60°.

"To distribute the water, we use a hose made from 12-ounce duck. We take a piece 30 feet long, and cut it lengthwise into three pieces, which makes 90 feet of hose about 2½ inches in diameter. We fetch the edges together, double once over, and with a sewing-machine sew through the four thicknesses twice, which makes a hose that will stand a six or eight-foot pressure. To make it waterproof, we use five gallons of boiled linseed-oil with half a gallon of pine tar, melted together. Place the hose in a wash-tub, turn on the oil hot (say 160°), and saturate the cloth well with the mixture. Now, with a clothes-wringer run the hose through with the wringer screwed down rather tight, and it is ready to be hung up to dry. A little pains must be taken to blow through it to keep it from sticking together as it dries. I use an elder-sprout about a foot long with the pith punched out. Tie a string around one end of the hose and gather the other end around the tube and fill it with wind, then hang it on a line and it will dry in a few days and be ready for use. It will last five or six years.

"To join the ends, we use a tin tube $2\frac{1}{2}$ inches in diameter by one foot long. It is kept tied to one end of the hose all the time. To connect them, draw the open end of the hose over the tube of the next joint and tie it securely. When ready to irrigate, we take the hose in sections convenient to carry, lay it from our tanks to the third row from the outside and down this row to the end of the field. Then the water is turned on.

"To connect the hose with the tank, we take a hardwood stick 15 inches long, bore a two-inch hole through it, and with a hot iron burn it out smooth on the inside, work one end down until it will fit into the end of the hose next the tank and tie it securely; then work the other end down so that it will fit tightly into a $2\frac{1}{2}$ -inch hole. With a $2\frac{1}{2}$ -inch auger, bore a hole in the tank on the side next the field you wish to water, two inches up from the bottom—then no sediment or dirt will wash into your hose. Push the plug into the hole, with a mallet give it a few gentle taps, and the work is done. We now have our water running, and it can be carried to any part of the field for any crop that needs it.

"To prepare for setting out celery-plants in a rather dry time, we take the end of the hose in hand, and fill the row the hose is in and the two on each side of it about half full of water, working backwards to the end of our first joint (thirty feet); then we cast the first joint off and go on in the same way until the five rows are watered. We have a $2\frac{1}{2}$ -inch plug ready to fit the hole in the tank, pull out our connection-tube and drive in the plug until the hose is again laid where wanted. A man in this way will water three or four acres in a day. With a Planet Jr. cultivator and one horse we level the ridges into the furrows, then with a light drag make the whole surface smooth and level. In a few hours the water soaks up through the dry earth and leaves a nice, moist soil that

will not bake, to set our plants in, with plenty of moisture and good manure at the roots, where it is most needed. Not one in a thousand plants will die, and hardly even wilt in the hottest sun.

"As the plants get larger we use the Planet Jr. to throw a little soil to them, and that is all the handling we give. When they have grown to six or seven inches, they consume water very fast. Our man now stretches the hose down the fifth row, instead of the third, and waters nine rows at a time, for now he waters the whole ground instead of the furrows. By compressing the end of the hose he is able to throw the water eight or ten feet each way. The ground is thoroughly soaked with warm water. In about three days we start the cultivator.

"The ground being underdrained 30 feet apart, all surplus water is immediately taken off, and this allows us to irrigate at least once a week, and to use the cultivator within a few days after, to keep the soil from baking. Under such treatment one can almost see the plants grow. By the time they are about a foot high, they are hilled up three or four inches with the cultivator. To blanch the celery we use boards one foot wide and 20 feet long. They are laid along the rows with the edges against the celery; stakes are distributed along the line, three to each board; a man takes hold of each end of the board and turns it up against the row of celery and drives the stake to keep it in place. As soon as our first-banked is ready for market, the lumber is moved along to other rows.

"For winter celery we only work the earth up to the plants with the cultivator, and about December 1 they are taken up with what earth may stick to the roots, and set on the ground floor of the houses, with a foot-board set up edgewise once in 15 inches, and no dirt or sand is put around the roots. They keep finely and blanch well."

HOW TO MAKE THE CALLA BLOOM.

LESSONS APPLICABLE TO OTHER PLANTS.



THE mistake more often made than any other in the management of the calla or *Richardia* is that of giving the plant too much root-space. Plants which the successful commercial grower would have in a six or seven-inch pot, in the amateur's collection are sometimes seen in peck or bushel-pots and boxes. If vigorous

to start with, these plants may make a surprising growth; and after a long time produce a few gigantic flowers. More commonly, however, they do not thrive in proportion to the size of the vessel they are in, and as to bloom prove a complete disappointment.

When a plant is given a larger pot than is necessary for its roots, there is great danger that the soil will become sour, in which event neither calla nor any other plant

will thrive. Even if one has the requisite skill to do the watering successfully, and the plant thrives on its "home-acre," its unarrested vigor will be against its doing much in the way of blooming.

The object of flowers is the production of seed. So long as the individual is thriving and has a vigorous hold on life, it is not disposed to expend its substance or sacrifice itself for the sake of its descendants. But when about at the end of its natural resources, and there is no hope of the individual doing much more in its own existence, or during the passing season in gathering individual strength, then it is ready to show for what purpose it has been living. It has reached the flowering stage, and now devotes itself to rocking the cradles of a new generation. The plant sets about this with greater or less energy according to the necessity of the case. If there be ample time, the plant in flowering will, as it were, "take it easy," and produce its blooms in succession throughout the period allowed, or until it has consumed

its substance. But if some condition threatens a suspension of the vital activity or tends to shorten it, as indicated by retarded growth, the plant exerts itself to do its allotted work in a shorter time, and often surprises us by the prolificacy of its flowering.

This makes plain the reason for keeping callas somewhat cramped at the root when they are grown for winter flowers. Some florists accomplish the end in view by placing a number of the rhizomes or roots in a box together, so that when they have attained some size they crowd each other.

Our treatment has been to use small pots and to turn the pots on their sides about June 1, in some shady place, and let them rest until September. Some growers set out callas like other plants and keep them growing all summer; but the period of absolute rest is an important factor in securing flowers in winter. Having rested during the summer, they are repotted and left unwatered for two weeks. Then a generous watering is given, and no more until they have started up briskly.

The calla is not particular as to soil, provided it is rich. The most satisfactory is composed of good loam, four

parts; rotted cow-manure, free from sawdust or litter, three parts; sharp sand, one part. As for pots, a six or seven-inch will accommodate a pretty large root-stalk.

Under this treatment the plants in a temperature of 60° at night begin blooming in November, and continue until the hot weather of the following season. Lovers of this beautiful flower have reason to congratulate themselves upon the discovery and adoption by Professor L. H. Bailey of a plan to start up the plants without repotting and depend on liquid manure to make up any deficiency in fertility.

Last fall our plants were given this treatment. Owing to the pressure of other matters they were not attended to until about the middle of October; but we lost nothing by the delay, as they came into bloom fully as soon as they would if started a month earlier with repotting. The blooms came with the first leaf, and in two weeks after starting most of the plants were showing flower-buds. By November 15 many had flowers ready to cut, and the blooming has continued with unwonted freedom and constancy ever since.

Indiana.

ERNEST WALKER.

GIRDLED ELMS THAT WOULD NOT DIE.



RECENT paragraphs in this magazine, which have noted the remarkable tenacity of tree life under the most abnormal conditions, lead me to make this record of similar cases which have come under my observation. The venerable Thomas Meehan, in speaking of the girdled Austrian pine on his grounds which so surprised his friend George Thurber by its continued growth and vigor, said: "It seems incredible that a tree can possibly live when the bark and underlying wood are separated." Alluding to another pine in Nevada, which had been girdled by porcupines, he inferred from the cases cited that these species of pine were specially endowed with power to draw moisture and other supplies for life and growth through the old wood, which other trees could not do. In the light of the evidence I shall present, this belief will need modification.

Secretary Ragan, of the Indiana Horticultural Society (page 758, 1891), cites certain pine trees, similar in character to those mentioned by Mr. Meehan. In all these instances the tree above the point girdled is said to have kept on growing and increasing in diameter of trunk as if nothing had happened to its organic structure, while below the girdling all was apparently still and practically dead, so far as any development was concerned. Another point to be remembered in connection with these girdled pines is, that only a few inches, or at most a foot of the bark had been removed.

About a mile and a half from my home in Kingston, N. Y., and on a leading city street, stood three years ago three fine, thrifty elm trees (*Ulmus Americana*), in front

of a small cottage. They had been planted many years before for street shade-trees, and were thoroughly established. For some strange reason unknown to me, the new owner of the cottage, who moved there in the spring of 1889, deliberately peeled the bark from the trunks from a point within a few inches of the ground for about three feet upwards, completely girdling each tree and denuding the wood of every vestige of bark for that space. Chancing to pass by some time afterward, I stopped to note the unusual proceeding: first, because I always regret the destruction of any large and beautiful tree without apparent reason; and next, in this case because the trees seemed in full growth with fresh leafage, although the girdling had evidently been done some weeks before. Questioning the owner, an illiterate foreigner, he said: "Too much shade; too many trees, big and hard to cut; kill 'em this way." But he didn't succeed. The graceful sweeping elms went right on about their business, breathing and pumping up sap as though no vandal hand had tried to sever their connection with the base of supply. All that summer they grew and the twigs lengthened, to my utter astonishment and pleasure, and the owner's consternation. In the spring of 1890 the elms started to grow at every end just like their ungirdled neighbors, and all that summer they were green and beautiful. I examined the wood of the girdled spaces, and found it apparently dead on the surface but alive and sappy inside. The owner rather began to admire the grit of the trees; at least he did not cut them down. Last spring and summer the green banners of life came out as before, and waved defiantly in the breeze.

But now the cottage got a new tenant. Two of the elms were felled during the summer. The other was left

until a few days ago, when it was sawed down close to ground. The stump measured about 15 inches across, and the circles showed the tree to have been about 20 years old. This tree was apparently still in full life, the wood being green and full of sap except the outer surface, which seemed dry, hard and dead, although the inner portion of this last or outside circle contained sap, and was evidently engaged in performing its organic functions.

But now comes the deviation from all other recent cases that have fallen under my notice. There was no perceptible difference in the enlargement of the trunk of these elms, either above, below or in the girdled space. The growth of the stems was normal, and equal at all points, so far as I could see. This is indeed remarkable, and goes to show that when the flow of sap between the wood and bark was arrested by the girdling, the entire circulation was merely diverted to the inner cellular structure or woody portion of the tree.

Such are the facts as I found them. I regret that at least one of these trees was not left standing to demonstrate the wonderful recuperative powers of nature still further; and yet the girdled trees were objects most unnatural and incongruous, such as I would rather not see continually in front of my own dwelling.

In this case there was no resinous property of the wood to resist the closing of the pores of the alburnum or sapwood as in the case of the pine trees; the young wood on the three-foot girdled space was practically dead on the surface and for an eighth of an inch in, if indeed it could be called young or new wood at all. How, then, can we escape the conclusion that the sap of these trees passed up through the main body of the stem? Surely with all our boasted knowledge of plant-life, and the apparently simple processes by which it is maintained, we are yet confronted with many unsolved problems; and among them sap-movement and cambium formation are conspicuous.

H. HENDRICKS.

THE ECONOMIC PLANTS OF JAPAN*—XIII.

ROOTS AND TUBERS USED FOR FOOD—CONTINUED.



FOR THE MANY species of irises indigenous to Japan, several are used as a source of starch, which is extracted from the fleshy root-stalks. This utilitarian end is not their principal function, however, as the Japanese are passionate admirers of their flowers;

and in many places throughout the country, especially about Tokio, there are large plantations of these beautiful flowers. Among the varieties are *Iris laevigata* (*I. versicolor*) and *Kämpferi* (*I. laevigata*, Regel). The *Kämpferi*, especially, is cultivated for its flowers. The sorts originated from it are numbered by the hundred, and in point of colors run through innumerable shades from pure white through purple to deepest blue. There are but few garden scenes more pleasing than a Japanese iris-pond in June. Other species grown for root-stalk and flower are the following: *Iris tectorum*, *tomiolopha*, *Chinensis*, *fimbriata*, *Siberica* var. *orientalis*, *S.* var. *haematophylla*, *ensata* var. *Chinensis*, *Pallasii* var. *Chinensis*, *oxypetala*, *setosa*, and *Japonica*.

HELIANTHUS TUBEROSUS, L., Jap., *Kiku-imo*. (Jerusalem Artichoke.) *Kiku* is the name of the chrysanthemum, and the plant is so-called from the composite character of the flower, while *imo* is the common name for tuber. The plant is generally known in Japan, and is occasionally cultivated. I have not been able to ascertain whether it is indigenous or not.

LAPPA MAJOR, Jap., *Gobo*. (Common Burdock.) This is a much humbler plant, but one which as a food-plant outranks all the species of the iris. It furnishes a striking illustration of the mutability of common weeds.

From an intrusive pest has been developed a useful vegetable. The long, slender tap-root has been enlarged, rendered fleshy and tender, and in a general way it partakes of the qualities of the parsnip, and is even more generally used than parsnips are with us. It is one of the standard articles which can be found at the green-grocers' nearly the year round. It is a perennial, but is grown as an annual. The seed is sown in rows two feet apart, and the plants thinned to about six inches. Ordinary specimens of root are about two feet long and an inch thick at the top, but occasionally much larger ones are seen. It prefers a rich sandy loam, and market-gardeners hold that soil manured with decayed pine-leaves imparts the best flavor to the root. Highly nitrogenous manures cause the roots to grow hollow. There are a number of varieties, with white, gray and almost black roots; some are early, others late. The early varieties are sown in May and dug in the fall; the late ones are sown in August and dug the next June.

A comparison of the composition of this root with the composition of some of our garden favorites shows that the *gobo* has less water and much more of the nutritive element than is found in turnips, parsnips or carrots:

	Gobo.	Turnips.	Parsnips.	Carrots.
Water	73.80	92.8	81.0	89.0
Ash	1.05	0.8	1.0	1.0
Protein	3.62	0.5	1.2	0.5
Carbohydrates (starch, fats, etc.)	21.53	5.9	15.8	9.5
	100.00	100.0	99.0	100.0

A root that contains 3.62 per cent. of albuminoids to 21.53 per cent. of carbohydrates is rich enough to sustain life; and not a single one of our common vegetables is equal to it in nutritive qualities. I have eaten it on many occasions in Japanese dishes, and while it must be

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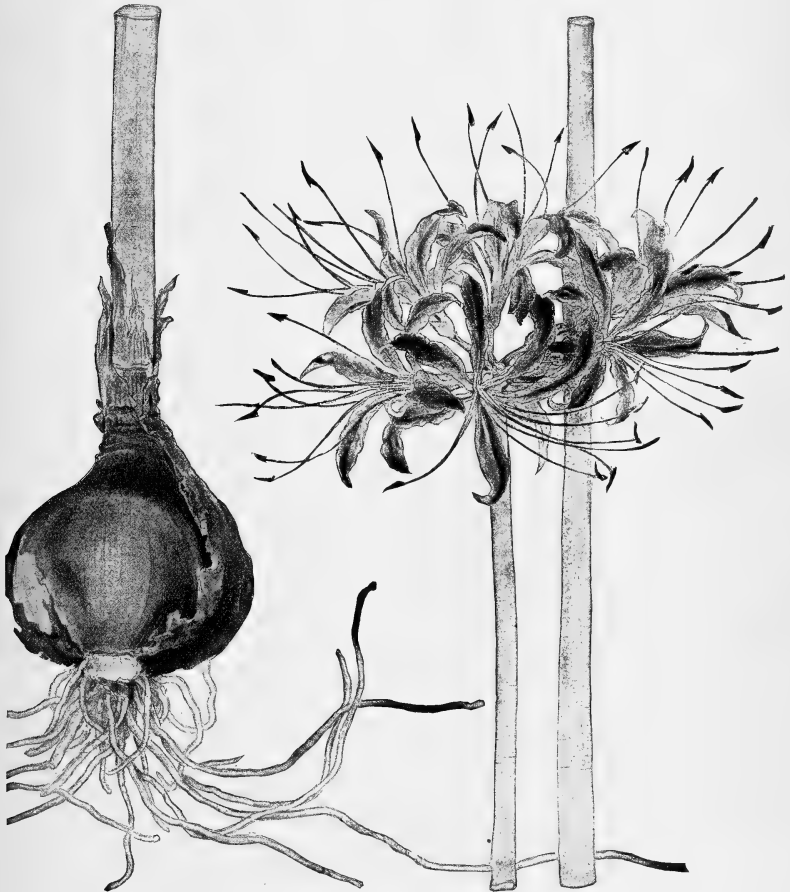
confessed that said dishes are not always calculated to give one the clearest notions of the flavor of individual ingredients, still I became satisfied that it was a palatable vegetable. In taste it approaches salsify. It is well worth a trial in this country. Old roots are rather fib-

rous; but this defect would soon be remedied in the hands of American growers by good culture and systematic selection of roots for seed-bearing. Although it is a common vegetable everywhere in Japan, like many others of their economic plants, it receives special attention in

certain places. Saitama and Kanagawa are somewhat noted for its culture.

LILY-BULBS.

The bulbs of nearly all the indigenous species of the lily are used for food, and they are cultivated quite



NERINE JAPONICA: BULB AND FLOWER-STALK. (From Nature.)

largely for that purpose. They are also gathered from the plains and mountain slopes. When properly cooked they are tender, starchy, nutritious and quite palatable. A common way of cooking is to boil them in the *shoyu* and sugar, when the scales are nibbled at in the same

rous; but this defect would soon be remedied in the hands of American growers by good culture and systematic selection of roots for seed-bearing. Although it is a common vegetable everywhere in Japan, like many others of their economic plants, it receives special attention in

manner as the scales of artichokes. The species cultivated more than all others together is

LILIUM TIGRINUM. It is propagated either by the axillary bulblets or by the small root-bulblets. The former are first grown one year close together to gain size, and afterward treated like root-bulbets. These are planted in rows two feet apart, and five inches apart in the row. Here they usually remain two years, the flower-stems being destroyed as they appear. In the fall of the second year they are dug and sold. Other species treated in the same way are *Lilium auratum*, *speciosum*, *Japonicum*, *Belladonna*, *lancifolium*, *concolor* and *Maximowiczii*.

NELUMBIUM SPECIOSUM This grand plant is a native of Japan and all the Asiatic tropical and warm temperate countries. Its chief attraction is as an ornamental water-plant, in which sphere it has no rival. The large double sweet-scented flowers, six inches in diameter, rearing their heads above water amongst a dense forest of large dark green leaves, are one of the most charming sights the eye can behold. The moats in Tokio, which were built as a protection to the once famous castle of the Shogun, abound in these flowers. They are also cultivated in ponds and pools throughout the country. But aside from its ornamental features it has a high economic value as a food-plant. The seeds are edible and much prized, and the large-jointed root-stalk furnishes a staple article of diet. It is palatable and nutritious, and is everywhere cultivated. It must be grown in stagnant water, from three to six feet deep, having a muddy bottom. This makes it possible to turn marshes and other places that cannot be drained to good account. Ponds suitable for lotus-culture are more valuable than equal areas of rice-land.

Propagation takes place either by seed or by pieces of root-stalk. The former is usually sown on a seed-bed of mud, and the young plants transplanted when a year old. To insure rapid germination, the seed-coat should be scraped to a thin shell above the germ. If this is neg-

lected, the seeds, which retain their germinating powers for a long time, may sometimes lie in the mud for several years before they vegetate. The seeds are sometimes packed in balls of clay, and dropped in the water at regular intervals where the plants are wanted. Seedling plants yield their first crop of roots the third year from transplanting.

Once established, the roots are dug every other year in alternate strips four to five feet in width; the plants which the first year were left undisturbed spread into the space which was dug, and establish young plants there. The second year the remaining old roots are dug. The root-stalks as seen in the market are two to three feet long, and consist of as many joints. Cut in slices crosswise and boiled in *shoyu* or water, they are served in various manners, and form a palatable vegetable of a rather mucilaginous nature but without decided flavor.

NERINE JAPONICA, Miq. (*Amaryllis Sarniensis*, Thunb.; *Lycoris radiata*, Herb.). Wild in moist places,



PIECE OF ROOT OF *NELUMBIUM SPECIOSUM*, USED FOR FOOD IN JAPAN.

particularly on the small dykes between the rice-fields. In many places it is so abundant that when in flower the meadows are patched with scarlet. In September, some weeks after the leaves have withered, it sends up a scape some nine inches or a foot tall, crowned with an umbel of bright red flowers; petals narrow, stamens longer than petals and pistil longer than stamens. The root is a cluster of bulbs with close layers. Our illustration (page 211) is drawn from life, and gives an excellent representation of the flower and bulb. It is said that the bulbs are capable of yielding starch, and it is for that reason classed among the food-plants. It is a showy autumn flower, which is worthy of notice in this country for ornamental planting.

C. C. GEORGESEN.

FRIENDS AND FOES IN THE GARDEN.

KNOW THY FRIENDS AND PROTECT THEM.



NEVER kill an ordinary snake, a toad or lizard, nor do we let anybody else do so if we can prevent it. They all are welcome visitors in our gardens. The greater number of farmers and gardeners seem to act on the supposition that every small animal, bird, reptile or insect is bent on doing mischief and must be killed. It is high time that this universal practice should be stopped. People who thus kill friends and foes alike only harm themselves, and do a favor to some of their worst insect enemies.

We cannot always draw the lines closely. Birds, snakes, toads, lizards, etc., eat useful as well as noxious insects; but the latter usually to a much greater extent than the former. It cannot be good policy to destroy any one of these small animals, unless it is positively known to belong to the injurious class. In doubtful cases it will usually be found the best policy to give the accused the benefit of the doubt.

For several seasons we have employed a few toads regularly as policemen in our hotbeds and coldframes, and have thus enjoyed perfect exemption from insect

pests in plant-growing. In the markets of Paris, toads are articles of regular trade, and gardeners buy them by the dozen as insect-hunters in their small gardens. These homely reptiles devour anything in the shape of worm or insect, from the smallest greenfly to the largest cut-worm and May beetle. Even the disgusting potato-beetle is devoured with evident relish.

Among insects there are many that prey on the worst pests of our gardens and orchards. "Nearly all the lace-wings, which include the ant-lions, aphid-lions, dragon-flies, etc.," says Prof. A. J. Cook in the *New York Tribune*, "are a benefit, living wholly on other insects, and so help to preserve our crops. Most of the locust order are destructive, yet even here we find the curious praying-mantis, common at the south, with its jaw-like anterior legs—one of the first of predaceous insects. True, it attacks bees also, but it certainly does much more good than harm. Several bugs, like the great wheel-bug and the soldier-bug, feed exclusively on other insects. Of the beetles, the beautifully spotted lady-bird beetle, the black, long-legged ground-beetles, the quick fierce, tiger-beetles, and a few others, are valuable aids in holding our insect pests in check. I have repeatedly seen the grubs of the ground-beetles eating cut-worms. The good work of the pretty lady-bird beetles in destroying the pestiferous plant-lice can hardly be too much appreciated. Of the two-wing flies, we have the tachina-flies, which are internal parasites

on other insects; they resemble in form and color the house-flies, to which they are closely related. These also prey upon cut-worms, laying their eggs on the caterpillars, and as these eggs hatch the maggots eat into their host and destroy its life.

"Two other families of two-winged flies do much good in eating other insects. The robber-flies are so fierce and strong they destroy even the honey-bee, while the conical maggot of the pretty yellow-banded syrphus-flies feed upon plant-lice to an extent surpassed by few other insects; they are nearly or quite equal to the lady-bird beetles as aphid-destroyers.

"Among the highest order of insects—the one that includes the bees and wasps—we have the ichneumon-flies and the chalcids—wasp-like insects that are parasites and do incomparable good. They are of all sizes, and prey upon almost all kinds of insects. They are far more helpful to the farmer than are the tachina-flies; they saved the wheat crop in Ohio, Michigan and Indiana in 1889. The wasps also belong to this order, and do much good; indeed, I think we may say that the wasps are only our friends. They are dreaded needlessly, for, unmolested, they rarely if ever sting. I have seen wasps carry off slugs and tent-caterpillars in great numbers. Every farmer should become acquainted with these friends and learn their habits, that he may help, not hinder, their good work."

ON MAKING LAWNS BY SEEDING.

FINE EFFECTS AT REASONABLE COST.



WHILE we may differ as to what garden embellishments are best, as to the beauty of a green grass carpet all agree, and so we find it common to all home grounds.

In the Waverly Garden at Edinburgh, which is a magnificent roof-garden above the market-place, while the bulk of the adornments are beautiful exotics in beds, yet similar beds are devoted to ordinary sward. This garden would have been greatly lacking in its power to charm had the lawn feature not been introduced. Even in a window-garden the suspended sponge in which grass-seed has been sown, or the pot or vase of growing grass, is always a pleasing and easily acquired ornament.

The object of the present article is to consider the subject of securing by seeding a handsome lawn for a moderate outlay, through pursuing methods within the reach of all home-owners.

THE SOIL.—The first choice will be a soil naturally loamy, deep, fertile and well-drained. In most cases the home chooser will look out for these advantages for other considerations also, as trees and plants will thrive better in such land, likewise the kitchen-garden and orchard.

But in the case of many homes, soil becomes secondary to location. In towns, however, hydrant watering is usually available, and this may offset certain defects of soil. In the case of a country home without public water it becomes necessary, in order to carry the lawn through periods of drouth in a fine green condition, that stores of moisture and food be provided by having the soil deep and fertile.

DRAINAGE.—Where the natural or artificial drainage makes the place healthful as a home, the surroundings will be sufficiently dry for a good lawn; otherwise put tile or other drains 30 inches or so deep in parallel lines about two rods apart, and lay in connection with an outlet, so as to provide an inch of fall per rod. Any under-drains that might thus be required should be put down as the first step towards fitting the ground for grass.

GRADING.—One of the first requisites is that the surface be sufficiently even to admit of the grass being regularly cut by a lawn-mower. Aside from the perfect evenness of the surface, some attention should be given to general appearance of the grade.

In the first cut on following page is shown what purports to be four views of the same section of a home lawn, designed to illustrate the effect of various lawn contours. The upper grade strikes the eye as being uncomely, because of the ill-shaped finish bestowed on it in construction. It is, moreover, so uneven that it cannot well be

kept in good order. It is a lawn in the contemplation of which a person of cultivated taste could not find pleasure. The second section shows the same lawn nicely graded, as with a level. It affords no variety in its contour, as natural landscapes do with rare exceptions. The third grade is slightly dishing, which of all forms for small

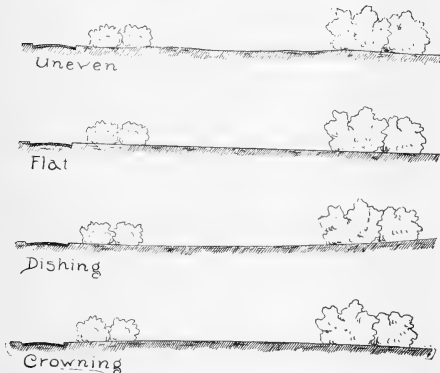
tramped by horses when the soil is so dry that it will not pack, this may answer nearly as well as the other ways.

A perfect tool for smoothing is a "float," consisting of two pieces of scantling about six feet long, on which are nailed inch boards a foot apart, connecting one scantling with the other, three feet apart. To add effectiveness the driver stands on it when passing rough places.

SEEDING THE EDGES.—Now mark out the walks and drives and the edges of the beds and borders, preparatory to defining all such edges with a line of sods. In the illustration below, A shows a walk; B B B a bed and the borders of a lawn ready for seeding, all the edges being thus defined. The operation is a simple one: First, some sod is cut and rolled; second, a slight depression about half as deep as the sod is thick is made in the lawn, and here the sod is put in place and thoroughly beaten with the back of a spade to settle the grass-roots firmly. In taking up sod for edging, turf as clear of weeds as possible should be sought. The advantage of taking up and putting down sod in long, rollable strips is shown in the first illustration on opposite page, where the long strips are much more uniform in thickness than where the sod is lifted in squares. Another gain is the smaller number of joints that will appear in the finished work.

SEEDING THE LAWN.—An extensive experience in testing lawn-grasses and in seeding lawns leads us to prefer a mixture of equal parts of Kentucky blue-grass (*Poa pratensis*) and red-top (*Agrostis vulgaris*) to any other for stocking the lawn. With us this mixture has proved much superior to the mixed "lawn-grasses" offered by nearly all seedsmen, and it costs considerably less. The kinds named are kept in stock by all seed-houses. We order them separately and mix as we sow. We use at the rate of not less than four nor more than six bushels to the acre.

As a last preparation for receiving the seed, the surface



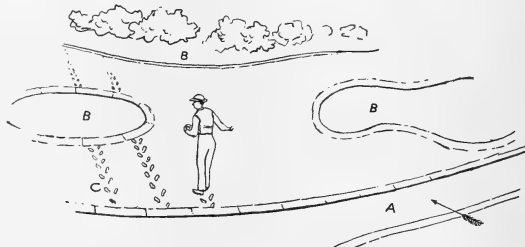
FOUR VIEWS OF DIFFERENT GRADES IN LAWN-MAKING.

grass areas is the worst. It is comparatively characterless, having indeed a depressing effect on the beholder. In pleasing contrast with this is the style at the bottom, which shows a swelling contour through its center, which at once satisfies the eye of good taste. It is a style that may well serve as a pattern for the average small "door-yard" lawn.

The illustrations refer to land that is level or nearly so; hence might not apply to grounds that possess more or less natural undulations throughout. In the latter case we would recommend that slight unevennesses be reduced, in order to facilitate the use of the mower, especially near the house; but, in the main, there might be no objection to retaining some natural variations of the surface.

A rule that must be adopted in lawn-grading is to have a good depth of fertile surface-soil over all parts as finished. This may vary from four to eight inches in thickness, according as the lawn is with or without access to hydrant water.

If all work up to this stage and also the final plowing, smoothing, raking and rolling, could be done in the fall and the final touches be left until spring, thus securing thorough settling of the soil, the lawn will not lose its shape. In the absence of either over-winter settling or of a heavy intervening rain, if the surface is everywhere thoroughly



THE LAWN GRADED AND THE EDGES SODDED: READY FOR SEEDING.

should be gone over with the garden-rake, leaving it smooth and fine. This is important for better germination of the seed, and is of material assistance in securing even sowing. Grass-seed can be properly sown only when the air is quite at a standstill. This condition is

most likely to occur just after daybreak, and sometimes at nightfall. In sowing the seed, our practice is to take a strip not more than five feet wide each time across the plot. As there will always be a slight movement of the



SOD CUT IN STRIPS VS. SQUARES.

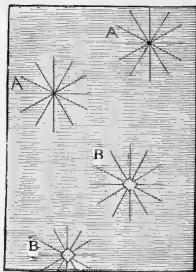
atmosphere, sow in one direction only, and that away from the wind, as the man is represented as doing in the illustration on opposite page. The air is supposed to be slightly in motion in the direction the arrow points. Where one chooses to take extra pains, the seed can be divided into two lots; one to be sown in one direction, and the other crosswise of the first tracks.

The seeding done, the final step in the lawn-making is to pass over the surface with a roller for the purpose of bedding the seed in the soil. We have, on a small scale, tried mulching lightly after seeding, with good results. The materials used have been clean straw, and also horse-manure shaken clear of the bedding. The advantage of the mulch is found in case the sowing is succeeded either by heavy packing rains or dry weather. Of the two materials we prefer the manure, which may remain permanently if the coat be light. The straw mulch should be removed as soon as the grass appears through the surface.

AFTER-MANAGEMENT.—The new lawn should be mown regularly from the time the grass and weeds are an inch high until the close of the season. A good rule is to cut every time the growth reaches a height of about an inch. The numerous weeds will mostly be annuals, the seeds

of which were in the soil; and if none are allowed to grow and seed, they will cause trouble only for one season, and the grass, if vigorous, will soon crowd them down. Such perennial weeds as plantain and dandelion should be removed with the spud. These cause little trouble, however, in a lawn thickly occupied with thrifty grass. Once each year or second year the lawn should be treated to a coat of fertilizer of some sort.

LEVELING AN OLD LAWN.—Where an old lawn has a good coat of sward, but is too uneven to admit of the easy use of the lawn-mower, it may readily be improved. Supposing that in such a lawn—represented by figure herewith—there are two slight protuberances at A A, and two depressions at B B; take out a slab of sod at the center of each place, and from these points cut with a sharp spade diverging lines through the sod outwards to the edge of the unevenness, as shown in the engraving. Then roll back each strip of sod until the entire surface is turned back. Now cut the surplus soil at A A down evenly across the openings and put it into the depressions at B B. Level the new surfaces with care, packing the loose soil quite firmly, return the rolls and slabs of sod, and beat well with the back of the spade.



TO LEVEL A ROUGH LAWN.

This must be varied according to the size of the protuberances. By treating the more prominent humps in this way, and beating down small humps when the soil is soaked, it is possible to work a great change for the better in a rough lawn, without much labor.

GARDEN NOTES FROM ENGLAND.

NEW EARLY SPRING AND AUTUMN FLOWERS.



AMONG the new varieties is *Philadelphus Lemoinei*, a delightful garden shrub, a cross made by M. Lemoine, about 1887, between the charmingly free, graceful and dwarf *P. microphyllus* and the commoner *P. coronarius*.

It resembles the former, and is quite as pleasing, being dwarf—not more than three feet in height—and spreading. The shoots have a graceful bend, setting off in June the profusion of spotless white flowers, as sweet as orange-blossoms. The way to plant it is as a distinct bed, permitting the graceful shoots to spread at will; and if the bed is on the grass the effect is height-

ened by the contrast of the white blossom and green turf. Here in England this new shrub is perfectly hardy, and went through the past severe winter almost unharmed. Such shrubs give charming beauty and distinction to the garden in early summer. In the opening days of leafy June we long for sweet blossoms, pure as snow, fragrant as the orange.

THE WHITE DAPHNE is a handsome hardy shrub, blossoming in early February in moderate climates. There are several varieties of *D. Mezereum*; this I think is one of the rarest, and of distinct and unusual beauty. The shrub is like the common form in habit, but the flowers, instead of being purple are white, large, and stud thickly the short, stiff branches. A large bed of it makes a charming feature—bold, effective and showy—as the row

of white bloom shows up well against the leafless twigs which surround it. Last February this daphne, named *D. Mezereum album*, flowered gloriously in the Royal Gardens at Kew, and it is quite as vigorous and hardy as any of the other forms of this favorite and pleasantly fragrant shrub. It should have a moderately light soil and an open position. A bold group gives a much finer effect than a single plant or two where things are crowded so that they may be deprived of their true beauty.

A NEW ROSE.—There are many new roses, but here is one that, wherever I have seen it, has told the same tale of delightful freedom in bloom, exquisite color, soft and refined and sweet fragrance. It is a French rose, raised in 1889 by the raiser of Guinoseau, and is named Augustus Guinoseau. It has been called a white La France—a happy and appropriate title. The flowers are of good shape, white with a light touch of rose, almost salmon in the center, and they are carried in profusion on the sturdy shoots, diffusing a sweet fragrance like the scent of the old cabbage-rose. It blooms freely in summer, and on a cold, wet autumn day it was the happiest rose in the garden, still flowering with characteristic freedom. A strong plant is obtained on the brier stock, and it will prove a valuable garden rose on account of its freedom, showiness, fragrance and hardihood. It is already becoming a favorite in England.

ASTER ACRIS.—Certain plants of undoubted merit never seem to rise to the same pitch of popularity as many inferior things. The perennial asters, or Michaelmas daisies, are many in number, the majority wild, weedy plants of no value whatever in the garden; others of charming beauty, as free and informal as the tall grass in the field. Among the very dwarf varieties is *A. acris*, which, by no means new, does not seem to be well-known. It is not over 2½ feet in height, is bushy and one mass of purple flowers, so thickly crowded together in the dense head as to hide every trace of leafage. There is a still dwarfer kind named *A. Sibericus*, but the two are

scarcely required in the same garden. Many splendid effects may be got by judiciously using these dwarf perennials in beds, and in the Royal Gardens (Kew) last autumn, much color was given to the broad acres of pleasure groups by having beds filled with *A. acris* on the outside line, and in the center varieties of the Madame Desgrange chrysanthemum. The two associate well, and produce a glorious display of color—strong purple and white. It is as necessary to think of autumn as of summer, and to gild the days of late September with bright color, few things are more suitable than this, which is easily grown and propagated and is not hurt by the first early frost nor dimmed by a cold autumn rain.

A NEW DWARF CALLA.—I saw exhibited at a meeting of the Royal Horticultural Society a new and distinct dwarf variety of the common *C. Ethiopica*. It was less than half the height of the type, the leaves and flowers being also proportionately smaller. A plant of this character would be useful, not alone for cut-blooms, but for decorations and the front of groups in reception and other apartments.

ARISTOLOCHIA GIGAS was the sensational flower of last year. It is known also as *A. grandiflora*, and both names are applicable, the plant being a giant of its race; the "giant" in truth, no other aristolochia approaching it in size of bloom. This extraordinary introduction from Jamaica flowered all the summer season in the famous *Victoria regia* house in the Royal Gardens (Kew), and as it is a climber it has been permitted to ramble in its own way over one of the rafters. It is vigorous in growth; the leaves are fully six inches across, deep green and the flowers hang down from this leafy mass. They are the center of interest, measuring 16 inches across and about 21 inches in length. This large surface of flower is beautifully colored with creamy white, set off by blotches and mottlings of crimson, and a central pouch, half a foot across, is of the deepest velvety purple-maroon, almost black in its intense shade.

ANGRÆCUM SESQUIPEDALE.

THIS remarkable orchid, illustrated on opposite page, was known to botanists in 1822, but first introduced into England in a living state in 1857 by the Rev. William Ellis, a missionary in Madagascar, whose attention had been attracted to it as he traveled through its native woods, and he says the trunks of the trees were covered with it. To his honor we may say that few who have traveled in tropical countries possessed so great a love for plants as Mr. Ellis. He introduced several angræcums, one of which has been named in his honor. We must not forget that he also introduced that wonderful form of vegetation, the lace-leaf plant (*Ouvirandra fenestralis*) from the same island. The first *Angræcum sesquipedale* he sent to his wife at Hollosden, where it flowered the same year, and was figured in the *Botanical Magazine*.

When Darwin received the first specimen he was puz-

zled to conceive how the plant was fertilized. He said that an insect had yet to be found in Madagascar with a proboscis long enough to extract the nectar from the bottom of the long spur attached to the flower. His idea that there was such an insect was ridiculed by entomologists, but some time afterward the moth was discovered.

The specimen in flower here is sixteen inches high and has three flower-spikes, one with five flowers and each of the other with four. The stem is erect and covered with the bases of the clasping leaves, which are strap-shaped and one foot long, bilobed at the apex and arranged in two opposite rows. The flowers, which last in perfection about a month, are six inches across, ivory-white, fragrant and wax-like. The sepals and petals are broad at the base and taper upwards. The lip is heart-shaped, forming at the end a hollow spur about twelve inches long. When the flowers first appear they are of a greenish

ish color, but after a time they turn to an ivory-white, with the exception of the spur, which still retains its greenish hue. They are all the more appreciated because they come at a season when orchid flowers are scarce, and consequently higher in price.

The culture is comparatively easy. The plant requires the temperature of a warm house, and should be planted

in a basket and grown in sphagnum moss mixed with pieces of charcoal, which serve to admit air to the roots, and also to maintain perfect drainage. It likes plenty of water all the year round and should be suspended from the roof close to the glass; but it must be shaded from bright sunlight.

R. CAMERON.

Botanic Garden, Harvard University.

SOME FLOWERS AND VEGETABLES.

NOTES FROM THE EDITORS' GARDENS.

ALTHOUGH last year was but the second in which the Japanese weeping cherry bloomed on our grounds, it fully confirms all the favorable reports that have been bestowed upon it by those who have older specimens. It is a small tree, picturesque in habit, with the branches reaching to the ground and the general shape irregular. The flowers are bright pink and come in great profusion, making a splendid show along the drooping stems. The tree appears to be perfectly hardy as far north as the Niagara river, and is a vigorous and satisfactory grower.

FALL BUYING, SPRING PLANTING. We are getting in the way of ordering some hardy trees and shrubs each fall and setting them out in spring, and like it. The advantage is that nurserymen are not so busy in the fall, hence can give orders more careful attention; and the stock is on the grounds ready to be set as soon as the soil is tillable in spring. One point not to be overlooked—and so we bring up the subject now—is that such trees require to be transplanted early. Everyone who has handled many trees knows that such as are dug early in the spring and heeled in will not leaf out fully for weeks after those of the same lot left standing have come out in full foliage. Not so with fall-dug trees that have been heeled in over winter—they start their leaves as early as the same kinds that have not been moved; hence their season for transplanting is shorter by just so much. Yet by setting such fall-dug trees early in spring they become better established during the first season than such as are dug in the spring. The drawback in the way of the system of fall buying and spring planting is the risk of carrying the trees over winter. Evergreens should never be bought in the fall and carried over, as their transplanting is better done in spring and summer.

AN IMPROVED MEXICAN ZINNIA.—One of the most satisfactory flowers tried on our grounds last year was the new *Zinnia Haogeana pumila fl. pl.*, a double variety of the Mexican zinnia. Its beauty of flower and the neat habit of the plant were generally remarked by visitors. The seeds were sown in the open ground about May 15 and by midsummer the pretty flowers appeared and continued by the hundred until after frost. The flowers, considerably reduced in size, are shown in the illustration



ANGRÆCUM SESQUIPEDALE, AT HARVARD BOTANIC GARDENS.

on next page. The color is a deep orange-yellow, reminding one of the rich shades found in the striped African marigolds. It is dwarf, not reaching above seven inches in height. Altogether it is a neat and attrac-

tive summer-blooming plant of the easiest culture and must become a general favorite in that class of plants.

While speaking of zinnias we are reminded that the members of the entire genus as now improved are among the most satisfactory plants that can be cultivated. They are neat growers, of easy culture, and the flowers vie in brilliancy with, if they do not excel in richness, geraniums. They show a larger range of colors than pelargoniums, for they embrace some rich oranges and allied tints. As bedding-plants they are satisfactory either in masses, rows or singly.

A point in their favor is that they appear in good blooming shape well into the autumn, after many other kinds have taken on a sorry appearance. While they are thought to prefer a sandy soil, they thrive in any good garden loam. In cultivation they are readily started, while a favorite way of raising them in the north is to sow the seeds in gentle heat about April 1—nothing being gained by sowing them earlier. One will not be without reward, however, if never a seed goes into the soil before corn-planting time and then outdoors. While the zinnia transplants readily, still it is better that this be done not so long before setting out but that the tissues will yet be tender and succulent, that they may lose nothing of that vigorous growth which is always desirable up to the blooming stage. Zinnias love full exposure to the sun and heat, being natives of the plains of Mexico.

THE PEPPERS.—The tendency for new peppers has taken a fanciful turn. In the Ruby King, Golden Upright and Golden Queen, introduced some years ago, the first-named red, the other two a beautiful yellow, and all smooth and quite large—we have apparently reached a standard of excellence which it will not be easy to surpass. Since the introduction of the sorts named none of practical value have been offered. Only monstrosities, like Procop's Giant with its twisted and contorted shape, and ornamental playthings like Red Cluster, Celestial, Coral Gem, Bouquet and Tom Thumb have been brought

out. To the latter class, more curious than useful, also belongs the Black Nubian. The plants from the start are a dark purple—almost black—and grow slowly and weakly. In the end, however, they become quite large and bushy and produce a great quantity of medium-sized long and pointed peppers. The plants attract attention by their unusual color, stalks, foliage and fruit alike showing that peculiar dark purple. We always like to have these curiosities long enough to get acquainted with them, and for people with like inclinations this new

variety and the others will prove interesting for a year or so. It has no practical value. It forms a fine contrast ornamentally when planted with the red and yellow sorts.

For use as pickling-material at home or for market the Ruby King is our favorite, but the Large Bell and Sweet Mountain are also good. As we usually plant many varieties, a dozen plants or so of each in a patch together, we give them a chance for the miscellaneous production of crosses. Some of the varieties, notably Golden Upright and Ruby King and most of the larger sorts, seem to be less subject to "mixing" than the newer fancy sorts. The Celestial seems especially liable to cross and we have had plants with fruits of all shapes, sizes and coloring from seed gathered from perfect specimens of Celestial.

SNAP-BEANS.—There is such a bewildering array of varieties, both in the green-podded and in the wax sections, that the

more of them we try the less we feel inclined to settle on "the best to plant," or to select one or two sorts for home use out of the long lists in seedsmen's catalogues. Fortunately, most of them are serviceable enough. At one time we were enthusiastic over the beauty and tenderness of the Ivory-Pod wax-bean; but this is not suited to all soils. On light sandy or gravelly soil it succeeded admirably and we had large crops of beautiful ivory-podders of medium size and fine quality. But on the soil on which we have had to plant it for some years it appears unreasonably dwarfish and unproductive, and subject to



NEW DOUBLE ZINNIA, HAAGEANA PUMILA.

rust. We shall not try to grow it again, but, instead, depend on Early Valentine for a green-podded sort, Butter and Saddle-Back for wax varieties. We were also pleased with the blue-podded butter-bean, a distinct variety having bluish foliage, flowers, pods and beans, and affording a charming variation in the bean-patch. The pods are equal in tenderness and brittleness to any other we know.

Two years ago we received seeds of a large number of unnamed new beans from E. P. Powell. These were of all colors and shapes. Most of them were pole varieties, and many of them produced pods of unusual length and thickness; in fact, some were as thick as they were broad, and all quite stringless. The best of these, we believe, will be given to the trade.

For dry white beans we have found nothing thus far that suits us better than Burlingame Medium.

LIMA BEANS.—Our last season's experiment with the ordinary Lima grown in bush form proved almost a failure. They were planted on highly manured ground, and the vines grew so fast and rank that we could not keep them in check. They ran considerably, notwithstanding frequent cutting back, and produced a light crop. The past two years in this locality have not been favorable to the ripening of ordinary Limas, and we have not had the accustomed abundance. We still stick to our wire-and-twine trellis—have to, in fact, for poles we have none.

We have good success with Henderson Bush Lima, but we could not do much with Burpee, nor with the Kumerle. In a long warm season a fair proportion of the fruit of Burpee Bush Lima will ripen, and most of them reach the proper stage for table use; but the Kumerle is altogether too late for us, although we can manage to get a few for the table.

FRUIT AND GARDEN NOTES.

PRACTICAL HINTS BY PRACTICAL MEN.



VERY GROWER was enriched in experience by the season of 1891, which gave to the American people an abundant harvest of fruits and vegetables. Here is a wealth of information from first hands. We are trying to incorporate it in these notes, and hope that many of our readers will render us welcome aid in making this department instructive, by telling us their most important observations during the past season.

RED RASPBERRIES AND THEIR CULTURE.

Within the past fifteen years red raspberries have taken a prominent place in the markets of the middle and western states. Varieties have multiplied and improved, each possessing peculiar merits or demerits, and demanding special culture suited to its own character, in order to yield the best results.

In 1871 I planted the Philadelphia, a seedling from Eastern Pennsylvania then widely known. It is a good grower, hardy and prolific, and the fruit is of fairly good qualities for table and canning, but rather soft for home use. It succeeds best on moist sand enriched with unleached ashes. Plant in hills 6x8 feet; support with a strong stake and cord, and leave six to eight canes to a hill. In 1872 I planted Red Antwerp, an early berry of good quality and rich aroma, but the plant is not hardy enough for northern Ohio winters without protection.

I next tried the Turner, a hardy, rampant grower, suckering badly. The first pickings are fine, good-sized berries, rather sweet for some tastes. As it is generally and neglectfully grown with ten times as many canes as there should be, the second pickings give small, insipid berries. To get the best results, plant it on light, moist sand with only a few canes to a hill. The suckers must be kept down the season through, by frequent hoeing and shallow cultivation.

Next I grew the Hansell. It has naturally a small cane. I enriched a light soil of sand and clay with composted manure, and planted in hedge-rows six feet apart. We obtained ripe berries three days earlier than from Turner, and they were of good size through its season. Fruit sprightly acid—a general favorite for table use, canning and pies. It is well-liked as a market variety. Marlboro, with me, owing to the large pith in the cane, is not very hardy or healthy. The berries are large and of beautiful color when just in their prime. A plantation should be picked over every day and receive but little stimulating manure. A good supply of leached hardwood ashes would be all right.

Brandywine, on heavy clay loam, proved a failure. I planted it again on damp sand in hedge-rows seven feet apart, enriched with stable manure and leached wood-ashes, keeping the canes thinned and the land free from weeds and grass. The result has been fair crops of bright crimson berries, of good size, which find a ready sale in our market, where appearance often goes before quality. The fruit is rather dry and insipid, but holds up well for 24 to 48 hours or longer. Many others are preferable for family use. Cuthbert is at its best in moist sand, in hedge-rows seven or eight feet apart, with but little stimulating manure, but a large amount of ashes. Plantations should be picked at least every second day to secure bright berries that will keep in attractive

shape. With good culture the Cuthbert is certainly "queen" among the red raspberries and stands next to Shaffer in productiveness. Clean and shallow culture and annual or biennial enriching of soil are prime requisites of success.—E. M. WARNER, *Ohio*.

WHAT JUDGE MILLER HAS TO SAY.

If some of the strawberries tried here last season don't make a mark in the world, I am mistaken. Hale Gem, Putnam, Thompson No. 7 and No. 51, Huntsman and some of the I. B. Miller seedlings loomed up grandly, and also a few of my own seedlings. The fact is, however, that it takes several years' trials in different parts of the country to prove that a strawberry is fit to be sent out.

There are enterprises in the south that need only proper attention to make them grand successes. There are great possibilities in pecan-nuts. Some sent me by Col. W. R. Stuart are the finest I have seen. Thousands of acres of rich low lands in that section can be planted with this nut with fine prospects of profitable results.

Next is the Japan persimmon. I have seen and eaten enough to know that there is a bright future for this fruit. Some doubt is expressed concerning the probability of its becoming a market fruit in the north, but I have no fear. It is too handsome and too good not to take with the masses. If there is any fruit that could take the place of the banana to some extent, it can only be the best of the Japanese persimmons. There are, in the south, forests of native trees of this family that could be grafted with the Japanese, and thus be made to bear in a few years, and bring in the dollars freely. Here none of these foreign varieties seem to succeed. I have tried a number of them; that we may get some that will be hardy is probable. Perhaps we may breed hardy sorts by crossing them. For many years I have been endeavoring to collect the best natives, and now have six fine varieties. Some of them are higher in flavor than any of Japanese, but not nearly so large, and they have too many seeds. Some, however, are nearly seedless. The persimmon is a fruit that never fails; the tree has no disease, is long-lived and quite ornamental.—S. MILLER, *Montgomery Co., Missouri*.

A VERMONT'S EXPERIENCE WITH PLUMS.

About ten years ago I began setting plum trees in my chicken-yards, planting a few each year for about five years. They have now borne several heavy crops. The trees were wanted to shade my yards, and therefore put only eight feet apart each way. A cleaner, healthier lot of trees cannot be found. I have not seen much black-knot, and always cut it out at first appearance.

The only cultivation I have given has been a thorough spading of the ground about twice a year, and now and then I have raked in oats or wheat for the hens to scratch for. This has kept the ground thoroughly worked, and the droppings from the hens have kept the land well enriched. The soil is a rather light, sandy loam, with a sand subsoil, but very rich. These trees have regularly borne heavy crops of strictly first-class fruit, which commands the highest price; indeed, I have had no difficulty

in getting four dollars a bushel at my door. Some of my Lombard trees have yielded $2\frac{1}{2}$ to 4 bushels of choice fruit apiece.

My method of pruning has been to cut back two-thirds of each season's growth, either in fall after the leaves had fallen, or in the spring before they had started, always taking pains to keep the middle of the head well thinned out to let in the sun.

I have had to thin the fruit, especially from the Lombard. For this purpose I use a pair of small pocket-scissors, sometimes removing two-thirds of the fruit, and yet I have never taken off as much as I ought. I have always been particular to burn all black-knots, and to keep all decayed or green fruit cleaned up from about the trees. I believe this is especially important.

About half of my trees are Lombard. Had I set all of this variety, my orchard would be worth much more than it is now. I have Bradshaw, a fine early plum, but a shy bearer; Yellow Egg and Washington, both nice, but not profitable; Purple Egg, fine, large, but rots badly on the trees; Imperial Gage, a splendid plum, and Green Gage, which is nice for canning; Shropshire Damson, a small late purple variety, but a good annual bearer and a quick seller; Genii, a large purple plum, rather coarse, bears well but is more subject to black-knot than any other. Of other varieties on my place none is of any account here. Moore Arctic is coarse and sour, and the tree seems to enjoy the black-knot. The Miner was recommended highly; some of those I got winter-killed, and I wish all had. They grew faster than others, blossomed full every spring, but never bore over half a dozen little red plums that never got ripe. I grafted other varieties on the trees, and they are now of some use.

I am setting a new orchard and shall plant largely of the Lombard, Niagara and Damson. I have gathered many cart-loads of bones, and in setting my trees I dig large, deep holes and put into each a liberal supply of them.—A. A. HALLADAY, *Vermont*.

A JERSEYMAN ON BUSH LIMAS.

No vegetable now attracts more attention than the bush Lima, and for good reasons. It enables us to dispense with the poles, wires or strings that obstruct the view and mar the neatness of our gardens. While growing the usual quantity of pole varieties last summer, I also took great interest in testing the value of the bush type. I can hardly speak too highly of Henderson Bush Lima. It is one of the most productive of all beans and of fine quality, but for market its small size is an objection. It is considerably earlier than the other Limas, and its vigorous bushy growth enables the plant to carry its immense clusters of pods well up from the ground. It can be grown with the ordinary cultivation given to the common bush-bean.

The Kumerle is another type, not so upright in growth, but rather inclined to spread, sending out strong laterals. Unlike the Henderson, it is very late, and should therefore be planted on early rich soil. In pod and shape it does not differ from that excellent sort, Dreer Improved Lima,

which is conceded to be the most delicious of all beans. When well-grown this is very large; some of the seeds are almost round, and crowd each other in the pods, like the Champion pea. I find it difficult to save sufficient seed of the Kumerle. The pods are heavy and thick, and set well under the leaves, so that they mildew and sometimes rot before they are dry enough for seed. But when shelled green for the table, they have no equal and are the admiration of all that see them.

The Burpee Bush Lima, all points considered, is the most meritorious novelty introduced for many years. It makes a large, magnificent plant, and its strong, bushy habit is thoroughly fixed; it has no inclination whatever to run. The beans are large, about the size of the Large White Lima, which the variety closely resembles in pod and shape. Like the Kumerle it is rather late and should also have the advantage of an early, rich soil. In fact my experience with all Limas indicates that a very rich, sandy soil is to be preferred. This variety makes a large and heavy bushy plant, and when set full of large pods, as it generally is, it appears to be unable to carry them without some protection or support. In high winds it is frequently blown over and injured by twisting or breaking near the ground. To prevent this I set a strong stake about as tall as the plant by its side and tie the plant to it. When cultivated in this way, it will be found fully as productive as any other of the pole varieties.—T. M. WHITE, *Monmouth Co., N. J.*

HOW TO PREVENT TOMATO-ROT.

Early tomatoes are a highly important crop with market-gardeners here. Rot is our chief trouble. The large tomatoes rot in the center just before ripening, causing serious loss. In some seasons this has been so bad that only half-rotted fruit could be obtained at any price, and many amateurs abandoned tomato-culture entirely. My first tomatoes were grown on land that had never before been planted with vegetables. They did well and we had ripe fruit by July 4. Everybody complained of rotting, while ours were all sound. Next year we planted on the same patch, supposing this to be the best. Singularly, all the fruit spoiled before ripening. This was the case everywhere around us, and we said the season was unfavorable. However, I had a surplus of plants in June and took about 200 to a distant field that had produced only wheat and corn. These made little growth, but by August were overlaid with fine, sound fruit, not a single one showing any disposition to rot. They were the finest and best-flavored tomatoes I have yet seen.

It occurred to me at once that planting the crop on the same land in succession was the cause of the rotting. I therefore selected the tomato-patch accordingly the next season, and to my satisfaction it proved a success. To be quite sure, I planted some on land on which tomatoes had been grown two years before; they rotted badly. Two rows which extended over the limits of the original field bore fruit all sound, while not three feet away in the field no good fruit could be found.

This has caused me to believe that tomatoes should never be planted on ground on which this fruit had ever

been grown before. How many years it will take to efface the effects of infection I do not know. A one year's interval does not seem sufficient.

The above is especially true on light soils; heavy clay lands seem to be less affected.—FR. WINDMILLER, *Minnesota*.

GROWING EARLY TOMATOES FOR HOME USE.

The climatic conditions of this and many other districts in the northern states are not especially favorable for bringing a full crop of tomatoes to maturity. We have to take more pains with our tomatoes than growers more fortunately located, who have only to set out plants, no matter how poor or small, in order to get a full supply of the ripe fruit. Hundreds of my neighbors hardly ever get more than a mere taste of ripe tomatoes, and yet it is merely a matter of proper management and painstaking to have a full supply for a long period every season. Our great obstacle is the difficulty of obtaining good plants.

Ordinarily it will not do to depend on the local plant-grower for a supply. In most cases one will get stunted, spindling specimens, not worth twenty cents a dozen. Some eighteen years ago we sold fairly good plants at seventy-five cents a dozen. This was not too much for the care bestowed; but of late a demand for cheap plants has sprung up, or possibly competition has forced prices down. At any rate, good plants are no longer obtainable, and we must grow them ourselves.

If we can prolong the ripening season or hasten it—which means the same thing—for a single day, that day is clear gain, for it requires as much labor to care for a tomato-plant whether it brings plenty of fruit to maturity or none. We may as well have fine, ripe tomatoes every day for three months as for six weeks; the expense will be the same, except for the superior plants. I have often taken ripe tomatoes into the market four weeks ahead of anyone else, and yet I am located unfavorably for competition.

First procure good seed of any of the best varieties. There is little difference between them in regard to earliness, except in some of the newer varieties, especially King of the Earlies, Earliest Advance, Atlantic Prize, Vaughan Earliest and Early Ruby. Of these King of the Earlies should be discarded on account of inferior quality, and Earliest Advance on account of its small size. The other three are good, and any of them may be planted for earliest. They are exactly the varieties for people with little skill, and for a rather cold climate. In such cases they might be made the sole reliance. But since some of the later varieties, such as Ignotum, Matchless, etc., are much better, we plant the Ruby, etc., only to a limited extent, and prefer the later ones for main crop, and would advise the same course by others.

Presuming that the plants are well-started and made stocky by frequent transplanting, about April 20 transfer to a hotbed previously prepared. If they are quite large and tall, cut them back; even severe top-pruning may be of benefit. Also shorten the roots somewhat. Give plenty of room—eight to ten inches each way.

While the plants remain here we must guard against excessive heat and cold. The sash may be slid back, partly raised or wholly removed at times. Our aim must be to get the plants toughened by the time they are to be set out.

Still, if we have neglected to start them as early as we should have done, there is a way to success. In such case send to a reliable plant-grower south of you early in April, and buy the required number of small plants, which, if only a few, can be sent by mail, and will cost but little. Plant at once in a hotbed or coldframe, and treat as advised for the plants started in a box in the window. When all danger of frost is over (June 1 in this location), transplant to the open ground with the utmost care. Two men, each with a square-edged shovel, can take a plant out of the bed without disturbing it much. By training to one stalk the ripening process may be hastened a little at the expense of quantity. I therefore recommend that a part of the plants should be treated in this way, in order to get a supply early in the season, but I would allow the rest more freedom, in that way securing a greater quantity, though later.—
F. GREINER, *Ontario Co., N. Y.*

PLENTY OF STRAWBERRIES WITH LITTLE EXPENSE.

Prepare the ground thoroughly by plowing, harrowing and rolling. Next stretch a line on one side lengthwise of the field and set the plants by it two feet apart, by inserting a small brick-trowel at an angle of 45°, drawing

the handle towards you with the right hand, taking the plants from a bucket of water in the left and giving them a slight jerk as they are inserted, so as to throw the roots into a fan-shape. Press the earth firmly against the roots with the foot. Place the rows three feet or more apart, planting every fourth row with a staminate variety. Set as early in the spring as possible.

After the first rain the field should be gone over with a small-toothed cultivator. Cultivate often until the runners begin to take root. Have the cultivator well-spread, and always go in the same direction between two rows. This will carry the runners away from the middle, and leave them near the rows. Hoe out any rank weeds.

When the ground freezes cover with straw or strawy horse-manure. After the picking-season continue the cultivator as during the first season. Prevent any weeds from going to seed by clipping with a sharp scythe. When winter comes cover as before. After gathering the second crop, plow the field and plant to turnips, pickles, sweet-corn or other crops. Never try to pick a third crop from the field. It won't pay. I know growers who hoe their fields from two to five times each season. Of course they get fine berries and a few more quarts to the acre, and perhaps two cents per quart more for their crop. But the cultivation has cost ten times as much, and therefore their net proceeds from one acre have not equaled mine, and as I raise berries for profit and not for glory I prefer 'this somewhat slip-shod method.—
J. E. SCHOOLEY, *Dearborn Co., Indiana.*

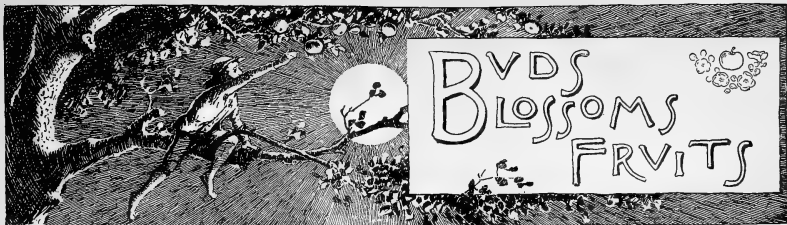


MY DAYS ARE GARDENS.

*My days are gardens, and in them I sow
Fair flowers of truth, or weeds of sin and woe.
Each hour, each moment, thoughts and deeds supply
The harvest I must gather, by-and-by.*

*O, may I scatter, then, of pure and true,
The living germs in all I say or do!
Perchance, my God at even may delight
To print such gardens with His footsteps white.*

—JAMES BUCKHAM.



As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will be judged only by the practical and useful ideas or suggestions in them. Besides this premium, the gain accruing between readers by the telling of experience should be a sufficient inducement to contribute such notes.

I. LITTLE TWIGS.

PLANT the school-yards.

CLEMATISES are easily grown in pots.

ARBOR-DAY is a blessing to the future.

WHAT LATENT BEAUTY in a ten-cent packet of seeds!

FOR LARGE pansies use soil that is one-third manure.

GO THROUGH the whole catalogue of gifts to man, and what can equal flowers and fruits?—*Shirley Hibberd.*

MCLEAN'S LITTLE GEM I find is the surest first pea. I have tried American Wonder more than once, and more than once I have failed.—*MARGARET, Campbell, La.*

TO SPRAY OR NOT TO SPRAY.—This is the question with horticulturists. You will find all about what, when and how to spray, in May number of AMERICAN GARDENING.

COBÆA SCANDENS.—If you desire a window or balcony climber of easy culture that always gives satisfaction, we commend this vine. It may be grown from seeds or slips.

WHEN LOOKING about for edging-plants, don't overlook that old favorite, sweet alyssum. Its bloom is fragrant; it lasts all summer; it is one of the few plants that survive the early fall frosts.

A ROOT-PULLER, not for dentists but for use on the lawn to remove dandelions, plantains, etc., is one of the latest patented devices. It is a kind of forceps with a lever attached, which serves as a pry in loosening the root.

ROME BEAUTY APPLE.—Thousands of apple trees are being set here in Lawrence county every year. The Rome Beauty, which originated in this county, is the leader, more being propagated than of all the other varieties put together.

WHY SOAK GARDEN SEED?—Soaking may be all right for such hard shells as canna and honey-locust, but for most things plant in freshly stirred soil and firm well. No more is needed to insure prompt germination if the seed is good.

A SERVICEABLE trowel has been received from W. B. Cleves, Binghamton, N. Y. It is angular and extremely stout, one of the few implements of this kind that are really made for business and not for play. Surely there is a good amount of "wear" in it.

CHANGE OF OWNERSHIP is reported in the celebrated English seedhouse of Thos. S. Ware, Tottenham, London, Mr. Ware having sold all his interest in it to his business manager, Francis Fell. The business will be continued under the old firm name, "Thos. S. Ware."

ENGLISH WALNUTS IN THE NORTH.—In our city, about 65 miles west of New York, we have trees of the English walnut, which have borne some nuts. One, as near as I can remember, is about 20 feet high, the other smaller. Both, I believe, were raised from seed.—*S. M. SHEINER, Orange Co., N. Y.*

AMERICANS LOVE FLOWERS.—The Duke of Marlborough, in a published letter, says that a peculiar quality of wealthy Americans is their devotion to flowers; that no other people spend money so willingly and lavishly for them. Well, this is a pardonable and refined sort of idolatry which we hope will always flourish!

GLADIOLUS PROPAGATION.—Gladioluses always come true when propagated from the small bulbets. It takes several seasons to grow them to a flowering size; with some growers longer than with others. A hint: if you will peel off the outer husks of the small bulbets down to the flesh, they will grow much more rapidly.

THE SPRING MARKET for American apples in England, notwithstanding the recent Paris green scare, is quite lively. Quotations in early February for sound stock, were Baldwins and Golden Russets, \$3.40 to \$4.80 per barrel; Greenings, \$3.40 to \$3.90; Newtown Pippins, \$4.47 to \$6; various other varieties, \$2.91 to \$4.40.

KAINIT A REMEDY for wire-worms and cut-worms—that is what the New Jersey Station insists it is. We believe it. At any rate, it has seemed to give us relief from these and other insects. We also use muriate of potash, or solutions of it, as an insecticide, and with it we kill greenfly on trees and plants, worms on currants and gooseberries, maggots on radishes, etc. These potash salts are worth the trial.

FRUIT-GROWERS TO ORGANIZE.—The Chautauque grape-growers have made vigorous efforts in the direction of organization for the purpose of securing better and cheaper shipping facilities, and better returns from their grape crops. These efforts deserve success, and are worthy of imitation by fruit-growers everywhere.

PRIZES FOR GOOD ROAD ESSAYS.—The Pope Manufacturing Co., Boston, Mass., will give 100 bicycles for the 100 best original essays upon "Good Roads," the competitors being free to select and treat any phase of the subject. This prize contest is open to students of high and preparatory schools, academies and colleges.

THE IRRIGATION PROBLEM is going to cost the beginners dollars for experience, unless they have an immense storage capacity. I had a wind-mill, but by the side of my steam-pump it was as a squirt-gun to the hose of the fire-department. When we want water we want it, and we cannot wait for the wind to blow it up.—E. H. CUSHMAN.

THE THORNS OF ROSE-STEMS frequently wound the fingers of retail florists painfully. Every active workman can show dozens of scars obtained in hurried preparation of bouquets and devices. Some of the veterans of the trade insist that the stems become impregnated with the poisonous substances used by growers to destroy plant-bugs.

THE MANSFIELD TREE-TOMATO is a thrifty grower, and a moderate producer of large, solid, irregular fruit. But it is putting the color on pretty thick to say, as some "editorial" notices do, that "no vegetable ever introduced has created such a sensation as the Mansfield tree-tomato." We have grown the tomato, but failed to note the sensation.

POTATOES IN THE ARTS.—It is said that large quantities of buttons are made from potatoes in this country. They are hardened with acids and take then the aspect of horn, ivory or bone, to a degree that renders it difficult for even specialists to distinguish the real from the artificial. The cost is extremely low. Soon we shall see small potato statues in imitation of ivory.

SOME TIMID SOULS seem to be afraid that with our present mania for spraying we will poison fruits and vegetables, the very soil even, and every live creature, human beings included, that eats of the products of our orchards and gardens! Rest easy, friends. The little poison that we can apply is a mere nothing compared with the poisonous substances already in the soil.

CLINTON GRAPES FOR JELLY.—Why do we seldom see the Clinton grape recommended for any purpose save wine-making? To my taste there is no more delicious acid-jelly than that made from the Clintons. Where shade is desired, erect a simple arbor, and plant one or two Clinton grape-vines. They will supply an abundance of shade and material for a quantity of excellent jelly.—ELDER'S WIFE.

NATURAL GRAFTING.—I read in the February AMERICAN GARDENING about a remarkable case of natural grafting of two hemlock trees. I know of an elm tree whose dif-

ferent roots are about 18 feet apart and the union about 25 feet from the ground, where they form one tree about 15 inches in diameter. The ground is level all around, and the tree is perfectly healthy and can be seen from the gravel road that leads from Larnia into London, Ontario, near Lobo village.—J. M. W.

A GOOD USE FOR TOBACCO.—Some of us who do not have access to cigar-factories may find it difficult to get tobacco fit for use as an insecticide. Why not raise a few plants? Last year I raised some in my cabbage patch, giving the same culture, and now I have an abundance of tobacco, much better than I could buy. A leaf crushed and placed on the earth under the roses in the window kept the lice off more effectually than anything I have tried.—J. H. VAN.

PARKS FOR VILLAGES.—The recent attempt to pass a bill enabling all towns in New York of 5,000 inhabitants or upwards to raise funds for public park purposes, did not succeed. A substitute was then introduced into the legislature, relating to a particular town, and this seems likely to pass at this writing. Because the first attempt on securing a general bill of this character has failed, it does not follow that its advocates need be discouraged. The time is nearly ripe when a carefully prepared law of this kind can be passed.

II. THRIFTY SAPLINGS.

The Golden Prune.—Some samples of this prune in the dried state were sent us by H. I. Blakesley, of Oregon, who says that they came from Seth Lewellen, the originator. It well deserves its name, for its size is very large, with pit in proportion, and the flesh of a rich golden yellow color. Evidently it is one of the finest of its kind. Mr. Lewellen says of it: "The Golden prune is a little larger than the Italian. On our land it is from six to ten days earlier than the other, and a little sweeter. I have no doubt it will do well where the Italian is a success."

The Bean-Weevil.—It is stated on good authority that the bean-weevil may continue to breed within the same lot of beans, although old and dried, for as long a time as the food-supply lasts. At the New York Experiment Station, at Geneva, a few handfuls of beans put up in 1882 in a glass case were seen swarming with hundreds of these beetles a few weeks ago. One remedy formerly recommended by entomologists for both bean and pea-weevils was, to keep the peas or beans over till the second season in tightly closed packages, thus destroying the insect. This remedy can no longer be depended on in the case of the bean-weevil.

Kew Gardens.—The average Londoner considers these famous gardens merely in the light of a pleasure-ground, and in this, perhaps, most visitors to the English metropolis join. This impression the *Gardeners' Chronicle* aims to correct by calling attention to the botanical activity—not only in a purely scientific line, but particularly in garden botany—that prevails in the place. "It has been a main agency in the collection and diffusion of

knowledge of all kinds relating to botany, and has ensured the cultivation and dispersal of economic plants of all kinds. Great things have been effected for humanity, entirely or very largely through the medium of Kew. Commercial men and practical statesmen are not very likely to feel much enthusiasm about botany as a science—they look upon it, if at all, as a harmless pastime; but when they see—as they may at Kew—what it is capable of, and what it has done for the benefit of mankind, they naturally look upon the gardens as an institution worthy of their support. The cultivation of cinchona, tea, India-rubber, Liberian coffee, represents only a few of the industries which have been established and fostered in India and elsewhere, chiefly through the agency of Kew."

A National Emblem.—The national-flower craze has broken out in a new form. A "Star Pansy Union" is being formed, having for its purpose the gaining of recognition for the pansy as a national flower, and proposing to secure "a more graceful, elastic and emblematic union for the United States flag," by placing the cluster of stars representing the states in the form of petals in a conventionalized pansy. For the head of the staff an acorn is to be used—"the emblem of greatness in littleness, of strength in weakness, of life in death." An attempt will be made to secure the adoption by Congress of this design in 1893.

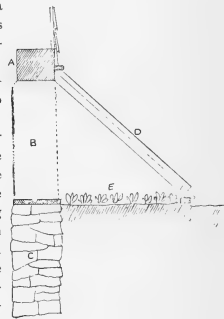
Narrow Pots for Roses.—The makers of the Neponset paper flower-pots are desirous of knowing whether a tall narrow pot, 6 inches high by 2½ inches at the top, about which a customer inquires, would be a useful form for growing small roses. The writer has had considerable experience in raising young roses in pots. He has found that inasmuch as young roses do not run as quickly to leaf as do many other pot-plants, it is an advantage in economizing space to grow the young plants along in narrower pots than would be suitable for plants like geraniums, coleus and heliotropes. What have our florists to say about it?

A Respectable Onion Crop.—Last season I dabbled a little in the new onion-culture, using White Victoria and Mammoth Pompeii onions. Seed was sown in the hothouse, and the plants set in open ground when of the size of rye-straw. The plants being so small, I set them rather too close, three by eight inches, and the tops covered the ground so I had to thin. Still, some of the bulbs measured 5½ inches in diameter, and I got a yield of 1,350 bushels to the acre. Will try about one-half acre this year.—A. P. MABI, Iowa.

Too Tempting.—There is a story that "out west" a man hung himself because, after repeated efforts, he failed to raise fruit and vegetables that came anywhere near the pictured varieties in the catalogues. A more or less gorgeous pamphlet is now almost daily left by the postman. And the amateur almost gives up in despair, saying: "It's no use my trying to keep up with the procession; I must take a back seat, or give up entirely." I've been there, and know whereof I speak. I shall no more be discouraged, even if my manettia-vine, instead

of being so covered with blooms, as in the picture, that no leaves were visible, only had five flowers at a time. But it was so pretty, with the five scarlet tipped-with-yellow blossoms, that I didn't miss the other thousand or two. But I was disappointed in my wax-beans! In the picture the bean-pods were so close together that one small branch looked like a paper of pins. Being fond of wax-beans I invested, and had just one full meal of the beans and a few scattering pods besides. But I love the bright catalogues just the same, and carefully store them away. When the baby is teething I can keep him amused and happy for hours, showing him the gaily colored pictures. And sometimes in the latter part of the winter, when tired out and waiting for spring, and perhaps threatened with *la grippe*, I look at the bright pictures of roses and delicious strawberries and take heart again.—SISTER GRACIOUS.

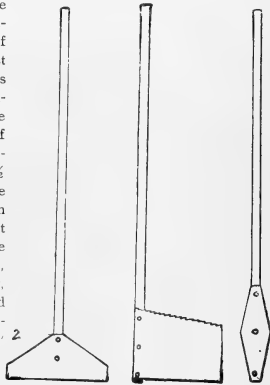
A Cellar Hotbed.—My neighbor's house is heated by a furnace, consequently the cellar is always warm. He uses the south end for a workshop in the winter. A few years ago he wanted more light than the small ordinary cellar-window afforded, so he enlarged the window, at the same time making a place for keeping plants over winter and starting seeds in the spring. The opening in the cellar-wall was enlarged to about four feet long, and down a little deeper than the level of the ground outside. A space two feet wide and the length of the opening was furnished with good garden soil. Then a hotbed sash was made the length of the opening, and of a width sufficient to reach from the top of the opening to the outside edge of the prepared soil. The triangular ends were also enclosed with glass. This arrangement gave a space of four by two feet of good garden soil, warmed by the furnace within and the sun without. House-plants were kept there in winter and seeds started in early spring the same as in a hotbed. This contrivance has continued to give satisfaction and is much less trouble than a hotbed. The drawing shows cross-section of the arrangement.—SUBSCRIBER.



Home Experiment-Grounds.—Pleasure and profit may be derived from a plat of ground set apart for experimenting. Strawberry-seeds may be sown in greenhouse as soon as the berries are ripe—the plants set into the open ground, put back into house in fall, and made to ripen fruit before next regular crop is ripe the following summer. Grape-seeds sown in sandy soil in autumn will make a growth of two or three feet the following season. Many new varieties of raspberries, blackberries and

gooseberries may be brought out by home experiments. Rose-seeds will produce new sorts. Geraniums and begonias will quickly flower from seed. In this work every lover of horticulture may find not only the stimulus of discovering a valuable novelty, but health and recreation. Girls and boys may engage in such work with a fair promise of pecuniary reward; for many instances are on record where large sums have been paid for new fruits and flowers. Try it, and if you do not find wealth, you will find health and pleasure.—C. I. ROBORDS, *Bates Co., Mo.*

What I Did with an Old Hand-Saw.—I took the handle off and presented it to a carpenter. I then had a blacksmith cut the blade crosswise into three parts. Of the first and widest piece, $7\frac{1}{2}$ inches long, I made a sod-axe, as seen in the central figure. Of the second or middle piece, $10\frac{1}{2}$ inches long, I made a strawberry-path cutter, shown at the left; and the remaining piece, $7\frac{1}{2}$ inches long, was transformed into a strawberry-pruner, as seen at the right of illustration. The last-named is used for cutting off runners



HOME-MADE IMPLEMENTS.

in the early part of the season. It saves stooping and backache, and is useful also for cutting off the roots of large weeds sometimes found in strawberry-beds. These implements were all made sharp on the grindstone.—J. HAYES.

Spraying to Prevent Damage by Frost.—The knapsack sprayer is a handy thing to have. We use the poisoning spray. It is our weapon against insects, against plant-diseases, against frost. If a late spring frost threatens to kill our unprotected tender vegetables, we fill the sprayer with clear cold water early in the morning and give the plants a thorough spraying. This will save them if the frost is not an actual freeze. And in the case of a freeze, if the spray be applied in the morning, the moment the temperature begins to rise the disastrous effects will be lessened.

Backache and Patents.—How kind it is of certain inventors to come to the relief of backache by giving us machines for setting small plants and trees. The old-time process of setting plants so familiar to us all, required the operator to stoop, or for relief to squat down and work with fingers, dibble or trowel near mother earth, with results to the back we never can forget. But

here comes a man from New Jersey with a patented machine to set out strawberry-plants, and another from Pennsylvania with a patented cabbage-plant setter, adapted also to other plants. The latter reasons that his machine will do better work than possibly can be done by the old hand process. We also must not forget the elaborate tree-planting machine, which the forestry division of the department of agriculture has been calling attention to with striking illustrations of late, as an aid to forest planting.

Rhubarb and Rhubarb Jelly.—A beautiful jelly can be made from pie-plant. Cut the stalks, after washing, in small pieces, but do not peel; add enough water to cook until tender. Put in a bag to drain, let stand several hours, then to five cups juice take four cups granulated sugar. Boil the juice 20 minutes, add sugar and boil until it jellies, which will be in ten or fifteen minutes. This makes a clear and beautifully-colored jelly, good and palatable and healthful besides. Now let me tell you how to get the pie-plant much earlier and tenderer than in the old way. Cover the plants with manure during the winter, then in the spring when the ground begins to thaw, take the manure off, put on an old barrel, or better, a box-like frame; pile the manure around the sides and cover with an old sash if you have one, if not, put some cheap muslin over the top. This covering is for the day, when the sun shines warm and clear. At night add more cover, either boards or old carpeting, until there is no more danger of severe frosts.

Sand and Damping-Off.—Usually in germinating seeds and starting young plants the greatest loss is caused by damping-off, or rotting, just under the surface of the soil. A long time ago I read of Henderson's "saucer system" of starting cuttings in wet sand set in the sunlight. I used to keep a deep baking-plate full of sand all winter, and in this way rooted more cuttings of plants than I knew what to do with. I often lifted them to see if they had rooted, and thus discovered that an enormous number of spreading roots grew on each plant in the sand. Now, why should not a layer of sand prevent all this damping-off, which is so annoying and expensive? I have tried it some, and hope others will try it and report.—BOSTON SUBURB.

Hyacinthus candidans.—I have read several accounts of the remarkable tenacity of life possessed by the *Hyacinthus* (or *Galltonia*) *candidans*, none of which surpassed an experience I had with mine. It was planted among other bulbs in the garden, and when I came to dig them the hyacinthus failed to appear. Finally I gave it up and left it in the ground over winter. The following spring I had forgotten it and was spading the bed when I chanced to see a white something in the dirt. Stooping to examine it, I found the lost hyacinthus-bulb sliced obliquely into three pieces. I was vexed, for though I am not particularly fond of the plant, I dislike to destroy anything of the kind. In desperation I fitted the pieces together and buried them, thinking I had seen the last of them; but lo! in a few weeks up it came, and three stalks, too, but none of them bloomed. Last

spring I had another bulb of hyacinthus sent me. I was only just recovering from *la grippe*, and had to delegate my planting to others. By accident, the hyacinthus was overlooked. One day in July when in the cellar I chanced to spy a stout green stalk poking up over the top of a bucket, and there was hyacinthus trying to climb out of the pit into which it had fallen. I planted it at once, in good soil, and in a month it bloomed as cheerfully as if nothing unusual had happened. From this I infer that hyacinthus is an excellent plant for busy and careless people to grow, as it does not get "miffy" so easily as most plants if neglected.—ELDER'S WIFE.

A Hotel Conservatory.—Connected with the Niagara hotel of Buffalo is a handsome plant-conservatory, main-

usual show plant-houses. The greenhouse opens from the conservatory, and measures 20x70 feet. In the roof conservatory of some other hotels there is met the most serious obstacle of a dry and uncongenial atmosphere, which ascends through the building. Freely to employ water on the plants for overcoming this defect, while it cannot entirely remedy it, is quite certain sooner or later to give trouble by leaking into the apartments below.

Improving Vegetables and Flowers by Selection.—"Time is money," and many who might become experimenters have not the time to spare, but must content themselves with growing the standard sorts that others, with more time and money, are bringing to the front. But there are few that could not lend a help-



VIEW IN A HOTEL CONSERVATORY IN BUFFALO, NEW YORK.

tained wholly for the gratification of the guests of the house. There is also a greenhouse in which is grown an assortment of flowering and ornamental plants, a chief use of which is the adorning of the dinner-tables and halls and rooms of the house on special occasions. The conservatory is 23x60 feet in size and is skirted by a 10-foot-wide piazza on three sides, upon which open the main hall of the hotel, the dining-room, one of the parlors and several private apartments. The piazza is furnished with easy chairs, tables and lamps, and is a favorite lounging-place for guests the year round—the temperature, even in cold weather, being kept at the agreeable vicinity of 70 degrees. There are winding walks through the conservatory, in which respect it differs agreeably from the

ing hand in the improvement of varieties by a selection of their best and healthiest plants for seed-bearing. Mark the plants of any kind that have the best fruit or flowers; then save the seed. By continuing this practice year after year, you will find that your plants will steadily improve in any way you wish.—J. M. WATERS, *Ont.*

A Greenhouse Suggestion.—There seems to be a tendency continually to increase the size of greenhouses. It would be interesting and profitable to discuss the questions how large houses may be built and still be economical. Why not use a curb roof with either 12 or 16 feet rafters, making house 40 or 50 feet in width? The flat upper half of roof would not greatly increase the height. The iron supports do not rust out if kept painted. Such

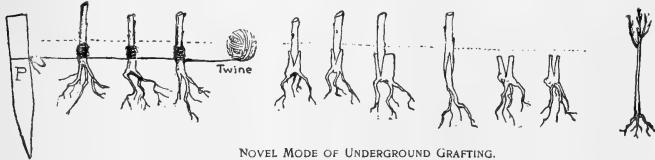
a house cannot get out of shape and has a comparatively small exposed surface. To use iron posts is cheaper than to build so many sides and gutters; there is also less shade.—THOS. L. BROWN, *Mich.*

Amaryllis in a Butter-tub.—One of the most beautiful floral displays I ever saw was a butter-tub filled to overflowing with *Vallota purpurea*. It was in full bloom with dozens of blossoms already open and dozens more coming on. Both foliage and flowers were on a grand scale and showed me possibilities in the plant of which I never dreamed. What the treatment was which produced such amazing results, I could not learn, as the owner was not at home, but a little experimenting in extra care and culture may result in similar success for others.—E. W.

Woman Insect-Detective Wanted.—One morning last June I went out to my 30-foot rose-bed, and howled at the sight that met my eyes, and exclaimed as I wrung my hands: "An enemy hath done this!" I went down the garden a little way, close to a row of currant-bushes, and howled again. For the rose-leaves were curled and mostly eaten off by disgusting bugs and worms. Cur-

each tree. Now for results. We have peach trees 12 inches in diameter that have yielded five successive crops of splendid fruit, and apple trees four to seven inches through that have fruited four years; and for several years we have also had plums, cherries, apricots, quinces, pears, grapes and small fruits. My orchard, which stands by the roadside, is an object-lesson to people for many miles around.—E. T. DANIELS, *Barber Co., Kansas.*

Novel Mode of Underground Grafting.—The same method of tying which B. A. Green in an earlier issue of *THE AMERICAN GARDEN* described as being used in banking celery, I have practiced for tying up grafts. The stocks to be operated upon are standing in rows in clean, well-worked ground, and are to be grafted where they stand. Clear away the earth from about the roots of the stocks to a depth of about three inches; then cut away at such a height as will leave the stump with its top about one inch below the general surface. With a suitable knife (an old saddler's knife pretty well worn down is a good tool for the purpose), split the stocks to receive the scions, which are cut wedge-shaped at the lower end; then insert



NOVEL MODE OF UNDERGROUND GRAFTING.

into the split in the stock. You can use either a saddle-graft or the usual splice-graft, according to size of stock or other conditions. Then take a ball of twine (the cotton twine

rant-leaves the same. Now, suppose in this dreadful emergency, when my house was full of company and I was up to my ears in work, my garden gate had opened, and a nice little woman had stepped in armed with a full spraying outfit, lots of insecticides and knowledge enough to rid me of that disgusting horde. After her work was done I would have paid her on the spot, with thanks besides. Why can't some some bright woman be an insect-detective? If she was quick, handy and sure, she would soon have a round of customers, who, if she didn't appear on time, would wear holes in the back gate looking for her. She might also add pruning-knives, and a knowledge how to use them, to her outfit. I know street after street in Detroit where the shade-trees need pruning and deft fingers would turn the shaggy, forlorn-looking objects into gracefully shaped trees. There is work in city and country for the woman capable of filling the bill. She would soon earn a splendid salary and be a healthy, happy woman, and enjoy her occupation besides.—SISTER GRACIOUS.

A Good Example.—Your article, "Quick Results After Planting," must be an incentive to those who have procrastinated. It also reminds me of the happy results of my efforts. I settled here in the fall of 1883, and the following spring broke up the raw prairie and planted an orchard, using yearling trees. I spaded up a spot two feet square and a spade in depth, in the dead furrows, for

used in shops for tying parcels suits pretty well, but fine linen twine is more conveniently handled), begin at the end as shown, and if the stocks are not firm enough to bear the strain and remain upright, assist with a stout peg, P. Then wind around each in succession, keeping the string unbroken, beginning at the lower part of the union and winding upwards; then turn downwards to the same point where the winding commenced, thus making the strain even on both sides of the stock. Then go on to the next, and so on till the row is finished. Replace the earth about the roots, raising it nearly to the top of the scion, and pack nicely with the foot or hands.

I claim no credit here for the method of grafting below the surface of the ground. It has no doubt been practiced more or less, but the mode of tying is new. This mode is well adapted to working apples, pears, plums, ornamental thorns and mountain ash, and probably to the beeches, oaks and other hardwood trees. It is sometimes desired to get trees on their own roots. This underground grafting is favorable for that purpose. In that case cut the scion about an inch or a half-inch from the lower end by forming a tongue on it; then place it on a wedge made on a stock. There is almost a certainty that the scion will form a root. The portion below the point of union should not be left too long—not more than, say, at most six inches. If too long it is likely to rot off.—SARNIA.

Pegging-Down Roses.—An admirable way to grow hybrid perpetual roses is by the pegging-down method. This consists of bending and fastening down the shoots to the earth, so that the surface of the bed will be nearly hidden with foliage, above which the new growth and flowers are to appear. The young shoots of one season are pegged-down the autumn following, at which time enough of the old parts are pruned away to give the former place on the surface. The rule is to have no branches laid nearer to others than nine inches. Some make a mistake in pegging-down the new growth during the growing season—leave it to grow as it will. When old wood is left at the autumn or spring laying-down time, because there are no new shoots to take its place, such wood should have the young branches cut back to spurs of one or two eyes each. The bed should annually, or at farthest, every second year, receive in fall a liberal dressing of rotten manure over the surface.

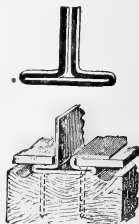
Two New Roses.—Jackson Dawson, of the Arnold Arboretum, writes to W. C. Strong: "In regard to the so-called Dawson Rose I can say that I regard it as a valuable addition to the list of hardy roses, and the beginning of a new race of roses. Heretofore most of the crosses of this class have been made with tender roses. But this cross combines the characteristics of the pollen-parent (General Jacqueminot) with the free-flowering quality of the other parent. It is remarkably vigorous, hardy and free-flowering, and I believe it will become a universal favorite, as well as a basis for others to work on and raise a new and popular race of roses. Of the rose Wichuraiana, I can say that it must become one of the most popular plants for parks and private places as a covering, and for growing among shrubbery and rocks it has no equal. Its almost evergreen character makes it acceptable at all seasons of the year. But it is especially beautiful when it is covered with its long showy bunches of white blossoms after most other roses are gone."

Boston Prices in Winter.—The *American Cultivator* reported as follows: A few tomatoes from the West Indies were sold at 50 cents per crate, while hothouse tomatoes were 25 to 35 cents a pound. Cucumbers were \$15 per 100. The first rhubarb from the forcing-houses came in January 19. It was grown near Boston and sold for 25 cents a pound. Mushrooms, in good supply, sold at \$1 to \$1.25 per pound. They are grown near Boston. Celery was \$3.50 to \$4.50 per box for good, but there was a large amount of very poor-looking celery in the market, that ought to be sold for a great deal less. Artichokes were \$1 per bushel. Potatoes were held at \$1.50 to \$1.60 per barrel, and sweet-potatoes were plenty at \$1.75.

Washington Evergreen Blackberry.—I have grown this much-praised variety for several years, and find it has some valuable qualities, but also one extremely objectionable habit which renders it a nuisance. Having the vines trained upon the lawn fence, they make a pretty show of 15 feet of luxuriant growth from one plant. The foliage is of a dark green, finely cut, and nearly evergreen. The berries were produced in such abundance as almost to hide the vines and foliage. In size they are nearly as

large as the Kittatiny, of a shining jet-black and a peculiar vinous flavor, becoming quite sweet when fully ripe. They are superior to all our other varieties for pies, jams and canning, and you can have them for a long period and quite late in the season. The trouble, however, is that the plant has such a strong habit of suckering from the roots that I find sprouts coming up 15 to 25 feet from the vine, and thickly all around wherever there are roots. There seems to be no such thing as destroying them. They are of such rapid growth that unless cut off when small, they will cover the ground. The vines are thickly set with long, sharp thorns, turned back, forming hooks which hold on to everything with which they come in contact. The berries cannot all be picked from the vines, on account of these thorn-hooks, even by putting on buckskin gloves. I would advise fruitmen to let the thing alone.—JOHN F. RUPP, Pa.

Lead-glazing for windows is not exactly a new thing. The engraving shows a style adapted to hotbed sashes now much used in England, and which seems to combine valuable features. The chief question for us to consider would be that of cost of the leads. The illustration explains itself.



Some Curious Nuts.—In the New Orleans markets travelers find exposed for sale several curious kinds of nuts. One of the strangest of these is the Japanese "sacred nut," or, as it is sometimes called by street-venders, "Chinese chestnut." These venders sell them for curiosities rather than edibles, and stick leaves of water-cress in among them, pretending that they are leaves of the tree that bears the nut. But this curious little structure, which looks so much like an Asian buffalo's head, with downward drooping horns, is not a nut at all, but the seed of an aquatic plant (trapa) with a leaf resembling that of the American lily. The seeds grow under water and can be kept in a perfect and edible state for 20 years, it is said. They are not good for eating raw, being then hard and tasteless, but when cooked have a flavor resembling that of boiled chestnuts. The outside of the nut is dark brown, but the kernel is white; and often when put in jars of water the nuts sprout into tiny plants. In France they are cultivated as curiosities and for sale; probably they might be grown also in America. These nuts are called "sacred nuts" because the Japanese use them in certain forms of worship. They are very rich in oil, and when placed upon altars and lighted burn with a hot, bluish flame, and give off a peculiar odor which is supposed to be a very pleasing incense to Japanese gods. Another odd nut from China and Japan is the lichi-nut. It is sold in many fruit-stores under the name of "Chinese date," and is supposed to have been first brought here by Chinese immigrants. The lichi-nut has a rough but easily broken russet-colored shell, and just within it, inclosing a seed much like a date-stone, is a layer

of rich-flavored date-like pulp. Whether the Chinese grow them in their little gardens on our western coast, or whether they are imported, no one seems to know; but they are well worth growing, and there is nothing that cannot be made to grow in some quarter of America. The pistachio-nut comes from the shores of the Mediterranean and from Persia. The nuts grow in clusters upon small trees, and are much used by oriental nations. They are covered with a delicate husk of bright red and purple, which rubs off showing a kernel of bright green. It is this kernel which gives to our American ices and confectionery such a delicious flavor, and beautiful color of delicate, cool green. Sometime we may grow our own pistachio-nuts instead of importing them.—L. GREENLEE.

Saving a Girdled Tree.—I have a Hubbardston Nonesuch apple tree thirteen inches in diameter, which three years ago became girdled by tying a cloth around it soaked in kerosene to keep the ants from running up its trunk. With the exception of the place just under the knot the covered part was as bare as if it had been planed, for a space of five to seven inches in width. Previous to this time it bore only a few straggling apples, but the first year after that it bore nearly a barrel, and has borne a good crop since. Nothing was done to the tree for two years, but last season I bridged the bare spot over with six grafts, four of which lived, so it looks about like the rough drawing. I think I shall save the tree, as it showed new life and vigor last summer.—J. C. BIGELOW, *Oneida Co., N. Y.*



SAVING A
GIRDLED TREE.

Chemical Manure for Vegetables.—The special crop most largely grown at the east end of Long Island is the early potato. In connection with a good soil, preferably a clover soil, the use of chemical fertilizers will give results quicker, surer and with less expense than other manures. I work a small place of about 25 acres, and the use of fertilizers, instead of so much stable manure, enables me to dispense with the services of an extra man, and to grow more potatoes on the same land two years in succession. We do not care so much for lasting effects; we simply wish to get our money returned as soon as possible with a good percentage of profit. I grow about 10 acres of potatoes each year, one-third Ohio and two-thirds Early Rose or a similar variety, followed the same season by late cauliflowers and other green crops for winter storage. The yield from 9½ acres the past season was 3,000 bushels. I give the preference to the Mapes manures. One ton per acre is the amount used for the potato crop, with something added for the green crop following.—E. E. PETTY, *Long Island.*

Ailantus Foliage and the Rose-Beetle.—In Bulletin No. 82, of the New Jersey Experiment Station, discussing the rose-chaffer (*Macrodactylus subspinosus*), Prof. Smith states that among other things "decoctions of peach-leaves and the blossoms of ailantus" were found to be valueless in destroying the beetle. This is the only reference I have been able to find to this tree

in this connection until recently. While attending a farmers' institute at Martinsville, Ind., my attention was called to the fact that during last summer the rose-chaffer was very troublesome in that vicinity, defoliating whole vineyards as well as doing much damage to roses and other cultivated plants. There seemed to be no remedy for the pests; but later on they were found to be feeding in countless numbers on the foliage of an *Ailantus glandulosus* tree which stood in the court-house yard, and it was also discovered that in a very short time the beetles commenced falling to the ground dead; and, as the janitor of the court-house expressed it to me, "the ground under the tree was literally covered with dead insects, and they did not recover again either." I was shown the tree, which was certainly *Ailantus glandulosus*. May it not be possible that the foliage of this tree, if not the blossoms, possesses poisonous properties which may render it an effectual remedy for this insect?—Prof. J. TROOP, *Indiana Agricultural Experiment Station.*

The Sixth Annual Orchid Exhibition, under the auspices of Siebrecht & Wadley, was held in the Eden Musée, New York city, March 2 to March 10. The enterprising firm who arranged the show were the largest exhibitors and drew heavily on their great resources in the decoration of the hall, which, by the way, is not suited very well for such an exhibition. W. S. Kimball, of Rochester, sent some beautiful hybrid cypripediums and other orchids. There were also fine flowers from the extensive collections of Frederick Goodrich, of Riverdale, N. Y., and Hicks Arnold, of New York city. Siebrecht & Wadley's exhibit included a great quantity of the show cattleyas and odontoglossoms, among the latter being fine specimens of *O. crispum* and *O. Pescatorei*. A beautiful pure white *Cattleya Trianae alba* was noticed, the flowers having a rich yellow throat. *Cymbidium Lowianum*, *Dendrobium nobilis*, *D. Wardianum* and several fine oncidiums were in full beauty, the delicate bee and butterfly-like flowers of the latter attracting much attention. *Lycaste Skinneri* was present in great masses of rich flowers.

Ferns and decorative plants were prominent; the elegant clumps of *Adiantum Farleyense* and *Nephrolepis Davallioides* var. *furcans* were very fine. Great tree-ferns, including a *Dicksonia antarctica* nearly 20 feet high, carrying over 100 fronds, were very effective. Other rare plants were scarce forms of aloecasia, anthurium, croton, ficus and the like. The pitcher-plants were fine. This firm makes a specialty of these odd forms.

Palms of great size were a feature, and immense specimens of *Livistonia Chinensis*, *Cocos plumosa*, various kentias, and *Cycas circinalis* were shown. Many smaller palms of especial beauty had been grown at the United States Nurseries, in the West Indies, controlled by Siebrecht & Wadley. Some tropical oddities, brought recently from Trinidad by Mr. Siebrecht, were most interesting. The peculiar and handsome fruit-pod of *Theobroma cacao*, from which the cocoa and chocolate of commerce are produced, was especially noticed. A huge flower of an acrocoma, the palm which supplies the

thatch for native huts, showed the remains of great beauty; the spike of *Oreodoria regia*, the royal palm, was greatly different. An immense rhizome of the fern *Polypodium aureum* imbedded in the wood of a tree showed the strength attained by epiphytal forms in the tropics. There were many other "curios," horticultural and otherwise, which were well worth study. Unfortu-

nately, they were not labeled as they should have been, or described in the catalogue which was sold. Plants of *Epidendrum bicornutum*, the common orchid of Trinidad, were also shown; it can be very cheaply imported, has pretty flowers, and would be an excellent species to popularize orchids for house-culture—it will grow and bloom in an ordinary living-room.

COMMENTS BY READERS.

* [One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

The English Sparrow: Friend or Foe?—I have been surrounded by sparrows for years. I have a cottage surrounded by trees, and the house is covered on two sides with Virginia creeper. Sparrows swarm in the vines and trees by hundreds. About sundown in summer they set up such a chatter and chirping that all passers-by stop and stare in wonder, and say, "Don't they annoy you?" I have but one answer. They came so gradually that I have got used to them, and in fact like them; and although they befoul the walks and fences to some extent, I can overlook that for the sake of their cheerful presence. I cannot see that they drive off other birds—I seem to have the same number of jays, robins, bluebirds and martins that I always had—but as the negro shooters are constantly at work, they naturally diminish slightly. I never see the sparrows quarreling with other birds. They remain all winter, and give us about all the bird-life we have at that season. I hardly know what they subsist on; they never hurt anything in my garden. They like sunflower-seeds, and with this exception they don't appear to molest anything. Therefore I must give my verdict in favor of the English sparrow.—M. M. S., Iowa.

One of Your Correspondents speaks of the English sparrow as a "happy little scavenger, endeavoring to pick up and consume the accumulated filth of our streets and gutters." Is this bird really a scavenger, a remover of filth? It is true he is active in picking the undigested grains and particles of food from the horse-droppings of our streets, but instead of removing any filth he actually spreads it, and distributes it over a greater surface. It seems to me that he might better be called a distributor and depositor of filth. I know of no native bird that deposits so much filth about our dwellings and on our sidewalks. And no matter how plain a style of architecture we may adopt for our houses, he will find a foothold on the roof, and by his deposits of filth there and in the gutters, he will defile water which is conducted therefrom into our cisterns. For my part I prefer to dispense with his services as scavenger, if I could thereby be free from his defilements about my dwelling. It is not pleasant to speak ill of birds. I believe that every bird has some good qualities, some useful purpose in the world, and that the amount of good we receive from them far

exceeds the evil. Yet some birds, like some people, do far more injury than they ought, and sometimes it becomes necessary to protect ourselves against their encroachments. I have observed one bad habit in the sparrow. It destroys blackberries. If I could say it eats them it would be more gratifying. If it would take a blackberry and eat it up I would be willing to feed quite a large flock, and make no complaint. But it takes just a bite or two in one berry, then a bite in another, and so on, destroying perhaps twenty berries in making one meal, when two or three, if wholly devoured would have been just as satisfactory to its appetite. In self-defense I have been obliged to use powder and shot. If there is any excuse in doing evil because others do, the sparrows perhaps have this excuse—the orioles do the same thing in the same way. I have suspected the sparrows of destroying strawberries, but have not detected them in the act.—CHAS. H. PECK, Albany Co., N. Y.

We have Sparrows on our farm, three miles from any town, and they greatly annoy our women on wash-days. The birds seem to delight in flying and fighting above and about the full clothes-lines. They fight among themselves to the death, and rob other bird's nests of eggs and young, and drag down the nests. They have driven away our bluebirds and martins, and are making life a burden to our little wrens. I have seen them pull out young martins from the nest and kill them, time and again; I saw a pair of sparrows force an entrance into a wren's home and take out a young wren and carry it in the air a distance of eight feet, and drop it into a barrel that had water in it. When I went to save the little wren, I found six others already drowned in the water-barrel. I have seen sparrows eat cherry-buds and the buds of other trees many times. Their noise now fills the air.—WM. F. NEHRING, Shelby Co., Ill.

If allowed to breed and multiply in any place, the sparrows soon reward farmers for their kindness by stripping everything in the shape of grain from the haulms for a rod or so next to the fences or hedges. They can get through a small hole into the granary on the farm, and help themselves to the grain and build their nests in every corner, leaving their droppings on everything. For a change of diet I have seen them light on the currant-bushes near spring and pick off the

fruit-buds in a way to suit themselves and not me. Before the sparrows came, it was a grand sight to see scores of swallows continually on the wing, darting hither and thither after flies. I have seen sparrows pull swallows out of their nests by the head, and take possession. They also drive away other small birds. Only the robin seems to be boss of the field yet. I have seen sparrows go for small test-plats of grain in a way that was very annoying.—JAS. M. WATERS, *Ont., Canada.*

The English Sparrow is not without redeeming qualities. In the time of oat harvest, near the city, they come in vast numbers and are destructive. They eat some fruit, and early in the summer I have known them to visit the nests of the goldfinch and feed upon their callow broods. They are vigilant, and have driven away the bluebirds and the purple martins, but seem on good terms with all the rest of our native birds. They have their ugly moods, but they contrive to get sunshine out of their hunted and harassed lives. They are beset and tormented, yet cheerful at all seasons, even in the streets and gutters. They eat with the hogs and with the chickens, and get their portion. Their history is the history of martyrs, and they are endowed with wonderful fortitude. They love life as well as it ought to be loved. What good do they? They destroy worms and grasshoppers and moths. For a number of seasons they kept the cabbage-worm from our garden. A lot of cabbages remote from the house were not visited by the birds, and it cost us much labor to save them from the worms. Altogether I think the sparrows deserve better treatment than they are now receiving. The truth was told by a little girl in her school composition, "Murder is a bad habit."—W. R. PARSONS, *Franklin Co., O.*

I think the English Sparrow has been basely slandered. I have watched him a number of years and found his winter impudence and chatter rather enjoyable. In the spring he retires to the woods, and then our trees are filled with robins, so that we can count them by the score on the lawns in front of our house. I cannot see that the sparrow has interfered with them in any way. The blame for thinning out our native birds does not belong to him but to Dame Fashion and our ladies.—M. S. L., *Otsego Co., N. Y.*

The English Sparrow was a nuisance around our home, but they can easily be kept away simply by not allowing them to harbor or nest around our buildings, orchard or lawn. During the summer of 1889 they were in complete possession of my grounds. The first bird-note in the morning, and the only one during the whole day, was the monotonous, disagreeable chirp of the sparrow. During the spring of 1890 I offered my children five cents a dozen for all the sparrow-eggs they could find, and told them to break up their nests wherever found. They brought me five and one-half dozen, for which I paid them 28 cents. This little scheme rid my home of the nuisance. During the summer of 1890 there were but few birds around my house; but in 1891 birds of all kinds except the sparrow were back in full

force, and the early morning serenade was made up of the sweet notes of the song sparrows, robins, orioles, the soothing twitter of the cunning little wrens and chippies, and we are in bird paradise again. This method is much better than that of the shotgun; we do not allow a gun to be fired near our house, as it frightens away our friendly birds more easily than it does the sparrows. Of course our children are taught the difference between the English sparrow, and the favorite birds, and they show just as much respect and love for bird-nests as before, and more, because they know the difference and are taught to appreciate the other birds.—B. WHEATON CLARK, *Niagara Co., N. Y.*

Winter Treatment of Oleanders.—(December AMERICAN GARDENING.) I was not aware that Oleanders needed rest. My mother raised many kinds and was successful. She left them out in the yard as late as November, and I have seen them covered with sleet before they were taken into the house. They were kept in the sitting-room all winter, and bloomed well with blossoms large and perfect. Her oldest specimen was over 21 years old when she left it in the care of a family who destroyed it by breaking, cutting and neglect. That was in Indiana, my native state. Here in Florida we have "oleander avenues" that are never given a rest. They bloom and thrive, and never suspect that their kin on the other side of Mason and Dixon's line are important enough to be taken into the house or cellar. I have only seen the double white and pink growing wild down here, but I have another kind that would be a rarity to the home folks. It is very handsome, and there is but the one in the place—St. Augustine. The true spider-lily is a beautiful thing, and grows wild in these parts; there is also another nearly like it that I saw advertised in a catalogue as the true one.—MRS. HALLIE E. THOMAS, *Florida.*

The Same Old Things.—(Page 107.) Sister Gracious, it's different here! I have only four geraniums; have one large yellow oxalis in bloom, one pot of freesias, two blue browallias and four begonias, and four nasturtiums will soon be in bloom. The nasturtium is lovely even if it did not bloom; but the dwarf ones will just cover the foliage with flowers, and in spring slips can be set in the garden where they will bloom till frost. Do not give them rich soil. One window has a lot of cacti, many of which I have never seen catalogued. Another window has an immense *Elettaria cardamomum*, but it won't bloom for me. There are three fine dracenas, *D. indivisa*, *rosea*, and *terminalis*.—MARGARET CAMPBELL, *La.*

Some Fruit-Notes.—I think Mr. Kellogg of Wisconsin was somewhat extravagant in his denunciation of the Michel Early strawberry. I am not a professional fruit-grower, but I raise a considerable quantity of small fruits. I may not have fine discrimination in taste, but I know good fruit when it touches my palate, and can distinguish a Delaware grape from a Talman. I have a few varieties of grapes, and never saw finer grapes the past season than the Empire State, with poor culture and without

bagging or the use of fungicides. There were but few defective bunches, and the fruit sold for more than any other grape on my place. Moore Early and Brighton did not do well; the former is naturally unproductive under poor culture, and the latter for lack of pollen. Michel Early strawberry is not perhaps all that was claimed for it, but is a good early berry in this section of western Maryland. I have spent more on some overpraised fruits than my means justified, but Michel Early was not one of them.—S. GAMBLE, *Maryland*.

Planting White Grapes.—(On page 39.) You say, "Go slow on the planting of even the best of white grapes." This may be proper with you, but it won't hold good in central Illinois. I marketed white grapes (Pocklington, Niagara and Martha) at 10 cents a pound, while other persons marketed black grapes at two and three cents. Now I not only got more money for my white grapes, but they sold more readily than the dark ones. I sold Brighton for the same price as the white grapes. The proof of the pudding is in the eating thereof; it's the money value there is in our farm products by which we measure each article. It will pay us best to plant white grapes, and as to hardiness they have proved for me equal to any black grape.—W. E. JONES, *Illinois*.

Native Persimmons.—The interesting article upon the persimmon in February GARDENING shows a fruit of different shape from those on our farm. Are there not several varieties of the native persimmon? We seem to have two in a small area. One variety, though growing where the tree gets sunshine nearly all day, does not ripen until after frost, and is a dull purplish black. The other begins to ripen near the end of August, and is of the beautiful reddish golden brown color, which is seen in the fruit shown in fancy fruit-stores in large cities. The early-ripening tree is almost entirely shaded from morning sun, and is only protected on the north by the chestnut tree against which it grows. The fruit is of a far finer flavor than the late-ripening kind. Both trees are alike in the shape of the fruit, having a much flattened upper and lower surface. Who can tell me what the early variety is?—AGNES GREGOIRE, *Barton Co., Ga.*

Amateur Celery-Growing.—Your article on celery-culture in December prompts me to write my experience for the benefit of those who think only an expert can raise celery. I made a hotbed with sash from double windows in April, and sowed a packet each of Boston Market and White Plume celery in a space about 1x2 feet at one end. The plants were twice pricked out, and just before haying, on a rainy day, 225 plants were set in a damp place in the garden. Shortage of help made me neglect the celery and it was hoed but twice. In September it was banked up and allowed to stay till the ground froze hard, when it was taken out but a little blanched, put in the shed cellar and entirely covered with moist sand. At Thanksgiving it was sweet but not white enough; now (Jan. 14) it is almost as white as snow, and my neighbors say they never ate finer-flavored

celery. That was my first year on a farm since a boy, so I know it was no skill of mine that produced the result, and I firmly believe any farmer by the exercise of a little care can be supplied with celery all through the winter.—A NEW HAMPSHIRE FARMER.

"Wanderer's" Notes in the February number made me think of my own keepsakes. Covent Garden market was one of our eagerly-sought spots in London. Although a pouring rain might have deterred us, we made our way thither long before six o'clock of a March morning, and were more than repaid. A parsley-fern for the greenery at home was bought and taken to our hotel. After a few days we found the chambermaid sufficiently interested to care for it during our absence on the continent; and a cheap hemp bag carried it safely to America, for it could swing on the stateroom hooks and have an occasional plunge in the wash-bowl. Its only name now is "Covent Garden fern," and with our cool rooms and open fires it grows finely in winter as well as in summer.—AGNES GREGOIRE, *Barton Co., Ga.*

Pampas-Plumes.—(Page 752, December.) A grower here who has been in the business fifteen years has twelve acres of pampas-grass. He has pulled 300,000 plumes from this patch in a season, selling for about five cents each. This is nice to tell, but last year his crop sold in Europe, delivered, for 2½ cents, and he got more than other growers because he dealt with old customers. The plumes will bring but little over one cent this year. I can buy now the choicest by the dozen for 25 cents. I see plumes by the ten thousand left on the field as not worth the labor of pulling. These growers will not become "bloated bondholders" by this season's work. The plants produce best plumes when three or four years old. A plant by itself will sometimes grow 200 nice plumes, but seldom over 100 when in a field with others. A dozen or more can be tied around a stick perhaps a yard long, then covered with paper and sent by mail to the East, and often to Europe, with safety.—A. T. GRANT, *California*.

The Substitution Nuisance.—(Page 18.) If only a different grade of the same variety of trees is substituted, no material difference will result to the planter; but a buyer is entitled to what he orders, and if it cannot be supplied, his money ought to be returned. For instance, a man has Crawford Early peach and concludes to order Foster. They are similar, and the nurseryman being out of Foster concludes to send Crawford Early, thus stocking his customer up with more trees of one variety than he wants. This substitution-clause ought to be struck out of all nurserymen's catalogues if they expect to deal fairly with their customers. There is another side to this question worthy of consideration. Many people go to first-class nurseries expecting to get stock at second-class prices, and are unwilling to pay a cent more for this good stock than for the doubtful article they could buy of irresponsible dealers. They seem to forget that in order to grow stock true to name, no cheap or slipshod labor can be employed. There

must be a fair margin of profit, and stock must be sold for fair prices to realize it. Another point is often overlooked by buyers. Nurserymen seldom sell all the stock they grow. When trees are budded and grafted, cuttings made or plants rooted, they cannot tell just what varieties and how many their trade will take, and sometimes a good many unsalable ones may be left to be thrown away or burned. So what are sold must help to make up for those that are not. If everything grown could be certain of a sale, stock could often be sold for less money. Out of justice to the nurserymen it would be well, in making out orders, to add a list of such varieties as might be substituted with the buyer's consent in case those ordered could not be furnished.—CHAS. WRIGHT, *Del.*

The Ideal Hedge-Plant.—(Page 57.) You say that honey-locust is the best hedge-plant. Permit me to differ from you. In this latitude, at least, the honey-locust develops the bad habit of suckering worse than the Osage orange. When well cared for it doubtless makes a good hedge, better than the Maclura, but draws heavily on the surrounding land and will fill it full of suckers. In my opinion no large tree like honey-locust, or maclura either, is a proper plant for a defensive hedge. The ideal hedge-plant, as I have for years insisted, is the *Citrus trifoliata*. It is hard to make people believe that any of the tree oranges can be hardy in the north, but there are few places where this deciduous orange is not completely hardy. It passed through last winter in Michigan safely. The first plant I had, eleven years ago in the highlands of Northern Maryland, passed without injury through a spell when the mercury at daybreak stood at 18° below zero, and the following day with a bright sun and no snow stood 4° below. Not an inch of wood was hurt. Its compact dwarf habit makes this plant easy to keep in good shape without hard pruning. Its complete armament of the strongest and sharpest spines pointing in every direction make it a better defence than even the honey-locust. It makes no suckers, and its roots spread but a short distance and are not exhaustive of a broad strip of soil as the other plants used for farm hedges are. It bears a great profusion of the sweetest of orange-flowers, and loads itself with little sour, seedy oranges, like limes, which ripen in October. P. J. Berckmans, of Georgia, who first grew the plant in this country, has a half-mile hedge of it now growing. He says that the only difficulty so far has been to grow enough of it to

supply the demand, owing to scarcity of seed. But it is now getting into fruit so plentifully that nurserymen will no longer have this difficulty. The trees I planted in Maryland, in 1880, have for years been bearing heavy crops, and the seeds are plentiful now in Florida. When people fully realize the entire hardiness of this plant, the question of the "best hedge-plant" will, I think, be finally settled. The plants are now so cheap in the southern nurseries that it will be easy for the experiment stations and individuals in the extreme north to test their hardiness. I have no plants nor seeds for sale, so don't write to me about them. They are now in most catalogues. Some growers class them as *Limonium trifoliatum*.—W. F. MASSEY, *North Carolina Experiment Station.*

Our Grape Crop.—(Page 732.) Your view of certain grapes differs considerably from mine. I do not see, for example, how *Dracut Amber* can be recommended for home use, as it is one of the most "foxy" grapes we raise. Certainly it is no better than the Perkins, which is also "meaty"; but neither, as grown here, is considered quite good enough for market, which means that even their good points of comparative freedom from rot, of productiveness and showiness of fruit and the fact that some like the musky flavor, can overbalance the general opinion as to poor quality. Quality is the main point with grapes for home use. Moore's Diamond here has a large bunch, and the quality is best or at least very good. Triumph with us is a splendid grape, but occasionally the season is too short, which is probably the reason you rate it as "sour fruit." I am among the number of those who can admit a little refreshing rich acid with the sugar in a grape without considering the quality spoiled thereby. You do not object to it in an apple. Noah and Missouri Riesling are rather insipid in taste as grown by me. Montefiore is among the best of its class in quality, its worst fault being the small size of bunch and berry. I can fully agree with you that the El Dorado leads in quality, but as for fruit here it hugs the zero mark closely. It seems pretty certain, now that rot may be controlled by spraying, that for home use the Rogers varieties should and will be planted more freely than heretofore; for notwithstanding the many recent introductions they remain a remarkable lot of grapes, supplying flavors unattained in other sorts.—BENJAMIN BUCKMAN, *Illinois.*



DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Alternantheras needed for bedding purposes may easily be propagated by dividing up the stock on hand into small pieces, each having a little root, and setting in a close frame in high heat.

Annals.—In the more southern states many of the common kinds may be most advantageously sown in the fall; but a few, such as asters, balsams, phloxes, larkspurs, marigolds, etc., can be sown in beds this month. Sow only part of a packet at a time. At the north the hardy kinds, such as candytuft, sweet-pea, morning-glories, mignonette, clarkia, sweet alyssum, etc., may be started now in open ground; half-hardy and tender sorts under glass, or in sheltered situations, where some extra protection can be given in cold nights. Thin the plants at an early age.

Asters.—Start in a warm border or under glass now. The tall ones, such as Perfection, Victoria, Cocardeau, Quilled, etc., are splendid bloomers, but want rich ground. They make fine beds bordered with the dwarf varieties. Pots with two or three plants are pretty for brackets on verandas.

Bedding Plants.—In the absence of a greenhouse, the hotbed will be a good place for most bedding plants from now until planting-out time. Remove the sashes entirely on warm days.

Beds and borders should now be spaded up or dug over. Dig in some good compost or high-grade fertilizer.

Begonias.—For potting the tuberous-rooted ones, use a mixture of two-thirds of fibrous loam and one-third of leaf-mold. Also add a little sand. Give good drainage and pot moderately firm. Place in a fairly light and sunny window, or in a similar situation in the greenhouse.

Begonia metallica succeeds best in a somewhat shady situation.

Boxes.—Sow in them annuals that bear transplanting, such as browallia, candytufts, calceopsis, gaillardia, pinks, carnations, godetias, asters, etc., and place in windows till the nights are warm enough to leave them outside.

Brugmansia.—If the plants have grown too large for pot or tub, they can be pruned back now and manure be dug into the soil.

Bulbs, such as hyacinths, tulips, lily-of-the-valley, etc., may be brought in from coldframes and used as window-plants at this time of the year, needing little care and attention.

Bulb-beds are to be raked over and put in readiness for the appearance of the plants.

Callas.—Keep rather crowded for pot-room. Water but sparingly after bloom. Later on, take out of the

pots and plant in rich soil outdoors. Lift again in August, removing the small bulblets, and replot the old bulbs.

Camellias.—Syringe frequently and sponge off the leaves.

Carnations like rich soil. Give plants in greenhouse a top-dressing of fine old manure. Plants in coldframes should be hardened off by considerable exposure, and may then be planted in open ground.

Cellar plants in pots may be brought up at the end of this month and put out in some sheltered corner; a few newspapers will be sufficient protection if the nights are cold.

Chrysanthemums should be encouraged to make uninterrupted growth and must not be allowed to become pot-bound. Strike cuttings for late plants.

Clematis.—Trim the shoots of early-flowering ones back to one or two buds. Cut those of the late-blooming kinds back to near the surface of the ground. This will insure strong growth from the base, and plenty of bloom.

Cuttings may still be made of verbenas, petunias, achyranthes, coleus, salvias, heliotropes, fuchsias, German ivies, etc., for summer use, and of chrysanthemums, stevias, roses, carnations, violets, etc., for winter-flowering. They should be potted on the first appearance of roots.

*Dahlia*s can be planted and the tubers divided.

Eucharis Amazonica.—This lovely lily flowers well if pot-bound, but needs an unlimited supply of liquid manure.

Ferns should be shifted or have the soil in pots renewed. In the woods the plants are just beginning to show their fronds, and specimens are easily transplanted if taken up with some earth adhering to their roots.

Flower-beds in the lawn should have a fine margin of turf around them. With the wealth of shrubs, perennials, bulbs and annuals that grow and flourish with us, a garden never need be without flowers, save in the winter. If attention was paid last fall to the garden, by the end of this month it should be carpeted with the tender green shoots so pleasant and refreshing to the eye after a long, dreary winter.

Forsythias.—These golden-hued flowering shrubs are now a blessing in every garden where grown.

Fuchsias like warmth, moisture and a little shade. Give plenty of water at their roots, and liquid manure occasionally. Shift as needed. If bloom is desired at any special time, cease to cut the plants back about six weeks before.

General Greenhouse Management.—With the advancing season and more light and heat, danger from insects increases. Greenfly is liable to trouble roses, verbenas, etc. Fumigation must not be neglected, unless you employ the more modern preventive of keeping gutters well-filled with tobacco-juice upon the heating-

pipes. Secure plenty of loamy turf, manure, refuse hops, etc., for potting-soil. Shift all plants as they need more root-room. Keep the pots clean. Always wash the old pots before putting plants in them again. The glass over all plants liable to spot in full exposure to sunlight, such as camellias, azaleas, fuchsias, primroses, caladiums, callas, ferns, etc., paint lightly with whitewash, or with naphtha and white lead.

General Lawn Directions.—When new lawns are to be made, get them ready and seed down as early as possible. Kentucky blue and red-top are the best grasses for this purpose. Use plenty of seed, and apply it while going over the area repeatedly and in different directions. Roll after sowing. New lawns bordering on paths and drives should be given an edging of turf, nicely and evenly laid down. Some of the lawn weeds, especially plantain and dandelions, need attention while the ground is still soft. Pull them up now or cut them off with a sharp knife just below the crown. Destroy chickweed. When the grass on the old lawns gets to be two inches high, it is time to start the lawn-mower.

Gladiolus for early bloom may be planted. Continue planting at intervals of a week or two until the middle of June. Place bulbs not less than three or four inches deep.

Hardy perennials, if soil is dry, may be taken up, divided and reset as required.

Hedges may receive their annual pruning.

Heliotrope needs plenty of root-room, and should never be allowed to become pot-bound. Shift as needed.

Hepaticas.—These harbingers of spring from the woods might well be in every garden, in clumps or borders.

Herbs of all kinds—plant this month.

Holbeds and frames accommodate plants that are crowding each other in the greenhouse, or of which there is an overplus.

*Iris*es are easily grown, and charm by the variety of their forms and coloring. They should be in every flower-garden.

Lilies.—It is not too late to plant summer-blooming ones in rich soil.

Mauvandias, German ivy and other climbers for summer are to be cut back.

Mignonette.—Sow directly where wanted, as it does not transplant easily.

Monstera deliciosa needs heat, light and moisture, and an abundance of water in summer.

Nicotianas.—Sow now for fall and winter blooming.

Oleanders.—Small plants may be taken out of the pots and bedded out.

Orchids.—Plants requiring it should always be re-potted while in a growing state. Shade from the sun. Provide moisture by sprinkling the paths and shutting the house early.

Ornamental Trees and Shrubs.—The earlier planted the better. Set evergreens when the new growth starts. Be careful that their roots do not get dry.

Perennials.—Be sure to plant a good variety. You

want, amongst others, columbines, *Lychnis Haageana*, phloxes, *Lotelia cardinalis*, hollyhocks, foxgloves, myosotis, bleeding-hearts, etc.

Petunias in pots, if old and unshapely, should be cut back thoroughly.

Platycodon.—Both the blue and white varieties give an abundance of bloom until frost.

Primroses.—Pot the young plants of the double white, and shade.

Propagation of House-plants.—Cuttings may yet be made and struck of abutilons, carnations, roses, etc. Pot off as soon as roots are formed.

Roses.—Plant out the hardy kinds as early as you can get the soil in proper order. Procure plants without delay. Prune the house roses, trimming side shoots back to one or two buds.

Seed-sowing.—Flower-seeds should never be sown broadcast into the border. Always sow in drills, rings, or clumps. Draw shallow furrows, less than one-half inch deep for fine seeds, scatter seed quite thickly, and cover with fine earth. Dried or pulverized moss or fine leaf-mold may be sifted over the seed in place of earth. Never neglect to firm well.

Stones.—The back yards of newly built houses, when dug up, often have a large crop of stones. Don't cart them away, but pile them in some shady corner, throw a little earth over them, and plant ferns, myrtle, sedums and other plants, and make of them a thing of beauty.

Street trees.—Protect against injury from the teeth of horses, etc., by some kind of guard. This may be made of slats, or a piece of wire screen wound around the tree-body. When trees are staked, bind them fast with a strip of duck or leather, not with cord. Bring the strip around the tree, cross on top of stake and fasten there with a nail or two.

Sweet-peas, nasturtiums and other hardy climbers, may be sown this month, but not on the shady side of a garden.

Tuberose.—Start bulbs in a warm place.

Verbenas. Propagate for bedding purposes.

Window Boxes.—Prepare plants now for stocking up boxes in May with plants of some size.

Worms in Lawns.—Take a quart of fresh-slaked lime to six gallons of water, stir well and let it stand. Roll the lawn one morning and the next apply the strained liquor with an ordinary garden-sprinkler. The worms will come out and can be swept up.

II. GARDENING FOR TABLE AND MARKET.

Apple orchards may now be cleaned from sap-sprouts, dead and broken limbs, and pruned as needed. Cover the wounds with some kind of paint. Prepare for spraying; it pays. Dispose of what fruit is yet on hand. Remove decayed specimens from the cellar.

Asparagus may be given a dressing of nitrate of soda, say at the rate of 200 pounds per acre. Mellow the soil over the plants, avoiding injury to the crowns.

Blackberries.—In making new plantations have rows eight feet apart and set plants three feet apart in the rows. Soil need be of only medium fertility.

Beets.—For earliest use sow as soon as soil is friable. We always start a few plants in hotbeds, and transplant to open ground when large enough. They transplant easily, and reach table size much sooner than those grown from seed sown outdoors.

Cauliflower plants in coldframes must be thoroughly hardened off before setting in open ground. For second early, seed may now be sown under glass. Use good seed. Early Erfurt and Snowball are among the best kinds. The soil, to raise a good crop, should be rich, moist and well-prepared. Our favorite method is to sow directly in open ground, three or four seeds in the hill, leaving only the best plants in each hill.

Cabbage.—Treat the early sorts like cauliflower,

Celery.—Sow as soon as a nice mellow seed-bed can be prepared in a well-protected situation. Make the soil rich. Firm the soil over the seed without covering. Apply nitrate of soda in small quantities during the early stages of growth. If you cannot get nitrate of soda, we believe it would pay to use the comparatively expensive nitrate of potash (saltpeter), at the rate of 100 to 150 pounds per acre. Thin early and thoroughly.

Cultivation.—Begin as soon as the rows of early-planted vegetables can be seen. Use the wheel-hoe freely. A fine steel rake is a serviceable weed-destroyer in the home-garden.

Currants.—Prune thoroughly and manure liberally.

Figs in tubs or pots, fruit of which is now swelling out, should have liquid manure once or twice a week. Head-in rampant-growing shoots.

General Rules.—Plant no speculative crops. Aim to distribute your labor evenly over all your crops. Don't starve the rest to pet one. Don't believe anything will thrive without care. One man may get rich on a hobby, but nine will get poor. Make your crops cover as far as possible the whole summer, and bring a constant income instead of relying on one that may bring in a large income, or may fail and floor you. In marketing be absolutely honest. This is a plain rule, and supposed to be universal. We yet find the poorest fruit at the bottom, and bruised fruit hidden. It does not pay. There is no money in it. What you want is a good market and quick sales, not a big sale and the loss of a customer.

Grapes.—Pruning must not be delayed long. The sooner done the better. Apply bone-meal and potash salts, or wood-ashes, etc. Plant vines if you have an insufficient supply. Don't neglect to plant a vine or two of the Green Mountain or Winchell, to give you a really good first early grape, and some of Vergennes for a late-keeping sort. New vines may also be planted in forcing-houses.

Hotbed.—Air, water and protect carefully. In mild weather a little air may be admitted even during the night. Coldframes can be left entirely uncovered from now on, except in cold weather.

Insects, Weeds and Fungi.—To fight them intelligently, be a student. It is truly impossible to whip weeds and insects, etc., and be a real master in nature,

without you consider the experience of others, and carefully study and store your own experience. Most of our farmers are not yet students. They are therefore ready to join in the cry that farming does not pay, and their boys push off to the cities where there are also ten failures to one success. Nothing pays without study.

Kainit, besides being a valuable source of potash, has also proved an effective remedy for many of the worms and grubs that infest gardens and fields. We give land intended for onions, cabbages, radishes, etc., a dressing of at least 1,000 pounds per acre, and believe this to be good protection against injury by maggots, grubs and similar pests.

Lettuce.—Sow seed in open ground when the latter is in fit condition. Wintered plants may be taken out of the coldframes and set in open ground, or, if desired very early, in hotbed. Grand Rapids and Boston Market are good for forcing.

Manures.—Few things equal wood-ashes for fruit and garden crops. The unleached article and bone-meal go well together, and thus they make a complete manure. Leached ashes must be used in greater quantities and can hardly be used too freely. Feed your orchard and garden crops well. It will pay.

Onions.—Start seed of large varieties in hotbeds or coldframes. Prepare the ground thoroughly making it very rich. Set plants or sets in open ground as early as condition of soil will permit.

Parsnip.—Sow in open ground, using strictly fresh seed only.

Peach trees should be headed back to encourage the formation of a compact head.

Pineapples now fruiting should have liquid manure, preferably warm and weak. Syringe and ventilate freely.

Planting.—Nine-tenths of our orchards are planted too close, and their usefulness is greatly impaired thereby. Give each permanent tree plenty of room. You can set trees for temporary use between, cutting them down when the others need the space.

Quinces need thorough annual pruning. When setting, select rich well-prepared soil.

Radishes.—For earliest, sow a hotbed now and in open ground as soon as soil and season will permit. Thin plants to one inch apart.

Strawberries.—When cold weather is past, remove the mulch from over the plants and leave it between the rows. For new beds, prepare the ground well and make it rich. Get good plants and set them early. Varieties that make runners freely can be set two or even three feet apart in the row. Most people set such varieties too close.

Sweet-Potatoes.—Start plants now in good bottom-heat, covering halved tubers, cut side down, with three inches of clear sand.

Tomatoes.—Transplant once or twice in hotbed, and finally put in coldframe to harden off. Give plenty of space to make plants stocky and sturdy.

HE THAT QUESTIONETH

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
BY DOING.

It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the fifth of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following. Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2821. **Shrubs Near House**—Which of the following should be selected for south side, and which for west side of house, viz.: Spireas, Tartarian and Hall climbing honeysuckles, Japan quince, *Hydrangea paniculata grandiflora*, *Clematis Jackmanni*, wistaria, wild clematis, climbing rose?—F. M., Ontario Co., N. Y.
2822. **Niagara Grape-Vines Ailing**.—A warty rough substance appeared on the cracked canes near the ground. Some vines died. Can you tell me the cause and remedy?—F. M.
2823. **Anthraxose of the Grape**.—What are the characteristics of this disease?—F. M., Ontario Co., N. Y.
2824. **Raspberry Anthraxose**.—Please describe this, and give remedy. If spraying is advised, what mixture is best?—J. C. M., West Virginia.
2825. **Mixtures for Grape Diseases**.—No drug-store around here sells carbonate of copper. Where can it be obtained?—H. J. S., Niagara Co., N. Y.
2826. **Wire Netting as Glass-Protector**.—My hot-house has large glass, 16x22, double thickness. Would fine wire netting be a good protection against hail? If so, where can I get it?—W. W., Iowa.
2827. **Best Late Pears**.—Which are the best two for late fall and winter use?—Wm. S., Mich.
2828. **Forsythia from Seed**.—Will *F. viridissima* and *F. suspensa* grow from seed? Or where can I get them?—J. E. L., Colo.
2829. **List of Hardy Shrubs**.—What flowering and ornamental shrubs can be successfully grown as far north and west as central Nebraska?—B. I. E., Neb.
2830. **Topping Sweet-Corn**.—Is this practice profitable on a large area?—G. H., Ohio.
2831. **Orange Prune**.—Does such a variety exist? If so, can you give description of same and its merits. —B. F. B., New York.
2832. **Value of Sawdust**.—Has mixed pine and hardwood sawdust, thoroughly rotted, any manurial value for loose soils? Would it pay to haul it three miles? Would it pay to haul it one mile to apply to clay soils to make them more porous?—G. C. T., Pennsylvania.
2833. **Gladiolus-Culture**.—Please give account of recent improvements made in gladioluses, and of the distinctive features of the leading strains now cultivated.—W. L. T., Wisconsin.
2834. **Poultry-Manure and Potash**.—What could I add to about one ton of chicken-manure to make a potash fertilizer for tree and small fruits? The manure was buried in deep pit, covered with 12 inches of earth. All the house slops have been poured upon it through a pipe inserted into the soil covering, and a considerable quantity of dry night-soil has been added to this.—W. H. P., Ontario.
2835. **Heating Hotbeds with Hot Water**.—How large should the pipes be; how many, and how far below the surface?—H. E. W., Indiana.
2836. **Mushrooms in Open Air**.—Can they be grown thus in this state? How should they be started?—C. E. S., Connecticut.
2837. **Lily-of-the-Valley from Seed**.—Can they be thus grown?—Mrs. C. G. H., Michigan.
2838. **Raising Sweet-Potatoes**.—What is the best and simplest method?
2839. **Cultivation vs. Drouth**.—How should we cultivate in a dry time to preserve moisture?—W. E. G., Kansas.
2840. **Best Early Pea**.—What kind would you recommend for the market-garden?
2841. **Forcing Cucumbers**.—How should they be fertilized to insure fruit setting?—W. S., Wisconsin.
2842. **Leaves on Palm Dying**.—My *Chamærops humilis*, 15 years old and growing rapidly, is losing its beauty by the leaves at the tips turning brown and brittle. What is the cause?—Miss C. W. M., Vermont.
2843. **Sowing Flower Seeds**.—How early can I sow the following in open ground, viz.: Sweet alyssum, pansy, candytuft, pinks, mignonette, nasturtiums, sweet-pea?—J. A., Jr., Brooklyn.
2844. **Remedies for Rose-Pests**.—What are best remedies for aphid, leaf-rollers, green slug, etc., that trouble my outdoor roses?—W. M., Rochester, N. Y.

2845. **Open Cement Drain.**—What proportions of sand, cement and lime should be taken for a drain that will stand wear and frost?—M. D. F., *Orange Co., N. Y.*

2846. **Ashes and Hen-Manure.**—Can I mix them for application to corn without loss in strength? I can buy large quantities of hemlock-ashes at 5 cents a bushel. Are they worth it for fruits?—G. A., *New York.*

2847. **Keeping Violets Fragrant.**—How can the odor be kept in violets as long as they stay fresh?—A SUBSCRIBER.

2848. **Honey-Locust in Florida.**—Will it succeed on the east coast of Florida, south of Jacksonville? Where can I obtain plants?—E. W. G., *Florida.*

2849. **Growing and Wintering Onion-Sets.**—Some information on this important subject will be welcome.—G. W. L., *Ohio.*

2850. **Strawberry Root-Borer.**—What can be done to destroy the pest? Is it safe to use plants from the infested patch?—C. S., *Kansas.*

2851. **Growing Healthy Violets.**—How should they be grown to keep them free from the rust, both in open air and in greenhouse? Is it better to have them on benches or in solid beds?—L. C. P., *New York.*

2852. **Codling-Moth Enemies.**—What enemies has the codling-moth, and which is the most powerful among them?—A. W. S., *Colorado.*

2853. **Small-Fruit Culture.**—Should blackberries be pruned? If so, how short should the laterals be cut? Should currants and gooseberries be cultivated, or should they be mulched heavily? What is best fertilizer for vineyards?—W. B. R., *Iowa.*

2854. **Growing Vegetables on Same Ground.**—How many consecutive years can this be done with safety?—W. W. R., *Ontario.*

2855. **Heating Vegetable-Forcing House.**—What is better, hot water or steam heat, top or bottom heat?—G. E. F., *Illinois.*

2856. **Growing and Ripening Early Tomatoes.**—What are the essential conditions of success? I have a cold grapery, and plenty of 6-inch pots in which to start them.—A. J. C., *Ontario.*

2857. **Growing Double Flowers.**—Will seed of double flowers, such as double hollyhock, produce double flowers?

2858. **Odorless Phosphate.**—I applied this in my garden last year. Could see no effect on vegetables, but it helped the flowers. What is your opinion about it?—T. A. G., *Michigan.*

2859. **Coal-Ashes for Grapes and Small Fruits.**—Are they a good thing?—Miss L. G. P. O.

2860. **Spinach-Forcing House.**—How should it be constructed? When is the proper time in which to sow?—C. L. H., *Mass.*

2861. **Market for Cut-Flowers in Buffalo.**—Please give addresses of florists to whom I could sell hyacinths and other cut-flowers in their season?—Mrs. D. M. J., *Erie Co., N. Y.*

REPLIES.

2824. **Raspberry Anthracnose.**—This fungus attacks canes and leaves. At first small purple spots appear scattered around the cane near its base. The spots rapidly increase in size, the center of each becoming grayish white in color. Surrounding each spot is a slightly raised, dark purple border, separating the healthy from the diseased tissue. The course of the development is from the lower portions of the cane upwards. The spots may run together, and appear as irregular blotches, sometimes completely encircling the cane, destroying the cambium layer and in effect girdling the cane. The leaves do not reach their normal size, and if fruit is formed at all it ripens prematurely, or simply dries up and is worthless. The spots also appear on the leaves, which become distorted, with edges rolled up inwards toward the midrib. As a preventive treatment, train and prune the plants in such a manner that plenty of air and sunlight will have free access to the canes. In spring, before the buds start, spray with a solution of sulphate of iron (green coppers), made by dissolving two pounds of it in five gallons of water. Later, if there is any sign of the disease, spray with the Bordeaux mixture. Burn all badly affected canes. Better read "Horticulturist's Rule-Book."

2823. **Anthracnose of the Grape.**—This scab-like disease is also known as bird's-eye rot, from the patches on the fruit. The fungus which causes it is closely related to that which attacks the raspberry and many other plants. All the green parts of the vine are subject to its attacks from the beginning of spring vegetation until the close of the growing-season. First it appears on the shoots as minute brown spots, a little depressed in the middle, with a slightly raised, dark-colored rim or border, and gradually increases in size. The disease attacks the leaves in the same fashion, but becomes especially marked on the berries. The small spots, grayish in the center, enlarge, and retain a more or less regular, rounded outline, and between the light-colored central portion and the dark border-line there often appears a well-defined band of bright vermilion. Finally the berries begin to wither and dry up, until nothing is left but skin and seeds. Sometimes a berry becomes attacked on one side only, when partly grown, and then becomes irregular in shape, the diseased part ceasing to grow. The side may then crack open, exposing and forcing out the seeds. The disease is most prevalent in wet seasons and low situations. To prevent it, wash the vines in spring before the buds have expanded, with a strong solution of coppers, and apply sulphur, or lime and sulphur, several times during the season. The regular treatment for black-rot, *i. e.*, spraying with Bordeaux mixture or ammoniacal solution of carbonate of copper, will keep the disease in check.

2782. **How Soon Nut-Trees Bear.**—With most nut-trees the planter needs patience. Walnuts, pecans and hickories cannot be expected to bear much for the first 15 or 20 years after they are started from seed. Chest-

nuts may begin to fruit somewhat younger, but usually they also require considerable age before they give full crops. The dwarfish Japanese varieties begin to fruit comparatively young. Plant them, if you want a few nuts as soon as possible, and if you are not particular about their quality. The Paragon also seems to be an early bearer. To start an orchard, the quickest way would be to begin with a chestnut forest, cut down the trees, let sprouts grow up, and graft part of them with the Paragon, cutting down all but the number of grafted trees needed for the orchard. Filberts here are an uncertain crop at best, unless provision is made for proper fertilization, and fruit should not be looked for in four or five years after planting. Hard-shell almonds bear about as young as peach trees, but we do not place much value upon the fruit.

2784. **Remedy for Tree-Cricket.**—Gather up the infested canes at once and burn them. This "snowy" or tree-cricket also has a natural enemy in a wasp which lays its eggs, each in a separate partition, in hollow stalks of weeds, especially of the wild lettuce, and stores up a number of crickets in each partition for the future larva to live on while undergoing its transformation. The tree-cricket, however, is not altogether an unmixed evil, as it feeds largely on plant-lice.

2859. **Coal - Ashes for Grapes and Small Fruits.**—Coal-ashes have next to no manurial value; yet they may serve a good purpose as mulch for all kinds of fruit crops.

2856. **Growing and Ripening Early Tomatoes.**—Some hints on this subject are given elsewhere in this number. Let us emphasize the necessity of, (1) selecting early varieties, like Vaughan's Earliest, Early Ruby or Atlantic Prize; (2) starting plants early, or buying early-started plants; (3) growing the plants strong and stocky, and hardening them off thoroughly before setting in open ground; (4) setting plants with plenty of soil adhering to their roots, in warm soil liberally enriched with quickly available manures; (5) picking the fruit as soon as it shows the first signs of ripening, and finishing off by spreading in single layer upon clean straw under glass. Your six-inch pots will come handy to raise good plants in, and the cold grapery may serve as a place to harden them off in.

2855. **Heating Vegetable-Forcing Houses.**—Of all plans yet devised the hot-water system will probably give the best satisfaction. Experienced growers generally prefer bottom heat; still, the question whether this or heat from above gives better results is not yet definitely settled.

2854. **Growing Vegetables on Same Ground.**—A vegetable should not be grown on the same soil for many years in succession. A strict system of rotation is always safest. Where a mixed lot of vegetables is grown, the same ground may be planted for an almost indefinite length of time, by changing the location of each kind from year to year. Where cabbages, cauliflowers, radishes, turnips or other members of this same family were

grown last year, plant tomatoes, egg-plant, peppers, etc., this year, and sweet-corn or vines next. There are so many different vegetables, that it is easy enough to practice a rotation which brings the same vegetable on the same spot only once in four or five years. With judicious management there is no need of changing a garden patch in a lifetime. In field culture of cabbages, potatoes, etc., and other crops subject to attacks of insects or diseases, I prefer to select an altogether different piece of ground every year, and remote from any spot where the same crop had been grown the year before.

2852. **Codling - Moth Enemies.**—What enemies the full-grown insect has to contend with I do not know. Undoubtedly it has some. The most powerful foe among living things is probably the pig if confined to the orchard, and in numbers large enough to devour every wormy apple almost as soon as it touches the ground.

2850. **Strawberry Root-Borer.**—The enemy which has found lodging in your Lady Rusk plants is the strawberry crown-borer. The larva is about ½-inch long, whitish, boring into the crown of the plant late in the season and remaining over winter. It is possible that the application of tobacco tea or of strong solutions of kainit or muriate of potash will kill the pest. Otherwise there is but one remedy known, and this is, pulling up and burning the infested plants. Any of the plants in that row that are not infested may be used for making a new plantation.

2733. **Training the Dewberry.**—There are several methods. One is, setting a stake to each plant and tying the latter to it, cutting it back as needed. Another method is, training to a common grape-trellis of three wires, the canes being tied to the wires in spring of the bearing year by means of wool twine. A third method is, spreading the vines upon a flat rack made of light slats that stands about 18 inches above the ground.

2832. **Value of Sawdust.**—Your mixed pine and hardwood sawdust can have so little plant-food that it is hardly worth mentioning. It would not pay to cart it three miles for use on loose soils. If well-rotted, however, it might pay to haul it one mile for use on stiff clay soil.

2830. **Topping Sweet-Corn.**—Whether it pays to cut the tops off above the ears after the latter have well set, is a disputed question. We think it does. Cut off the tops of part of the field this year, and compare the yield with the part left with tops on. Thus you can settle the point, at least to your own satisfaction.

2760. **Water-Cress Under Glass.**—This is easily grown. In city markets it is much esteemed, and in ready demand at fair prices. Although it is really an amphibious plant, says the *Practical Farmer*, it is a mistake to think that it must grow in water. Indeed, it can be grown in an ordinary frame in winter to advantage and profit, and it is believed that the plant is less hot and more crisp when so grown than when grown outdoors in the usual way in summer. The frost must be kept out, of course;

and it is better to whitewash the glass, the growth being better when there is partial shade. Only a little air is required. When rainy days come the sash may be taken off, as showers are beneficial to the plants. There are many nooks in greenhouses where these plants could be set, to give the luxury of their use out of season.

2834. **Poultry-Manure and Potash.**—It was a mistake to put all the house slops upon the poultry-manure. Presumably the latter is now quite wet, and some of the plant-foods may be leached out. It is better to keep the droppings mixed with dry or simply moist absorbents, and to put the kitchen slops, etc., upon a compost-heap of horse-manure, muck, turf, etc. Your compost has probably about $\frac{3}{4}$ per cent. of potash, and a little more of phosphoric acid, besides some nitrogen. To make a fertilizer for fruit trees of it, I would add to each ton about 100 pounds of muriate of potash, or 250 pounds of kainit, and 100 pounds of bone-meal; and then apply at least two tons of the mixture per acre.

2836. **Growing Mushrooms in Open Air.**—You can try it, although success is not an assured thing. Procure some fresh spawn in August. Lift up pieces of sod here and there in an old pasture that has good loamy soil with a fair percentage of lime; insert some of the spawn and replace the sod. In October following you may possibly get some mushrooms.

2838. **Raising Sweet-Potatoes.**—Make a good hot-bed; place a little soil or sand upon the heating manure, and upon this the halved seed-potatoes, cut side down and closely together. Then cover with about four inches of sand. Water and air as needed. By June you will have good plants, which are to be set in ridges or elevated hills, with rows about four feet apart, plants two feet. Put a shovelful of good compost under each plant. A handful of high-grade vegetable fertilizer mixed in the hill often gives excellent results.

2839. **Cultivation vs. Drouth.**—Cultivation for counteracting drouth, consists in frequent stirring of the surface, $1\frac{1}{2}$ or 2 inches in depth. This surface soil, if kept well pulverized, will retain the moisture below and save it for the use of the roots. If the soil is baked or compacted the moisture rises to the surface and evaporates rapidly. Cultivation prevents this.

2840. **Best Early Pea.**—The market-gardener wants the earliest. We have used Alaska and found it satisfactory, but almost any of the "first earlies" of our seedsmen will do just as well. For a pea to come right after this we would select McLean's Little Gem. Some consider American Wonder unsurpassed as a market-garden pea. We have never had success with it.

2846. **Ashes and Hen-Manure.**—There will be no loss by mixing these if the mixture is applied and incorporated into the soil without delay. Otherwise loss of ammonia might result. Fresh hemlock-ashes at five cents a bushel are a cheap fertilizer, and you should buy all you can get and apply them to your orchards and small fruit patches freely. It will pay. Compost the large bones with fermenting horse-manure, or soften them

by putting in alternate layers with unleached wood-ashes, keeping them moist. The bones can also be utilized by burning, and applying the ashes.

2843. **Sowing Flower Seeds.**—Seeds of hardy flowers, such as sweet alyssum, pansy, mignonette, larkspur, pinks, sweet-pea, etc., cannot be sown too soon after the ground of the border is in proper order.

2858. **"Odorless Phosphate."**—This is also known as basic slag or Thomas slag, etc., a waste product of the iron industry, and contains no plant-food except phosphoric acid in an available, although not strictly soluble form. On land deficient in phosphoric acid, but containing enough potash and some nitrogen, we have seen good results following the application of this "odorless" phosphate. But it is not a garden-fertilizer if applied alone. Substances containing potash and nitrogen should be used with it.

2847. **Keeping Violets Fragrant.**—Those who handle and sell large quantities would be glad to know how to keep them fragrant as long as the flowers last. A course often resorted to is to wrap bunches of 50 florets or more in odorless waxed paper and keep them in a cool, damp place. Anything that stays the maturing of the blooms and at the same time keeps away fresh air tends to lengthen the odorous period.

2837. **Lily-of-the-Valley from Seed.**—It can be done but is seldom practiced, as new crowns form so rapidly in ordinary cultivation that there need never be a scarcity of plants if division of the roots is resorted to.

2789. **Daphne odora.**—Where a mistake is often made in growing this delightfully fragrant plant, is by treating it as a pot-plant, in which case it is almost sure to become infested with red-spider and canker. But when planted out in the border or greenhouse, to cover a back wall, or to train over trellises, pillars, etc., it may easily be had to succeed, producing an abundance of pure white flowers of the richest fragrance throughout the summer months. In setting out the plants in border a chief aim should be to have a good soil and suitable drainage. A soil composed of about equal parts of turfy loam and peat with a liberal addition of sharp sand will suit them well. In the absence of peat the proportion of loam might be increased, and some decayed leaves, or hops, etc., be substituted for the peat. All parts of the border should be underlaid with tile drains at a few feet apart. As such plants cannot be removed, the house in which they are grown must admit air freely overhead and at the sides. In the main the cultivation of this species is identical with that of the camellia, where the latter is bedded out. A temperature of 45° to 50° at night is the most congenial.

2826. **Wire Netting as Glass-Protector.**—Some objections would be the expense and the fact that it produces shade in a harmful measure. Hail-storms severe enough to break glass are few and far between. Better insure your glass. Write to John G. Eshler, secretary of the Florists' Hail Association, Saddle River, N. J., for particulars.

2828. **Forsythia from Seed.**—These hardy shrubs are increased by propagation from cuttings or by layering, like currants, grape-vines, etc. We are not aware that the plants ever seed. Strong plants can be bought at the leading tree and shrub nurseries for 50 cents or less.

2829. **List of the Hardier Shrubs.**—For a list of a dozen of the hardiest flowering shrubs, we name the following: Barberries, several species and varieties; flowering currants, dogwoods, ornamental elders, bush honeysuckles, mock oranges, lilacs, Japan quince, native spiraea, weigelia, native euonymus or spindle-tree.

2821. **Shrubs near House.**—All the shrubs and climbers named are so adaptable that they would succeed on either the west or the south side of your house.

2861. **Market for Cut-Flowers in Buffalo.**—The following florists in Buffalo do not grow the stock they sell, hence are heavy buyers: Adams & Nolan, D. B. Long, R. J. Lawrence. There are in the city several stores who both grow and sell. The names could be found in the city directory.

2851. **Growing Healthy Violets.**—It is believed that the cause of yellow spots on violet-leaves, of which so much has been heard in time past, is due to submitting the plants to a growing temperature through the winter, when natural conditions require that violets should have rest by freezing. Accordingly, growers now propagate in the fall, and keep the plants in a coldframe during winter, thus giving them the advantage of a natural winter rest when small. To propagate in the spring from plants that are being forced is to deprive the stock of such rest year after year; hence is it to be wondered at that ailments should set in?

2842. **Leaves of Palm Dying.**—The trouble with your palms undoubtedly is at the roots. We think that the soil is uncongenial, perhaps as a result of poor drainage in the old boxes. It may be sour from continued or former bad drainage. When an experienced plant-grower finds a plant ailing, nine times out of ten he examines the roots first and in most cases he finds that the trouble is there.

2844. **Remedies for Rose-Pests.**—The rose-bug or rose-chaffer may be fought by hand-picking or by knocking off on sheets early in the morning. Clinton grapes, which these beetles prefer to most other plants, may be planted as a decoy. For the rose-slug use kerosene emulsion sprayed upon the bushes; for the rose leaf-hopper use whale-oil soap, kerosene emulsion, buhach in powder or solution, or tobacco tea. Aphid and most other insects that trouble rose bushes yield readily to spraying with kerosene emulsion.

2817. **Root-Knot on Vegetables and Flowers.**—This "disease" appears in the form of galls or knots on the roots of a large number of plants and trees, among them the clematis, rose, begonia, cucumber, potato, tomato, cabbage, turnip, lettuce, beet, radish, parsnip, egg-plant, grape, peach, plum, orange and many others. The knotty swellings are caused by and contain minute worms, known

as eel or thread-worms (*Heterodera radicola*) which multiply and spread from plant to plant very rapidly. German investigators have strongly urged the use of "catch" plants for the root-gall of the sugar-beet. Rape, for instance, may be sown on the infested fields, and when the roots have become infested, but before the females have begun to produce young, the plants pulled up and destroyed. Several crops of rape should thus be grown and destroyed in quick succession, each succeeding crop tending to entrap the worms remaining in the soil. This method is expensive and tedious, but may be practicable in some cases, especially for land on which high-priced crops such as clematis and other nursery stock are to be grown. For ordinary crops this method will hardly answer. It is probable that the worms require living tissues to develop in, and that, deprived of this, they would die. Hence keeping land clean and free from all growth for two or more years can be expected to free it from all infection. Soil known to be infested should not be planted with any crop subject to the attacks of eel-worms unless means are found and employed to destroy the enemy. Alkaline fertilizers, such as hardwood-ashes, muriate and sulphate of potash, kainit, etc., produce a hard growth that is but little if any affected by the root-knot. Tobacco-dust mixed with the soil has also seemed to be a protection, probably on account of its alkaline nature. These preventive materials should be used in as large doses as would be safe to apply on the respective crops. For pot-plants use fresh, uninfected soil.

2825. **Mixtures for Grape Diseases.**—To find carbonate of copper you will have to go to a wholesale druggist or paint-shop, or purchase it from one of our manufacturers, or dealers in, spraying-machines. You can also buy the prepared ammonical solution of carbonate of copper, now being advertised under the name "copperdine." This will be found the cheaper way, as druggists charge exorbitant rates for both the copper and the ammonia. Write to W. S. Powell & Co., Baltimore, Md.

2877. **Spruces from Seed.**—One of our evergreen-specialists gives the following directions: Sow evergreen-seeds broadcast in beds four feet wide, in light, sandy loam; cover very lightly. Shade the beds from the sun for the first year, either with lath frames or brush. The seeds are sown dry. The beds must be carefully hand-weeded the first and second years. The seedlings are then of proper size to be thinned out of the beds and planted in the nursery. In Minnesota, board wind-screens and winter protection will be necessary. If the inquirer will follow these instructions carefully he will be certain to succeed.—B. I. E.

2668. **Haverland Strawberry.**—The Haverland is valuable for home use or near-by market, but in a wet season the berries are too soft for shipping. It stands drouth best of all with us. It ripens early and continues late. This enables it to bear immense crops. Michel Early is the only berry that ripens early enough to fertilize its first blossoms with us.—L. J. FARMER, *Long Island, N. Y.*

2659. **Cranberry-Growing.**—My next-door neighbor has a cranberry patch of about 10 square rods, from which he annually gathers over a bushel of cranberries. They occupy an undrained wet hole that is flooded in winter and gets partially dry in summer. All he did was to get the plants and set them out.—L. J. FARMER.

2726. **Manure for Hotbeds.**—As substitutes for horse-manure, leaves or waste hay may be used. Peruvian guano or horn-shavings, strewn among the coarse materials as the bed is made up, will cause it to give off a rapid heat; indeed some caution is necessary in the use of these materials or too great heat may be produced. Potash, unleached wood-ashes, or almost any of the best grades of commercial fertilizer, used in same manner but in larger quantities, will produce heat. If the materials to be used are dry, a moderate application of boiling water will hasten the heating process. Use a thermometer, and if the heat gets too strong it may be reduced by making holes with a stick through the soil covering and into the heating-material.—WM. F. B.

2744. **Remedy for Flea-Beetle.**—Dust the plants with wood-ashes when slightly moist with dew or rain. This does not prevent their feeding on the under side of the leaves, though it appears to disgust them and they seek other quarters.—W. P. H.

2747. **Remedy for Scale or Bark-Lice.**—Wash the trees with a lye made from wood-ashes or commercial potash. The solution should be quite strong, and be well rubbed on with a brush or swab. If the first application does not remove them, a repetition a few days later will.—W. P. H.

2755. **Climbers for Veranda and Lawn.**—We have never known cows to eat the Virginia creeper, *Ampelopsis quinquefolia*, or *A. Veitchii*. Both are vigorous, hardy climbers, but for the lawn perhaps the *Clematis coccinea* would be preferable, it being more showy and easily trained to a trellis.—W. P. H.

2763. **Nursery Stock from Different Sections.**—Our experience of a half century with stock from various sections has been that stock from home nurseries gives the most satisfaction. One and two-year-old trees recover from long transportation much more readily than older ones.—P. W.

2764. **Running Water in Fruit-House.**—It would perhaps equalize the temperature somewhat and not be very injurious to apples, which keep better where there is sufficient moisture, but most fruits decay more quickly where much moisture is present.—H. P.

2772. **Cement for Holes in Trees.**—A mixture of fresh cow-manure one part and clay two parts, is a good cement to fill the holes in apple trees after the rotted particles have been removed. A small percentage of lime may be added.—W. P. H.

2749. **Essentials of Peanut-Culture.**—These are light soil, plenty of well-decomposed vegetable matter, phosphate and potash; well broken up land and clean culture.—JULIUS SCHNADELBACH, *Alabama*.

2714. **Flowers for Shady Places.**—For two summers past I have placed a few pots of *Cheonostemma hispida* in a corner where the sun never shines, and they have grown well and bloomed continually. Fuchsias also do well in moderate shade. In growing plants in shade, remember that it makes quite a difference whether the shade is produced by houses and fences or by growing trees; and it often happens that those trees which have their roots near the surface not only shade but appropriate nearly all the plant-food and moisture in the soil, so that few plants will succeed in such a situation, while there are many which do quite well in the shade of buildings and fences.—WM. F. BASSETT.

2747. **Remedy for Scale-Lice.**—The surest remedy I have found is to dislodge all the scales with a stiff brush, and then syringe the plants thoroughly with strong soap-suds. Add a very little kerosene. Each scale is the covering or house for a countless number of minute insects, each of which upon being liberated sets up a house of its own. Hence the need of thorough syringing. I have had plants subject to these pests in my greenhouse, which seemingly could not be freed from them, that were not troubled after being moved to a cooler atmosphere. Plants kept in a healthy, growing condition better withstand the ravages of insects.—E. L. P., *Crawford Co., Pa.*

2725. **Genii Plum.**—I have grown both the Genii and Lombard. With me the two are not to be compared. In my new orchard I shall plant at least three-fourths Lombard, and not one tree of the Genii. The latter ripens about one week before the first Lombard, but for quality the Lombard is way ahead; besides, one Genii tree will furnish you with more black-knots than 50 Lombard. Why plant an inferior variety when there are so many good ones, even if it has a high-sounding name?—A. A. H., *Vermont*.

2775. **English Walnuts.**—The required information can be obtained by writing to Felix Gillette, Nevada City, California, for northern parts, and to George W. Ford, Santa Anna, California, for southern parts of the state. Both are extensive walnut-cultivators. Mr. Gillette has all the fine foreign varieties, and is perhaps the largest importer on the coast. He is also the originator of the "second generation" of præpariturian walnuts.—HENRY E. DOSCH, *Oregon Board of Horticulture*.

2708. **Bags for Bagging Grapes.**—I use the ordinary 2-pound manila-paper bag for bagging grapes. Such can be purchased from most grocers at about \$1 per 1,000. I then buy a spool of small iron wire and cut it into lengths of five or six inches. I borrow a pair of tinner's shears to do this. I then run the wire once or twice through the bag near its mouth, through the side where it laps or is pasted together. This makes a convenient fastening, and a good hand can bag several thousand clusters a day. Be sure and use the iron wire, as the steel wire is more brittle and does not bend readily; copper wire will do, but it is much more expensive.—JOHN H. MASON, *Ky.*

CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Radishes Free from Worms.—An English gardener who has had great success in raising radishes makes his radish-beds with nearly or quite one-half soft-coal ashes and soot. Under this plan his beds are not infested with worms.—*Michigan Farmer*

Grafting Persimmons.—The Japan persimmon is usually grafted on the common persimmon without difficulty. Nurserymen usually graft them precisely as they graft apples in winter time, only employing collar-grafting instead of cutting up pieces of the roots.—*Mechans' Monthly*.

Acorns for Profit.—As statistics are the order of the day, says the *California Fruit-Grower*, we would like to know what the acorn crop of California is valued at. Vast droves of porkers are fed upon the crop each year, and the acorn certainly has a very considerable moneyed value as a food product for swine.

"Blue-Blooded" Gladiolus.—William Ferguson, of Massachusetts, writes that he is making gratifying progress toward the production of a blue gladiolus, and adds: "In all my seedlings which contain blue blood the corms are invariably white in color. I have wondered if other growers have the same results."—*American Florist*.

A Mixture for Insects.—In July, when I was treating my vines against the mildew, the idea occurred to me of employing the same insecticide for destroying the insect pests which affected my roses. Consequently, I syringed the trees with a liquid composed of the following ingredients, with the result that a few hours later all the insects were in a dead or dying condition, and had fallen off the leaves: Ammonia, 1 kilogram; sulphate of copper, 2 kilograms; water, 200 liters.—*Journal des Roses*.

Antiquity of the Apple.—Even the 2,000 kinds of apples now recognized make a trifling list compared to the apples of the past. No one knows where the apple was originally indigenous. It is common with the garden authors to write that "by the skill of the pomologist the delicious apple has developed from the wild crab." It is just as likely, from American experience, that the wild crab of the Old World is the degenerate escape from cultivated trees. We know that the Greeks

cultivated it, but as the root of the word is the same in all, even the most barbaric tongues, there is little doubt of its being cultivated long before the dawn of modern civilization. Remains of what must have been very fine specimens of apples are found in the mud under spots where the lake-dwellers of Switzerland had left their cabins to found towns and villages on land. That it traveled with the white man from his early Asiatic home is much more likely than that nature, unaided by man, spread it over the woods and wilds of Northern Europe.—*Philadelphia Ledger*.

The Root-Pruning Craze in England.—At the present time many will be lifting and root-pruning their peach trees with the object of curing them of all the ills they are heir to. With young vigorous trees growing in newly made borders of rather strong loam, root-pruning at the end of the first or second year after planting will prove beneficial in checking strong growth and tend to the maturation of the wood. But this operation is generally performed on such trees towards the end of August. This early check gives the trees plenty of time to recover before the end of the growing-season, and ensures a crop of fruit the following year under skillful management. But root-pruning has become a craze with some cultivators, and no matter what the evil is that the trees may be suffering from, the mutilation of the roots is the only remedy which seems to pervade their minds, even although it would be more in keeping with the well-being of the trees to promote the development of healthy roots. No peach tree, under good management, should require to be root-pruned more than once during its existence, and this should be done to bring it into a bearing condition, when the quantity of fruit it is allowed to perfect can be regulated to suit the capabilities of the tree. Instead of root-pruning some strong-growing young trees I have obtained the best possible results by pinching, and, except in the case of very strong wood, would strongly advise this means of aiding the ripening process. Pruning the roots, like pruning the branches, has become a fad with some, and these faddists always ascribe a partial success to their fiddling among the principal organs of nutrition, which a better knowledge of plant physiology would teach them was frustrated, more or less, by such unnatural treatment.—*Gardeners' Magazine*.

The Aboriginal Chinese Primrose.—We give an illustration of a flowering specimen. The conditions under which it grows in nature are very different from



PARTS OF NATIVE CHINESE PRIMROSE. [A and B, leaves of two forms; C, petal; D E F, various forms of the calyx.]

those under which it is cultivated here, and any one who will compare the parts of the wild plant here illustrated will see how great a change has been effected in one season only, and without any cross-fertilization. Such changes bear witness to the process of evolution. Not many plants would respond so soon to the attention of the cultivator as this Chinese primrose. The flowers of the cultivated specimen are a pale rosy lilac. The pollen shown at the left is magnified 300 times in diameter. — *Gardeners' Chronicle*.

Don't Overwater.—When too little water is given to house-plants the wilted and drooping leaves soon indicate what the trouble is, and it is very easy to apply the remedy before any serious injury is done. When too much water is given, however, the injury is not discovered until, perhaps, the leaves turn yellow and begin to fall, and it is then too late to repair the damage. This means that it is easier to injure house-plants beyond remedy by giving too much water than by giving too little. — *Garden and Forest*.

The Licorice Tree.—Most licorice comes from Asia Minor, where it is found in great abundance all along the flat, uncultivated, and almost uninhabited lands of the rivers Tigris and Euphrates. It is a small shrub not more than three feet high, with a light foliage, and is never found far from the water. The season for collecting the roots is generally during

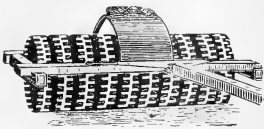
the winter, although it is possible all the year round. When the root is first dug it is full of water and must be allowed to dry—a long, tedious process, often taking a year. It is then sent to Bagdad, where it is pressed into bales and shipped to London, and from there to America, quantities of it being used in this country in the manufacture of tobacco. The black licorice sticks or rolls which we see in the confectionery and drug-stores come mostly from Spain and are made of pure juice mixed with a little starch, which prevents it from melting in warm weather, and before packing each stick is wrapped in bay-leaves. The word licorice means "sweet root," and is of Greek origin.—*Harper's Young People*.

Impatiens Sultani is, I think, one of the most useful plants in cultivation for rooms, as the flowering-season lasts so long and the plants do not suffer much from being in the house, while the same plants will do over and over again if they are not kept indoors too long at a time. The metallic luster seen on the flowers in certain lights makes them very attractive. Though seedlings are the best, I generally contrive to keep a few old plants through winter, and these become large the second year and flower early.—*Gardening Illustrated*.



WILD FORM OF PRIMULA SINENSIS AFTER ONE YEAR'S CULTIVATION.

Beverly Clod Crusher.—This implement, also known as Deuser's clod-crusher, may be described as a roller composed of 10 or 12 movable disks playing loosely on a spindle, each disk being vandyked on the periphery and having blunt teeth attached to the sides. M. Langelier, in his recent publication on agriculture from which this implement will pulverize the very hardest clods, but we believe it should be used immediately after the plow, the harrows following.



BEVERLEY CLOD-CRUSHER.

Chrysanthemum J. Stanborough Dibbens.—This new incurved Japanese chrysanthemum has globular heads of a large size, suitable for exhibition purposes, and wherever it was shown last autumn growers and connoisseurs of chrysanthemums were highly pleased with it. The head, as a whole, appears of a bright yellow, and when examined more closely the florets are seen to be broad, blunt incurved bright yellow on the upper

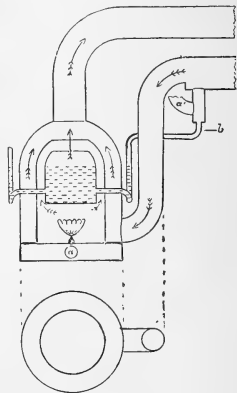


CHRYSANTHEMUM J. STANBOROUGH DIBBENS.

surface and sulphur-yellow on the reverse. When in perfection the florets are regularly incurved, but later on the outer ones are reflexed and incurved at the tips, while the middle ones are reflexed and the uppermost

ones erect, quite filling up the center of the flower. These peculiarities may often result, however, from conditions of culture as well as the age of bloom; but when in its prime the latter presents the regularly incurved form with interlocking florets shown in the illustration.—*Gardening World.*

Improved Method of Heating.—In this apparatus a generator of suitable design and dimensions is provided with an air chamber, or with air-chambers, and with a boiler fitted with tubes for generating heat; the boiler being supplied with water by a suitably placed cistern—and pipes or other appliances are attached thereto as required for circulating, distributing and using the heat generated. The air-chambers and the



IMPROVED METHOD OF HEATING.

whole system of pipes have free communication with the atmosphere by apertures in the under surface of the pipes, which provide for the circulation, expansion and contraction of the hot air and vapor, convey the condensed water to the boiler and maintain an equal pressure between the atmosphere outside the apparatus and the current of heat circulating therein. The arrows in the generator indicate the rise of vapor from the boiler, the hot current of waste heat from the gas-flame and the hot-air current in the air-chamber. The heat and vapor unite and form the moist circulating current. The arrows in the pipes show the direction of the flow, and the current of non-radiated heat returning to the air-chamber. In small apparatus, the fuel may be gas or mineral oil, and the waste heat may be passed through the pipes to find its exit through the small pipe *a'*, covering the aperture for expansion, which is carried to the outside air. For large apparatus, coke or coal can be used, and the quantity of fuel required will be little more than a third of the amount consumed by hot-water apparatus of equal size. The generator can be substituted for the boiler of existing hot-water apparatus and the water in the pipes dispensed with, thereby saving the fuel required to heat it.—*Gardeners' Chronicle.*

Celery plants should be bought from those who make a specialty of growing them for sale on a large scale. At thinning-time the young plants may be procured for one-third the price asked for them at the regular planting-

season, and by transplanting them two inches apart each way in a rich border, or, what is better, in a coldframe where a shade can be put over them, fine plants are conveniently at hand when planting-time comes. When only a moderate number of plants are needed, it is better to buy them in this way than to raise them from seed.—*W. F. Massey, in Garden and Forest.*

Cheap Plant-Protector.—A useful contrivance is a plant-protector for early melons, cucumbers, squash, tomatoes, beans, etc., made of wire. It is cheap, convenient and durable. It consists of a No. 8 wire hoop 15 inches in diameter, and three pieces bent nearly in shape of a half-circle and looped at the two ends around the hoop, crossing each other at the top. They are secured where they cross by being tied by a piece of small annealed wire. The



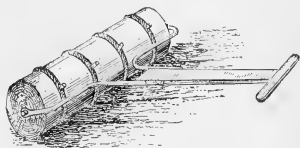
CHEAP PLANT-PROTECTOR.

wire framework can be covered with old newspapers or strainer, or cheese-cloth costing three or four cents per yard. When put on, a little soil on the edges in several places will prevent the wind from blowing it off. The strainer-cloth covers might be sewed fast to the framework, but rats and mice are apt to make nests among them when stored away. These protectors can be made of several sizes. For tomato-plants they might be a few inches taller than for melons. They can be made to order by tanners and wire-workers in small lots at \$3 per 100. Gardeners and truck-growers can sometimes save the cost of these protectors three times over in one season.—*Farm and Home.*

A Gourd Garden.—The varieties of fancy gourds now offered by the trade are almost innumerable. A large collection have for some years now been grown at Kew, and as they have at last succeeded in weeding out the useless or less ornamental kinds, the collection there may almost be taken as a standard for garden purposes, as the selection includes fruits of large size as well as of distinct colors. The collections grown in the Royal Gardens, Kew, form an interesting addition to the hardy plants in the herbaceous ground, and as they are trained to poles, the—in some cases—extraordinary forms are shown to the best possible advantage. The vines bear in such quantity that they have to be frequently thinned. This gourd garden has awakened a considerable amount of interest.—*Gardeners' Chronicle.*

Roller and Marker.—This is an ordinary wooden garden-roller, such as anyone can make of a piece of chestnut or oak log, three or four feet long, with iron pins driven in the center on each side, and a simple

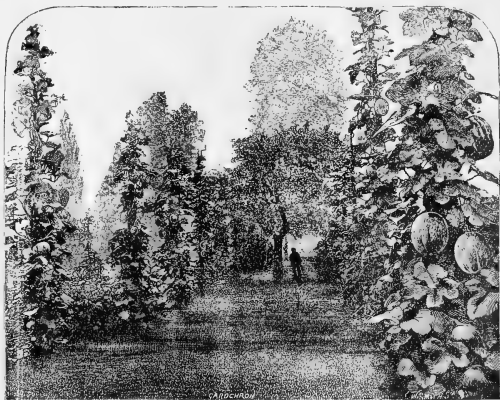
handle attached by means of two pieces of old wagon-tire. Bore holes into the face of the roller, one foot apart, and put in pins. To use this tool as a marker, make each of these pins hold a small rope, encircling the



ROLLER AND MARKER.

roller by driving the pins into the holes beside the end of the rope. More than one row of holes can be used to change distances if required for other vegetables. Strips may be tacked lengthwise of the roller to mark places in row for setting plants.—*Greiner's New Onion-Culture.*

Tulips for House-Decoration.—Some of the earliest kinds of tulips are amongst the brightest of our winter flowers. Pots of these bulbs, chiefly of the Van Thol variety, are now to be seen in all our flower-shops, each plant with a fine flower, and amateurs are apt to be disappointed when their home-grown bulbs begin to blossom, that they are not all so perfect and so fine as those exposed for sale. But the nurseryman goes a different way to work to produce these specimen potfuls, and those who know the right plan can easily supply themselves with tulips, not only in pots, but growing in bas-



GOURD-LINED WALK IN GARDENS AT KEW.

kets of moss and even in vases, where drainage can be arranged for. Bulbs can be planted in autumn in boxes 10 inches in depth, with a light, sandy compost, containing a little leaf-mold and equal parts of loam and sand, with

good drainage, holes being made in the sides of the box near the bottom to allow of the escape of the water. The bulbs should be an inch below the surface and be firmly planted, not exposed as hyacinth-bulbs are, and a sprinkling of soot over the soil will be useful to keep slugs and insects away. The box may be drained with potsherds over the holes, with fine ashes above them; and a layer of moss sprinkled with soot, covering the drainage, will keep it all clear. Water and place the box in the garden until the end of November, when it may be removed to a window in a room without a fire. Plenty of air



WHITE TULIPS IN POT.

in mild weather is necessary, and the box should be kept as near the glass as possible.—*Gardening Illustrated.*

Use the Sponge Freely on Plant-Leaves.—One of the difficulties in the cultivation of plants in a sitting-room is that the dry air and dust from an open fire tend to clog the pores of the leaves. Deprived of the rain which would naturally cleanse them, and not often watered with a rose-pot or syringed, the plants kept in a room are apt gradually to lose their health and look miserable even if they do not altogether die. The best remedy for this is the regular use of a small piece of soft old sponge with slightly warm water, and in the case of "blighted" plants a little yellow soap, soft soap or insecticide. Especially is this necessary in the winter when dust is rife, and as "blight" is then at its weakest point a thorough cleansing during the cold months will result in freedom from it during the summer. Practice and delicate handling are needed for success. Some plants are much easier to sponge than others. Amongst these may be reckoned the India-rubber plant and also small specimens of palms, both of which need constant washing when grown in a room. Arums, too, with their splendid leaves, are often subject to an attack of greenfly if left unwashed, but the stems of their great leaves are very succulent and easily broken down. Orange-trees and many other plants exude a kind of sticky, essential oil, which catches the dust; they therefore require special attention, warm water and a little yellow soap being necessary to cleanse them if they should have been neglected. The young shoots are extremely brittle, breaking off with a very slight touch. Orange-trees, therefore, should receive special attention in their dormant season, so that sponging may not be necessary just as the spring shoots appear. Aspidistras and many other plants need sponging often to keep their health; in

fact, all plants with evergreen foliage and any others which will bear it are strengthened and improved by the use of the sponge.—*Gardening Illustrated.*

Truffles in France.—Some interesting information on truffles is given by Consul Horace G. Knowles, of Bordeaux. There are three species of truffles found in France—the black and most common, the white (highly prized), and the *truffe à l'ail*, which has a flavor of garlic. They are found in all soils, but chiefly in oak forests or where the earth is damp and calcareous, thriving best in an almost sterile soil. In appearance the ordinary truffle is about the size of a walnut, with a rough brown, warty surface, closely akin to the potato; which it likewise resembles in consistency though not in color. Not yielding to cultivation, they must be sought for in chance places, nor is the method of obtaining them the less interesting. The pig has a vigorous appetite for this subterranean morsel. It is a decided passion with the race; so that, as the day dawns, out he is led to perform a duty which, though rather odious and disappointing to him, is particularly lucrative to his master. As the scent of the fox leads hounds to the trail, so the odor of truffles attracts the porker to the cherished bed. He sniffs about, this way and that, until he locates the desired object, when he immediately begins to root up the earth with his awkward snout. He is closely watched during the operation by his owner, who, upon the swine uprooting the truffle, whacks him sharply over the nose with a stick. In the responsive grunt of pain which follows this brutal blow the soft, moist fungus is dropped from the animal's jaws, and before he can again pick it up it is bagged by the hunter. The beast, nothing daunted, presses on to another spot, where, hidden a few inches below the surface of the ground are more of the epicurean dainties. And thus, after numerous repetitions of the same performance, the animal, thoroughly disappointed, gives up in disgust and submits to being led back to his pen; but on the morrow, thanks to the pig's short memory, the occurrences of the day before are completely forgotten, and he experiences again the same joy and pain, hope and disappointment, expectation and defeat. Recently it has been found that dogs could be trained to perform the duties that are instinctive to the pig, and so great is the demand in France for the truffle that many of the canine species are now in certain districts possessed of this estimable talent. Scarcely is there a canning establishment at this moment in France that does not, among other alimentary products, preserve this dainty. It has become as indispensable to the dinner-table of the *noblesse* as the aromatic sprig of garlic to the frugal repast of the peasant. The annual production is valued at about \$3,000,000. The article is sold at \$1 per pound and almost double that price in the larger cities. Not alone in France do the truffles thrive; they are found in quantities in Italy, Spain and Holland, but are of indifferent quality compared with the French, lacking the delicate and incomparable flavor of the native product. In the United States, especially in California, some attention has been given within the last few years to the gathering and preserving of truffles, and a number

of western packers have gone to Bordeaux in order to inform themselves regarding the canning process. It is a very simple one, the truffles being partly boiled, as tomatoes, asparagus and other vegetables, and then jarred and sealed in their own diluted juice. All meat and game products are also "truffled," the vegetable being cut into small squares and inserted into the substance of the article preserved.

Lilium Nepalense.—This singularly beautiful lily

grown under glass the stem is of a greenish purple, the nodes being of a deeper shade. The leaves are of a deep shiny green, from two to three inches long and about one inch broad, the upper leaves being cordate, much shorter and broader. The whole plant reminds one more of a *littonia* or *methonica* than a lily. The flowers, few in number, are nodding, funnel-shaped, the segments revolute, from three to four inches long and from one inch to an inch and a half broad, deep purple, tinted and



FLOWER OF LILIMUM NEPALENSE: reduced one-half in diameter.



LILIMUM NEPALENSE.

was introduced into cultivation in 1887 or 1888. The bulb is globular, from one and a half to two inches long and three-quarters of an inch broad, of a deep purple color, the roots long, fleshy, and always remaining on the bulb when in a healthy state. The stem, which appears as in most Indian lilies rather late, is smooth, of a beautiful deep purple color, especially when the plant is exposed to the full light and is grown outdoors the color then being much more intense. It grows from three to four feet high and is rather slender. When

spotted with brownish purple, the ground color pale sea-green, sometimes yellowish green; the tips are sea-green, sometimes tinted purple, the outside being greenish purple, tinted deep purple, often spotted brown. This difference of coloring is, however, hardly perceptible to the ordinary observer. The anthers are golden yellow, the stigma light green—a most beautiful combination of color.—*Gardeners' Magazine*.

Two Heads on One Cabbage-Plant.—Put out your Jersey Wakefield in the usual way; only use the very best

strong plants and set them on your very richest land. And when the heads are ready to sell, cut out the head, leaving all the outside leaves attached to the stump; that is, cut out the head so as to have no leaves to strip off and throw away, for the leaves are all left on the stump. Now keep cultivating these stumps along with the other cabbages that have not yet headed, and very soon small heads will start out on the stump. Pull off all these little heads but the best one, and this will soon make a head as good as the first one and may be better. These second-crop heads will, many of them, mature so late they may be wintered over in the usual way, and these are the ones friend March gets his choice cabbage-seed from.—*Gleanings in Bee-Culture*.

Pond for Aquatics.—My little lily-pond is on a level grass-plot. The bottom is concreted and cemented, and the side walls are of brick laid in cement and lined both back and front with Portland cement. The walls from the base for 16 inches up are 8 inches thick, but from there to the top they taper, both sides alike, to 3 inches

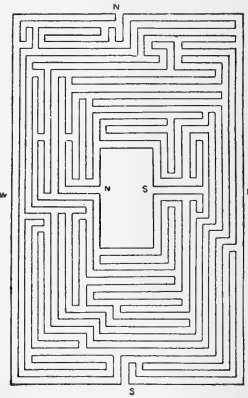
wide. This tapering at the top not only gives the tank a neat appearance, but is serviceable in lessening the pressure against the wall from frost in winter, both from the water in the pond and the ground on the outside. Provision is made for draining the water at will from the bottom, and the overflow pipes being made of rings or sections like a pocket drinking-cup I can have the water as high as I please. Before commencing to concrete the bottom of the pond, I put in the center a cedar post 4 inches in diameter and rising 6 inches above the water-surface. Around the top of the post is an iron band to strengthen and prevent it from splitting, and downward from the top I bored a hole and inserted in it a one-inch piece of gas-

pipe, and on this pipe secured a revolving double T, which can be seen in the middle of the pond. The use of this double T is to support the end of a plank, the other end of which rests on the grass outside the wall. This plank is used as a pathway into the pond, and I find it indispensable in planting, cleaning off dead leaves, gathering flowers, regulating the distribution of the plants and foliage and getting seed; and by lifting the end that rests on the grass I can carry it around the pond wherever I please, the other end resting on the revolving T moving around also, and in this way get to any part of the pond I wish with very little trouble and without getting wet.—*John McElvery, in American Florist*.

Blackberries in Ohio.—Erie and Minnewaski seem to be more hardy than the Lawton and less liable to rust than the Kittatiny, although the Erie has shown a slight tendency to rust. Snyder, Agawam and Ancient Briton are the only varieties that pass the winter safely in this latitude. Early Harvest is commonly reckoned as tender, but it is less often winter-killed than Erie or Minnewaski.

Either it is uncommonly well-suited to this locality, or its merits have been overlooked. If the robins would let it alone it would be as profitable as any variety that can be grown here. Child Everbearing tree-blackberry has been fully tested, both under its present name and its former name—Topsy. It is of no value here because of its tenderness. It has been killed even in mild winters, and has never given a crop. The plants attain about half the height of ordinary varieties and are indescribably thorny. It is the least promising of any variety ever tested here.—*Bulletin Ohio Station*.

Flowers by the Million.—"Father of the Chrysanthemum" and "Old Uncle John" are pet names for John Thorpe, chief of the floricultural bureau of the World's Fair of 1893. He has devoted about 30 years of his life to various branches of floriculture, giving especially careful attention to the production of new and improved varieties. In his present capacity he has induced Jay Gould, William K. Vanderbilt, George W. Childs and several other millionaires to loan many of their best and rarest plants to the fair. It goes without saying that this department will be a magnificent success. Experts in that line say it will be the greatest show of fine flowers ever seen in the world. A million pansies, a million roses and many thousands of flowers, plants and palms of all climes will be shown. There will be 16 acres given to this exhibit, and ten of them will be on the wooded island on which the mammoth horticultural building is to stand. The shores of the island will be left wild for scenic effect, and the waters around it will be bright with water-lilies and other aquatic plants, while the interior will be artistically planted with lilies, rhododendrons, roses and other flowers. Mr. Thorpe was the organizer of the Society of American Florists, has done much work in his line in England, and is known to horticulturists all over the



OLD GARDEN LABYRINTH IN ENGLAND.

world. When he took up the chrysanthemum it was described as "small and colorless." There are now 2,000 varieties catalogued, with a bewildering variety of shapes and colors. When he took up the carnation there were but few varieties; now there are a thousand. He has been in the business all his life, and his friends are enthusiastic over his work at Chicago.—*Chicago Daily*.

Garden Craft.—Occasionally we meet some curious relics of the old artificial style in landscape-gardening. In describing a noted garden in England the *Gardeners' Magazine* says: Beyond the rose-garden is the maze,

incongruity is mere childishness. From the same paper we also reproduce a view in the gardens of Elvaston castle showing clipped yews, as a third example of this kind of curious antiquated taste in ornamentation.



CLIPPED YEWES IN THE GARDENS OF ELVASTON CASTLE.

which, like the garden on the western side of the mansion, serves to remind us of the taste of our forefathers so far as it influenced the arrangement of the grounds round the dwellings of the wealthy. This is an excellent example of the labyrinth, so popular in the sixteenth and seventeenth centuries, its interest being materially enhanced by its great age. The length is 174 feet and the width 108 feet, and the hedges are of yew, those on the outside being four feet six inches through, and those inside are three feet wide. *Gardeners' Chronicle* also gives some examples of this old taste for artificiality. One illustration here reproduced gives a view in the gardens at Levens, Westmoreland. It would be vandalism, indeed, to destroy so fine an example of a style no longer fashionable; but it would be grotesque folly to copy it in any modern garden. We cannot appreciate shrubs clipped and tortured into the semblance of birds or beasts, or any of the quaint conceits of the old practitioners of the topiary art; we cannot conceive that this practice is defensible on any score whatever; as well make a cannon of glass or a statue in soap as carve out of foliage forms utterly unsuitable for the purpose. Contrast is allowable, and often agreeable in a garden, but deliberate

Forethought of Gardening.—

Very early peas generally do well on light, sandy soil and yield a nice early crop. Late peas on the same soil would be almost sure to fail. Radishes do best on very light soil, and are almost certain failures on a very heavy one. Strawberries are at their best on neither the one nor the other; give them a light, sandy loam with lots of manure and good care, and they yield bountifully. The planting must be so arranged that the succession of crops will follow each other without confusion or interference. Land as valuable as a good market-garden ought to be is too valuable to rest with a single crop in a year. The question of rotation of the crops must be carefully considered if one expects to make his land do anything near its best.—*Practical Farmer.*

Simple Botanical Apparatus.

My apparatus consists of the following easily and cheaply obtained im-

plements and appliances: A trowel for deep-rooted plants; a press, consisting of the top of a table, newspapers, two books and a stone; and for mounting, a bot-



CLIPPED YEWES IN A GARDEN AT LEVENS, ENGLAND.

tle of glue, a pen-knife and—a hair-pin! With these simple helps much pleasurable work may be done.—*Miss M. P. Williams, in Popular Science News.*



LIGHT FROM THE SOCIETIES BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Pruning Peaches for Low Heads.—The peach has a habit of bearing at the extremity of its branches. The fruit soon gets beyond reach, thinning becomes difficult and the weight is apt to break the branches.

Colonel Pearson's method, as described before the New Jersey Horticultural Society, is to cut off the main branches within one and a half to two feet of the trunk *after* leaf-growth has fairly started. Trees stood such severe treatment well and soon made a new top, which furnished finer and better fruit the next season. If this pruning was done *before* growth commenced, while the tree was dormant, it would be injured. Mr. Jones said he had practiced this way successfully. President Blackwell told of a successful grower who cut off his entire orchard after one year's growth to within one foot of the ground, to give the roots the advantage at the start. Trees thus treated branched low and produced fruit which sold at outside prices.

Crops in Orchards.—Three crops of rye will ruin an orchard. From the time of planting till the death of the trees, not a single crop of either rye, wheat or oats should be taken from the land. The orchard will not stand these crops and at the same time produce apples. It is by no means necessary that we should lose the use of the soil altogether, as we can raise roots, corn, peas, buckwheat, hay, pasture, and even an occasional crop of barley, not only without hurting the young orchard, but actually to its benefit, if accompanied with a judicious use of manure. As potash is the main element withdrawn from the soil by a crop of apples, in the application of manure we should govern ourselves accordingly.—*Proceedings of Ontario Fruit-Growers' Association.*

Preparing Potting-Soil.—When stacking turf intended to be used as potting-material the heap should not be made more than three or four feet wide. If of greater breadth the air cannot act freely on all parts of the mass, and consequently it is more likely to become sour. A week or so previous to being wanted is long enough beforehand to subject turfy materials to the preparatory process of chopping and turning and mixing the other ingredients thought desirable or necessary to the welfare of the particular kind of plant for which the compost is in preparation. For all plants requiring peat soil to grow in, I am in favor of its being fresh. All soils intended to enter into composts for potting should be collected in dry or frosty weather.—*Wm. Craig, before the Howick (England) Gardeners' Mutual Improvement Association.*

Local Fruit Districts.—Within a few years the eastern shores of Lake Michigan, particularly south of Grand Haven, have become famous for peaches. On the

western shore of the same lake the peach tree scarcely survives the winter and rarely yields fruit, while a few miles further to the westward the peach tree cannot survive, and only the more hardy varieties of the apple can be successfully fruited. On the east shore of the lake, however, apples and even peaches are said to succeed as far north as Mackinac, which is a degree north of the northern boundary of New York and Vermont.—*E. S. Goff, before the American Pomological Society.*

Trees for Arbor-Day Planting.—From long experience we have found that nursery-grown trees, or those which have once or twice been transplanted, are preferable. But if not convenient to get nursery trees, do not hesitate to go to the woods and dig elm, hard maple, basswood or linden, and ash. We would not recommend taking evergreens from the forest unless very small, and these are not desirable.—*Wisconsin State Horticultural Society.*

New Markets for California Fruits.—The time will soon be here that California must have another outlet besides the markets of the United States for her increasing crop. This is the case already with Florida, and to meet this state of affairs commencing with next season steamers will be chartered and a direct line of boats run between Jacksonville and London, carrying the surplus of Florida's early crop of oranges. This outlet will in time become a valuable one for California's products also. From September 1 to December 15 there is no Mediterranean fruit in the English market, and the oranges from Florida just fill the gap. Then the people have suddenly acquired a taste for our fruit. The prices obtained are far in advance of what the same would have brought in the American market or the Mediterranean fruit in the English market. In addition to the demand in England, Germany, France, Belgium and Russia will take large quantities. Russia is the greatest consumer of oranges among the European nations, and she likes them sour, too.

Impress upon your people the necessity of growing more lemons. It will surprise many to learn that there are more lemons consumed than oranges, but such is the fact. No country on earth can produce finer lemons than San Diego county, and if I had a train-load of your Bonnie Braes in New York Friday I could sell the entire lot in less than an hour for \$5 a box, provided the fruit was in sound condition. However, they are too fine to stand shipping. Experiment a little in the way of grafting until that difficulty is overcome, and you will have a fruit that will astonish the east.—*California State Horticultural Society.*

Irrigation in Market Gardens.—W. W. Rawson told the Boston Market-Gardeners' Association that he finds field irrigation to pay with certain crops, such as early cabbage, celery and cauliflower. The labor costs \$5 per acre, if a suitable irrigation plant is at hand. On 10 acres the cost of such a plant would be about \$1,000 and would consist of a windmill and steam-pump, tank and piping. Irrigation is indispensable in hotbed and greenhouse culture, but may be had by simply a windmill and tank for storage of water, costing \$100. Varnum

Frost questions the profit in field irrigation, but for green-houses and hotbeds some provision for watering is essential. Mr. Corey thought field irrigation unnecessary. More damage comes from too much moisture than from too little. Melons do better in a continuous dry year. The roots go deep into the soil in a dry time; if rain follows, the moisture drowns out the roots, the vines die and the immature fruit spots with rot. W. H. Allen said that if water cannot be had from the public service, a private plant is indispensable for hotbed and greenhouse culture. It pays to water early cabbage and celery. He irrigates by plowing a furrow along the side of these crops and allowing the water to run therein. Mr. Rawson said his plant cost \$6,000 and he got that sum all back by improvement of crops in field irrigation.

Cultivation of Native Fruits.—We have slighted our native fruits. In the old world a class of fruits have been developed which for thousands of years have been adapting themselves to soil and climate. We have sought to reap at once the benefit of that long process of improvement, by removing these fruits to our land and its widely different conditions, with many failures. The foreign grape we have abandoned. In its stead have sprung up a multitude of improved native grapes. Our raspberries, blackberries, strawberries and gooseberries of native stock are fast superseding foreign varieties. The best authorities now agree that American trees are the best for America. In every case the best improved native varieties of any tree or fruit surpass the best imported ones.—*A. M. Ten Eyck, before the Wisconsin Horticultural Society.*

The Transportation Problem.—The first essential is organization. Not for war but to prevent it. Fruit-growers should organize that they may deal with lines of transportation and be dealt with. Organization is the one instrument generally recognized and made use of in successful business affairs. The importance of each fruit-grower taking a personal interest in this matter cannot be too strongly urged. The benefits gained by the Fennville Fruit-Shippers' Association are recognized. There is not a fruit-shipper in the vicinity, no matter whether he favors the action taken by the shippers or not, who has not gained financially on account of the work accomplished through this organization. Very few of us, indeed, would like to see it suspended.—*West Michigan Fruit-Growers' Society.*

A Fine Hardy Lawn Plant.—I want to recommend the high-bush cranberry. It is a bright object on the lawn in winter. If you have a screen of evergreens and will plant some high-bush cranberries in front of it, they will form the most striking and pleasing objects on the lawn, for the fruit hangs on all winter.—*Mr. Watrous, before the Iowa State Horticultural Society.*

Pecan-Growing at the South.—The secret of success is found in planting the best varieties of pecans in good soil and in the thorough cultivation of the trees until they come into bearing. While the trees are young they will not interfere with the growth of any

crop it is desired to cultivate. The pecan thrives best in a generous soil, and unless this is rich, add muck, mulch or fertilizer. Attention bestowed on young trees will be richly repaid in rapid and vigorous growth. Transplant the pecan at the age of one or two years. Avoid older trees, for they are not apt to do so well unless they have been highly cultivated and well cared for in the nursery. One-year-old trees are most desirable. Pecan-culture is in its infancy and will make rapid advancement. There is no danger of overdoing the business, for the demand will keep pace with production; the man who plants now will reap his reward and leave a rich legacy to those who succeed him. We have record of one wild pecan tree which has produced more than 1,000 pounds of nuts in one season. Please estimate the value of that tree, had it been of the choice varieties. Hence, plant the best; it will repay you many fold. My interest increases with each year. I am now in the seventy-second year of my age, and as an evidence of my faith I will state that I have just finished clearing up a piece of new ground in which I shall plant a young grove this year.—*Col. W. R. Stuart, before the Mississippi Horticultural Society.*

Planting Forests for Profit.—The soil of exhausted hillsides is best renewed by a growth of trees and a deposit of leaf-mold. A young forest thickly planted must be a constant source of profit, after the first eight or ten years, through cutting to thin out and give room for proper development of tops. Lands once planted in valuable forest trees will soon be of greater value than an equal area of tilled soil. As the amount of the available timber supply diminishes, the value will increase. Now is the time to turn attention to trees as a farm product for profit. Farmers who are wise now will reap a rich reward. Trees need no cultivation, and require but little protection or labor compared with other crops. Western New York may well lead the way in systematic forest-culture. The lumber market is failing and the demand is great, with supply constantly decreasing.—*Genesee Valley Forestry Association.*

Always Pick the most Favorable Location.—When commercial peach-growing is to be made a specialty, the selection of a suitable location is of the highest importance. Comparatively small belts or tracts of country have special advantages in this direction that make them of superior value. Location includes climate. Extremes of heat and cold during winter are often the cause of failure. Frosts cause failure in many places otherwise favorable.—*Jan. F. Taylor, before the Michigan Horticultural Society.*

Stock and Scion.—Considering the influence of stock upon scion, or *vice versa*, G. C. Caston had noticed that the King apple was more productive and of a better quality when top-worked on the Talman Sweet. In fact he knows of no better stock for all sorts than this one. The Baldwin grafted on Early Harvest ripens before the proper time, as it also does on the Talman Sweet, while in the same orchard on winter sorts it ripens at the usual season.—*Ontario Fruit-Growers' Association.*

California's Wild Strawberries.—Two species of *fragaria* are indigenous to California. *F. Chilensis* is found close along the coast in the northern counties, has white flowers and perfect leaves, which are smooth and shiny on their upper surface. *F. Californica* is distributed throughout the interior of the state and differs from *F. Chilensis* by having sparingly villous leaves, not shiny on the surface as with the other species. Little attention has been given the wild strawberries on the Pacific coast. From observations made I believe that both species may be greatly improved by cultivation and that they are among the most promising of our wild fruits. I have noticed in several localities vines of both species which were thriftier and produced much larger and finer berries than the average. These were doubtless undefined varieties of nature's production, and clearly demonstrate that the species are both capable of great improvement. The necessity of constantly irrigating the improved varieties of strawberries which have been imported into California has been a great drawback to the general production and use of the fruit in the home garden. The necessity of irrigation might be overcome by selection and hybridizing varieties which naturally grow in the driest and most unpromising locations. Another point to be considered is the delicious sweetness and delightful aroma of our native berries, both of which qualities it is possible to perpetuate.—*Emory E. Smith, before California State Horticultural Society.*

Western New York Horticultural Society. (Continued from p. 192).—The black-knot of the plum, said Prof. Beach, is easy to exterminate. Early in spring cut out every affected branch and twig. Badly attacked trees should be headed back or cut down, or gone over repeatedly. Burn the trimmings. Do this for two or three seasons and you will see the last of the knots. Look sharply to the wild plums and cherries. Perhaps legislative enactment against the black knot might help to exterminate it. The remedial treatment of paring the knots off and painting the wounds with turpentine, linseed-oil and red oxide, etc., finds few endorsers. George T. Powell set 1,000 plum trees in a black-knot infested vicinity and watched and cared for them, but finally lost the whole through the criminal carelessness or laziness of a neighbor who kept an old hedge-row full of black-knots. Why should this be allowed? A resolution was adopted demanding that the legislature enact a law to enforce the cutting out of diseased plum trees. [It has since been introduced in the state legislature and will undoubtedly become a law.]

Mr. Wiley, Cayuga county, states that even good fruit improperly packed brought little or nothing; poor fruit never paid, no matter how packed, but good fruit properly packed always gave good returns. Among strawberries E. P. Roe was mentioned as a vigorous grower, ripening its fruit late. Triumph gooseberry proved a strong grower and good fruiter. It was free from mildew and sold well.

Irving D. Cook reported a great fruit yield from Genesee county. Yellow Transparent received favorable mention as an early apple. Fruit-trees by the roadside were

found to be a good investment. One man had a fine crop of Northern Spy apples from trees planted along the highway. The Anjou pear and German prune were recommended for roadside-planting. The impression prevails in the county that we have too many apples.

Mr. Hooker, of Monroe county, called the past year a good one for consumers; still, the growers were fairly well paid. There were no insects on plums, no scab nor fungus. Spraying is still neglected.

The Ontario county report speaks well of Sutton's Beauty apple, which may yet displace the Baldwin in Western New York; also of the Longfield, a fine sort, and MacIntosh Red, a valuable variety for the table. The early peaches came in competition with southern Crawfords, hence did not sell well. The early cling are all right for home use. The Salway peach was struck by frost about October 15, before it ripened. The fruit was gathered and put in the cellar, afterwards taken out and canned, proving exceedingly fine and good for the table, even when eaten fresh. It is a hardy, productive, late variety. Horton's River is hardy and productive. The Harris apricot and some others proved profitable in the county. The Field plum is early and good, somewhat resembling Bradshaw. Bartlett pears sold at one cent a pound to the canneries. There is more money in raising pears at \$1 per bushel, than in raising potatoes at 25 cents. Choice varieties of cherries brought good prices. Moore Ruby is a fine red currant.

Of the Gaertner grape, W. C. Barry says it is one of the Rogers hybrids that seems to have been overlooked. It is productive, handsome, one of the showiest, and well worth cultivation. Mr. Snow says it is good to experiment on, but not good to make money. The Rogers hybrids are not planted by the acre, simply because they are not certain and not productive enough to be profitable. Mr. Clark has about an acre of Rogers No. 4, which produces fairly well, but he does not get any more for them than for Concord, and would not enlarge his plantation. W. C. Barry thinks that the grower who has a good location near a large city, and will give this grape extra care, can make it profitable.

Do apple trees under constant clean cultivation incline to produce wood at the expense of fruit? was answered by Mr. Hooker in the negative. Trees of bearing age will produce more and better fruit under clean cultivation than under neglect. Mr. Bogue says cultivation should be given early in the season. Young trees heavily manured with stable manure and well-cultivated, bear later than if not so generously treated.

D. S. Willard replies to a query on Japanese plums. Among the three or four Botans first introduced under number, some are good and some are not. Burbank Seedling is one of the best and most hardy of the whole family. He has 40 to 50 specimens on 18 inches of wood. The quality is good. Mr. Van Deman says he has been watching it for three years. The fruit is of medium size, reddish purple with a beautiful yellow under-color, of high quality, flesh rich yellow, seed small, flesh clinging to stone. It blooms late.

Foreign and Native Trees and Plants.—Like the horse, the dog, and other domestic animals, the *Vitis vinifera*, from its long association, has become thoroughly subservient to man's uses and purposes. He may train it almost as he will, and yet it patiently submits, always yielding its precious treasure in the season of harvest. While it may be strong and vigorous, it is yet comparatively compact in its habit of growth, seemingly preferring to ramble near the surface of the ground rather than to mount, as will our American species, to the top-most branches and crags within its reach. Yet, again, the old world grape may be pruned to mere stumps, as a result of its long discipline, if not of its natural tame and domestic habit, while our American grape will utterly rebel and refuse to yield fruit, if not to live, when subjected to such a rigid regimen.

The American wild cherry (*Prunus cerastina*) is a much bolder straggling grower than its European congener the domestic cherry (*Cerasus sylvestris*), or even its more nearly allied foreign relative, the Mahaleb (*C. Mahaleb*). Our native wild plums (*Prunus Chicasa* and *P. Americana*) are each bolder and less symmetrical in their habit of growth than the European species (*P. domestica*). The native gooseberry (*Ribes hirtellum*) and the native wild currant (*Ribes floridum*) are stronger and more robust in habit than are the domestic gooseberry of Europe (*R. grossularia*) or the introduced garden currant (*R. rubrum*). None of the varieties of foreign raspberries (*Rubus idaeus*) will compare in boldness of growth and rambling habit with our native species (*R. strigosus* or *R. occidentalis*). The native strawberry (*Fragaria Virginiana*) unquestionably furnishes some of the most rampant growers belonging to the genus. In the genus *pyrus* (the pear and apple) we have but few native examples for comparison. The American wild crab (*P. coronaria*), however, while it may not be more vigorous than is *P. malus*, the cultivated apple from Europe, it is probably when left to itself less symmetrical in its form of growth.

Perhaps none of the introduced roses will compare with some of the native species in luxuriance of growth. None of the foreign junipers are so loose and straggling in their habit of growth as the common red cedar (*Juniperus Virginiana*). The Lombardy poplar (*Populus dilatata*) is much more symmetrical and compact in its form and less robust in habit than either of our well-known American species. When we compare the several introduced species of arbor-vitæ (thuja) with our native species (*T. occidentalis*), we find the same general results are obtained. The American larch (*Larix Americana*, tamarack) is not stronger, but is certainly less compact in its growth than is *L. Europæa*, the introduced species. *Tilia Americana*, the basswood or linden of our forests, differs essentially from its compact-growing European cousin (*T. Europæa*). The Norway maple (*Acer platanoides*), though a vigorous, strong grower, assumes without artificial restraint or training a low, compact and beautiful form, very readily distinguish-

ed on these accounts from our native maples. The native ash (*fraxinus*) of the various species is perhaps without exception a more slender and taller-growing tree than its European relative (*F. excelsa*). The Scotch and Austrian pines (*Pinus sylvestris* and *P. Austriaca*) are each bold, strong growers, but yet short-jointed and compact in habit as compared with *P. resinosa* our northern red pine, or *P. Strobus* the majestic white pine of Michigan and Canada. The balsam-fir (*Abies balsamea*), indigenous to the northern borders of the United States, is a much more aspiring tree than the noted silver fir (*A. pectinata*) of European origin. The horse-chestnut (*Æsculus Hippocastanum*) is a more compact and yet a more vigorous grower than its American cousin, the buckeye (*Æ. glabra*), and the same may be said of the Norway spruce (*Abies excelsa*), when compared with the wild spruces of our Canadian forests.—From paper by W. H. Ragan, read before the Indiana Horticultural Society.

Careful Selection for Improving Fruits.—My neighbor William Steele recently paid \$6600 for a two-year-old heifer which had never given milk, nor was there an absolute certainty that she would make a successful breeder. Why was such a price paid? Because she was the ideal type of one of the most illustrious families of the shorthorns. Her ancestors on both sides for many generations had been uniformly the greatest prize-takers at the largest stock shows in this country and Europe.

Plants are male and female, and governed by all the laws that rule the breeding of animals. Plants are subject to disease, and transmit their constitutional weakness with as much certainty as do animals, and manifest as great a tendency to revert and take on defects of ancestors. Look at the prize-winners at horticultural shows—people go through their orchards picking a specimen from this tree and from that until the exhibit is made up. The individual tree that is loaded year after year with the finest fruit, true to type, high in color, rich in flavor, its perfect foliage and smooth trunk indicating perfect health and hardness, is entirely ignored in the awards.

The same is true of superior individual vines or plants. They die in oblivion. I do not believe there is a commercial nurseryman in America to-day who seeks out these trees and plants and makes a special feature of propagating from them. It is a universal rule of nurserymen to take scions from nursery rows or any tree most convenient of the variety desired. Downing points out clearly that a graft from a diseased tree will transmit the disease to the healthy stock even if grafted a dozen times in succession. I believe this has more to do with failure of orchards than any other cause.

Year after year the strawberry-grower digs up plants between the rows where they have stood unprotected—freezing, thawing and heaving, under water or dried by the winds of winter—until their constitutional vigor is utterly destroyed. I do not know of a strawberry-grower whose plants are not more or less mixed with seedlings or spurious plants. No attention whatever is paid to selection.

The clamor is heard from one end of the country to the other for something that will equal the old Wilson strawberry of thirty years ago. Where it has been kept pure by careful selection it, has even now no equal among the perfect-flowering sorts. I have nothing on my farm that will approach it, and I have tried pretty much everything offered. Wherever the Wilson has failed you will find on careful investigation that no effort has been made to preserve its purity. Dealers prefer it, and many of my best customers will have nothing else. The Crescent is more vigorous and more productive, but like the Wilson, and for the same reason, has been given a back seat by many growers. As a cash-bag filler, these two are yet the champions if kept pure by proper selection.

A pedigree plant may be said to be one which possesses the best points of its variety in the greatest perfection, with the ability to transmit these characteristics to its offspring. The want of fixedness of the desirable features in our new varieties is the cause of failure when they pass out of the hands of the originators. Their changed conditions and different methods of cultivation render the bud-variation so great that for want of proper selection and exclusion of inferior plants their value is lost. No one can estimate the loss to fruit-growers from this cause. The truth is, we have gone wild over the introduction of new seedlings. Our fruit-lists are altogether too long. There is no earthly reason for continuing one-quarter of the varieties we now have. We have not made the substantial improvements we should have made

if we had devoted more time to the accumulation of the good qualities of the old standard sorts by propagating from those that produce the prize-takers. How shall we make these selections? My method has been first to study the variety until I had a true ideal of the type to work from. Study the plant, its habit and foliage, its fruit both on the vine and in the boxes. Fix these firmly in the mind, then go into the fruiting field to look for this ideal plant. Having found it, examine every leaf to see if its foliage is perfect and free from all disease. If the variety is deficient in foliage, its fruit too soft, or not of the desired form or color, select with a view to correct these deficiencies.

In case of a strawberry-plant, remove the fruit as soon as sufficiently developed to reveal its true character, that the plant may not be weakened. Stimulate it gently with liquid manure, and pot the runners and remove them to a bed specially prepared for the purpose. Next year use only plants taken from this propagating bed, and select again year after year. Never take a single plant to the field not perfect in all respects, nor use the tip-plants from between the rows. Keep the propagating-bed carefully mulched during the winter. You will be surprised at the uniformity of fruit in color and size, as well as the prices you will command. Patience and experience will be required; but the compensation in quality of fruit and consequent pecuniary gains will be ample.—*Extract from paper read by R. M. Kellogg, before the Michigan State Horticultural Society.*



EVEN-TIME

O time most meet for musing,

'Long wood-paths dark and dim,

When the silent, dreamy twilight

Comes softly stealing in!

When the bees have hushed their humming,

And butterflies gone to rest,

And the robin, with drowsy warble,

Calls "Good-night," from his nest.

When the dove's low cry grows fainter,

As she mourns herself to sleep;

And the owl, with plaintive hooting,

Lone watch begins to keep.

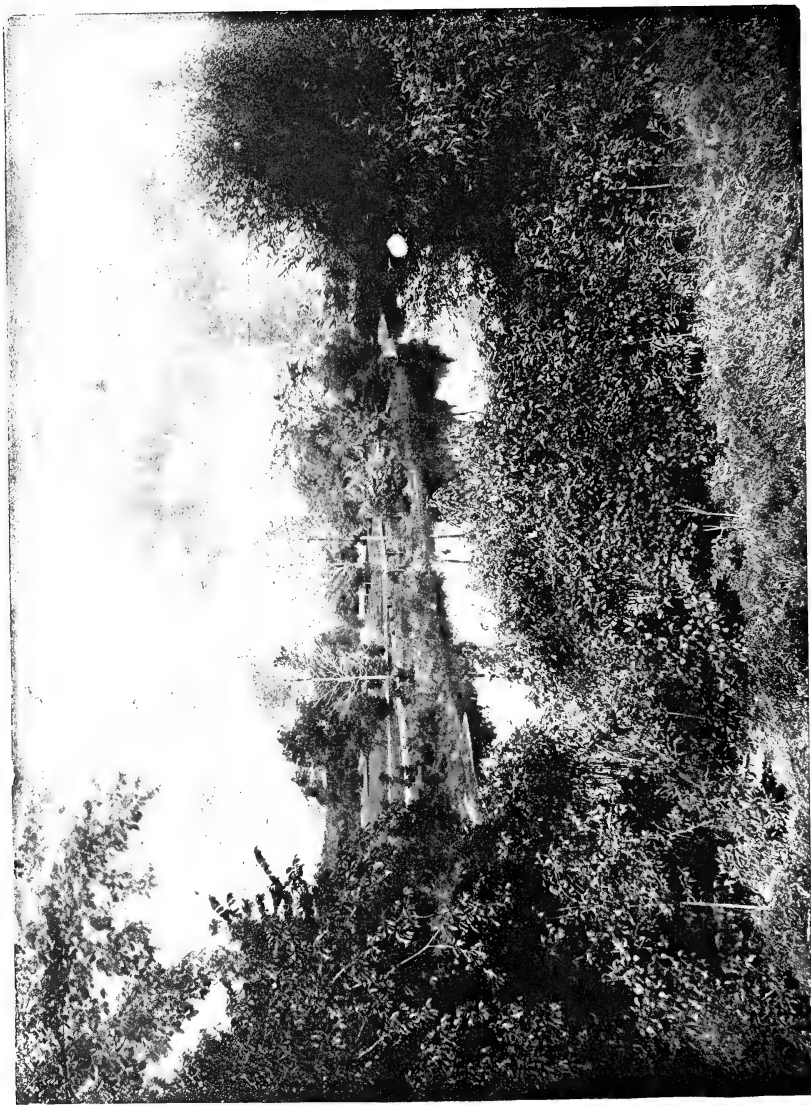
Meet, indeed, such time, for musing

In the grand old shadowy wood;

Sweet time to wander lonely

In meditative mood.

M. LOUISE BURNITE.



A VIEW IN WASHINGTON PARK, CHICAGO.

American Gardening

The American Garden—Popular Gardening

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THE DEVELOPMENT OF LANDSCAPE.

Hast thou a heart to prove the power
Of a landscape lovely, soft, serene?
Go—when its fragrance has left the flower,
When the leaf is no longer glossy and green,
When the clouds are careering across the sky
And the rising winds tell of tempest nigh,
Though the slanting sunbeams are lingering still
On the tower's gray top and the side of the hill—
Then go to the village of Playford, and see
If it be not a lovely spot;
And if nature reveal its charms to thee
Thou wilt love it and leave it not
Till the shower shall warn thee no longer to roam;
And then thou wilt carry its picture home,
To feed thy fancy when far away—
A source of delight for a future day.
Its sloping green is verdant and fair,
And between its tufts of trees
Are white cots peeping here and there
The pilgrim's eye to please:
A white farm-house may be seen on its brow,
And its gray old hall in the valley below
By a moat encircled round;
And from the left verge of its hills you may hear,
If you chance on a Sabbath to wander near,
A Sabbath-breathing sound.



BEAUTIFUL landscape inspires a love for nature that will live long after the particular incentive has been forgotten. Repeated associations with favorite spots make them seem more beautiful because our memory pleases our minds, while the sight pleases our eyes. We may drive through extensive parks and view the most

elaborate attempts of human skill, or pass through the ravines and over the hills of nature's reservations and leave them with but the one cherished impression of grandeur. We have not studied the elements or their relations to each other as they unite to form so pleasant a picture to the eye, nor have we stopped to analyze the subtle yet pervasive power of harmony in diversity.

"Effective landscape-gardening is an art which is only acquired by study, taste and judgment," and it is seldom that the artist is given the freedom of action necessary to work out his conception, because of expense. The development of a landscape in accordance with the elements of nature demands a familiar acquaintance with plants and trees, as no immediate effect can be made such as is planned in the mind of the artist. This and other considerations make it absolutely necessary that the plan or conception be the work of a single mind.

Imagine a painting that has passed under the hands of several artists before its completion. However successful the artists, the picture would lack essential harmony of thought. It is not often, however, that extensive grounds are transformed in the short time allotted to one man, and therefore landscape taste is more frequent in small pictures having home as the central thought.

We speak well of the man who displays an appreciation and taste in the surroundings of his home, and ascribe to him an intelligent mind and approachable nature. Numerous residences in suburbs or neighboring villages of large cities could be cited to indicate the recent and rapid development of landscape art. It is pleasant to note that the early tendency to formal or purely conventional features of ornamentation is giving place to graceful lines, natural forms and groups. It indicates that Americans are no longer imitating foreign ideas, but are manifesting an individuality in their display of nature's elements that is peculiar to Americans. Native plants are more generally grown, which fact means a subsequent improvement in their varieties. And the American wild-flower clubs scattered over the country are doing a good work in preserving and popularizing the rare and neglected beauties of our fields and forests. Certain principles or rules may be noted in the art, but rules and taste often are at war. Rules in hands lacking taste are dangerous. However, four points are to be closely guarded and carefully considered: lines, topography, form and color.

The effect of lines marking topography, walks and drives is often overlooked. These should be simple, graceful and supplemental. An architect in planning the elevation of a good house aims to preserve certain prominent lines as a basis for ornamentation so that from whatever point the eye views the building the element of *unity*, so essential in every plan, is observed. Likewise the lines of walks and drives as well as the nature of the surface must determine the kinds and position of ornaments used on the grounds. While in buildings the lines are for the most part straight, in lawns the most pleasing effect is attained by use of curves. These should not however be without an *apparent* cause. A rapid rise in the surface, an obstacle to be avoided, or a point to be reached in passing, are causes for greater or less curves. Gracefulness alone is cause for only a slight amount of curves, where surroundings and purpose do not compel a straight line. Irregular curves are better than well-defined parts of circles or ellipses. These lines should be so related as to make access easy between all important points. There are also to be considered the "lines of sight," which are imaginary lines radiating from desirable points of observation. These must be considered at the time of planting as eventually becoming trees and shrubs, that even when they are grown the house may not be concealed as behind a hedge.

The most notable example of landscape work in which the feature of straight lines in walks and drives becomes a painful one is Hyde Park, in London. All lines of passage are perfectly straight, crossing meadows and forests at angles somewhat like the threads in a spider's web. About the year 1730 a large body of water was introduced (the Serpentine), but no care was exercised to give it a natural or even graceful outline. The roads have been made from time to time, without a curve. What is called Rotton Row (a corruption of the French *route*

du roi) was originally the passage for the king and his cavalcade between Westminster and his palace of Kensington. It is a mile long and 90 feet wide. But contrasting favorably with Hyde Park are the 1,000 acres of Golden Gate Park, San Francisco, or the 800 acres of New York city Central Park, in neither of which are any straight lines found, with the exception of the mall in the latter, about $\frac{1}{4}$ -mile long; yet there are 15 miles of drives and 28 miles of walks in Central Park alone.

Lines of sight should command considerable range and special features should not be too closely placed. A broad expanse of level or rolling sward and water are two essential elements of surface to lend quiet and peacefulness to a landscape. The absence of grass in a large part of Golden Gate Park gives a desolate aspect to one accustomed to eastern meadows. The bare sand-hills in the extreme part of the park appear like the dim outline of distant mountains. This appearance is made more real by the high steep hills with their winding bridle-paths near to the improved portions.

An effect with trees is not at its best until the hand of the planter disappears and the trees show forth the beauty that comes with years. Among the large landed estates of England the greatest pride is attached to those having the largest and oldest specimens—a safe resting-place for pride, since no money can make a new planting excel.

The most beautiful trees are not of the most recent introductions, nor of the most expensive varieties. A lawn that has upon it nothing but rarities is a simple exhibition of extravagance. We expect to find more or less of maples, spruces and arbor-vitæ, according to the extent of the grounds ornamented. Then with such a basis of well-known trees, a single specimen of any other will suggest to the mind that it must be more than common, and will thus attract the attention due its merits.

G. C. Butts

BERNARD BARTON

A GARDEN AT LAKE WORTH.



THE VICINITY of Lake Worth, Florida, as regards climate, is destined to be the Nice of the American continent. The happy mingling of warmth and humidity, toned, tempered and stimulated by the salt breath of the sea, constitutes the ideal atmospheric condition for the weak and debilitated.

The pathetic and prophetic anticipation of events that led Ponce de Leon to search for the fountain of perpetual youth on the very peninsula where daily recurs the miracle of rehabilitating and perpetuating human existence imperiled by disease and age stands without parallel in human annals. The good things for humanity shadowed forth in dreams to the knightly Ponce are being made more available each year by men who, in obedience to impulses as mysterious to some people of to-day as

were those of De Leon to his comrades, are and have been engaged in ornamenting, tilling and planting in this favored locality—mysterious, because, like Charles Lamb, we love the sweet security of streets, and cannot conceive how men of wealth and activity can be content in the comparative isolation enjoined upon the pioneer horticulturist in such remote localities.

The fullest practical exhibit of the latent possibilities of Lake Worth's soil and climate are displayed on the grounds of R. R. McCormack. They represent five years of intelligent labor, ample means and unflagging enthusiasm, with results that must be gratifying to the fortunate owner. Fifty-two acres are devoted to flowers, fruits and vegetables; it is in reality a private experiment station, where in successive years has been tested whatever will take kindly to the conditions of this *morceau de tropic*, which nature has placed here in a moment of haste, as a hurried housewife might place a piece of Dresden china beside a cup of common delf. Wandering

wave and winged wind may have wafted seed and germ hither, and they yielded gracefully to the change and rooted themselves permanently amid their new environment. These tropical tendencies necessitate experimenting and feeling of the way as to adaptability, manner of growth and special culture. The beautiful as well as the useful has received attention.

Two acres border on the lake and are faced by a stone wall; the remaining acreage runs back in a slope that terminates in a ridge crested with pineapples. The residence is near the center, with a north front looking to-

secluded and circuitous paths one comes suddenly upon a *Poinsettia pulcherrima*, a blaze of scarlet and gold, or *Acalypha Macafeana*, exhibiting such hues and proportions as could only be found in a climate like this. On December 11 there were in bloom a large white clematis (Emma Bateman, I think), callas, geraniums, bignonias and an Arabian acacia, which for delicate and delicious perfume exceeded anything with which I am familiar. If they have many such flowers in Arabia, it is deservedly called "Araby the blest." Alocasias of magnificent proportions with immense leafage mingle with the floral



VIEW IN THE SUBTROPICAL GARDEN OF R. R. MCCORMACK, NEAR LAKE WORTH, FLORIDA.

wards the lake, from which it is separated by long colonnades of cocoanut trees. These graceful trees, growing in parallel lines, their gray stems sloping smoothly up to the crown of feathery green plumes, bear more than a fancied resemblance to the stone columns skirting a cathedral aisle, and the dim religious light hardly permits the grass to grow. On either side are flower-beds, notably three large ones watered by subirrigation, containing fancy-leaved caladiums. On either side of the fountain's stone basin is a bed of crotons, the finest private collection we have seen. Concrete walks are bordered by achyranthes, chrysanthemums, etc. Wandering along

treasures from many latitudes. The *Russelia juncea*, so difficult to cultivate successfully in the north, here sways its long branches of delicate green, scarlet-tipped, in the most graceful manner imaginable.

Our visit in one respect was ill-timed, as it was the season for planting rather than exhibiting; but even in the transition stage its perfumed walks and flower-fringed ways were goodly sights to see.

Leaving them reluctantly as only half explored, we regaled our vision upon lime, lemon and orange trees, bearing their golden fruitage, the sour-sops and sapodillas, as new to us in nomenclature as they were in taste, tall

tamarinds with drooping foliage, the mangoes, the dates and alligator pears; the long rows of pineapples, embracing best varieties, one a specially imported species from the Azores. The date-palm requires to be twenty years of age before bearing, and the trees are staminate and pistillate. Leaving fruits, of which we have given an imperfect list from memory, we visited the green peas, well-grown lettuce, ripe tomatoes, half-grown squashes and cucumbers ready for gathering. As we left the vegetable garden we passed beds bordered with *Acalphya*

marginata in all shades. The prettiest design for a flower-bed, of the many in these grounds, was a crescent inclosing a star; it may be common, for all we know, but it is very effective.

We have only hinted at what might furnish material for a long article. Lake Worth, in the arts that give grace, beauty and infinite variety to human existence, has been preparing herself for the greatness of her inevitable destiny as a natural sanitarium.

Florida.

EMILY HARRIS SHERMAN.

THE WAR AGAINST FUNGI AND INSECTS.

LATEST INFORMATION ABOUT SPRAYING AND SPRAYING-MIXTURES.



SPRAYING must be done to insure success in fruit growing, and to some extent in vegetable culture. "To spray or not to spray" is no longer the question, since on this point all the authorities now agree. "Let us spray!" is the exhortation of progressive growers everywhere. Neither is there any remaining question or doubt about the proper time when the operation should be performed. Everybody now knows, or has been told time and again, that spraying for fungi must begin early. Grapevines should be thoroughly and profusely sprayed—almost soaked—with a simple strong solution of sulphate of iron or copper even before the buds burst; and spraying with the ordinary mixture should follow when the first leaves appear, and be repeated every few weeks in the first half of the season. Fruit-trees, to be protected against the attacks of scab and other diseases, should also receive their first spraying on the first appearance of their leaves, and succeeding ones at reasonable intervals, according to season and danger of attack. The proper time to spray for codling-moth is immediately after the blossoms have fallen.

The great problem, however, which confronts the fruit and vegetable grower is the question of what spraying mixtures to select, and how to procure and prepare them. The whole matter of spraying and spraying mixtures is a new science yet in a state of evolution, and the teachings and doctrines are subject to constant and perhaps radical changes. Nothing is yet definitely settled; all is uncertainty. The mixtures that are accepted as "best" to-day may be discarded to-morrow, and certainly will be replaced by better ones in the near future. The advice which we give now is intended only for the present. To write books on spraying for permanent use would be a thankless task.

The tendency in the evolution of spraying mixtures is in the direction of greater dilution, therefore of reducing the expense and lessening the dangers and inconveniences of the treatment.

The uncertainties in regard to what mixtures should be recommended for general use render the following—

from the chief of the Division of Vegetable Pathology Department of Agriculture—of special interest:

1. "What are the latest formulas for preparing the Bordeaux mixture and ammoniacal solution of copper carbonate?"

We shall recommend for the coming season the following:

Bordeaux mixture.—Copper sulphate 6 lbs., fresh lime 4 lbs., water 45 gallons. Place the copper in a barrel holding 45 gallons and add 10 or 12 gallons of water. Stir until all the copper is dissolved. Slake the lime in a suitable vessel. When completely slaked add enough water to make a thick whitewash. Pour the latter into the barrel containing the copper solution, using a gunny-bag as a strainer. Add sufficient water to fill the barrel, stir, and the mixture is ready for use.

Ammoniacal solution of copper carbonate.—Place 5 ounces of copper carbonate in a water-pail and add enough water to make a thick paste. Then pour in three pints of strong ammonia, and stir until all the copper is dissolved. If the copper does not readily dissolve add more ammonia. When the solution becomes perfectly clear dilute to 45 gallons.

2. "What combination mixtures (insecticides and fungicides) are best and safest?"

A combination of London purple or Paris green with Bordeaux mixture is the only one we have tested sufficiently to warrant recommendation. We ought also, before unqualifiedly recommending this, to investigate by analyses the matter of its adherence to the fruit after harvest.

3. "Is there any way to dispense with the troublesome Bordeaux mixture by using others, especially the carbonate of copper solution, more freely and frequently?"

By using Bordeaux mixture for the first two or three sprayings, then following with the ammoniacal solution, any trouble that might result from spotting will be avoided. All things considered, Bordeaux mixture is unquestionably the best fungicide we have. Used intelligently, it is safe, cheap and perfectly harmless. Very few people take the trouble to make the mixture properly, and as a result they have trouble in getting it through the nozzle. This may be avoided by a little care.

4. "Is it probable that we shall yet find better fungicides than any now known?"

We have now in our laboratory more than a hundred preparations, many possessing valuable fungicidal properties. Some of these are perfectly harmless, are almost as cheap as water and fully as easy to apply. A few more years will reveal some wonderful improvements in the direction of fungicides.

5. "Can we combine the ammoniacal solution with Paris green and other arsenical insecticides?"

It will be observed that Paris green may be one of two compounds: (1) Schweinfurt's green, or (2) Scheele's green. The first a simple neutral arsenite of copper, the latter an aceto-arsenite, both of which are soluble in ammonium hydroxyde. According to Frey, No. 2 is formed by mixing ammoniacal solution of copper with arsenic acid, hence it is probable that the compound is soluble in an excess of the ammonia, and the danger is

in applying a solution containing a soluble arsenite. According to Van Slyke, London purple is a mixture of the arsenite and arsenate of calcium, and arsenite and arsenate of rosaniline. All four of these compounds are soluble immediately in water and become more so on standing in contact with large quantities of water. They are also, according to Kilgore, very soluble in ammonia, hence the addition of London purple to the ammoniacal copper carbonate would give you a solution containing arsenic in a soluble form, which is known to be very corrosive in its action upon the foliage.

B. F. GALLOWAY.

[We are probably somewhat surer of our ground in regard to insecticides, and the only precaution to be given is to add a little lime to the solutions, and water enough to make them harmless to the foliage. Don't put Paris green on peach trees, especially not without lime. For plum trees use 250 gallons of water, and for apple trees 200 gallons of water to each pound of poison, in order to obtain the proper strength.—Ed. A. G.]

THE RHAPIS PALMS.

THE genus rhaps among palms belongs to the slender-growing class of that valuable family of decorative plants. In habit all the species are free and graceful, the leaves being fan-shaped, and they are at once among the

very finest plants we have for the conservatory, the window-garden, and for summer bedding in the subtropical garden. Not only are they among the most ornamental of plants, but to this quality may be added a not less important one—that they are capable of withstanding, unharmed, a considerable amount of rough treatment.

The most generally grown species is *R. flabelliformis*, of which it affords us pleasure to present a fine engraving of a specimen growing in Horticultural Hall, Fairmount Park, Philadelphia. This elegant slender-growing plant, which forms a beautiful object for the window or for the decoration of apartments generally, is equally at home in the stovehouse or greenhouse. The stems are slender, the leaves flabellate, upon short footstalks, and of a dark green color. The leaves are very persistent, so that a plant with a stem of six feet may be frequently seen with perfect leaves down to the bottom. Walking-canes are imported from its native regions in China and Japan, under the name of ground-rattans. There is a beautiful variegated variety of the foregoing known in the catalogues as *R. flabelliformis variegata*. It is characterized by broad longitudinal bands of white and yellow, which give the leaves a strikingly handsome character. It is quite rare in cultivation. Another species with larger leaves than the first named, but resembling it in other respects, is

R. humilis. A peculiarity of this is that the segments are more pendent, rendering it a beautiful ornament. It is a native of Japan.

The rhapses are of easy culture. For soil they prefer loam and peat in equal parts, with a little sand. They



RHAPIS FLABELLIFORMIS. (From specimen in Horticultural Hall, Fairmount Park.)

sucker somewhat freely, and may be increased in this way, and also by seeds when such are obtainable.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XIX.

A CONSIDERATION OF THE NEEDS OF THE SMALLER GARDENS.

REQUESTS have been received from several subscribers for suggestions on treating small gardens or garden-plats that are to be devoted largely to flowering plants or shrubs. For the purpose of illustration we take the diagrams Figs. 1 and 4, which represent actual gardens.

The first diagram is of a garden 100 feet long and 30 feet across at its wider end. It extends to the left of the dwelling, and has been planted in the present style for

with the place, it was a real pleasure to have the owner apply to the editor for whatever assistance he might be disposed to offer in the way of rendering the plat more beautiful and interesting.

This garden is fairly representative of hundreds of others in the following particulars:

First, the owner is possessed of such a love for beautiful flowers and plants, that she is bound to have every available foot of garden space devoted to them; second, she is intimately acquainted with annuals and their culture, and on these she depends for almost the entire display made—by no means an unattractive one.

The first principle lacking here is the broad one, that no plat of ground, whatever its size, can possibly look so well if planted solidly with flowers (aside from walks) as when much less space is given to flowers and the curtailment made up by a fair breadth of greensward. In the case of Fig. 1 there is no grass, the entire surface being given up to beds of annuals with narrow walks between. In nature the grasses clothe the landscape, except where masses of trees and shrubs, or single ones, appear, seeming to spring out of the grass. Nothing can be more satisfactory and refreshing than a beautiful landscape, hence we should seek the secret of its charms for use in our gardens. Flowers are like ribbons, jewels and other embellishments in personal attire—most effective when made to adorn rather than when used so excessively as to obscure the object that they should adorn.

To apply this principle to the garden under

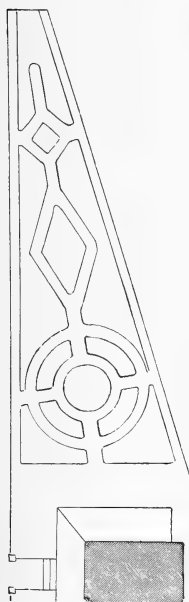


FIG. 1.—INSTANCE OF OVER-PLANTING: ALL FLOWERS AND NO GRASS.

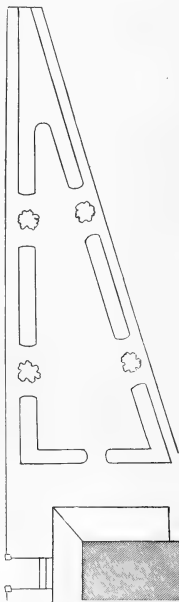


FIG. 2.—FORMAL BEDS OF FLOWERS IN THE GREENSWARD.

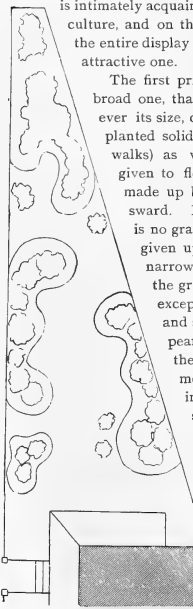


FIG. 3.—IMPROVEMENT OF FIG. 1 IN THE NATURAL WAY.

two years. It being conspicuously in view from the trains of a railroad over which the writer passes occasionally, he has never failed to notice the bright little garden in his trips that way in the summer, and to admire the owner's passion for having as many flowers as possible in the small area. Being thus somewhat familiar

discussion two diagrams are shown in Figs. 2 and 3. The first is after a more artificial order than the latter, and might suit some tastes better. It is patterned upon a style of lawn embellishment often employed by French gardeners and seen frequently about the city of Paris. It is a judicious blending of the natural and the formal

styles of ornamentation, and is usually quite effective. Its redeeming feature is the broad central area of grass, which, by extending at a few places to the extreme edge of the plat and connecting with a strip of grass that lies outside the shrubs and flower-beds, imparts an idea of the presence of the largest possible lawn area the place will admit; and this liberally embellished with flowers. By this means, although the actual surface devoted to flowers is less than in Fig. 1, who can doubt that even if given proportionately more pains in the choosing and care of the lesser number of plants used, the effect would be more pleasing in the one case than in the other?

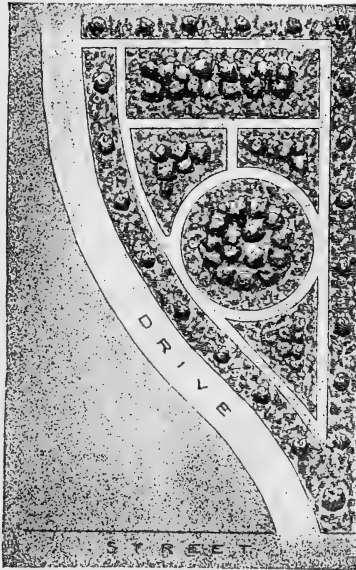


FIG. 4.—A POOR DIVISION OF LAWN AND FLOWER-BEDS.

Besides seeking to gratify the eye, every gardener should aim to provide in the garden that which will rest the tired brain. Is it not clear that the plan showing an ample sward area possesses restful quieting powers wholly lacking in the other?

A step farther is taken in Fig. 3. Here, besides providing an ample grass area an irregular style of outlining and locating the beds is adopted, in imitation of the irregularity that so generally prevails in natural landscapes. What is gained by this over Fig. 2 is that such an informal arrangement will please and rest the mind in a way not possible to the evenly balanced, straight-lined features of the other. At first glance one might feel

that the regular garden of Fig. 2 was prettier than the irregular one; but let each be visited daily the season through, as a garden-lover would desire, and in time the pretty, formal features of the first ones would become so fixed in the mind as to appear monotonous when compared with the informality of the last, which, with its charming irregularity, could not be so easily retained in memory. The fact that in such irregularity the plan as a whole cannot be apprehended from any one point, imparts both interest and restfulness to the visitor.

The natural or irregular style of lawn arrangement need not be confined to areas of considerable extent. It

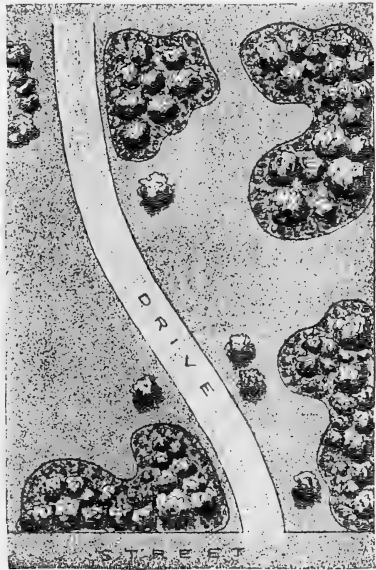


FIG. 5.—SUGGESTED IMPROVEMENTS FOR THE GARDEN OF FIG. 4.

is of use in treating the smallest areas. If those who take a contrary view will follow the writer in his jaunts through meadows, wilds and forests, he will undertake to show charming bits of natural scenery in grass, flowers, bushes and vines contained within nooks and corners as circumscribed as any that fall to the lot of landscape-gardeners to treat, which are perfect models in their way of what we would delight to see used in ordinary garden adornment.

One of the peculiarities ascribed to the garden of Fig. 1, as seen by the writer, was the free use of annuals. The owner we know will permit us to suggest that no garden of such extent can be made so attractive by the use of annuals

alone as if mingled with a good assortment of hardy perennial plants, shrubs and vines. Indeed, there is so much satisfaction in employing the woody growths that we should like to see them used quite freely here, especially if plan 3 is adopted. Our preference would be a fine assortment of hardy flowering shrubs, with perhaps a few dwarf evergreens located somewhat centrally or towards the back end of the several borders, and lower-growing annuals and perennials, hardy and tender, placed next the margins. A garden devoted wholly to annuals is quite sure, sooner or later in the season, to look incomplete—a defect which the presence of a goodly number of vigorous clean-leaved shrubs will go far towards offsetting. Farther on we will give a list of stock in the lines named.

In our next illustration, Fig. 4, we have another example of a plat devoted entirely to flowers and walks, when a liberal sward of grass would greatly improve the effect. The lawn across the drive seems not to be embellished at all, while the floral plat is all embellishment with no lawn.

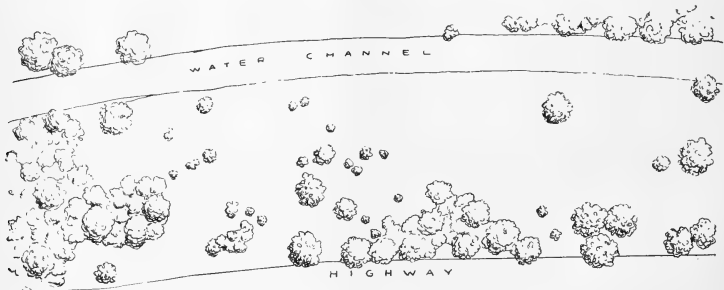


FIG. 6.—A SKETCH SHOWING NATURE'S METHOD IN ARRANGEMENT OF PLANTING.

The principles applied to Fig. 1 are of equal force in the present case. Inasmuch as the shape and other circumstances differ materially, we suggest in Fig. 5 an arrangement for this plat. The embellishments are introduced on both sides of the drive, as the grass is also carried in liberal measure to the right of the drive.

SHRUBS AND PLANTS IN THEIR ORDER OF BLOOMING.

In response to a special request we publish a list of choice hardy flowering shrubs and plants, which will give in turn their bloom the season through in the latitude of Niagara Falls:

FLOWERING IN APRIL.—*Shrubs:* Mezereon pink (*Daphne mezereum*), golden bell (forsythia), Cornelian cherry (*Cornus mascula*). *Herbaceous Plants:* *Adonis vernalis*, wall-ress (arabis), glory-of-the-snow (chionodoxa), winter aconite (eranthis), dog's-tooth violet (erythronium), snowdrops, hepaticas, narcissus, crocus, early tulip, saxifraga.

FLOWERING IN MAY.—*Shrubs:* Japan quince, flowering plum, broad-leaved plum (prunus), flowering almond,

barberry, Thunberg's spiræa, plum-leaved spiræa, lilacs of many sorts, rough-leaved viburnum (*V. rugosum*), lantana-leaved viburnum, bush-honeysuckle, tree peony, tamarisk (tamarix), wistaria, flowering currant, rhodotypos, exochorda, mahonia. *Herbaceous Plants:* *Anemone pulsatilla*, *Asperula odorata*, daisy (bellis), marsh-marigold (caltha), lily-of-the-valley, perennial candytuft, moneywort, hyacinth, grape-hyacinth, moss-pink (phlox), polyanthus, blood-root (sanguinaria), trillium, periwinkle, violet, garland-flower, *Daphne cneorum*, dodecatheon, double rocket (hesperis), German iris, *Lychnis viscaria* and others, lungwort (mertensia) valerian (polemonium), ranunculus, *Veronica amethystina*, etc., bleeding-heart (dicentra), crown-imperial and guinea-hen-flower (fritillaria), fennel-leaved peony, thalictrum.

FLOWERING IN JUNE.—*Shrubs:* Silver-bell shrub (halasia), lance-leaved spiræa, Josika's lilac, garland mock-orange, double-flowering mock-orange, large-flowered mock-orange, Japan snowball (viburnum), graceful deutzia (*D. gracilis*), double deutzia, weigelia in numer-

ous varieties, dogwood, white-fringe (chionanthus), elder, clematis, early roses, colutea, calycanthus, rhododendrons. *Herbaceous Plants:* Bugle (ajuga), crimson mallow, campanulas in variety, crosswort (crucianella), garden pinks (dianthus), ornithogalum, squills, sea-pink (silene), sedums (dwarf), *Agrostemma coronaria*, *Anemone Pennsylvanica*, anthericum, delphiniums, sweet-williams, German irises, evening primroses (œnothera), spiderworts (tradescantia), columbines, *Baptisia Australis*, centaureas, clematis (bush), *Doronicum Caucasicum*, day-lilies (hemerocallis) *Lychnis Chalcedonica*, perennial poppy, feverfew, goat's-beard (*Spiræa Aruncus*), calystegia, *Dictamnus Fraxinella*, peonies.

FLOWERING IN JULY.—*Shrubs:* Billard's spiræa, Fortune's white spiræa, Japanese spiræa, climbing roses, clethra, stuartia, Ledebour's bush-honeysuckle, climbing honeysuckle, corchorus, eleagnus. *Herbaceous Plants:* *Tunica saxifraga*, *Dicentra eximia*, plantain lily (funkia), *Cypripedium acutifolia*, blazing-star (liatris), perennial lobelia, self-heal (prunella), *Sedum telephium hybridum*, milfoil (achillea), *Campanula*

pyramidalis, American senna (cassia), lilies in numerous species, *Clematis tubulosa*, cone-flower (echinacea), globe-thistle (echinops), epilobium, Japan iris, mallow (*Malva moschata*), dragon's-head, *Spiraea palmata* and *venusta*, *Valerian officinalis*, bocconia, *Galetia candida*, everlasting-pea, hollyhock, asclepia.

FLOWERING IN AUGUST AND LATER.—*Shrubs*: Plumed hydrangea (*H. paniculata grandiflora*), oak-leaved hydrangea, purple bramble (*Rubus odoratus*), althæas, double and single (hibiscus), mist-tree (*Rhus cotinus*), Chinese tamarisk, trumpet-flower (tecoma), clematis. *Herbaceous Plants*: Crimson mallow, *Campanula carpatica*, autumn crocus, *Dianthus deltoides*, gentians, hellebore, *Sedum spectabile*, achillea, allium, asters, mist-flower (conoclinium), plantain-lilies, *Lysimachia clethroides*, œnotheras, *Stokesia cyanea*, *Aconitum autumnalis*, Japan anemones, *Veronica subsessilis*, *Chelone Lyoni*, *Desmodium penduliflorum*, eupatorium, vernonia, *Euphorbia corollata*, *Gaillardia cristata grandiflora*, *Rudbeckia Newmanii*, *Chrysanthemum lacustre*, golden-rod (solidago), eulalia, *Helenium autumnale*, perennial sunflower, knotweed (polygonum).

And now let us turn to an illustration of a real landscape, shown in fig. 6 on the opposite page—a meadow which supports numerous trees and shrubs, lying about one mile from the writer's home. The sketch is in no

sense an imaginative one, but shows the place as correctly as it was possible to do without a careful survey. The area embraced by the diagram is about eight acres. The growth is chiefly elm trees, willows, alders and elders, the ground being somewhat marshy in character.

What exquisite freedom is shown in the distribution of the woody features of the area? Notice the bare stretch of open meadow lying centrally and toward the water-front, and the few heavy masses of trees and shrubs in view or suggested—for that one to the extreme left consists of an almost solid mass of shrubbery, extending nearly the full width of the tract and for some distance beyond the limits of the illustration.

Given a park or ample grounds of such size and shape to embellish, and who might not wish to transplant this landscape just as it is to his domain? And yet the landscape-gardener has great advantages over nature in work of this kind. He can follow her matchless patterns in grouping, but instead of confining himself to the few species of trees or shrubs that may prevail in any given spot, he can draw from many places in near latitudes and in two zones the world around for a stock of beautiful woody growths.

It will be a fortunate day for landscape-gardening art when our gardeners will draw their lessons as well as their material largely from nature's own storehouse.

FLORAL BEAUTIES OF OUR BOGS AND PONDS.

WATER-LILIES AND OTHER EQUATIC PLANTS.

(continued from April AMERICAN GARDENING.)



HE only other species of nymphaea known to be indigenous to the United States is the yellow water-lily of Florida, first made known to science in Audubon's "Birds of America," published in 1843. He represents a swan swinging among a lot of yellow lilies, which he calls "*N. flava*, Leitner," but gives no description whatever of the plant. Botanists for a time regarded this lily as

a mere creation of the artist's fancy. Mrs. Mary Treat, of Vineland, New Jersey, rediscovered this plant and described it in *Harper's Magazine* for August, 1877. Leitner, whose name was added to the name of Audubon's lily, was a young German botanist, who collected in Florida. He was killed by the Indians. The plant found by Mrs. Treat was identified with Audubon's plate. Undoubtedly the drawing was made from plants that Leitner collected in Florida, although the swan represented with it has never been known so far south.

Mrs. Treat says: "On my excursion in the rowboat I was attracted to the nearest cove, where acres of water

were covered by the beautiful variegated leaf of a strange water-lily which bore yellow flowers. I saw it was a nymphaea, but its manner of growth and whole appearance were so unlike our white water-lily that I knew it must be a distinct species of which no mention was made in the text-books of Gray or Chapman. The beautiful leaves lie thick upon the water, and in May, when the flowers appear, it is one of the grandest sights I ever beheld. I have traced it about forty miles along the St. John's river."

In rootstock and its manner of growth *Nymphaea flava* is different from the white lily, although the flower is similar. The root is upright instead of horizontal, and is made up of scales like a true lily-bulb. They throw out thready points at first, which proceed onward and finally make young plants.

Some dealers have advertised it as hardy. I tried to winter a plant in the cellar and lost it. I planted a half dozen in the pond one fall, but they never grew. I put out several in the spring two years ago, only one of which gave me any bloom while none were wintered, and I bought another this year which shows no signs of life. In order to amount to much they must grow where they can remain through the winter, for their manner of growth requires at least two years for their full development.

The catalogues of various dealers describe many foreign species of nymphaea and others of garden origin,

all requiring the same general treatment, excepting perhaps that the tender species require a little coaxing. Instead of putting a dormant plant into deep water, which is always cold at the bottom, it should be first set in a pot in shallow water, where the sun will warm it, and after attaining a good growth transferred to deeper water. A strange thing about many tender species is that they will make a wonderful growth and yield flowers abundantly in one season, even with seedling plants, whereas the seedlings of our native species do not bloom until the second year.

Nymphaea Devonensis is the choicest red water-lily in cultivation. In one season, under liberal culture, a single plant will cover a circle 20 feet across, with leaves 25 inches in diameter and flowers 12 inches from tip to tip of its rosy crimson petals. The stamens are scarlet. The leaves are rich green, with serrated edges and occasional brown blotches. *N. Sturtevanti* is a semi-double red lily, a seedling from *N. Devonensis*. *N. rubra* is a native of India, with large flowers of a deeper shade of brilliant red. *N. dentata* and *N. lotus* are white-flowering species. The latter is supposed to be the lotus of the ancient Egyptians, and one variety of it has a delicious odor like that of ripe apples. These are tender species and all are night-bloomers, opening in early evening and remaining open until about ten the next morning; the flowers all stand up out of the water.

Among the day-blooming tender nymphæas we have *N. scutifolia*, a distinct blue species from the Cape of Good Hope, with large flowers of aromatic sweetness, unlike that of any other species. *N. caerulea* is a blue lily and a free bloomer, with very fragrant flowers. *N. Zanzibarensis* is said to be the best of all the blue or purple sorts. A variety of it has lighter colored flowers, and, strange as it may seem, one variety of this blue-flowering species has beautiful rosy pink flowers. A pretty, small-growing variety from Mexico, similar to *N. flava*, is called *N. Mexicana*. *N. elegans*, from New Mexico, has white flowers tinted with pale blue.

Hardy nymphæas, other than *N. odorata* and its numerous varieties, are *N. reniformis* and *N. mariaceae* in four distinct varieties, one of which has bold flowers with broad yellow petals and orange-colored stamens; another quite similar but of a flesh tint, is vanilla-scented. Two others, similar in form but different in color, are delicate rose and pure white.

N. alba is the hardy English lily with but little fragrance. Its variety *candidissima* is larger, stronger, and a better bloomer. Last and least is *N. pigmea*, the smallest of all nymphæas, from China, with sweet white flowers smaller than a half dollar. They open at noon and close at sunset. A variety of it has yellow flowers.

Belonging to a different genus in the same family is our common yellow pond-lily, toad-lily, frog-lily, horse-lily, bonnet, gold-watch, yellow-jug, or spatter-dock, as it is variously called. It is *Nuphar advena*. It is a strong grower with enormous roots, the leaves and flowers often standing up out of the water. What is generally taken for its corolla is the ring of six bright yellow sepals

that surround the flower proper. It is showy at a distance and is of a curious and beautiful structure that will bear closer inspection. There is a variety of it called minus, which appears to be something between this and the next rarer and smaller species, *Nuphar kalmianum*, which has only five sepals instead of six. Its delicate small flowers are more like gold collar-buttons than gold watches. It has one set of thin round leaves that lie submerged, and another set of thick elliptical leaves floating on the water. We first noticed it from a car-window, and were so strongly impressed with the fact that it was the small nuphar, which we had never known, that a stop-over was made at North Haven, Conn., which verified our first impressions, and gave us the honor of being the first to report this species to Yale College as growing in that vicinity.

A pretty little species that is perfectly hardy has been recently introduced from Japan, and is called *Nuphar Japonica*. *Nuphar luteum* is the European yellow lily, having a brandy-like scent.

Another strange and beautiful native plant in the water-lily family is the water-shield (*Brasenia peltata*). Its floating and unparted oval leaves, bright green on the top and reddish brown beneath, are secured by smooth red stems. When the flower-buds begin to form, nature coats and protects the plant with a gelatine as clear as crystal and so soft and delicate that we could hardly feel its touch but for its coolness. The crane-like chocolate-colored flowers, standing slightly above the water, are exceedingly beautiful on close inspection, but they are the most difficult flowers to get the first sight of that I ever looked for.

Nelumbium luteum, which Gray now calls nelumbo, is the American lotus, or water-chinquapin, which grows from Ontario to east Nebraska, but its only locality in New England is Sheldon's Cove, Hadlyme, Ct., where it covers acres. Gray says it is probably of Indian introduction, which, when we consider that it is strictly an American species, is far more probable than the common tradition that the seeds came hither in Egyptian paper-bags. Like all the nelumbiums, it has enormous leaves and flowers and a wonderful seed-vessel with many cells, of which one writer says, "We can see the large round seeds embedded therein like so many plums in a pudding." The flowers are a creamy greenish white, and very showy at a distance. The locality is resorted to by people from far and near, who are so greedy as to pick and carry away immature buds that can never open, and thus, notwithstanding the abundance of the plants, a flower from that place is seldom seen. It is difficult to cultivate, either from seed or root, but will do well when once established.

N. speciosum, from India, Asia and Japan, known also as the sacred lotus or sacred bean, is of easy cultivation either in pond or tank, and is perfectly hardy. The leaves are 30 inches across, and footstalks 5 to 6 feet in length; its flower-stalks are 5 to 7 feet high. The first day the flowers appear like gigantic tea-rose buds of a bright rose color. The second day they open like a

tulip, the base of the petals being creamy white, most beautifully and delicately shaded off toward the ends into bright pink. In their last stages of expansion they measure from 10 to 13 inches from tip to tip of petals. There is also a pure white variety of this species, another tinged with crimson stripes, and one of a deep rose pink.

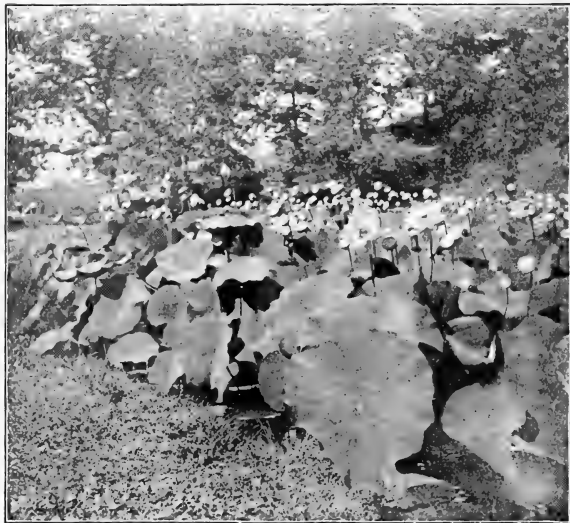
Last but not least of the water-lily group is *Victoria regia*, the queen of the family, which is a native of South America, named in honor of Queen Victoria. It produces leaves six feet across, one plant covering a space 30 feet in diameter. The flowers are from one to two feet in width. The first night that they open they are a lovely white and emit a delicious perfume, resembling that of pineapples. The second night the flowers have changed to pink and have lost their perfume. The leaves turn up two or three inches at the margin, and have curious veins that form a strengthening framework, giving them sufficient strength and buoyancy to support a child.

In bold contrast with this green giant is the delicate little floating-heart (*Limnanthemum lacunosum*) of our own ponds. Although it is like a miniature water-lily, it belongs to the gentian family. Its mottled, heart-shaped leaves are anchored by slender threads, and on their under side is a wonderful little tufted structure, from which come to the surface, one after another, the delicate little white flowers, hardly more than $\frac{1}{4}$ inch across. If the anchor-line becomes broken they do not mind it, but float happily away to wherever they may be carried by wind or current and still continue to grow and ripen their seed. This happy disposition makes them desirable plants to pick, for they will thrive and bloom as well in a fish-globe or platter as when anchored in the pond.

Their English sister, *Limnanthemum nymphocoides*, the yellow flower of the Lock-shop pond, sometimes called villarsia, is a very different plant. Its flowers are somewhat the color and form of cucumber flowers, and remain open nearly all day. The smooth and ribbed middle portion of each of its five divisions is narrowly elliptical, giving the flower a starry appearance, while the outer portions are delicately crape-like. It is an exquisite flower for close examination, and when picked and placed in water will keep on growing until all the flower-buds

develop. It is perfectly hardy, and altogether too rank a grower to be placed where space is desired for something else. When fairly started it literally makes a golden lake. I doubt if there is any other plant that will cover so much space, or furnish so many flowers in one season.

The water poppy, *Limnocharis Humboldtii*, is often confounded with the limnanthemum, but it is very different. Its three broad petals of bright sulphur-yellow are in pleasing contrast with its beautiful purple stamens. The flowers, which stand up out of the water above its oval floating leaves, open in the morning, close about four o'clock in the afternoon, and then fall down into



A BRAVE SHOW OF NELUMBIUMS IN A CONNECTICUT POND.

the water, never to rise again. It is a rank grower, well adapted for tub culture. Although it must be wintered in the greenhouse, the cost of the plant is so small, and a small plant grows large so soon, that we can well afford to buy a new plant every season.

The water-hyacinth, *Pontederia crassipes*, is an odd plant and a good one to grow in a tub. Its thick shiny leaves are on inflated bulb-like petioles, producing lovely spikes of light purple flowers. The rootlets, which are also purple, are very fine and feathery, and quite as charming as the flowers. The inflated petioles enable the plant to float, but more flowers are obtained by setting the plant in rich loam. When so treated its petioles elongate and lose their expanded form, as if

the plant knew it had no further use for these boat-like structures. A variety of this species with beautiful blue flowers, striped with violet-purple, has also been advertised.

Novel and charming as these plants are, their sister, our native pickerel-weed, *Pontederia cordata*, seems still more beautiful. The large numbers of bright blue flowers, standing above its lovely green heart-shaped leaves, form one of the prettiest borders of our lakes and and slow-running streams. It loses none of its beauty by standing in the water in company with the delicate white spider-lily, *Pancratum rotatum*, in the rivers of Florida.

Those who know the delicately beautiful marsh tree-fool or water shamrock (*Menyanthes trifoliata*) may be reminded of its beauty as we speak of its curious creeping rootstocks, conspicuously marked by the remains of the sheaths of previous petioles, its pale green, trifoliate leaves, and the spike of ten to fifteen feathery white flowers, often exquisitely tinted with pink. Although much smaller than a chrysanthemum, its lovely plumes rival those of Mrs. Alpheus Hardy. But those who have never seen this flowering plant can have no conception of its beauty.

In August we have fewer flowers in our fields and forests, while the floral treasures of our bogs and ponds are then most abundant. What wonders there are in one lovely lake where we have often botanized with a boat! On the margins the sweet-scented stork's-bill, or clethra, is white with its long spikes, and the sweet flowers of the tall white azalea cast their reflections in the crystal water near the shady shore. Back of the yellow-jugs, or gold-watches, and nearer the bank, is a living lining of blue pontederia.

The white, delicate flowers of the arrow-heads, *Sagittaria variabilis*, are mingled with leaves which vary wonderfully in shape from a thread-like V to a broad heart with pointed lobes. In places we find the potamogeton with inconspicuous flower-spikes, its small, shining narrow leaves floating on the surface, and stranger yet, its dull-colored large long wavy leaves entirely covered by the water, often unseen by the ordinary observer. In one of the coves thousands of white pond-lilies, tinged with pink, float among the wine-colored leaves. Some of the flowers are so small that we call them baby lilies. Near by are the round white balls of the fragrant button-bush (*Cephalanthus occidentalis*). The bogs are decorated with tall flower-spikes of the showy calopogon, and the less showy little pogonia. Both are often found growing from a lovely carpet of green and red in most delicate patterns set with brilliant jewels such as can only be formed by the little sun-dew, whose white flowers are not necessary to make it attractive. Two species of it are here, one with long leaves (*Drosera intermedia*), the other with round ones (*Drosera rotundifolia*).

The bladderworts take possession of some portions of the lake and fill the water with their wonderfully fine and delicately branching submerged leaves, dotted with

the little valved bladders that catch food for the plant. The common species (*Utricularia vulgaris*) sends up a spike of small but beautiful yellow flowers. Another species gives purple flowers (*U. purpurea*). Another (*U. inflata*) makes a special raft in flowering time, composed of five long radiating bladders on the surface of the water, like a floating star, upon which to support its spike of yellow flowers. Another species (*U. intermedia*) with broader yellow flowers grows nearer the shore, and its fringe-like leaves creep on the surface of the mud, while the bladders are borne only on the mud-covered rotlets.

In the water where there are fewer plants we find the floating-heart, with its little white water-lilies; and in the clear water at the very bottom, near the shore, the pipewort (*Eriocaulon septangulare*) forms pretty rosettes of pointed light green leaves from which arise slender stems as straight as an arrow, each capped with a little velvety silver button. Here, too, is perhaps our rarest native aquatic, the water-lobelia (*L. Dortmannia*). It is a very smooth, clean plant, extremely tender to handle, its leaves all tufted at the base, where the water is from six inches to two feet deep. Even the flower-buds are often under water, but the upright stems rise higher as the buds develop, and its few bluish white flowers look downward toward the water as if loath to leave it.

We have seen all these flowers about the middle of August in this lovely lake, besides others not mentioned; and in a wet meadow not far away the flowers of the *Utricularia cornuta*, supported on slender, leafless stems, stand so thickly as to form broad sheets of solid yellow as viewed from a distance.

The cardinal-flower, sister of the water-lobelia, is much better known. Blazing acres of it may be seen in the offshoots of the lower Connecticut, and broad meadows are painted with a sinuous line of cardinal-red that marks the course of the winding brook, hidden by intermingled grass and flowers. Although this is a semi-aquatic plant it is easily grown, and will thrive in the dry ground of our common gardens.

We can only mention the large velvety leaves and long yellow spikes of the golden club (*Orontium aquaticum*) of shallow river coves. The blue veronica of our brooks, the yellow *Bidens Beckii*, and the white and yellow water crow-foot (*Ranunculus aquatilis* and *R. multifidus*), the two latter having finely cut submerged leaves and floating flowers, and many more, we must leave unmentioned while we stop to notice a loathsome pool, covered with a coat of green. How many have turned from it in disgust by reason of the floating green; but what a mistake! That despised green is in fact millions of beautiful little floating plants which are doing their best to purify the water. It is the duckweed, of which we have two species. The most common (*Lemnaminor*) has a wide range, but it is said never to have flowered in the United States, although it flowers freely in England.

Nesaea verticillatus is a beautiful water-shrub, whose axils are surrounded with lateral clusters of rose-purple flowers. It is quite common in its ordinary single form,

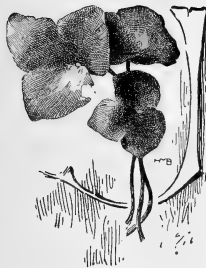
but in Plainville, Conn., many of the plants have beautiful double flowers, and there is no other known native locality in the world for the double-flowering variety.

A large floating plant (*Pistia spathulata*), called water-lettuce, grows abundantly in the south, and so does the smaller and more beautiful floating fern (*Azolla Caroliniana*). The text-books erroneously describe the latter as floating loosely upon the water as if this were its only home. However much it may travel, its original home is in springy places on the shore, or in the fields

where it forms the most delicate plush carpet of green and reddish bronze that ever grew. The fine roots become tender as the plant matures, are broken off, and the rains carry them to the river where they are found and written up as floating plants by those who never have seen them in their original home. Perhaps the writers are not to blame, for the whole secret of nature cannot be learned at once, any more than one can exhaust the subject of aquatic plants within an hour.—*James Shepard, before the New Britain (Conn.) Horticultural Society.*



THE GLADIOLUS AS IT IS.



JUST a half century ago next year, in 1843, L. Van Houtte produced in Ghent the hybrid gladiolus gandavensis, which was the starting-point of our best garden varieties. It was the result of a cross between *G. psittacinus* and *G. oppositiflorus* (sold now under the erroneous name of *floribundus*). It is true that its originator gave psittacinus and cardinalis as its parents, but Dean Herbert, who examined it closely, decided from botan-

ical evidence that there must have been a mistake on Van Houtte's part, and the matter is now considered settled as above stated. Whoever has cultivated cardinalis will agree that our gandavensis hybrids show nothing of the cardinalis blood; differing, especially, in the ease and certainty with which they can be carried through the winter in a dry state—a very difficult thing to do with that species. From the first the brightness and stateliness of this plant have made it a favorite, and the raising of seedlings from it has been the amusement as well as the business of many; hence a host of varieties have been brought into existence, hundreds of which have been forgotten, and hundreds more ought to be,

either because they are poor or because they are not distinct from other kinds. The naming of inferior or indistinct varieties of any plant acts as a check upon improvement. There are no doubt 200 varieties now in existence worth keeping under names; I do not believe there are more, though it is probable that every one who raises seedlings names a great many. It does not follow that no other than named sorts are worthy of cultivation: for supplying cut-flowers, mixed bulbs are worth, to the uncritical, as much as the best named varieties.

For many years the French and Belgian growers had the field to themselves, and so far as I can learn confined themselves to improving Van Houtte's gandavensis, in which they were remarkably successful, inasmuch as many of these old varieties still hold their place in commerce and in estimation. Some years ago a gentleman was looking at my gladioluses, and was much pleased with a bed of brilliant scarlet ones which not only had attracted his notice at a distance, but compelled his admiration when standing among them. The variety was the ancient Brenchleyensis, which can be bought at a cent apiece, yet no later kind excels it for brilliancy, though in other particulars it does not hold a high position. Two other old kinds, Shakespeare with a white ground and Meyerbeer with an orange-red, both produced by M. Souchet from the same seed-pod, are equal to any modern kinds in every respect but length of spike. Ambrose Verschaffelt, a variety which may be had for ten

cents, has lately won the prize from many high-priced competitors at our Massachusetts Horticultural Society shows.

These facts should not discourage us in our attempts to improve this noble flower; they only show that, rapid as improvement once was, advance must now be slow. Yet there is an advance from year to year which those who are particularly interested in gladioli are able to see. Five years ago a spike with twelve flowers open at once was considered wonderful—and the average to-day is considerably less than that—but spikes were shown in Boston last year with seventeen perfect flowers, and I do not doubt that we shall soon see them with twenty. Length of spike is one thing to strive for. Another is to get a good yellow. A first-rate kind of this color does not now exist, but until we have a series ranging from straw to orange we still have something to work for.

We have varieties with black edges, such as Victory, Jupiter and others, but after a hot day the black parts appear to be withered and scorched; it will be an attempt worth making to produce black-marked kinds which can stand the sun. We are not making much progress toward a blue gladiolus. Lemoine's much-talked-of "blue" variety is of an unusual color, truly, but it is far from what it professes to be. There is a truly blue species, *G. gracilis*, which may possibly help us to what we want, but no hybridizer has used it as yet. As for the double gladioli offered from time to time, they are scarce only because most growers discard them promptly when they show themselves among the seedlings, as they frequently do. I have seldom seen less attractive flowers.

There have undoubtedly been many attempts made to improve the *gandavensis* strain by hybridizing them with

other species, though few of these crosses have been recorded. In 1871, John Standish, of Ascot, at that time an extensive grower, exhibited a large number of hybrids which he had raised between *gandavensis* and *cruentus*; one of these, named Alice Wilson, was figured in the *Florist and Pomologist* in 1873. The spike was ill-shaped, the few flowers were set loosely along it and were of small size and not in any way attractive. Mr. Standish appears to have let the matter drop, and no one, so far as I know, has succeeded with the cross since. The Lemoine hybrids were put into commerce in 1879. The infusion of *purpureo-auratus* blood has produced many striking flowers as well as many which have nothing to recommend them. They are not hardy, in spite of all that has been claimed for them. If left in the ground over winter they almost invariably die, though the small bulbets come up frequently and give a false impression as to the hardness of the large bulbs. M. Lemoine has the field virtually to himself, for, though many persons raise these hybrids for pleasure, commercial lists include few, if any, hybrids that are not his. The latter strain, called Nanceianus, which combines the Lemoine strain with the blood of *G. Saundersi*, originated, as is well known, by Lemoine, and has given us some varieties with enormous flowers, but neither of these strains is worthy of comparison for a moment with the *gandavensis* series. M. Souchet and his successors have sent out the greater part of the varieties we now grow, and in my opinion the best ones for our climate; for Kelway's varieties, beautiful as they are when well grown, seem not to endure the brightness and heat of our summers very well, though in a wet season such as we sometimes have, they are very fine.

Massachusetts.

W. E. ENICOTT.

SUMMER BEDDING IN A BROOKLYN GARDEN.

FINE EFFECTS PRODUCED WITH FOLIAGE OF PLANTS.



AMONG the many handsome private grounds in Brooklyn, New York, none last summer attracted more attention than that of James W. Elwell, on Grand avenue. One view of this garden, taken from a photograph in August last, has been engraved for illustration.

One ornamental bed, prominent by its graceful curves and points, was filled with *Echeveria secunda glauca* in the central parts, *Alternanthera versicolor* for dark foliage, and *A. aurea nana*, the well-known variety of golden hue. A large four-pointed bed just out from the dining-room windows was filled with the two brilliant coleuses, Golden Bedder and Verschaffeltii. The other plants toward the edges were *Alternanthera negro*, *A. Parychoides* and *Santolina argyræa*. The center plant was a good-sized specimen of *Dracena Brasiliensis*. The same classes of plants, in very different varieties and colors, were used for the other foliage beds.

For centerpieces cactuses, agaves, etc., were used. In other parts of the grounds there were also beds of hardy roses—a source of much enjoyment.

From an intimate acquaintance with these and other instances of fine but unpretentious carpet-bedding, I am satisfied that this style of garden adornment should be more practiced in city lawns and plats. The neatness of the design and the brightness of the colors used in such work remain with us at the height of beauty longer, and in my estimation give more pleasure for the outlay than the same amount spent for coarse-growing annuals and other plants that lack neatness of appearance.

Geraniums, coleuses, etc., look well planted around the piazza and fences. For the small plat especially I would recommend boxes filled with vines and flowering plants displayed to suit the individual taste. Rustic tubs or vases filled in like manner add charms to the place. Wistarias, honeysuckles and clematises should be more used in beautifying the home.

JOHN A. BOYLE, Gardener.



BEDDING WITH FOLIAGE-PLANTS IN THE GARDEN OF JAMES W. ELWELL, BROOKLYN. (See opposite page.)

FIELD NOTES.

TIMELY THOUGHTS ON BLACKBERRIES AND STRAWBERRIES.

THE exceptional weather of the last part of February enabled me to begin some early spring work betimes. The frost was nearly all out on February 22, and procuring help I began digging several thousand Erie blackberry-plants, which were wanted for the southern trade by March 15. This berry, which originated here about 15 years ago, is now rapidly making its way as it becomes known, and bids fair to long rank as one of the leading blackberries. Beginning to ripen with the Snyder, it easily commands from \$1 to \$2 per bushel more than that variety. Two weeks later the Taylor and the Rochelle compete with it, but the uniformly large size of the Erie keeps it in the

lead. Last year the blackberry season opened July 23 and closed Sept. 10. We might have gathered another bushel or two after that, but the pickers were at school and the grown folks had enough to do to gather the peaches, tomatoes and pears. Besides Erie, Rochelle and Taylor I grow Kittatunny, and I cannot see why it is not more popular. It is the finest blackberry in existence, quality and appearance being taken into account, and on my farm has never suffered to any serious extent with the yellow rust.

I am preparing to grow a good many blackberry-plants from root-cuttings, and my way is to cut the pieces as early in the spring as the roots can be dug, and place

them in rich sandy loam in shallow boxes, which are piled under the benches of the greenhouse. As fast as the benches are emptied by spring sales, the boxes are set up on top and the heat expedites the matter of callusing, so that by May 25 the roots begin to sprout and are ready to sow in trenches two inches deep. After sowing it is necessary to mulch the ground with short straw, sawdust or fine manure to prevent drying out. The roots, in size from $\frac{3}{16}$ of an inch in diameter up to the largest, are cut into pieces about two inches long. The usual way is to cut the roots in the fall and bury them, but this necessitates digging the plants at that time and careful heeling-in and protecting during winter.

Many small-fruit plants are lost after being received from the growers through want of care in heeling-in. The bunches of 25 to 50 are heeled-in as received, and the result is that the inner plants, having no contact with the earth except at the extreme ends of the roots, dry up and perish. Only a little while ago I heard a beginner berating a nurseryman because some blackberry-plants purchased last spring did not all grow. Inquiry revealed the fact that they were not planted until two weeks after they were received. "How did you care for them during those two weeks?" asked the nurseryman. "Why, I buried the bunches in the ground," was the reply. As the bunches were bulky it will easily be understood that more or less of the inner plants had little or no contact with the earth. If the plants were a week *en route*, and possibly a week in the bunch before shipment, for a full month's time that some of the plants had to depend on their

own moisture for existence; and it is no wonder they died. Had the bunches been separated when first received, it is probable that nearly all would have lived. The same is true of strawberries, raspberries, rose-bushes or anything tied in bunches.

To-day, February 27, we have been protecting our last year's strawberry-patch from railroad fires. The plantations were partly non-productive last year from frost, and being clean were left to fruit another year. They lay on either side of the railroad, and I feared the dry herbage and last year's mulch would take fire; so we took a Planet Jr. and a horse, and cultivated two places in each patch, running twice back and forth, making a clean mark that fire could not cross. One mark was about 18 feet from the fence, and the other about 20 feet from that. The second was made in case a strong wind should carry the burning cinders beyond the first. Whatever is burned over in the spring is ruined for fruiting that year; so I take this method to save all but one or two rods wide. I ought to have made this protection last fall, but did not get to it. Strawberry-foliage does not ignite as readily as grass, and the precautions may not be needed, but I once lost a valuable half-acre in this way, and do not want to take any more risks of the same kind. None but owners of land next to a railroad know of the losses and anxiety caused by fires set by locomotives. The matter should receive the attention of our lawmakers, that adequate damages may be awarded for crops destroyed.

Summit County, O.

L. B. PIERCE.

FLORICULTURAL SMALL TALK,

ABOUT OUR MODERN FLORAL BEAUTIES.



HEAVEN bless the man or woman with a hobby! For although the world often eyes them askance, to such is the world indebted for many good things of life. Without going farther back than half a century to reach a starting-point for review, see what wonderful changes have been wrought in all the branches

of science up to the marvelous exploits of Edison!

Floriculture offers no exception, and thanks to the patient skill and persevering efforts of a host of specialists, it has kept pace with the sister arts in the grand triumphal march of modern progress.

We are prone from time to time to dwell in pensive retrospective thought on the old-fashioned gardens of our grandmothers, and to indulge in sentimental rhapsodies over their departed glories—glories which were no doubt greatly magnified by our childish eyes. Could those dear, staid old ladies revisit us, 'tis quite safe to say that they would be startled out of that prim propriety of deportment for which they were so distinguished and would be impelled to display all the vivacious enthusiasm

of a "girl of the period" on beholding the present splendor of some of their old-time favorites.

How they would marvel to see their old bee-larkspur, transformed into Lemoine's lovely delphinium, double and single, in every conceivable shade of blue, its beauty enhanced by metallic glints of pink and mauve and other combinations of shades, so daring that the deft and unerring hand of nature alone could make them a pleasing success, all in massive, hyacinth-like spikes of bloom, half a yard in length. They would surely gaze with wonder and delight on Charter's magnificent hollyhock, with its ample crape-textured rosettes in countless vivid shades, which have taken the place of their old-fashioned meager flowers in dingy colors. Modern magicians have transformed or transmuted their ancient pot-marigold into Pure Gold, Meteor, Prince of Orange and other gorgeous forms, to the extinction of their primitive prototype. Nor would they recognize the old China aster, with its narrow range of color, in the superb flowers of to-day, so perfect and symmetrical in form, so varied in eccentric type and so lavishly endowed with brilliant colors; nor the old flower-de-luce, in its present German descendants, displaying endless freaks in

Combinations of colors and tints. Their credulity would be severely tested by being told that the colossal pansies of our time have been evolved from the tiny heartsease that they so fondly cherished.

The pansy offers the most striking evidence of the advance of modern floricultural art, and has reached the acme of superiority in the Bugnot strain. Monsieur Bugnot, of St. Brienc, France, is an enthusiastic amateur who has made this flower a special study for twenty-five years, and in that long period has devoted all his leisure time to this labor of love. The minute details and the exacting precision of his profession as an optician must have eminently fitted him for exercising the patient care and the delicate observation so necessary in his self-imposed task of bringing the race of pansies that bears his name to its present state of high perfection; a condition that demonstrates the value of high culture, scrupulous selection and rare floricultural skill.

It would be quite impossible, no matter how florid the imagination, to exaggerate the wonderful beauties of the genuine Bugnot pansy. A little stress is advisedly laid on the term "genuine," for in the first year we tried them a comparison between the results of seeds from three different sources displayed a marked variation, which left no doubt that in one instance the seed had been adulterated. The following year two packets of seed were procured, one direct from the originator and the other from a trustworthy Boston firm. The latter proved quite true, for the flowers were equal in quality to those produced by the original Bugnot seed. No description could do justice to such gorgeous flowers. Colors and shades which a few years ago would have been considered impossible in a pansy are displayed in endless variety. Æsthetic blendings of terra-cotta, Pompeian reds, claret, brick, garnet, and countless nameless unclassified shades, never conceived nor dreamed of, have been conjured up by this pansy-wizard, Bugnot. The astonishing variety, the exceeding richness and novelty of coloring, the velvety splendor of the thick-textured petals, all combine to render this unique strain inordinately beautiful. But alas! mundane happiness in all its forms is more or less diluted; there are spots on the sun, flaws in diamonds, and—dolls are stuffed with sawdust. These reflections are the prelude to a humiliating confession that the comparatively peerless Bugnot pansies are affected with a serious defect. They are not "robustious," and you mustn't expect them to grow with that sturdy vigor so characteristic of the German, Trimardeau and other less beautiful strains. They are a high-bred race, and it is perhaps to exclusive interbreeding that their constitutional delicacy may be attributed, while the latter defect may possibly account for the originality and abnormal beauty of the coloring.

The average amateur with an inclination for experimenting out of the beaten track occasionally opens up fresh vistas in practical floriculture which surprise and delight him. After having gone on for years growing sweet-peas to a height never exceeding four feet, the conviction had become quite settled that they had no ambition to mount

higher. One of the most agreeable revelations of last season's work was the perfect realization that under certain conditions they can be induced to grow to eight or nine feet. The division fence on the north side of the garden is six feet high, and to obstruct the incursions of a venerable neighbor's hens the fence proper is surmounted by a lattice addition three feet in height. The spot chosen for the sweet-peas was along this fence, where the soil was carefully prepared and thoroughly enriched, and a furrow six inches (an important detail) in depth was made quite close to the fence, that there might be no chance for a growth of weeds behind the plants. The seeds were sown quite early, in fact before the frost had fully gone from the garden, and at first were covered to a depth of two inches, the remaining soil being gradually added as the plants made growth, until the furrow was finally completely filled.

From a pile of evergreens, which had been used as a winter covering for hybrid remontant roses, large flat spreading branches were selected and tacked to the surface of the fence, covering it from the bottom to the top, thus forming a capital support for the numerous tendrils of the clinging vines. The row of peas was fifteen feet in length, comprising three feet of Blanche Ferry, three of Invincible Scarlet, three of Painted Lady and six feet of Eckford Mixed. A detail which I came near forgetting, and which may have had an important bearing on the luxuriant growth, was in the fact that a drain from my neighbor's kitchen ran along the fence on the opposite side, from which no doubt my sweet-peas derived material benefit. The plants grew quite to the top of the fence, Blanche Ferry with the others, though that variety is often set down as a dwarf. The fence was a wall of bloom throughout the season and was well decked with flowers when cut down by frost in mid-October. By watchfully training the side branches and bending down a portion of the plants, the bloom was kept evenly distributed over the surface. I never before had so adequate an idea of the refined and glorious beauty of the sweet-peas as that afforded by last season's experiment. The leading factors in the successful result may be recapitulated as generous soil, deep planting, unobstructed exposure to the south, and ample support for the tendrils prepared in advance. The latter point is well worth consideration, for the healthy and rapid growth of the vines depends greatly upon it. The starting may be considerably hastened by soaking the peas until they sprout, which they usually do in two or three days, being careful not to allow them to become dry in the process.

On the whole the Marguerite carnation has proved to be one of the most satisfactory novelties of recent introduction. Of course the quality of the flowers is not exceptionally high, but the extraordinary profusion of bloom atones in a great measure for the rather meager proportions of the new-comer, while the unfailling large percentage of double flowers is a most gratifying feature, which advantage, combined with its certainty to bloom the first season, are qualities which render it a decided acquisition for the flower border.

F. LANCE.

THE LUCRETIA DEWBERRY.

ITS CULTURE AND VALUE.

THE Lucretia is by far the most prominent of the dewberries. It was found growing wild in West Virginia. Plants were sent to Ohio and distributed in 1876. From them the present stock has sprung. Mr. Albaugh named it Lu-

cretia for Mrs. Lucretia Garfield.

There are several methods for training the Lucretia dewberry.

It is commonly allowed to lie upon the ground. The canes are cut back to three or four feet in length in the same manner as blackberry and raspberry-caness are treated; and if the best results are expected the canes should be thinned to four or five in a hill.

The canes are usually allowed to branch freely, although it is evident that some checking of the growth may often be essential to good results.

A mulch is often placed under them to keep the berries clean and to retard the weeds. When this is applied the vines are raised with a

fork. Trellises and racks of various kinds have been devised. However, there has been no gain in productiveness or earliness upon the trellised or racked plants; the only advantages have come from the greater ease of picking and cultivating, and the less amount of room occupied. These advantages are considerable and seem to me to warrant the adoption of some simple trellis, preferably a wire trellis in garden culture. Whether it would pay in field or market culture is a

question which must be determined by the grower himself. The labor of tying the canes to the wires is somewhat onerous, but it is needed only once in the season.

This training does not interfere with covering for winter protection, for the young or growing canes are allowed to lie upon the ground, and are tied up the following spring. If the canes interfere with cultivation while

growing, they can be placed lengthwise of the row with a rake or they can be thrown over the lowest wire. After the canes have borne they are cut out in the same manner as the canes of raspberries and blackberries.

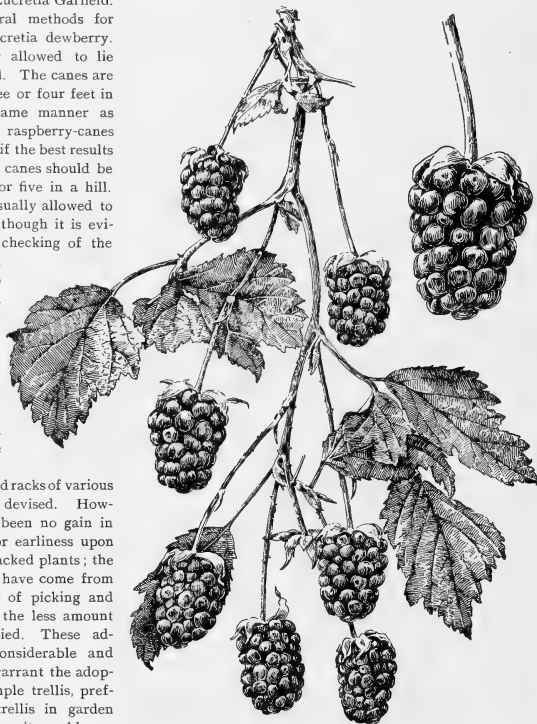
One of the chief merits of the Lucretia is its earliness.

Dewberries, raspberries and blackberries grow side by side in our plantations, and we have had, therefore, a good opportunity to observe the earliness of the Lucretia. This year the first ripe raspberries (Marlboro and Ranco-

cas) were obtained July 4. At this time a few dewberries were about fully grown, and had turned red.

July 8 a few ripe dewberries were secured. July 11 dewberries on some of the vines were ripening rapidly; at the same time Ada raspberry was beginning to ripen, and Doolittle and Souhegan were in their prime. July 16 Early Harvest blackberry, our earliest sort, gave its first ripe fruits, while the first picking of Agawam was not obtained until July 22. July 16 there were no

flowers to be found upon the dewberries, but the blackberries were still blooming freely. A week later pickings from the dewberries had practically ceased. It will be seen, therefore, that the dewberries ripen with the earliest black raspberries. But it must be said that there is great variation in the time of ripening between different plants in the same lot.



LUCRETIA, FROM A GOOD PLANT. (The separate fruit is full size.)

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In size of fruit and productiveness the best plants of *Lucretia* are all that can be desired. An illustration of an average cluster from a good plant is given on preceding page; the detached fruit is natural size. The quality of the *Lucretia* is a moot point. With us this year the quality was certainly inferior. The berries lack sweetness and character. This is well illustrated by the fact that our customers declined to buy the dewberries when the blackberries began to ripen, although the dewberries were the more attractive in appearance. Others, however, maintain that the *Lucretia* is superior in quality to the blackberry. Much undoubtedly depends upon the season and the soil.

The *Lucretia* is rather soft in texture, but it will evidently carry well in transportation. It is attractive in shape and packs well in the box. One of the advantages of all dewberries is the ease with which they can be protected in the winter, and this must serve to render them attractive to northern fruit-growers. The canes are probably no hardier than those of the blackberry, but the natural protection of the earth and snow often carries them through winters that seriously injure blackberries. In our own plantation the canes have not been injured to any extent.

But what is the general value of the *Lucretia* dewberry?

Is it an acquisition? It is impossible to answer this question unreservedly. It seems to me to be a valuable fruit because of its earliness, large size and attractiveness, and a habit of growth which affords winter protection in the north. The canes are very thorny, and this feature, in connection with the low growth, makes the gathering of fruit unpleasant. But a proper system of pruning and mulching will overcome some of this difficulty, and if the canes are tied to a trellis the picking is pleasanter than the picking of blackberries.

The adverse opinions often come from persons who allow the plants to grow at will—a treatment from which we have no reason to expect good results. Cultivation and pruning are as essential in the dewberry as in the

blackberry. We must learn how to overcome the failure of the flowers to set, and to prevent formation of nubbins. In my experience, however, the greatest difficulty has arisen from the great variations in the plants, and I suspect that much of the supposed tendency to form nubbins is really a permanent characteristic of some plants that are not true to type. In a plantation of 50 plants fully half bear worthless fruit, while the remainder bear large and handsome berries. Our illustrations show these differences well, one showing fruit from the best plants and the other fruit from the poorest ones. The plants also vary greatly in the time of ripening their fruit. The best plants gave ripe fruit this year July 8, but others gave none until the 16th.

Whether this variation comes from a sporting in the variety since its introduction, or is chargeable to the substitution of wild or inferior plants by dealers, it is impossible to say; but it is a serious drawback to dewberry-culture.

To sum up, it appears to be safe to say that the *Lucretia* dewberry possesses desirable features, and that in many places it will be found profitable. It needs pruning and other attention, and trellising is often advantageous. It is about as hardy as the common blackberries, but it is easily protected. Its greatest merits are earliness, large



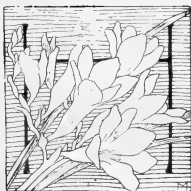
LUCRETIA, FROM A POOR PLANT. ONE-HALF NATURAL SIZE.

size, and the ease with which it can be protected from cold. Its greatest demerits are the frequent failure of its flowers to set, and the formation of nubbins, its variability and the labor of picking. It has received commendations from Vermont to Florida and California. It is probable that it will gain in favor as a fruit of secondary importance when the best methods of growing it become better known, and in such localities its culture may prove profitable.

There are, in all, a dozen varieties of dewberries in cultivation, of which the *Lucretia* is best known. Windom and Bartel are prominent in some places, and Manatee has also been grown to some extent.—*L. H. Bailey, in Cornell University Bulletin.*

SHARING FLOWERS WITH THE UNFORTUNATE.

CHEER FOR THE SICK: BRIGHTNESS IN THE HOMES OF THE POOR.



HAVE our readers who live in the midst of ample gardens, containing a profusion of bright sweet flowers and verdure, ever thought to share them with those who have them not? Have you ever passed through a large city hospital and seen the pale, discouraged faces of the inmates turned upward from weary beds of pain and sickness, and realized how much they need what you could easily spare? A basketful of fresh blossoms, bunched into little nosegays and distributed to right and left in a crowded hospital ward, would bestow unspeakable blessing and aid the doctors and nurses wonderfully.

But there are places outside of hospitals and asylums where kind-hearted flower-growers could do a blessed work. We refer to parts of large towns where poverty and wretchedness make their abode. Think of all the women and children in these places who are cut off from the beauties of nature, who would feel grateful and receive much benefit in soul and mind if given some spare flowers from your hands. Well may we, who are surrounded by a wealth of flowers that God has given, ask ourselves who bestowed on us the exclusive right to possess and see fade before our eyes these treasures which are so much needed by others? Let us try to share them with the unfortunates of our towns and cities.

In that most interesting work from the press of Worthington & Co., Hartford, entitled "Darkness and Daylight in New York," we are given a charming glimpse of the flower-mission work in some of the poorer districts of the metropolis, and we are indebted to its publishers for two pretty pictures. The superintendent of the Children's Aid Society of Corlear's Hook, is an ardent lover of flowers, and believes in their value for training the rough little subjects with whom he is brought in contact. In the back yard of the home he planted shrubs, flowers and vines about a shady seat, where for a moment those who rested on it might fancy themselves in the country. Sewage and bilge-water gave the best-known odors of this region, and he fought them with hyacinths, heliotropes and violets. In the school-room and through the lodging-house plants and flowers were scattered about, influencing the rough little beings, who begged for a single flower with an eagerness that could not be denied. The pathos of such a scene must influence not only those who have seen it, but those who hear about it.

Windows overran with bright blooms. Buds and blossoms, green leaves and trailing vines were everywhere. The little yard was full, and as the demand increased the superintendent proceeded to erect a small greenhouse. The time for this arrived when a small building was put up in the rear for bathing purposes, and above this the greenhouse was built, opening into the school-room; so that to-day every waif in the school who looks up from his desk sees a vista of flowers.

Soon a novel reward was suggested to the young vagabonds of Rivington street—and indeed of the whole region—who flocked in full of delight over the growing things. The best children in the school were allowed to take a plant home with them, and if they brought it back in a few months improved and well cared for they received others as premiums. Soon in the windows of the poorest most tumble-down houses and tenement rookeries one saw flowers growing, or met the little savages of the district carrying a plant more carefully than



IN A CITY MISSION GREENHOUSE AT CORLEAR'S HOOK, NEW YORK.

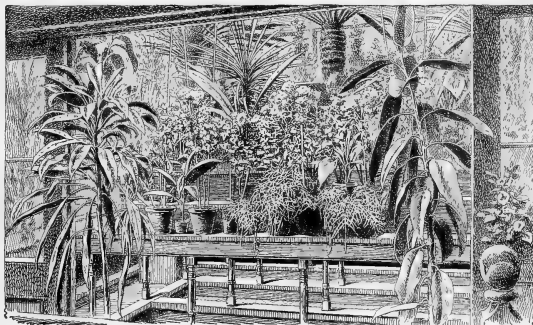
they had been accustomed to carry the baby when an overworked mother entrusted it to their care.

Thousands of poor families now have their windows filled with beautiful plants as an outcome of this benefi-

cent project. They have learned the art of propagating the hardiest kinds, and ivies, fuchsias and geraniums flourish under their care.

The general mission, known as the New York Flower-Mission, whose rooms are at 104 East Twentieth street, does active work from May to November in distributing both flowers and fruit. Four hundred towns in the vicinity of the city send contributions, and Smith, Amherst and Vassar colleges also send flowers. Not only hospitals of all sorts, but "homes" for the aged and infirm are now included in the work of distribution. Flowers come in all sorts of ways. Those who understand the work either make them in small bouquets or separate the varieties, laying them in flat baskets with layers of wet cotton batting between. Often they come in great bunches and must be sorted and made over. Railroads and express companies deliver them free, and each year the interest increases. Some donors make a specialty of one flower. Pinks come in profusion from one well-known giver, and an unknown contributor, registered as the "pansy-man," last year sent in thousands of his favorite flowers in the season; while from another source, in one year, came 1,800 fragrant pond-lilies.

Distribution is the heaviest task. City missionaries, Bible-readers, nurses and druggists throughout the poor districts all cooperate in the work, and last year saw the distribution of over 100,000 bouquets and bunches of flowers among the sick and the poor. Women prefer



FLORAL VISTA FROM A NEW YORK MISSION SCHOOL-ROOM.

roses, and the children clutch at anything with color and sweetness. Men in hospitals beg for pinks, and look after the distributors with hungry eyes. The Flower-Mission we know will gladly make good use of all the flowers that AMERICAN GARDENING readers may send them.

OUR VEGETABLE-CANNING INDUSTRY.

A REVIEW OF THE SITUATION.



people, as articles of ordinary diet. Such enormous increase in the consumption must naturally invite the attention of willing producers of vegetables.

Indeed, our advice is frequently asked by subscribers concerning the profitableness of canning tomatoes and sweet-corn in a commercial way. An inquiry of this kind is evidence enough in itself that the inquirer is not in a condition to compete with experts who have made a study of it for years, and who probably selected for their

operations just the locality that to them seemed to offer the most favorable conditions for success. Consequently we have never felt justified in offering the least encouragement to such ventures.

To engage in canning vegetables commercially, is by no means so simple a matter as many of our inquiring friends seem to suppose. Some interesting data are given in the report of the statistician of the Department of Agriculture, for December, 1891.

"The people of this country," says the report, "probably enjoy a wider dietary than those of any other nation in the world, and to supply the needs, necessities, and even whims of appetite, there is a constant striving on the part of those engaged in the different branches of the canning industry to attain superiority of product, novelty of preparation, and general excellence combined with reasonable cheapness of result." It will be seen from this how poor the chances are for one ignorant of even the first principles of the business.

This is further emphasized by the remarks of the statistician in regard to the canning of green corn:

"It is only within comparatively recent years," he says, "that successful methods have been followed in

preparing green corn for use outside of its ordinary period of growth. This branch is now a very large one, and factories are to be found in very many sections of the country where the sweet varieties of maize are grown. The principle packing districts are in Maine, New York, and the Atlantic coast as far south as Virginia, although in the central west, where the surplus corn which supplies commercial demand is grown, it is rapidly assuming importance.

The reputation of this class of our canned-goods product is attested by the steady and rapid increase of the amount consumed by our own people. Americans are very particular, not to say fastidious, in their diet, and the popular taste for delicacies and preparations of standard varieties of food requires an intelligent and progressive study of methods by packers that insures constant elevation of the standard of quality. A careful investigation of methods used by canners shows that they are prompt to accept all the latest improvements which tend to a betterment of product, and that there is a constant striving to attain perfection in quality and methods of packing goods."

The figures which show the pack of canned corn between 1885 and 1891, inclusive, are interesting :

The total pack in 1891 was	2,799,453 cases.
" " " " 1890 "	1,588,860 "
" " " " 1889 "	1,760,300 "
" " " " 1888 "	3,491,474 "
" " " " 1887 "	2,311,424 "
" " " " 1886 "	1,794,735 "
" " " " 1885 "	1,082,174 "

They show us how the gradually growing demand and the over-anxiety of canners to meet it resulted in the over-production of 1888, which again brought a reaction almost disastrous to the whole industry, until the rapidly growing consumption caught up with the diminished production. This year (1892) we have little reason to doubt

that consumption will equal a production like that of 1888, then far ahead of the demand. The enormous pack of that year also shows us how little difficulty will be experienced in extending the pack to keep pace with the increase of consumption, no matter how rapid this may be. On the whole, it would appear from trustworthy indications that the coming season seems to have bright prospects for the canners.

In regard to tomatoes, it appears that the pack of last year was the largest on record, but that it exceeded the pack of 1890 only a little, and that the annual product is so nearly stationary that it is only 263,000 cases above the average pack of the four previous years. New Jersey leads in production, the present season showing an increase of sixteen per cent. over that of the previous year. Maryland stands second, but shows a product considerably smaller than that of 1890. This is explained by the fact that in Hartford county, where the greater number of canneries are located, the crop was poor and many factories did not go into active operations. The pack by the leading states in 1891 was as follows: New Jersey, 950,833 cases, against 815,485 in 1890; Maryland, 744,010 cases, against 949,157 in 1890; Indiana, 341,217 cases, against 243,920 in 1890; Delaware, 264,950 cases, against 230,025 in 1890; California, 218,311 cases, against 222,173 in 1890; New York, 114,774 cases, against 101,952 in 1890, etc.

The figures for the pack of canned tomatoes during the last six seasons are as follows :

The total pack in 1891 was	3,405,365 cases.
" " " " 1890 "	3,166,177 "
" " " " 1889 "	2,976,765 "
" " " " 1888 "	3,343,137 "
" " " " 1887 "	2,817,048 "
" " " " 1886 "	2,363,760 "

As in the case of the corn pack, we think this season's outlook for the commercial tomato-canner is encouraging.

ORNAMENTAL AND PRACTICAL GARDENING

ON THE EDITOR'S GROUNDS.



GROUP OF IRISES.—A large assortment of hardy perennials suited to this climate lends beauty to our grounds. There is no one class among them that gives greater satisfaction than the iris family, comprising, as it does, a larger number of species and varieties than any other in our garden. Some good qualities of the iris, not possessed in like degree by any other hardy plant, are ease of culture in any soil, neatness of habit (with no tendency to weediness), grace in outline and delicacy of coloring. "Poor man's orchid" is a term that seems well applied when we consider that the plants are so cheap to buy and so easy to grow, and that their bloom rivals the orchid in grotesqueness and exquisite delicacy of form, as well as in singularly beautiful combinations of color.

Of the various species now in cultivation, gathered from many lands, for common use none can excel that old favorite, the German iris (*I. Germanica*). A number of charming varieties have sprung from this type. Some recent varieties that have flowered here, surpassing our ideals of a few years ago, are named below as worthy of special notice :

Madame Chereau (shown life-size in the engraving on next page). Color white, delicately edged and feathered with violet. The white falls, or outer drooping petals, are tinged with yellow; standards, or inner erect petals, of a bluish cast. A vigorous grower and free bloomer. *Acteon*.—Standards yellow; falls white, with crimson veins.

Bridesmaid.—Standards pale lavender; falls white, reticulated with lavender; very fine.

Flavescens.—Primrose-yellow, almost white; fine.

Albicans.—Large, pure white; charming in every way.

Gracchus.—Standards lemon-yellow; falls pale yellow, reticulated purple; of dwarf, compact habit; a profuse bloomer. The Royal Horticultural Society of England awarded this handsome variety a first-class certificate in 1885.

The new race known as the Japanese or Kæmpferi iris is attracting fresh interest with each year, all of which it deserves. The flowers differ from the German type in being broad and flat. They exhibit a wonderful variety of colors and shades, and appear later than the others. The race has sprung from *I. levigata* and *I. setosa*, species common to Siberia. We are indebted to Japanese gardeners for first producing the remarkably large and double varieties. European and American gardeners have lately followed their lead, and are growing some fine sorts. These succeed fairly well in any good garden soil, but earth that is somewhat peaty is most congenial to their growth. They dislike shade, preferring an open exposure.

The Crimean irises (*I. pumila*) are a charming dwarf, early-flowering group. They grow from six to nine inches in height, and produce an abundance of lovely flowers. Being dwarf and of vigorous habit in any soil, they are well suited to grow in the front line of the border. The type is of a rich purplish blue color, and from this many varieties have arisen, ranging through purple, white and rich yellow.

The Siberian irises (*I. Sibirica*) are quite distinct, being distinguished by their long grassy foliage, two or more feet in height, forming dense, erect tufts, with numerous slender stems bearing an abundance of flowers. The type is a light blue, having a net-work of dark lines. The colors of the varieties range from rich velvety blue to pure white, slightly veined with pale lilac. There are no yellow varieties as yet.

WORK FOR SHARP EYES.—Our rambles through the grounds in winter and early spring revealed numerous

points in tree and shrub-culture requiring attention which passed unnoticed before last season's leaves had fallen.

The first shrub to attract notice was a flowering-almond, recently transplanted. This shrub had several strong wild shoots growing from the point below where the almond was budded on wild-plum stock. These shoots were fast sapping the very life of the ornamental budded top. They were promptly cut out—a thing that should have been done last season, before they had advanced so far. The plum-shoots were much stronger than those of the almond, and had they not been removed, it is likely that in one or two seasons they would have entirely crowded out the latter.

In this way many more choice budded trees, shrubs and roses are lost than their owners are aware of. Young stock from the nursery is set out and perhaps grows fairly for a year or two. Then a sprout may start up below the bud, and as it is sure to grow rampantly the owner is perhaps delighted to see "how fast that shrub is growing this year," never taking the trouble to notice from whence the growth proceeds. A year or two later a strong bush

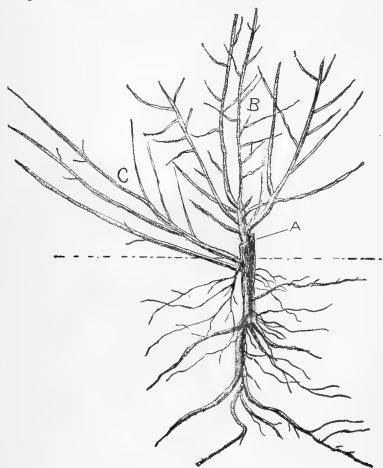
or tree has developed, but the owner "can't see why it never flowers as it did at first." Still later he writes to his favorite journal, telling how varieties change. If an expert were to examine carefully the growth above described, he might discover somewhere in the interior the dried-up remains of the once fine budded plant, killed in the struggle against the stronger-growing shoots that should not have been allowed to live for a single season. The first illustration on page 280 shows an almond budded upon plum-stock at A. B is the ornamental almond top, dying of starvation, and C

shows the robber plum-shoots. Kilmarnock willows and other choice weeping trees, budded roses, flowering almonds, plums and peaches, and all cultivated budded fruits are forms that suffer most from such neglect. But little attention is required to keep wild shoots down, and having planted out choice budded trees and shrubs, no one should deny them this.



GERMAN IRIS, MADAME CHEREAU.

The illustration at the bottom of this page shows two cases of branch strangulation by labels discovered on our young trees. The one to the right need cause no surprise, for this is the ordinary nursery label, the re-



WILD SPROUTS ON FLOWERING ALMOND
(See page 279.)

moving of which had been overlooked. The result is that the wire is completely buried in the bark, causing a defect that will be quite sure to make a weak spot in the branch here. The figure to the left shows a zinc label, designed to be permanent—a style long recommended for its safety, because being simply coiled around the branch it was assumed that it would open with the growth. And so it would had it been put on rightly. After breaking off the branch at the label the cause of the trouble was revealed; the label had been coiled around the twig four times instead of two as is usual. It could not "give" with the growth, hence it was as injurious as a tight wire would have been.

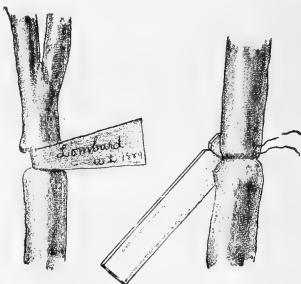
The most satisfactory label we have used up to date, and we have tried numbers of them, is a substantial pine label with a wire almost the size of a light knitting-needle. It is attached to the branch by a loop so large that half a dozen years of rapid growth do not fill it.

BEAUTY EASILY ACQUIRED.—The engraving of a piece of water-edged lawn at Woodbanks, shown on opposite page, was made from a photograph taken last summer. It is presented for the purpose of showing how easily, now and then, "art doth mend nature" and secure to us lovely landscape effects with little trouble and expense. Where smooth green turf now slopes downward to the water's edge, there was, two years ago, a medley of underbrush, choke-cherry trees and decayed stumps. The fine old red oak just beyond could not be reached. A few

days work in spading and grading and sowing grass was all that was required to extend the lawn to the oak and to the water's edge. The former owner last summer expressed much surprise at the change wrought at this point. Although he had lived here for years, he never dreamed of its being anything else than a rough bramble-patch.

ARE COPPER SALTS INJURIOUS TO PLANT-GROWTH?—Trials are being made to set this matter definitely at rest, so far as we are concerned. We have in some cases been extremely lavish in the application of both sulphate of iron and copper directly to the soil around the house, but the grass and other plants seem to flourish just the same as ever. How the Bordeaux mixture or any of the spraying solutions, applied to foliage in the usual dilutions and quantities, can have the least influence upon root-growth we cannot understand. Tests made at the Iowa Agricultural College, as reported elsewhere, only show that the ammoniacal solution of carbonate of copper, mixed directly and intimately with the soil in large quantities, may for a while retard the germination of seeds, or have an unfavorable influence upon root-growth. But even this effect is lost after a time. The smallest amount of carbonate of copper mixed with the soil in these tests was probably not less than nine pounds per acre, while a single spraying with the solution would require not more than a few ounces of the copper salt per acre, and a whole season's persistent spraying would probably not distribute more than a very few pounds over that area. Growers have every reason for depending upon nature's ability to render harmless by chemical combinations or by other means all dangerous or injurious substances put upon or into the soil. Our own tests thus far indicate that the presence of carbonate of copper in the soil does not prevent germination or healthy root-growth.

POINTS IN PREPARATION OF SPRAYING MIXTURES.—With considerable regret we come to the conclusion that



DAMAGE FROM COILED AND WIRED LABELS.

for this season at least we will not be able to dispense with the Bordeaux mixture. Fortunately, however, we feel authorized to use and recommend a much milder dilution than last year's formula demanded. For 6 lbs,

of sulphate of copper and 4 lbs. of lime we may now use 45 gallons of water, instead of 22 gallons as heretofore recommended. This not only makes the mixture one-half cheaper, but also much more convenient to apply. Still, the lime is apt to give trouble by clogging the nozzles unless great care is taken in preparing the mixture. Professor Galloway advises straining the lime-water into the copper solution through a gunny-bag. Last year we attempted to strain the ready-made mixture through the strainer of the knapsack sprayer. This experiment did not succeed; but we found another quite convenient way of getting over the difficulty. Stir the mixture thoroughly, then allow the coarse sediment of the lime to

The greatest difficulty in the preparation of the latter has been that of obtaining the ingredients at anything like a reasonable cost. Not an ounce of carbonate of copper could we find in Niagara Falls or Buffalo a year or two ago. One of the drug-stores in Buffalo procured some for us from New York at an outrageous price. Nor will we always be able to get strong ammonia in country drug-stores. They keep ammonia-water of 14° to 16° strength, which is worthless for our purposes, but not liquid ammonia of 22° to 26° strength, which we desire. We found a small supply of ammonia 26° in strength the other day in a Buffalo drug-store, but had to pay at the rate of \$2 a gallon for it, the druggist, however, agreeing



A WILD SPOT AT "WOODBANKS" TRANSFORMED INTO A PRETTY GLADE. (From a photograph.)

settle, and immediately pour or dip off the clear blue liquid from above the lime. If you wait too long the copper also will sink to the bottom, leaving a colorless liquid on top, which is little more than lime-water. The blue liquid, dipped off in proper time, can easily be strained through the sieve of the knapsack sprayer, and will give no further trouble. Stir the mixture just before putting it into the sprayer. We shall not dread the job of spraying with the Bordeaux mixture thus made, more than spraying with the ammoniacal solution of carbonate of copper, or with any other of the liquid fungicides in ordinary use.

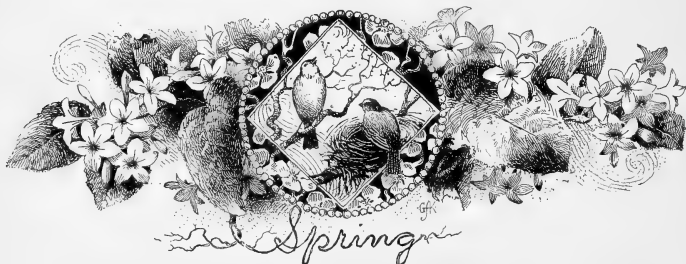
to furnish it at \$1.25 a gallon in larger quantities. This makes the spraying solution by far too expensive. Fortunately we found a cheaper way of getting it last year in buying the prepared mixture known as copperdine. This is simply 3 ounces carbonate of copper dissolved in 1 quart liquid ammonia. A gallon of this preparation is enough to make 100 gallons of spraying mixture, when properly diluted with water. It is sold at \$1.50 a gallon, and much cheaper in large quantities. If Professor Van Slyke, who recently stated before the Western New York Horticultural Society that "it costs three or four times as much as it ought to," will tell us how we can

prepare our ammoniacal solution of carbonate of copper in a cheaper form than we get it in copperdine, every fruit-grower in need of the material will greatly thank him. In the meantime, however, we shall stick to the prepared mixture.

KAINIT VS. INSECTS.—We are not quite certain whether kainit kills wireworms and maggots or not, but plants to which strong solutions of it were applied freely seemed to suffer less from insect attacks than plants not so treated. At least we are hopeful that treatment with kainit will give us radishes free from maggots, and save our cauliflowers and cabbages from destruction by the same pest.

These plants, together with onions, lettuce, turnips, etc., seem to endure a large amount of kainit or other potash salts without injury.

EARLY VEGETABLES.—Radishes are always the first vegetables of the season, as we can grow them in four weeks from the time of sowing seed. Still we can never get them too early, so we start them in flats under glass about two weeks before we could sow seed outdoors, and then transplant in open ground an inch apart in the rows. Thus we gain a week or more of time, and an advantage over the flea-beetles and maggots. Radishes transplant quite readily.



THE PEOPLE VS. THE ENGLISH SPARROW.

A SUMMARY OF THE QUESTION.



WITH this issue we bring the case of "The People vs. the English Sparrow" to a close. We still have remaining a few unpublished communications on the subject, both pro and con, but as they add no new features we will sum up the case in the light of the evidence already presented.

After all the violent denunciations for years, all the urgent advice given by press and speakers to shoot, trap, strangle and poison the sparrow, after the enactment of laws by some of the state legislatures offering a prize for its scalp, we wonder that the sparrow has yet so many warm friends among prominent horticulturists, and (what is most surprising) that the friends seem to be in a large majority. Certainly a creature that has so many sympathizers and defenders cannot be wholly bad nor a general nuisance.

Evidence shows the bird to be by no means guileless. It has bad habits. It makes itself obnoxious, especially in cities and the larger villages, by nesting around buildings and befouling them; it is sometimes quite destructive in wheat-fields; it is naturally pugnacious and impudent, and its voice is not melodious. So much is proven by the evidence, but no more.

Individuals, or individual families and flocks, may, per-

haps, from evil example, have developed other bad habits, such as eating fruits from bushes and vines, destroying buds on trees and bush-fruits, picking young growths in the garden, driving away other birds, etc.; but the whole race should not be held responsible and made to suffer for the bad habits of individuals. If all the charges preferred against the bird were known to be true, every farmer and gardener would willingly pay out a fair sum to be relieved of such a troublesome pest. Yet we doubt whether there is a single person in our vicinity (at least we have not found one on inquiry) who would be willing to pay \$5, or even \$1, for the extermination of the sparrow. In some localities where sparrows exist in excessive numbers, no doubt people would gladly pay something to be rid of them, but such cases appear to be rare exceptions.

On the other hand, evidence shows that the sparrow destroys insects, caterpillars, butterflies, beetles (especially May beetles), locusts, etc., besides countless numbers of weed-seeds. Its numerous and voracious young are fed almost exclusively on insect-food. This is something to be thankful for.

We are not disposed to engage in hair-splitting discussions concerning the merits and demerits of the sparrow, or to weigh in gold-scales the good and the bad it does, but prefer to take a broader view. We are not in sym-

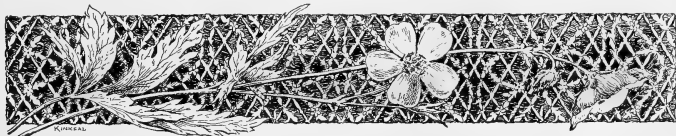
pathy with the sentiment, "What is the sparrow good for, anyway?" As well to ask, "What is the dog or the cat good for, anyway?" What good is there in a pet rabbit, a pet parrot, a canary, etc.? The sum representing the aggregate harm done by the sparrow is insignificant compared with the aggregate amount paid out by people to maintain worthless, useless pets, yet all the annoyance, the damage, the dangers, resulting from their maintenance are borne voluntarily and without grumbling. What is a squirrel good for, except to eat nuts, steal corn, and destroy broods of small birds? Yet we would not like to miss their presence in our woods. If we can afford to support these millions of costly pets merely to enjoy their presence, surely we can also afford to support the sparrows for the services they render, and the life they impart to the otherwise lifeless winter landscape. The presence of bird-life is a luxury well worth paying for.

In whatever aspect the question is presented, we see nothing in it to justify summary laws and processes against the bird. To offer a bounty on the sparrow's head by state laws seems to us uncalled for, unwise, unsafe, absurd. The mass of the people do not demand it; the majority are against it. We do not desire to have our boys incited to wanton murder, and to the reck-

less use of guns, which, at best, are dangerous tools in their hands.

The sum total of the damage that people suffer through the sparrow, is as nothing compared with that done by rats and mice, and these have no redeeming qualities. Yet people bear their depredations with comparative equanimity, never dreaming of calling on the legislatures for relief. Neither is there any necessity for legal interference, when self-protection is within everyone's reach, and far more effective. It would be an insult to the intelligence of average people to doubt their ability to deal with the sparrow, when it becomes excessively numerous and troublesome, just as easily and effectively as with rats and mice and other pests. If there are localities in which the sparrow, by reason of excessive numbers or otherwise, has become a general pest, it should be left to the local authorities to deal with the question as the particular case may seem to require. But to legislate in the direction of a state bounty on sparrow's heads is too much like shooting with big cannon at small game.

To denounce the sparrow in unmeasured terms has become rather fashionable; but sensible people should not be slaves to senseless fashions. Our verdict is, *Give the sparrow a rest!*



ARE COPPER SALTS INJURIOUS TO PLANTS?

RESULTS OF TESTS MADE AT THE IOWA STATION.



BELIEF that certain copper salts seriously affect the root-system of plants is widespread among horticulturists. To decide this question an experiment was made in the college greenhouse with several of our principal fungicides. These fungicides were used in three different strengths. Seventeen lots, each of

25 square feet, were partitioned off, and to fifteen of them 500 cubic centimeters of the solutions were applied and thoroughly mixed with the soil. After the ground was thus prepared it was planted with Capital corn.

Lot I.—Ammoniacal carbonate of copper; ammonia, 1 pint; carbonate of copper, 1½ ounces; water, 1 gallon.

Lot II.—Twice the strength of Lot I.

Lot III.—Twice the strength of Lot II.

Lot IV.—Check; no application.

In different periods the percentage of germination was as follows:

Dec. 5: Lot I., 10.66+; Lot II., 4.24+; Lot III., 0; Lot IV., 26.28.

Dec. 14: Lot I., 78; Lot II., 60; Lot III., 20.66+; Lot IV., 82.28.

Jan. 6, Lot I., 89; Lot II., 98.18+; Lot III., 52.66+; Lot IV., 93.71+.

This shows that on January 6 the highest percentage of germination was in Lot II., to which was applied a solution of ammoniacal carbonate of copper as generally recommended; but in Lot III., where double the amount was used, germination was low. So far as rapidity of germination is concerned, the experiment shows that Lot IV., no application, had a great advantage over the others. But the results are more significant in other directions, especially as regards growth and development of roots. A fine, vigorous growth was produced in Lot IV. All the plants had a healthy look. The roots branched well and were covered with earth. In all the treated lots, not only was growth checked but the root-system was poor, especially so in Lot III. In many cases no roots were developed. When formed, they were long, slender and brown. The young roots coming from the stems were also brown at the tops. In some cases the stem was brown also.

Bordeaux mixture, eau celeste, modified eau celeste and ferrous sulphate were also used in three different strengths, as in the ammoniacal carbonate of copper. In

some few cases there was very slight injury in the use of Bordeaux mixture, eau celeste and modified eau celeste. The plants grown on these plats compared very favorably with those in the check plot. The following are the formulæ for different fungicides:

BORDEAUX MIXTURE.—*Lot I.*: Sulphate of copper, 6 lbs.; slaked lime, 4 lbs.; water, 22 gals. *Lot II.*: Half the strength. *Lot III.*: Double the strength of *Lot I.*

EAU CELESTE.—*Lot I.*: Sulphate of copper, 2 lbs.; ammonia, 2½ pts.; water 24 gals.; *Lot II.*: Half the strength; *Lot III.*: Double the strength of *Lot I.*

MODIFIED EAU CELESTE.—*Lot I.*: Sulphate of copper, 2 lbs.; carbonate of copper, 2½ lbs.; ammonia, 1½ pts.; water 24 gals. *Lot II.*: Half the strength of *Lot I.* *Lot III.*: double the strength of *Lot I.*

From these experiments, although not final, I think we may safely conclude that ammoniacal carbonate of copper should be used with some caution. With the other fungicides there was little resultant injury; yet even these might with some advantage be used in a more diluted form, since copper salts have proved effective in dilute solutions.

Iowa Agricultural College.

L. H. PAMMEL.

[Similar tests have been or are being made by other stations. Thus far they have failed to convince us that there is any cause for alarm, or any necessity of particular caution in the use of these fungicides on the grounds mentioned.—ED. A. G.]

VEGETABLE AND FRUIT NOTES.

SUGGESTIONS BY WIDE-AWAKE GARDENERS.



DURING the spring of 1888 the chorogi was introduced into this country under two names *Stachys affinis* and *S. tuberosa*. In 1890, Hemsley, writing of the botany of China, determined that the proper name of the plant is *Stachys Sieboldi* (of Miquel). It still remains to

determine upon a good English name for the plant. Many names have been proposed, as: Chinese artichoke, Japanese artichoke, knotroot, curlroot and spirals, all of which are more or less objectionable if the plant is ever to assume any importance in trade. A Latin name would hinder the popularizing of the plant. The simple generic name *stachys* might lead to confusion, as other species may come into cultivation. I have ventured to use the Japanese name chorogi. This name has been suggested in English journals, but does not seem to have been adopted by any writer.

Chorogi is a small perennial plant, having the aspect of peppermint or spearmint. It belongs to the mint family, and to a genus (*stachys*) which is well represented in this country. In fact, there is some doubt among botanists as to whether it is really distinct from a common wild *stachys* (*S. palustris*) which grows in wet places over a large part of North America. Its value to the gardener lies in the great number of crisp white tubers which it produces just under the ground. These tubers are thickened underground stems, like those of the potato. The illustration (page 285) shows a plant as it appears in November, after digging, with the earth washed from its roots. The detached tuber is full size, and represents an average specimen as grown in naturally poor but well-enriched sandy soil. Although the tubers are small, they are so abundantly produced as to make the plant a heavy yielder. We imported tubers in the winter of 1889-90. They were in poor condition when planted, and the growth for 1890 was small. The plants were allowed to remain without protection during the winter, and this year they have spread so as to fill a row

a foot and a half wide, and have produced a great number of tubers.

We have eaten the tubers in several ways, and I do not hesitate to pronounce the plant the most important acquisition to our list of secondary vegetables that has been made in several years. The tubers can be cooked in a great variety of ways, or may be eaten raw. They are fried, roasted, baked, pickled, preserved, stewed in cream, and made into various fancy dishes. They may be dug as wanted in the winter, and ordinarily enough of the plant will be left in the ground for propagation the following year. The greatest fault with the vegetable is the fact that the tubers shrivel and spoil if exposed to the air for a few hours. This will interfere with their market qualities. They can be kept in earth, however, and the French market them in moist shavings or in sawdust. Much of their value depends upon their crispness.

Several chemical analyses made here and in Europe show that the chorogi is esteemed quite as highly as the potato for food and for fertilizing properties. It appears to be safe to recommend the chorogi for trial in every home garden.

SPANISH SALSIFY.

A vegetable which promises to be of considerable value in this country, if once generally introduced, is the so-called Spanish salsify (*Scolymus Hispanticus*), a native of southern Europe. I have grown this for two years. It makes a root much like salsify, except that it is much lighter colored and considerably longer. Its flavor is less pronounced than that of salsify, but when carefully cooked it possesses a very agreeable quality which is somewhat intermediate between that of salsify and parsnip. It is adapted to all the methods of cooking employed for those vegetables. The particular value of the vegetable, aside from affording a variety in the kitchen garden, is its large size and productiveness as compared with salsify. We raise almost twice the crop upon a given area that we can secure from salsify, and no doubt it could be sold for that vegetable in the general market. The seeds are much easier to handle and sow than those of salsify. It is sown and cultivated in exactly the

same manner as that vegetable, and can be dug either in fall or spring. A good illustration of the root is shown on page 287. The Spanish salsify's greatest fault lies in its prickly leaves, which make it unpleasant to handle. But on the whole it is worth introduction into American gardens. L. H. BAILEY, *Cornell*.

JUDGE MILLER ON
TREE-FRUITS.

I am asked whether the buds of the Garber pear are hardy with me in unfavorable winters. A correspondent in Illinois states that the Kieffer has its buds killed at times when the peach-buds escape. This is new to me, as the Garber and Kieffer have not failed here in five years, except in 1890, when they were frozen after the fruit was well formed. But that freeze also destroyed all the other pears for the season, and not only ruined the fruit crop, but also injured most of my trees, so that the blight followed like

a plague. The Garber, Kieffer and Idaho only are left sound among 100 trees of bearing size, including some 20 varieties. Bartlett and Seckel fared as badly as any of the others. You may ask, "What are growers going to do with the fruit when the Kieffer trees already planted commence bearing?" If they prove as good generally as they are here, there is no fear of being overstocked. With our plan of keeping fruit I can have them all winter and until new pears next season are ripe. When wanted for eating, all we have to do is to bring some into a warm room for a few days to ripen. If I had Bartlett, Seckel and Kieffer, all in good condition, as many Kieffers would be eaten as either of the other two. For canning or preserving they

are just what we want. The Garber has a quince flavor, making it valuable for preserving where the quince cannot be grown, as seems to be the case on my grounds.



CHOROGI, *STACHYS SILBOLEDI*. From Bulletin, Cornell University Experiment Station.

I would like to learn from our readers who have tried the Japan plum what varieties succeed in the latitude of Missouri. The Kelsey is of no use here, although the tree and fruit-buds seem hardy. For three years past it has bloomed so early that the blossoms were killed by



DETACHED TUBER OF CHOROGI. (Natural size.)

late frost. I intend to set a few trees on a northern exposure and give them another trial. The Golden Beauty plum is really the only curculio-proof plum that I have yet grown. The insect attacks it as freely as it does other varieties, and leaves little spots on the surface, but I never found a worm in a Golden Beauty plum. About 20 varieties of plums may bloom with me this season, and if they set fruit the curculio will be dosed with Paris green or London purple. There was a time when wormy apples were rare in my orchard, but now they have increased so that it will be absolutely necessary to spray the trees if we wish perfect fruit. The man who sends wormy and imperfect apples to market hereafter will find that they "profit him nothing." With recent discoveries as to defeating insects and preventing grape-rot, it seems that we are on the high road to successful fruit-growing. My vineyard that has been neglected for a few years is being put in order, and we will try to have grapes again. The prospect for a fair crop of fruit here the coming season is good.—S. MILLER, *Montgomery county, Missouri.*

THE BUFFALO-BERRY.

I am glad to see that some of our nurserymen are introducing the buffalo-berry. I am anxious to know how it will thrive here in Ohio, under skies so much grayer, and in soils so much damper and colder than those of its native habitat.

Down in southeastern Utah it grows in thickets on the sandy flats along little mountain creeks. Apparently it has its limits, growing in the lower and hotter parts of the cañons, and up to an altitude of about 6,000 feet, where it gives place to the service-berry, wild gooseberry, and choke-cherry. The soil on which I used to see it growing was very dry, loose, mellow sand, in which, however, moisture could always be found at a certain depth. The bushes generally grew about 8 feet high, although my attention has been called to extraordinary specimens 20 feet in height. Individual plants are not showy. The leaves are light grayish green, rather curious and interesting, and the shrub is upright in growth. In July the fruit begins to be visible, and soon the whole thicket is aglow with red berries in great profusion. I know of no fruit shrub that bears more abundantly than the buffalo-berry. Every little twig holds as much fruit as can find lodging-place upon it. The berries are the size of currants. They truly vary as much in a natural state as currants do in cultivation. I have eaten buffalo-berries as large as small gooseberries, and others not larger than duck-shot. I hope the nurserymen are propagating the larger kinds, which I thought at time of eating were sweeter than small ones. At that time I was foreman of a cattle-ranch. Our nearest neighbor was 25 miles away, and our nearest orchard 100 miles; so we watched the buffalo-berry with much interest. We would go out in a big wagon to some promising thicket, the company consisting of one of my men, his wife and babies and myself. The babies promised to help pick, but I believe they generally stayed in the shade, and we carried them laden branches to despoil. I never knew a child to be

injured by eating the fruit, and most children are fond of it. It is slightly astringent, and the Mormon women assured me that it was quite medicinal. We cut off the heaviest laden boughs and carried them into the shade, where we stripped them at our leisure, comforting ourselves with the thought that the fruit would be all the more accessible next year for our pruning. The same destructive harvesting was practiced down on Price river, and the settlers very nearly ruined all the better thickets of fruit.

During August the berries grow sweeter, and in September and October they are in their prime. If the birds will spare them, they remain uninjured until Christmas, and I do not know how much longer. I would not care for a fruit that the birds would leave ungathered later than that time. We generally ate the berries raw with sugar, though sometimes we had them stewed or in pies.

It seems to me that the buffalo-berry would make a good hedge, where great strength is not required. The plant is somewhat spiny, and suckers from the root enough to keep the hedge thick. The fruit is not easy to gather from the bush, for the berries are almost sessile about woody stems. I set an orchard on the ranch, and among other fruits set was a row of buffalo-berries. They had made their first season's growth when I came east, but I never heard whether their fruit was finer for being irrigated or not. I brought some plants home to Ohio, and tried to give them good care, but they all died. I mean to try again, however, and shall make a special point of preparing the soil so that it may be light, sandy and well drained.—J. E. WING, *Ohio.*

SULPHATE OF COPPER AS A FUNGICIDE.

Sulphate of copper dissolved and diluted in water and mixed with various amounts of slaked lime is called Bordeaux mixture. This will prevent rot and other fungous diseases in the grape, but there are some serious objections to its use, and I think it entirely unnecessary to use the sulphate in combination with the lime. The resulting sulphate of lime clogs nozzles and pumps and has given me a great deal of trouble. The only good reason why lime should be used with the sulphate of copper is to prevent injury to the foliage of plants. But all fungous growths are delicate in structure, and may be destroyed by applications too weak to harm ordinary vegetation. Then why not dilute the sulphate of copper so that it will not harm plants on which it is used, yet be strong enough to destroy the fungus growths that prey upon them? Last spring I commenced to spray with a solution of two ounces of sulphate of copper in 50 gallons of water. Result, no injury to the vines, but there being no rot visible at the time I could not tell what effect it might have on the fungus. Three ounces to 50 gallons of water did no harm to the foliage; four ounces burnt the foliage a good deal, so we returned to the original strength, two ounces to 50 gallons of water, and continued to use this the season through, and the result was entirely satisfactory, better than it ever had been with the Bordeaux mixture. At one time we delayed

spraying a little too long, and rot made its appearance on the grapes, but the spraying immediately checked it. The brown spots turned black, dried up, and the berries continued to grow; the parts that were attacked by the rot showed only a slight scar. I have tried this method only one season, and may be mistaken in its efficacy, but it seems so reasonable to me that I shall continue to employ it in my vineyard.—E. A. RIEHL, III.

GROWING CABBAGE.

The cabbage is found growing by the dozen in amateur gardens and by tens of thousands in our market-gardens. Since it responds so readily to right treatment it is entitled to all the space, care and attention given it. The soil most suitable for the cabbage is a heavy sandy loam, with a rich dressing of well-decayed stable-manure, plowed in deeply and thoroughly harrowed. Mark off the ground into rows two feet apart one way and 16 inches the other. At each intersection scatter a little concentrated fertilizer, and set the plants deep, nearly to the first leaf. See to it that the ground is well firmed around the roots. Cultivate thoroughly and frequently, and hoe deeply. Of many varieties the following are the most desirable: Early Wakefield; heads conical; the most popular early variety with market-gardeners. Early Summer; ten days later than Wakefield, but larger; heads are flat and keep well. Early Win-nigstadt; two weeks later; a sure header, doing well where other sorts would fail. Early Schweinfurt; large; second-early. Fottler's Brunswick; standard late. Early Ulm Savoy; solid round heads of medium size.—CHAS. E. PARNELL, *New York*.

GROWING HIGH-BUSH BLUEBERRY.

I raised several thousand *Vaccinium corymbosum*, or high-bush blueberry-plants from seed some years ago, and have distributed them far and wide. It is the best of all the vacciniins as a fruiting-plant, and should be grown in every well-arranged fruit-garden. I think before long nurserymen will awake to its merits and begin to grow good plants. The trouble has been that the

plants heretofore sent out were so poor and so badly rooted that most of them died the first season. It is easily raised from seed. Sow in a soil of sandy peat, carefully water and shade until the plants grow to be two or three inches high, when they can be transplanted an inch

or two apart into well-prepared beds until they get strong, after which they will grow in any good garden soil. They do best with plenty of moisture, and when once

well established, will be benefited by a good dressing of manure as much as any other fruit-bearing plant. When small they are easily transplanted from the woods and pastures if taken up with a ball of earth attached to each root. Larger plants should not be used unless well cut back. In white cedar swamps thousands of young plants from three to five inches high might be collected. If carefully handled for a year, these can be reset at any time. In fact, if *V. corymbosum* is grown in a deep sandy soil, it is one of the easiest shrubs to transplant, for it can be removed when in or out of bloom. I have lifted hun-

dreds in full bloom and transplanted them without loss. Good varieties can be side-grafted under glass on more common varieties. Cuttings root with great difficulty. Selected varieties can be propagated by layering, if kept well mulched with sphagnum, and well watered.

A number of growers in Massachusetts are becoming interested in the cultivation of this plant, and are on the lookout for large varieties, so we may soon expect to see blueberries as large as cherries. Mr. Huntington, of Lynn, has now more than a dozen well-marked varieties of good size, some being one-half to three-quarters of an inch in diameter. Mr. Hervey, of Hingham, Mass., has also been growing blueberries as garden-fruits for several years. He considers them a success, and would not be without them for twice their cost. Benjamin Smith, of Cambridge, secretary of the Pomological Society, has

grown them a number of years, and says a few bushes give his family plenty of fresh berries during their season. From a small row transplanted last spring my boys gathered 8 to 10 quarts of fruit during the summer.



SPANISH SALSIFY. (See page 284.)

Beds of wild berries near large cities and towns are getting scarcer every year, and where there are good ones, you cannot, as of old, pick them without paying for the fruit. So if we want our children to go berrying we must either send them away into the country or bring the berry-bushes to our small gardens.—JACKSON DAWSON, *Arnold Arboretum*.

WHY WE PRUNE OUR TREES.

Tree-trimming requires sound common-sense, perseverance and watchfulness. To whomsoever nature has denied these attributes it is and will be a nuisance, and a task not to be undertaken. Some persons will direct the attention of a tree-trimming brother to the trees of the forest, and show him large and healthy trees that never have been trimmed. At first glance this argument seems convincing, but soon the fallacy of it becomes apparent. Forest-trees are for the purpose of producing wood, but orchard-trees are required to bear fruit. If we desire to grow timber-trees the knife should never be used. If we wish to raise fruit, the benefit of rational trimming deserves our consideration.

By proper pruning we give the tree just the form for our purpose, and compel it to bear early and annual crops of beautiful fruit. By rational trimming we can correct the irregular bearing of our fruit-trees, make them annual bearers, and increase the yield from year to year. Trees left to grow up at will may, after reaching a certain age, produce an occasional heavy crop; but between this harvest and the one following there is always an uncertain period of fruit-failure. The tree, to develop and ripen its fruit, has consumed all reserved nourishment, and has none to spare to develop its fruit-buds. We may see this clearly demonstrated in those apple-orchards which bear only every other year. A year or more is required for the development of fruit-buds which give blossoms and fruit. This irregularity in the bearing of trees may be prevented if you compel the tree to divide its sap among fewer branches, by cutting back some of these, breaking out or pinching off shoots, removing all superfluous blossom-buds, and last but not least, by thinning out the fruit. Rational tree-trimming is, therefore, nothing else but the removal of all useless branches in such a manner that besides the sap necessary to produce fine fruit enough is left for the production of fruit-buds for another season. Rational trimming will increase the size and beauty of the fruit, and enhance the value of the crop. The fruit, in drawing its nourishment from the tree, shows us how we can assist it to gain a larger size. To aid it we cut back branches above the fruit, prune out all useless growth, and thus secure to ourselves bountiful harvests and long-lived trees.—FREDERICK JAEKEL, *Pennsylvania*.

HOW I GROW FINE MELONS.

To grow a fine crop of melons we want the best thoroughly decomposed manure. The soil at the foot of a hill has a peculiar adaptation to melon-growth. Go to the woods and select rich and loamy soil at the base of a hill, raking leaves and soil all together. Haul this soil and put it in a convenient place for a compost-heap, about

one foot and a half deep. Now add good stable manure to about the same depth, then a layer of mold, and then another of manure, and so on until the heap is finished. Let it remain a few weeks, then turn it over, keeping the heap in a cone-shape. At intervals through the winter repeat the process. Now, if you have them, spread tobacco-stems thickly on the ground; four weeks before planting turn them under.

When ready to plant plow again, and if possible, follow with a subsoil plow, loosening the soil some fifteen inches, or break the ground half the depth, cutting half-furrow slices. Roll or drag and then cross-break, setting the plow twelve inches, taking half-furrow slices as before, and roll again. Then mark off both ways 6x6 feet, and at each crossing put two forkfuls of the compost, and make a large flat hill, mixing the soil and compost well together. Now plant 12 or 15 seeds in a hill and thin out later, saving two of the best plants in each hill.

As soon as the plants are up, cultivate all the space between the hills deeply and thoroughly, and every ten days until the vines interfere. After the vines are two feet long nip off the buds. When done cultivating the crop leave the soil smooth.—THOS. D. BAIRD, *Kentucky*.

MULCH VS. DROUTH IN STRAWBERRY-GROWING.

The protracted drouth of last summer and fall has more thoroughly than ever convinced me of the necessity of adopting more reliable methods for the culture of strawberries in this locality. Methods that might prove successful in the eastern and middle or more northern states would in average years prove a failure here. The air gets so dry and hot, the sun is so scorching, and breezes are so constantly blowing that the exposed soil is exhausted of moisture in a short time.

After having made almost a complete failure for two years in succession, I finally adopted the plan of mulching heavily between the rows, with most gratifying results. I harvested a larger yield and larger berries than any other grower in any portion of the state.

My plan is to plant in spring, rows 4 feet apart, plants 2 feet apart in the row. Cultivate well until June 15, training the runners in the row; then put between the rows as much coarse stable manure as can handily be thrown from a wagon, without covering the plants. A little careful placing and tramping will be necessary in order to get the ground well covered close to the plants. I never thought one could mulch too heavily and have been liberal with it. Mulch settles and rots quite fast, and plants will root through a good depth of it. If the season should be dry, no more attention will be required until fall, when runners should be clipped and weeds kept down. In practicing this plan for eight years I have not failed once to get a splendid crop. A patch so treated hardly needs any extra protection in winter, as there will usually remain sufficient covering to prevent the ground from quickly freezing and thawing. I have so far found only a few varieties well suited to this locality. Burbach, Crescent and Captain Jack head the list. Will give Michel Early, Crawford, Warfield and Haverland an-

other trial. After last season's fruiting I made a clean sweep of Jessie, Longfellow, Miner, Monarch of the West, Sharpless, Stayman No. 1 and Lady Rusk, the last being the least promising of any, hardly giving a perfect berry. Neither is Cumberland Triumph a success here. I wasted much labor trying to grow that celebrated variety. It is a fine plant and has luster berries but few of them, and these few are sure to blister in our hot sun.—A. B. CROSBY, *Labette county, Kansas.*

HOW I DISPOSED OF MY BRUSSELS SPROUTS.

For several years the produce of our large market-garden has been delivered directly to customers. We do not live near a large city, but supply customers in two manufacturing towns near by, and a novelty, or in fact anything our patrons are not accustomed to, must be introduced by degrees. Two years ago I tried brussels sprouts. I raised plants of the half-dwarf Paris Market, and it was a magnificent crop, but I could not sell it, as I had some other new varieties of vegetables, and I was liable to have the whole crop on my hands. So I set my wits to work to find a way of utilizing the sprouts. I looked over the late garden to see if I had ingredients enough for mixed pickles, and I had more varieties than those sold from pickle factories. The recipe for the dressing was obtained from the nearest factory, and then I began gathering the pickles, namely, two quarts each of string-beans, small cucumbers, brussels sprouts, ground-cherries and small onions; some green radish-pods, peppers and cauliflowers. These filled a large pail, and I delivered them to the customers with a copy of the dressing recipe laid on top of the dry pickling materials. This plan worked like a charm, and orders kept coming in long after the brussels sprouts were gone.

The next year I tried another scheme. I raised all the materials, prepared them according to directions, put them up in pint and quart glass cans and gallon jars (for hotels, etc.), and delivered them already prepared. Pickles put up in this way are very superior, and they found a ready sale, both in the dry state and prepared ready for the table. The demand far exceeded the supply. Too much cannot be said in favor of the brussels

sprouts. I found them easy of culture. I sowed the seed April 1, in a warm room, and when they put out the third leaf I transplanted them in boxes, and from these into the garden, in deep, sandy loam, made rich with stable manure, and gave the same culture as for cabbage.—MRS. J. GAILLARD, *Pennsylvania.*

BLACKBERRY AND STRAWBERRY PATCH.

Have the ground in productive condition for ordinary farm crops, and especially well drained, for the blackberry is as sensitive to water as any other fruit. Prepare the ground early and thoroughly. For Early Harvest I mark off the ground in rows $3\frac{1}{2}$ feet apart; for Taylor, Ancient Briton, Kittatinny and Snyder, 4 feet apart. We use a spade in planting, and have a boy to help. The blackberry root-cuttings are prepared as for propagation in nursery-rows. Now we plant the patch in strawberries, and after that plant the blackberry root-cuttings, dropping one cutting at each place where a blackberry-plant is wanted, in each alternate row already planted in strawberries. I am not particular as to the distance apart in the rows—2 to 3 feet—but am careful to get in enough cuttings to secure a good stand of plants.

I give the patch good and thorough cultivation, and grow the strawberries on the matted-row system. When good blackberry-roots were used, I always had a good stand of plants. The advantage in planting this way is to avoid transplanting, which puts the plants back one year. At the same time the land is in continual use. The strawberries will amply pay for all labor of planting, cultivating, etc., until the blackberry-plants are large enough to occupy the ground. The strawberries are mulched in the fall, and the mulching is left on the ground for the blackberries. This is quite an advantage to the growth of blackberries. Last season we harvested from nine rows of Early Harvest 125 feet long, two years old from root-cuttings, 500 quarts of fine berries, besides a second crop of strawberries, which was also a good half crop, as we had only one-half the original rows to pick from. The plants in the rows of blackberries had, of course, been destroyed in cultivation, and the blackberries needed the ground.—S. H. H. *DeKob county, Indiana.*

DESECRATION OF A GREAT PARK.



ENTRAL PARK, New York city, is world-famous as one of the finest pieces of landscape-art in existence. It is the one great playground of the largest city in the western hemisphere. As a creation of natural beauty, by man's skill joined to nature's forces in a place where only rocks and desolation existed before, it is scarcely par-

alleled in the world to-day. With this one work, surpassingly fine as it is, great New York is far behind each and all of the next dozen large towns of America; though she will be well in the lead when her new park-system is complete. But worse yet—O, the shame of it!—

worse yet, her alleged city fathers (?) have lent their aid to the horse-racing fraternity, who are leagued together to spoil the people's one recreation-ground by building in it a race-track! And, of course, at the same people's expense. That's the way in which "improvements" for the benefit of our dear gamblers, stock-jobbers and horse-racing brothers are usually created in the lordly Gotham town, a city where are huddled together most of America's 50 to 100 great millionaires and a million or two of the "people." First we chop off the people's grass and trees for a race-track, and then take the money out of the people's pocket to pay the choppers and diggers, with, perchance, a little bonus added for the political bosses in payment for the privilege! We cannot find words hot

or strong enough to voice our indignation at this flagrant outrage on nature; this despoiling of New York's one garden; this uprooting of thousands of beautiful trees and plants, destroying acres of lawn and millions of flowers; robbing two millions of people of a large part of their pleasure-ground—the bit of refreshing nature in many miles of dreary bricks and mortar, stones and filth and weariness. And all for what end? One would suppose that such a movement would be made only that some great public good might be consummated. But no;

it is all and only that a few dozen or scores of owners of fast horses may be saved the trouble of driving two or three miles further to reach the existing tracks, boulevards and country roads to the northward! And all at the expense of the people in park-land and decoration and money. Fortunately New York has some honest men left who will not see Central Park destroyed without a struggle; who will fight hard to save the gardens, lawns and woods. The fight is now on. May the right win, and the park be saved for its proper use.



TO SPRING.

*Lo, hither comes a youthful queen,
A virgin queen uncrowned;
With joy we greet her smiling face,
And loud her praises sound!*

*Modest, in face of our applause,
Her maiden blushes burn,
With downcast eye and drooping head
She laughs and weeps in turn.*

*Old earth, long parched with winter thirst,
Drinks in her grateful tears;
At bidding of her sunny smile
The earliest flower appears.*

*With this rare blossom, intertwined
With livening sprays of green,
We crown the rippling amber locks
Of our beloved Queen.*

—CHAS. T. WHITE.



. As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc., the publishers make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The article will be judged only by the practical and useful ideas or suggestions in them. Besides this premium, the gain accruing between readers by the telling of experience should be a sufficient inducement to contribute such notes.

I. LITTLE TWIGS.

"Let us go a-Maying."

The dainty wild arbutus is still in bloom.

FORSYTHIA SUSPENS A is a fine wall-plant outdoors.

A RED-STEMMED white primula is found among the novelties.

HAVE YOU a good variety of succulents coming on in your garden?

PEONIES should no longer be neglected. They form fine ornamental clumps.

A NATIONAL amateur gardener's association has been formed in England.

WANTED: A new strain of Lemoine gladiolus, having strong straight stalks.

FRUITS, plants, seeds, etc., for testing or examination by the editors of this journal, should be sent to La Salle, N. Y.

WHAT A WONDERFUL THING is a simple clod of soil! It can be made to produce violent poisons, healing medicines, delightful flowers and nutritious food.

BLUE FLAGS and yellow day-lilies (hemerocallis) combine handsomely when planted together.

PEACHES are being shipped from the Cape of Good Hope to London; why not to America?

IT IS PROPOSED to move that famous but crowded old botanical garden, the Jardin des Plantes, from Paris to Versailles.

THE MODERN IDEA of cemeteries is to make the resting-places of our dead into beautiful parks rather than dreary stone-yards. We commend it most heartily.

WHY FORCING ROSES have not done so well as usual the past winter about New York city, is a question which puzzles many florists.

A GOOD way to spread the interest in gardening is to lend your copies of AMERICAN GARDENING to sluggish horticulturists or farmers in your neighborhood.

POISONOUS GARDEN REQUISITES.—A seedsman of Barnstable, England, has been sued and made to pay damages, for having sold a poisonous weed-killer, without being a duly registered pharmaceutical chemist.

ARBOR DAY CELEBRATION is merely a first attempt in the direction of inculcating a taste for horticulture in the minds of the young. Soon perhaps we will see garden plats attached to every public school. Why not?

THE BOSTON CEMETERY authorities state that it is almost impossible to induce people to accept as a gift any dead trees in the cemeteries, even after they are cut up into suitable lengths for handling.

THE WORLD'S FAIR Horticultural building is advancing rapidly and begins to assume the appearance of a finished structure. Great activity prevails throughout the horticultural department during the present planting season.

CLEMATIS PANICULATA, a worthy ornamental climber, which is this season being offered widely as a novelty, was introduced into Europe nearly a hundred years ago. Like many another jewel among plants, it has waited long for introduction here.

LEMOINE GLADIOLUS.—Growers of this new race are sure to be surprised at the richness, colors and marking usual with it, but will be disappointed at the weak contorted stalks and the few flowers that appear in sight at any one time.

OUR KIEFFER PEARS three years from setting bore immensely, and where two-thirds were thinned out, the fruit was large and sold well in market two days before Thanksgiving. Fruit on over-cropped trees was small and of poor quality.—E. M. WARNER, O.

SPECIAL TO OUR FRIENDS.—We would call particular attention to the publisher's modest (?) appeal, in the advertising pages of this issue, to the friends of horticulture to assist in increasing the number of readers of AMERICAN GARDENING. Please refer to the advertisement pages, 2, 3, and 23 to 31.

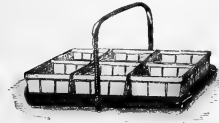
SPRING WOOD-FLOWERS are more plentiful during the month of May than at any other time in the year. Some of them, if transplanted, bloom well in our gardens. Among these are a number of the silenes, wild violets (*Viola pedata* is finest of all), trilliums, cypripediums, *Tiarella cordifolia*, the tiny dwarf iris (*Q. verna*), wild columbine and many others.

APPLES FOR QUEBEC.—The list of apples given below is well adapted to soil and climate of Quebec, northern Vermont and vicinity. *Summer*: Yellow Transparent, Red Astrachan, Montreal Strawberry, Titovka. *Autumn*:

Oldenburg, Alexander, St. Lawrence, Golden White. *Early Winter*: McIntosh Red, Fameuse, Wealthy, Bethel (Vermont). *Late Winter*: Pewaukee, Scott Winter, American Golden Russet, Ben Davis, Grimes Golden. The last is a little tender, but best of all.—R. BRODIE, *Montreal*.

ROADSIDE FRUIT-TREES.—We read that the province of Hanover, Germany, produced in 1890, upon trees along the waysides, a crop of fruit worth \$37,000, the region of Hildesheim a crop worth \$12,000, and that of Göttingen \$8,000 worth of fruit. The *Bulletin d'Agriculture* asks, "When shall we in Belgium plant the waysides with fruit-trees?" An English journal thinks the same question might be asked in England, and we feel like joining the chorus for America.

SIMPLE BERRY-TRAY.—A sample of a cheap and serviceable berry-tray was handed us by H. J. Seymour, Niagara Falls, Ont. It is made of common sheet-iron, bent and riveted as shown in illustration, with handle made of a piece of band-iron.



SIMPLE BERRY TRAY.

A GOOD IDEA IN SEED-PANS.—On ordering some shallow pans for starting seeds in the window, I directed the tinsmith to partition off two of the diagonal corners with strips of galvanized iron, about three inches long and of such a width that they would not reach within half an inch of the bottom, though even at the upper edge with the top of the pan. This affords me an opportunity of watering the soil without pouring any on the surface.—W. O. E.

WHERE ARE THE APPLES?—A few pieces of strawboard, evidently remnants of what was once a box, were received by mail from Virginia. The sender, whose address we found written on one of the pieces, also forwarded a letter stating that he had sent us two specimens of sweet apples. We have lost the apples, and our friend has lost our opinion of them. Probably the box was not strong enough, and temptation was too strong for some post-office employee. Always pack fruit carefully and securely.

II. THRIFTY SAPLINGS.

Dried and Sifted Moss.—The well-known author and gardener, Joseph Harris, of Moretown Farm, N. Y., gives in his *Rural Annual* an excellent hint on seed-sowing, which we can endorse from experience. The idea is to prepare a compost for potting, for hotbeds or for starting plants in boxes in the house by incorporating some dried and sifted moss with soil from the garden. Put in enough to make the soil light and spongy and then press it down firmly. The moss retains water and roots spread rapidly through the mass, so that when you pull up a plant for setting out in the garden, there will be a half pint, pint or quart of moss and soil adhering to the mass of roots that spread through it. We always mix a tablespoonful of superphosphate to a bushel of moss and soil.

The New York Botanic Garden.—A good beginning has been made toward founding such a garden in Bronx Park, Upper New York. This has been in the direction of needed legislation for the incorporation of the garden and the securing of stockholders. But more must yet be done in the direction of needed funds, for not less than \$250,000 is considered essential before the work can be begun. It is a project that should command wide interest, for its incorporators have in view nothing short of an institution that shall compare favorably with the Kew Gardens of London, and the Jardin des Plantes of Paris. In picturesque aspects it can easily excel both these famous gardens.

The Effects of Propagation.—Professor Bailey stated at the Buffalo carnation meeting, that propagating by cutting was not a deteriorating or devalizing process. That some varieties do run out is a matter of fact that cannot be denied, but why they should is quite another question; and why they cannot be kept in their pristine state is a question to be considered. While the great majority of varieties may not run out, there are some that will, in spite of every effort made to keep them in their healthy condition. Weak and unstable varieties are sure in time to disappear even under the best cultivation, while the majority of strong, well-fixed ones will be maintained. Propagation by cutting is not a devalizing process, nor does it tend to make varieties run out.

The Agapanthus.—Why is this beautiful and easily managed plant not more grown? Its needs are few and simple: A pot or tub of suitable size, light open soil, good underdrainage, an abundance of water during the growing season (with liquid or other stimulants in advance of the blooming period), and a cellar or shed where severe frost does not enter, in which to winter it. A good specimen with its numerous spikes of light blue flowers is very beautiful, and no more effective lawn or terrace plant can be grown. It has many strong roots, yet it can easily be accommodated in tubs made by sawing small casks in two.

Liquid Grafting-Wax.—The following receipt is much better than the old fashioned "beeswax, rozzum and taller" article. Melt 1 lb. of common rosin over a gentle fire. Add to it 1 oz. of beef-tallow, stirring well. Take from the fire and let it cool a little, then mix with it one tablespoonful of spirits of turpentine, and about 7 ozs. of alcohol. Put back on the fire and stir constantly until it boils again for a moment; then remove and when it cools it is ready for use. This wax is cheap, easily prepared, and will keep a long time unaltered. It is applied with a wooden paddle, in as thin a coat as possible. Within a few days it will be almost as hard as stone. It never softens or cracks, and is not affected by either heat or cold. It is most excellent for covering wounds on trees.—W. H. RICE, *Indiana*.

A Tree-Planting People.—Deplorable as is the past ruthless waste of forests in America, there is comfort in the knowledge that more trees, shrubs and vines are being planted to-day than ever before in the history of the world. This is apparent in the report of the last

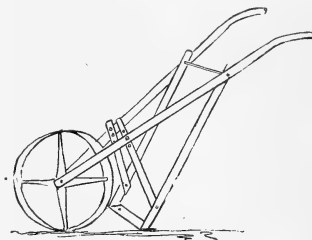
census, from which it appears that 4,510 nurserymen in this country were growing for sale on their grounds in 1890 a total of over three billion trees, vines, shrubs and plants. Nurserymen report that their sales of stock have been remarkably good in recent years. That Arbor Day observance has been very helpful in calling forth interest in planting is most certain. Now, if all the planting that is being done were well done, there would be an inestimable gain. But we know that this is not yet the case, and here the need of educating the people by the reading of instructive books on planting is apparent. If a million copies of the Rural Publishing Co.'s little elementary work, "How to Plant a Place," were distributed among young planters, the percentage of loss by inferior planting would be decidedly lessened.

Interesting Facts.—At the time of writing these words, the first day of spring, the snowdrops are opening. They came near blossoming a week ago, but a fresh visitation of winter set them back again. To-day they are growing and in bloom; yet where one penetrates the layer of mud which the warm sun has thawed, the roots are found to be embedded in a frozen crust. The bulbs of some hardy plants are near the surface; others lie much deeper. Among the latter are those of the dog-tooth violet (*erythronium*). Thomas Meehan, in his monthly, referring to their unusual and uniform depth, says: "A sort of stolon is sent out from the bulb of last year, which runs deep in the ground when the root happens to find itself near the surface, but does not do so when it is already as deep as the plant itself seems to think it ought to go. Just why plants have these powers of discrimination has never been clearly ascertained." In the case of lily-growing, it is well known that while the average kinds succeed best when planted five or six inches deep, the California species require twice that depth.

Spare the Trees.—Not many years ago trees throughout the rural districts were valued only in proportion to the stove-wood or lumber they would yield when cut. To-day there is a growing appreciation of trees for shade and shelter and beauty. Of two farms side by side, the one having fine trees here and there, in pastures, along the lane, and above all in the street and about the buildings, the other with not a tree outside the orchard, perhaps, the former should certainly command a much better price, other things being equal. What a pity that all land-owners cannot understand this. On a farm less than a mile from the writer's home, a handsome soft maple standing by the roadside was recently cut to the ground for fire-wood. Not very far distant is another farm of seven acres with two large white elms standing a few rods back from the highway. Lately we noticed that the owner had girdled one of these trees with a view to killing it, and probably the other will have to go a year later, unless the solicitations of neighbors can prevent. If these trees were standing on the writer's grounds a consideration of \$500 each would be no inducement to have them cut. Oh for a law making it a criminal offense to take the life of a fine tree!

Park Enemies.—A blow of such a portentous nature has been struck at Central Park, New York, as to fill friends of city parks generally with alarm. It is nothing less than the passage through the legislature of an act authorizing the establishment within its limits of what is termed "a light-harness drive," but which really is to be a race-track. Lovers of parks everywhere should be on their guard against conspiracies of this kind. It must be insisted on that the object of parks is to supply the restfulness of the country to those who live in towns, and that every step that is taken in the direction of destroying their quiet and pastoral character should be strongly opposed. It is said that a big combine is reaching out for "privileges" in the Yellowstone National Park. After they get the privileges what will the rights that are left count for to the public?

Home-Made Weed-Killer.—R. A. Kummel, of Indiana, sends us the device here shown. The illustra-



HOME-MADE WEED-KILLER.

tion needs little explanation. The weeding-blade is made of an old saw-blade, and fastened to a frame which may be raised or lowered at will.

A Glorified Brush-Pile.—I used to admire the nasturtiums even in the days when sprawling plants, covered more or less with faded-looking, reddish yellow blossoms were the prevailing style; but since I have come to know the choicer kinds my admiration is intensified. Last summer there was a pile of brush in a depression in my garden. We did not find time to fill it in the spring, so the soil about it being good and no other place available, I planted nasturtium and morning-glory seeds near by, and left them to their fate. In a short time they were running riot all over the brush, making a blaze of color with their dazzling scarlet, golden and rich maroon-colored blossoms. They had barely reached their prime when "the convenient season" arrived, and the depression was filled with earth; but not before I had taken many bloom-laden branches to brighten the living-room. Several nasturtiums rooted quickly, were potted off in soil, and during the dull dark days of winter they have brightened with their brilliant coloring, and perfumed with their spicy breath, a corner of my little greenery.—ELDER'S WIFE.

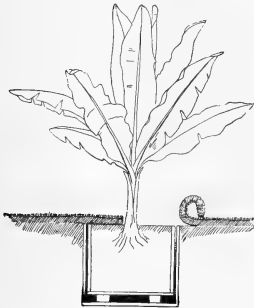
Catesby's Leucothoe.—In the issue of THE AMERICAN GARDEN for August, 1889, the two *andromeda*, *mariana*

and arborea, were well described. Another one not so well known, but also native of the southern Alleghanies I tried to describe in the May number for 1891, but in going through the press the name was changed to mariana, which it only slightly resembles.

The shrub referred to is known as *Andromeda Catesbaei*, *A. axillaris*, *A. spinulosa* and *Leucothoe Catesbaei*, names given by botanists Walter, Michaux, Pursh and Gray. Unlike the two andromedas mariana and arborea, it is an evergreen, with glossy, shining leaves which often take in midwinter a metallic purple cast. These leaves are serrate and acute lanceolate, with very narrow tapering points often an inch long. The shrub's branches are of slender drooping habit, their tips trailing upon the ground so that a well-grown bush of it is a shapely mound of evergreen, with branches drooping outward from the center. In spring-time this green mound is thickly frosted with panicles of white bloom. The flowers resemble in shape and size those of other andromedas, but are borne in shorter, more thickly set panicles in the axils of last year's persistent leaves, and are almost hidden by them. I have often cut branches three feet long set thickly with bloom, but the odor is unpleasant, somewhat like that of chestnut-flowers. It is so faint, however, as hardly to be noticeable. The seed-carbels of this andromeda look like small brown nut-clusters, and are retained throughout the winter until late in spring. The buds, too, are formed in autumn, and look like sharp little spines an inch long, so tightly do their brownish bracts inclose them. This andromeda or leucothoe is usually found growing along the banks of streams in moist places, but bears transplanting even into upland gardens, if given a sandy soil and partial shade. It blooms during April and May, and forms a graceful and beautiful ornament for lawns at all times of the year.—L. GREENLEE.

Setting out Large Plants.—A common custom when putting out bananas, palms, oleanders and other tender

plants for the summer, is to set them about with the boxes or tubs in sight. A more effective way of using many kinds is to sink out of sight the tubs in which they grow, giving the appearance that the plant is growing naturally in the new place. The engraving shows how a box may be lowered into the lawn



SETTING OUT LARGE PLANTS.

and entirely hidden, conveying the idea that the plant grows out of the grass. First the sod is rolled back; then an excavation some inches larger than the tub is carefully

made and lined with rough lumber, into which the box is lowered as shown. There should be at least an inch space around the box after it is lowered into place. The sod is then straightened into place, and you have every appearance that the plant grew where it stands.

Rustic Baskets and Boxes.—In these days almost every woman grows flowers, some more, some less, and I venture to say that no one derives more pleasure therefrom than does the woman who must economize more closely elsewhere in order to procure the few seeds or plants required. For her the problem of vessels in which to grow such as require pot-culture is not always easily solved. The ever-present tomato-can, in its various sizes, meets many requirements, and when painted a pleasing but inconspicuous shade of brown or gray is both useful and ornamental, but is not made of shapes and sizes to suit all cases; then something else must be devised. Neatly-made rustic-work is generally pleasing, but the more pretentious specimens are too difficult for average feminine hands to manufacture successfully. With me the "cob-house" is a favorite pattern for hanging-baskets, stump-boxes, etc. It is easy of construction, being composed of poles, from the thickness of one's thumb to half the size of the wrist, cut into pieces usually from 6 to 20 inches long, length and diameter of sticks varying according to the size of article to be made. Lay down two sticks parallel with each other a little less than their own length apart. Across these lay five or more sticks to form the bottom, and nail the sticks where they cross. Build up the sides by laying two more sticks across the ends of the previous layer, and if intended for a stump-box nail each course at the corners as it is laid. If making a hanging-basket, holes must be bored where the sticks cross, and stout wire (No. 10 or 12) passed through the holes and bent to form a loop at top and bottom. Chains or wires are attached by which to suspend the basket, the interior is lined with fresh sheets of moss and filled with rich mellow soil, plants being inserted between the logs as the basket is being filled. With care to supply water in sufficient quantity, such a basket, filled with "whip-cord," "lobster" cactus or tradescantia, will be a source of pleasure throughout the summer, at least, and require but little expenditure of time in its construction.—ELDER'S WIFE.

A Geranium Talk.—Like all other people I want bushy plants. In spring I take from the pots plants that have not a good shape (those that were rooted the year before, or are left over in small pots from last season's trade). All these I plant in the open ground, and only leave them there until they break at every joint. When these new shoots are about an inch or more long, I take the plants up and pot them, leaving as much soil as possible adhering to the roots. After potting they are watered well and kept in the shade till new growth is noticed; then they are given more light, careful general treatment, and buds are pinched off until fall. They are brought in before they get chilled and placed in a sunny window or greenhouse in a somewhat even temperature not too high, and are regularly watered, aired and sprayed. Such treat-

ment gives a profusion of fine flowers and compact shapely plants. Of course variety has much to do with the shapeliness of plants. Select those having short joints and single or semi-double flowers, such as Gloire de France, Bishop Wood, White Swan, etc., and leave the giants, like Golden Dawn and others, for gardens or parks, where they look well and are in the right place. After I get my plants in good shape I keep them from year to year. I have some that are seven or more years old, and for that reason are valuable as bloomers.—G. B. DIEMER.

Vines About the Veranda.—

How charming a veranda may be rendered by the use of climbing plants of various kinds is shown by the pretty engraving here given which represents a porch in front of a subscriber's home in Illinois. One thing is plainly set forth: We are not dependent upon garden area for pleasing effects with plants and flowers. In the present instance an *Akebia quinata* and a *Clematis Sieboldii* are the bolder growers employed for entwining the post and railing in a manner quite delightful to the eye. In the suspended basket some vigorous maurandia and vinca plants are growing, forming a perfect mass of green. The foliage of the basket-plants contrasts prettily with that of strong-growing climbers, as it is finer cut and more delicate in texture. From the rustic stand in the corner a trailing mesembryanthemum reaches to the floor. The rustic pot to the left of the center on the railing contains a young Japanese maple



A VERANDA CORNER IN A CHICAGO SUBURB.

Giant Pansies.—Secure a shallow box and fill it with moderately rich soil containing some sand. Press the earth down firmly, sow some Giant pansy-seed in little drills, and cover with pulverized soil. Be sure to firm the surface of the soil again after covering the seed. Now place the box in a shady but warm place and keep the soil moist, neither too wet nor too dry. When the plants have attained the height of one inch, transplant into another shallow box, two inches apart each way. About the first of September select a place partly shaded, having the earth well loosened and made very rich, with well-rotted manure. Move the plants from your box into this prepared spot and set them five inches apart each way. Give plenty of water and do not allow many buds to appear. Pinch them out, until you are sure that the plants have a good stocky growth. Do not allow over three stalks besides the main stem. You will thus get monstrous blossoms. When the winter sets in throw some leaves on the bed for protection and you will have many giant pansies again in the spring.—D. D. P. Victor, N. Y.

The No Fence Improvement.

—As a possible result of the "no fence" campaign inaugurated by the AMERICAN GARDEN three years ago, it is interesting to note the following from the *Hartford Times*: "Driving on the beautiful avenues of Hartford, it is singular to notice how many people have encouraged the abolition of fences around door-yards and lawns. These open and unguarded spaces give opportunities for dogs, cattle, runaway

horses, rough boys and other nuisances to invade and misuse the grounds up to the very doorsteps. Also, the absence of a fence gives an unfinished and incomplete effect. It destroys all sense of privacy, security and that most essential feature of a home, an air of repose. Both practicability and poetry are apparently banished from a home where there is no fence or some kind of an inclosure surrounding it. The fence need not necessarily be high, ugly or forbidding, but surely a low pretty fence or hedge adds much to the comfort, protection and appearance of a house-garden or dooryard, even if the latter is but a strip of turf. The lack of a fence would also be considered an architectural mistake, for, it is said by those who have studied such matters that a house close to the street needs the fence from which to rise, as from a support and base, as much as a statue needs a pedestal. Without the fence, the house instead of looking like a settled homestead, looks like a building that has been moved from its place and dumped down anywhere. The fence takes away from the feeling inside the walls of being all outdoors."

Table Decoration.—Low bowls are very desirable for flowers on the table. A quaint china bowl, such as most families have brought down from their grandmothers, has an air which suits the modern idea of decoration. Every flower should be fresh and perfect, and old-fashioned flowers are preferred for such arrangement. A fanciful device, quite easy to arrange, is a sheet of looking-glass fringed with grasses. Lying upon this are water-lilies among their leaves. For this arrangement it is necessary that the lilies have short stems. Often low banks or mounds of flowers are raised, as of lycopodium, in which tulips are stuck as if growing. The foundation for the bank can be made of damp moss, thus keeping the flowers perfectly fresh. Simpler designs suit better the taste of most people. The placing of small bouquets at each plate is a graceful attention, and one usually appreciated. A few flowers in a wine-glass of water are also often placed beside each plate or those of guests. In selecting flowers for this purpose, or for table decoration of any kind, highly perfumed ones are not desirable, as their odors, combined with the heat and light, and the steam of food, are apt to be sickening. For this reason ferns are always in favor, and the bright colors of the geranium lend a cheerfulness to a dining-table not easily obtained in neutral tints and shades.—MRS. L. H. GALE.

Xerophyllum asphodeloides.—It is a singular fact that a plant of such marked beauty as the "turkey's-beard" or *Xerophyllum asphodeloides*, should have remained so long unnoticed in this country. It is eminently suited to landscape-planting or wherever permanent effects are wanted. Its fine evergreen foliage in winter is very pleasing, and when it is topped by the tall spikes of creamy white flowers in June, the effect is beautiful beyond description. A good-sized clump will have a spread of foliage two to three feet across. Individual leaves are often three feet long by less than one-twelfth of an inch wide, and rise in graceful curves with the tips drooping

to the ground on either side. The flower-spikes appear in June and remain beautiful a long time, as a single spike will often produce flowers for the space of a foot or more, growing upward as they successively expand. When planted in masses, with a background of evergreens, they produce an effect of more than common beauty. In England the xerophyllum is taking a high place among hardy plants, where it has been fully tested and its great value unquestionably proved. It has twice received special distinction from the Royal Horticultural Society, once by a first-class certificate, and again by a special award of merit. If spikes of this flower are cut and placed in water they will keep for two weeks, and what could be finer for drawing-room decoration than a pitcher filled with these soft, white blooms?—F. L. BASSETT.

Truck-Growing for Wealth.—The ordinary conditions of success must be met if we expect to succeed in any business. The city man who undertakes to grow fruits must compete with practical men who possess the necessary knowledge, experience and mechanical dexterity. To succeed, even the practical man must have the right soil, in the right locality. He must have capital sufficient to start his business and to wait a few years for results. He must have persistent pluck to cultivate the soil, to care for his plants, and to fight weeds and insects month after month and year after year, without receiving much income from his fruits. What city business is likely to bring wealth to an impecunious, inexperienced man? If there is such a business in the city the country man cannot compete in that respect with the city man. The rich man who wishes to reduce his capital may safely resort to fruit-growing. If he does a good share of the manual labor he will be likely to eat strawberries that cost five cents each, with a good appetite. Many farmers fail as fruit-growers. Inexperienced city men need not expect to increase their capital in this business.—E. MORDEN, Ontario.

Growing Lima Beans for Market.—This section, called "the home of the Lima bean," lies along the shore of Lake Erie where the pound-nets are lifted and tons of small fish are discarded every day. An enterprising gardener conceived the idea of trying fish as a fertilizer for his beans and it proved a success. These fish are mostly perch, weighing one to three pounds. When the ground has been made ready for the beans the rows are marked out with a horse and marker. In every check-row a hole is dug with a hoe, a fish planted and covered with dirt and poles placed in position to mark the spot. This is done about a week or ten days previous to planting the beans, which are dropped upon the soil directly over the buried fish. Planted in this way they make a strong growth, but the leaders are not allowed to grow higher than six feet and all runners are broken off every week, no vine being allowed to encroach on its neighbor. This causes them to form pods from the ground upward, early in the season, and the crop will all be marketed by the time the first frost falls, while with other treatment they just come well into bearing before frost cuts them down.—MRS. JOHN GAILLARD, Pa.

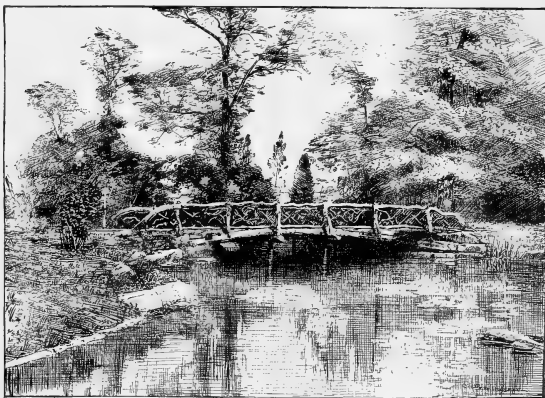
A Fine Rustic Bridge.—The pretty water view on this page, reproduced from the *Gardeners' Chronicle*, shows what a delightful effect rustic-work may contribute to a scene of this character. Not only is such a bridge one of the most effective that could be employed in such a situation, but it should be by far the cheapest bridge that could be constructed. The owner of the place or his gardener should be ingenious enough to build a substantial affair of the kind, while the material need not be difficult to obtain. The best time to cut wood for rustic purposes is in the last half of the winter, which gives it time to season gradually, and without bad cracking before summer when wanted for use.

Apple-Growing in Maine.—About twenty years ago I planted an apple orchard on a protected southern slope. The trees were seedlings. They formed low, spreading heads and their limbs were grafted about three feet from the ground. The grafts have made good growth and yielded well, but the large branches are almost horizontal, and the rays of the noonday sun striking those on the north side of the trees at right angles, scald them badly. They also break down when loaded with fruit. The branches on the south side of the trees are not injured. On one tree the main branches on the north side stand nearly perpendicular, so the sun's rays, which cross them obliquely, can do no harm. The tender sorts are injured at the trunk, but the hardy seedlings are not. Trees of Baldwin, Porter and Hubbardston Nonesuch are scalded most. I had a small orchard of Benoni trees which were top-grafted six feet above the ground. The grafts, like the stocks in which they were set, grow upright, have come to bearing, and are doing finely. These grafts are Jewett Fine Red, and fail with me, the variety being tender, except when treated as mentioned. In this state we must select hardy upright-growing sorts and give them good cultivation and but little pruning. Recently I visited an orchard situated on an exposed northern slope. The trees were in bad condition, the bark on many having burst off entirely around the trunk. There was no sun-scald and the branches and tops were all right, but the stems had suffered severely. The hardy sorts seemed to be injured as badly as the tender ones. Extreme protection as well as extreme exposure should be avoided.—CHARLES A. MILLER, *Maine*.

Dating Seeds-Packets.—The legislature of the state of North Carolina passed a law last year which clearly recognizes that to put old worthless seeds into new packets, with bright chromo-prints, does not rejuvenate

the seeds. In place of bright colors on the outside of the packet it wants a date showing exactly when the seeds within the paper were grown. Now, if any person or persons doing business in the state shall sell or offer for sale any vegetable or other seeds without such a date upon the packet, they are liable to a heavy fine or imprisonment. To mark a packet wrongly also subjects the offender to a serious penalty. There is only one small matter which North Carolina Solons have omitted, namely, to provide means for proving conclusively the age of seeds to the satisfaction of a jury. Is it not true that without this violations of the law cannot easily be proved, and the law itself will remain inoperative?

A Plant "Kleptomaniac."—One of my friends who is in good circumstances, owns a nice house and a lovely garden and is passionately fond of flowers. She spends hours caring for them and has many and choice



A BEAUTIFUL AND EFFECTIVE RUSTIC BRIDGE.

varieties. She drove around to see me the other morning and admired a double petunia in my front yard. And it was a beauty! A rich maroon, spotted with bright yellow. I showed it off with pride, and laughed to see the "I must have it!" in her eye. I left her at the gate and went in to wash my breakfast-dishes. When I went out after sundown to water my double petunia, it was gone. Imagine my feelings! I hastily put on my things, walked a mile and a half to my friend's house, leaned over her front fence and there was my lovely flower, blooming away beside a General Jacqueminot rose. It was nearly dark, and no one was in sight. I hastily dug up my plant, and then, wishing to leave a reminder of my visit, put my visiting-card in the soft earth where the plant had been. We are still friends. She calls on me, but this little episode has never been referred to. It would be safe to leave your purse in her hands, but a coveted plant is where the kleptomania comes in.—SISTER GRACIOUS.

Railway Gardening.—It is a pleasure to note that from year to year American railroads are giving increased attention to gardening as a means of adornment for their station grounds. Much taste and care are now bestowed upon the architecture of railway buildings, and it is but fair that railway gardens should receive like attention. The railroad companies thus become public educators. The fine gardens they place before the public are object lessons, taught under circumstances sure to make a strong impression on the beholder. One never sees a train stop in view of a pretty station garden, but that all eyes are turned towards the refreshing sight of soft green turf and blooming flowers. The travelers speed onward to their homes with a quickened sense of their own opportunities for possessing fine gardens. The *Philadelphia Times* recently said concerning the gardening along the line of the Pennsylvania Railroad Company, that at the opening of last summer 128,000 plants of various kinds were shipped from the bothouses at Newark to supply the stations of the company wherever flowers were used in the gardens. The main line, west of Philadelphia, went into the business of decorating its gardens only four years ago, and this year ordered from the foreman at Newark three times as many flowers as it had ever done before. Being of natural and not of forced growth this gardening system is in a very healthy state. When the company found that they would have to provide means for supplying themselves with large quantities of plants without being dependent upon the whims and charges of professional horticulturists, they set about looking for a suitable place to establish greenhouses of their own. Their attention was attracted to a hothouse in Newark. J. C. Shivler, who has been the station-agent there for many years—since the days when the locomotives burned wood instead of coal—was an earnest gardener and had a good hothouse. This was a convenient place, so they made him an offer which he accepted, and they bought him out. This was the nucleus of the company's gardening plant, and they have added to it until now there are six greenhouses and 250 sashes of hotbeds. There are two greenhouses of 65x20 feet each, two of 65x12, one of 48x20 and one of 20x12. Twenty or twenty-five men are employed during the summer to go up and down the road, visit each station once or twice a week and keep the gardens in order. This is on the Philadelphia, Wilmington and Baltimore railroad and the Baltimore and Potomac; but the main line and the West Chester branch also have similar sets of employees. The work of preparing for the next season commences annually about the 15th or 20th of September. Propagation of the various plants then begins and is continued all winter. Shipments commence about May 1, and are finished about July 1, when every station has its full supply of flowers. Mr. Rose, the gardener, sent out last season 128,000 plants of all kinds, yet he had 10,000 left over. This great total included 30,000 coleus, 30,000 alternanthera, 10,000 canna, 10,000 stevia (variegated), 10,000 echeveria, 10,000 vinca, 8,000 dusty miller, 7,000 geraniums, 5,000 *Ampelopsis Veitchii* (Boston ivy), and

8,000 miscellaneous plants, such as honeysuckles, begonias, trailing vines, veronicas, petunias, etc.

Yet with all these of their own production the company sometimes runs short of general bedding-plants, and last year they bought nearly 6,000 to supply a deficiency. Their plant is being enlarged to enable their own staff of hothouse men to meet the demand. In addition to the establishment at Newark, the company has a large nursery at Christiana, Pa., embracing an area of 26 acres, with from 16,000 to 20,000 feet of glass, and from which also about 100,000 bedding-plants, besides shrubbery, are sent out annually for main line and New York division.

Transplanting Lessons.—Given a cloudy day, seedlings in right condition, a thick mat to sit on—you can buy one made of rubber, but an old straw one answers every purpose—and you need ask for nothing more in the way of earthly enjoyment, unless it be to have a robin singing in the apple tree near by. I have a basket of very fine soil, and as I plant each little seedling, I put a handful of it around the tender roots. It is like a soft blanket that will warm and make comfortable the baby shoot. Transplanting sweet-peas, asters, four-o'clocks, balsams, etc., is very little trouble, but petunias and other small seedlings take lots of patience; still a plant-lover is sure to have this, or must learn it. One has to get hard-hearted and learn to throw away (if she can't dispose of them over the fence to a neighbor) those plants which she cannot get into the space at her disposal. I always keep a refuse-basket by my side for the poor discarded seedlings, sticks, stones or hard bits of clay. Whatever you do or don't do, be sure to water freely. It settles the soil around the roots of the tender plants, and if the sun comes out the moisture from the damp earth keeps the leaves from wilting. Water twice a day if there is a hot wind, till the roots get down far enough to feed on the moisture stored below. I don't transplant poppies. They refuse to submit to the operation. If they come up in a thick clump, I pull up half of them. They are accommodating, and this is my rule for them. Where they self-sow, let them stay unless you want the place for something else. Springing up here and there, their bright colors show off among the marigolds, or other annuals; as they get through blooming pull them up. They will be sure to ripen seed enough for next season.

—SISTER GRACIOUS.

The "California Cold Process."—How skillfully these rascals of the Bain and Staples type disguise their bait! Note the apparently innocent beginning of the following communication, received from one Rose R. S., of Michigan: "Will some one please write me what will remove grease spots from carpets? I have a nice carpet nearly ruined by grease. I have peaches, berries and grapes now over a year old and as natural as when picked. I use the California Cold Process. You do not cook nor seal the fruit, and it only costs a cent a quart to preserve it. If any of your readers wish I will send them a small sample of berries by mail and tell them

just how to put them up. It is much nicer than canned fruit and much less trouble and expense. You can put up a bushel of berries in about ten minutes." Something like this is sent to other papers also, and many of them are taken in. Our readers will do well to look out for the fraud.

Water-Lilies from Seed.—It is not generally known, perhaps, how easily some varieties of water-lilies can be raised from seed. Last year I obtained a package of seed of the Zanzibar water-lily (*Nymphaea Zanzibarensis*), which proves to be an annual and of the easiest culture. About the first of March I filled a common bowl three-fourths full of leaf-mold, and after making it firm I sowed the seeds, covering them slightly with sand. The whole was then covered with about an inch of water and set upon the mantel-shelf near the stove-pipe. In about two weeks they began to germinate, when they were removed to a sunny window. Here they were kept until they had gained considerable size, when a common wooden pail was filled about two-thirds full of rich earth and the seedlings transferred to it and covered with two inches of water. They remained in this until they became large plants, with leaves three or four inches in diameter, and it was truly astonishing how soon the tiny seedlings reached this size. Tubs made by sawing molasses-hogsheads in halves were then sunk into the ground,

and filled more than half full with a compost composed of good soil and well-rotted manure in equal parts. One or two plants were set into the center of each tub, and an inch of coarse clean gravel was placed on the surface to keep the soil down and the plants in their place, and the whole covered with a few inches of water. No further attention was given except to add water occasionally as it evaporated. I was surprised to find that the water in the tubs remained clear throughout the season; the growing plants in some way keeping it pure and wholesome.

In a short time the water-lilies pushed up with surprising rapidity leaf after leaf of large size until the space within the tubs was completely filled with them. About the latter part of July they began to flower, and they blossomed continuously until they were cut down by the frosts. The frogs came and made their abode in my miniature lily-ponds, and seemed to like their new quarters very much, as they remained even after cold freezing weather. The color of the flowers is either a beautiful light blue or a bright pink. They stand up well out of the water and the same flower opens for several successive days, closing about the middle of the afternoon. Finally they settle back into the water again to perfect their seed, which is always ripened under water.—S. MANSFIELD.

COMMENTS BY READERS.

[One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

Trimming Trees for Planting.—H. M. Stringfellow, a successful fruit-grower of Galveston county, Texas, strongly advocates cutting away most of the tops and nearly all the fibrous roots of trees, as described and illustrated in the AMERICAN GARDEN for November, 1890. He told me that his practice was to cut off all fibrous roots, leaving nothing but short stubs, and trimming the tops short also. He claimed that if so prepared the new roots would start fresh and vigorous, and reach out deep for moisture and food, forming roots more like the original tap-roots, which nearly all tree-planters agree is highly important. Now if this is correct, the system has some advantages. Much time and labor in setting the trees would be saved, also much expense in packing and shipping, if trimming were done at the nursery. If trimming were done early in spring, or at time of digging, the wounds would be healing and much of the energy and life-force of the trees would be saved. It has for years been my practice when I received peach trees from the nursery to trim off all the side branches, cut back the tops and trim off the broken ends of the roots smooth, before heeling-in, if not ready to set them in the orchard. If they are well heeled-in, in moist earth, the buds begin to swell, and the ends of the roots to become callus much sooner than those of trees left untrimmed. I recall some instances which prove to my mind the correctness of this idea, and that it is at least

well worth testing more fully. Some five or six years since I received a May Duke cherry, a small inferior tree with practically no roots—two or three small broken stubs, two to four inches long, and no fibers. I had little hope of making the tree grow, but I set it near the house and watered it occasionally. It started nicely and has grown vigorously ever since, although for the last four years it has stood in a grass-plat and the seasons have been dry. It is now a fine healthy tree, 10 or 12 feet high and 3 to 3½ inches in diameter. My brother, a fruit-grower of long experience, tells me that for years it has been his practice to shave off the small fibrous roots from trees before setting, believing them to be useless as well as in the way.—M. L. McCLANE, Michigan.

Native Apples.—E. P. Powell speaks in such a way of making a change in apple-culture by the addition of native sorts and of wild apples, that the reader would infer there were in colonial times wild apples of which our present sorts are an improvement. This, if true, is news; as we know of no native sort, except *Pyrus coronaria*, the common wild crab-apple, and *Pyrus angustifolia*, of Pennsylvania and southwards. Downing says that as yet no cultivated varieties of the apple have been raised from our native crabs, but from seeds brought here by colonists from Europe. Yet Mr. Powell says that the Indians had wild apples and some very good seedlings. We in the west, who are looking for just such

valuable seedlings (as our's is a hard climate), would like to have a list of them. A cross has been made on the wild crab by C. G. Patten, of Iowa. If we remember correctly, he used the pollen of the Duchess. He improved the size and got quite a showy apple, but nearly all the astringent crab flavor was retained in it. The Iowa State Horticultural Society, with the best skill in the state and at considerable expense, crossed during last season a large number of blossoms of the wild crab. The tree upon which the work was done produces the finest and most showy wild crabs that have been found in the history of the society. At this writing I have some samples on my desk. They are larger than the Soulard, a little flatter (looking somewhat like an undersized Janet), greenish yellow and russeted around the stem, which is set in a very shallow basin. The blossom is rather deeply set, slightly corrugated around the basin, which has a few dots scattered over it and some russet streaks. The stem is from two to three inches long. The native odor of specimens is strong, and they are in every way handsome crab-apples. It is the intention of the society to breed a new race by crossing on this stock, and if possible to put the hardness of the wild crab into a new race of apples having the flavor of Grimes Golden Pippin, Jonathan, Roman and others.—W. M. BOMBERGER, *Iowa*.

Still More About the Sparrow.—You express my opinion and experience on the sparrow question precisely in the following: "After seventeen years experience in gardening (in which period we have always been surrounded by the lively little European), we have yet to record the first serious objection to the bird, coming under our own observation." I have for twenty years watched the little fellow carefully, scrutinizing his every movement, and I now have to say in all sincerity that so far as all these charges are concerned but one is true on my premises. The exception is the charge of filthiness, but this at my place is not a serious objection. The English sparrow here does not drive off other birds, but is himself driven from boxes and gourds placed about my grounds for bluebirds to nest in, by the rightful owners. I grow all kinds of fruits adapted to this latitude, but the English sparrow does not molest any of them. I have seen him frequently with caterpillars, cabbage-worms and other insects in his mouth. He sometimes partakes sparingly of wheat, oats or rye that may be scattered on the ground around the barn. I have never seen him destroying grain in the field as has been charged. I only wish the blackbird, robin and cat-bird were as guileless as the sparrow. I verily believe that the unpopularity of this bird grows out of an unaccountable and wicked prejudice against anything imported from Europe.—SYLVESTER JOHNSON, *Marion Co., Ind.*

The Japan Golden Russet Pear.—(Page 86.) I do not know how the story could have originated that the American Minister to Japan sent me the Japan Golden Russet pear. Certainly there is no truth in it. About 30 years ago I was attracted by the appearance of a remarkably vigorous pear tree, with dark greenish

brown wood and large luxuriant glossy foliage, which grew in the garden of a retired sea-captain, in the vicinity of Boston. The seed of the tree was brought from China and the variety was identified as a seedling of the sand-pear. The tree was enormously productive, but the fruit was valued only for canning. The great vigor and healthfulness of the tree induced me to raise seedlings from it, with the purpose to use them as stocks on which to bud our dessert varieties. I think some of these seedlings went west. It is possible that some one has given the name "Japan Golden Russet" to one of these seedlings. It is putting a variety of fruit within a narrow limit to say that it is good only for canning. So far as I have seen this is all that can be claimed for the Chinese and Japanese pears. If they had a high flavor or spiciness, like the quince for example, and only required cooking and sugar to make them palatable, they might still be of great value. But we fear they are deficient in flavor. That they have other qualities, such as vigor and productiveness, in a remarkable degree, is certainly true; and we may reasonably expect, not only that they will be useful as stocks for grafting, but also that they may give rise to hybrids with our table varieties, which may combine the excellencies of both parents. They afford an interesting field for experiments.—WM. C. STRONG, *Massachusetts*.

The Japan Golden Russet Pear.—(Page 86.) Seward Morris states that the "Strong Japan pear" is probably the same as the "Japan Golden Russet" of eastern nurseries. We have received a catalogue from a western nursery firm, offering a Japan pear under still another name and claiming it to be identical with Japan Golden Russet. We procured two of the trees and a sample of the fruit and could not recognize the latter either in tree or fruit. The fruit sent us and the picture of the same in their catalogue closely resembles the cut of Strong Japan in AMERICAN GARDENING, which is not so flat as Japan Golden Russet while the stems of both are much longer than those of Japan Golden Russet, which are very short. Our stock did not come from Mr. Strong as Mr. Morris suggests, or from the same source as that of the western nurserymen. The trees received, instead of having the short dwarf, stubby growth of Japan Golden Russet (which seldom attains more than two or three feet in height in one year) were five to six feet high at one year old, and resemble in growth Mikado, Von Siebold and other Japan sorts. This pear was received by us in the following manner: Several years ago in an importation of Japan persimmons we noticed a tree different from any with which we were familiar. We planted it and found it to be of vigorous, though short, stubby growth, with the large luxuriant foliage common to the Japan type of pears. At three years of age it produced several pears of medium size, very flat, ripening in September and October; color, beautiful golden yellow; flesh crisp, juicy, rather sweet; not unpleasant in flavor and unsurpassed for canning and preserving. It blooms late and so escapes injury from late frosts.—JNO. R. PARRY, *New Jersey*.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Air.—Give freely to all plants in houses.

Amaryllis can now be plunged in the border or planted in open ground.

Anemone Japonica alba.—Plant in clumps for fall blooming.

Annals of all kinds, sow in open border this month. If started earlier in boxes, and now well up, plant out, but cover with pots or paper cones if the sun is hot. Uncover at night.

Ants dislike sulphur and guano.

Asters, sow in open borders. Like balsams, they require a rich, light sandy soil. They also make good pot-plants. Give air and water freely.

Azalea.—Repot and move outdoors.

Balsams.—See *Asters*.

Bedding Plants to be provided. All suitable kinds are now freely offered at every florist's.

Begonias that have been in the windows all winter must be trimmed and well cut back if straggling, and put out where they will have shade from taller plants or fences. The tender sorts should not be put out too soon. Tuberous-rooted *begonias* may now be planted in the open ground.

Border Plants.—Red and white oxalis, lobelias, heliotropes, alternantheras, pyrethrums, etc., are suitable.

Bourgainvillea spectabilis or *flava*, in conservatories, want sunshine, and must not be kept too moist.

Bulbs.—Planting for summer and fall blooming is no longer to be delayed. Dig carefully around groups already growing, and trim the bulb-beds neatly.

Cactuses showing faded leaves may possibly lack proper drainage.

Caladium esculentum.—Give a rich soil, all the better if half manure. Provide plenty of moisture. Without these requisites you cannot expect to grow the enormous plants often seen.

Camellias.—Put in a shady place outdoors, sheltered from winds. Water and syringe frequently.

Cannas, treat like *Caladium esculentum* for striking effects.

Chrysanthemums, thin and take cuttings.

Cinerarias.—If to be propagated fill the pot to the top with sandy compost. When suckers have formed, divide and pot each one separately.

Clematis.—All imported kinds require good rich soil.

Clerodendrons.—Old plants are fine for summer gardens, but must not be put out till danger of frost is past.

Cyclamens.—An easy way to carry them through the summer is to place them in the open border.

Dahlias.—If eyes are well developed the tubers can be cut like potatoes, leaving two eyes on each piece. Plant not later than May 15.

Daphne.—Prune off only the dead wood.

Dutch Bulbs.—As soon as the spring bloom has faded dig carefully, without removing the tops or all soil from the roots, and set in some out-of-the-way place to mature, heeling in as for nursery stock. The space which they once occupied can then be filled with bedding-plants.

Evergreens.—In planting never let the roots become dry; else they will surely be killed.

Ferns and wild-flowers are excellent material for brightening shady and dingy corners. Give them a light and well-drained soil. Many native ferns are highly ornamental, and require only a little care in watering in the dry season, slight protection in winter, and an occasional light top-dressing of manure.

Fuchsias.—Give the winter-flowering plants a rest by withholding water. Trim the old ones and plant out; they will do for the shady side of a garden. For handsome pot-plants to bloom in autumn, strike cuttings the later part of the summer, and keep well pinched back for eight or more weeks.

Gardenia.—If leaves turn yellow, the plant most likely needs food. Give liquid manure, and keep well syringed.

Geraniums.—Cut large plants well back.

Gladioluses.—Plant for succession, not less than three inches deep.

Gloxinias love moisture, plenty of air, warm temperature and a somewhat shady position.

Greenhouse Management.—Plants that are to remain in pots over summer may be treated as advised for house-plants. Plunge in sand, soil or coal-ashes to prevent drying out too rapidly. Water faithfully in this season of rapid growth and dry atmosphere. Sprinkle the walks frequently, and syringe under benches. This will keep down high heat. Keep air moist, and discourage red-spider.

House-Plants.—We always make their summer management easy by setting them in the open border. The hardier ones, like agaves, azaleas, oleanders, hydrangeas, daphnes, etc., go out first, to be followed somewhat later by the tenderer kinds. If these are left in pots, plunge in sand, soil or coal-ashes. Syringe frequently all plants remaining in the house, as a means of keeping insect pests in check. Try to keep the atmosphere moist about the plants.

Hoya carnosa requires much moisture during summer.

Hyacinths.—Cut off flower-stalks when the leaves are ripe. If they have been in the ground two years take up the bulbs and heel in for a time in some out-of-the-way corner, and then place in a cool cellar till October. The bed will be good for annuals. Roman hyacinths can remain for years in the same place.

Hydrangeas can now go out to the garden. Give an occasional dose of liquid manure to induce strong growth and fine flowers. The hardy *H. paniculata grandiflora* should have a place in every garden.

Ipomæas are fine for covering old tree-trunks.

Ivy-cuttings put down now will have long shoots before autumn.

Jasmines must be carefully trimmed and trained.

Lapageria rosea is one of the handsomest climbers for a conservatory.

Lawn Management.—Start the lawn-mower as soon as the grass is an inch or two high. Repeat every two weeks or oftener. Use the edging-knife several times in the growing season to keep the edges neat. Plant the beds as the season advances.

Mathiola bicornis is exceedingly fragrant. Sow some seed of it in a spare corner.

Maurandia Barclayana is a pretty vine for trailing over low walls or for climbing trellises.

Mignonette dislikes transplanting. Sow where it is to blossom.

Oleander-cuttings from well-ripened wood will strike quickly in a bottle of water hung outside.

Pansy-beds will be in all their beauty during May. Do not let the plants bear seed. The more flowers you gather the more you will have.

Parsley.—The double-curved makes a fine edging.

Perennials.—Plant columbines, day-lilies, iris, hollyhocks, poppies, phloxes, etc.

Pinks.—Sow seeds and set bedding plants this month.

Primulas are now in full bloom. Dig in dead leaves about them.

Quassia-chips made into a decoction (four ounces to one gallon of soft water and four ounces of soft soap) is said to be a good remedy for greenfly on roses. Syringe the bushes well with the liquid, and in an hour or so wash off with cold water.

Ribbon-beds can be prettily bordered with white alyssum and blue lobelias, and filled in with plants in shades of red, where a patriotic display is wanted.

Roses.—Watch carefully and pick off the caterpillars that roll the leaves.

Rotation is good for both flower and vegetable garden. After bulbs and early perennials cease blooming in spring, annuals brighten the lawn until fall beauties begin to blossom.

Shrubs.—No cutting may be done now, only prune out dead wood.

Shrubberies.—Groups of tall lilies and foxgloves are striking and beautiful.

Summer bulbs should all be planted in May.

Sunflowers.—Plant wherever there is a damp corner. *Tidiness* and cleanliness are absolutely indispensable in both greenhouse and garden.

Trees, if dead or sickly and not in the way, may be covered with perennial creepers.

Violets.—Grow in a half-shady border. When in bloom keep the roots moist, but not the foliage.

Water-lilies.—Prepare their tubs; they will soon be sprouting.

Wet lands should be planted with the alder, ozier, elm and ash.

Window-boxes.—Plant with ivy, geraniums, trailing fuchsias, lobelias, nasturtiums, petunias, etc. Avoid crowding.

Wistarias, by cutting back, can be made handsome standards for tubs or lawns.

Wood-lice.—Toads will soon destroy them.

Yucca.—No large grounds should be without these stately plants; they stand northern winters well.

II. GARDENING FOR TABLE AND MARKET.

Asparagus.—Have you an asparagus-bed? No vegetable is grown with greater ease and certainty, and none is better relished. Set 50 or 100 plants now. They will give a full supply for years to come. In cutting from an old bed be careful with the knife, lest you injure the crown of the plants.

Beans.—Begin planting the bush sorts. Start the Limas in pots or on inverted sods under glass, if you wish them early. Plant late crops in open ground after May 15, when the soil has become warm.

Beets.—Sow for succession. If plants were started under glass, set in open ground at once.

Blackberries.—Clean up the old patches, and get them ready for fruiting. If new plantations are to be made, set plants early. The land need not be rich. Select the variety best suited to your locality.

Cabbages.—For early, set plants grown in coldframe or hotbed in well-manured and well-prepared soil. Early Jersey Wakefield is the variety you want. For medium early use Henderson Summer.

Carrots.—Sow for main crop. Be sure to keep down weeds from the very beginning. Chantenay is a good short variety; Danvers a good medium-long sort.

Cauliflower.—Treat like early cabbage. Have soil very rich. Nitrate of soda is good for both cabbage and cauliflower.

Celery.—Keep the plant-bed well cultivated and scrupulously clean of weeds. If really first-class plants are wanted do not allow them to stand thicker than about 25 to the square foot; and less will be better. Apply nitrate of soda in small quantities, say 100 to 200 pounds an acre.

Cucumbers.—Plant in open ground the latter part of the month, or start a few hills soon, in same manner as advised for Lima beans. Cucumbers in frames need plenty of sun and careful airing.

Currants.—Trim old bushes and plant new ones early in this month. The ground should be rich and kept clean. If well taken care of currants pay. Try White Imperial.

Dandelion for greens. Sow in open ground.

Egg-Plant.—Keep the plants in good heat. Transplant in three-inch pots or old tomato-cans, and toward June set in open ground, carefully protecting from potato-beetles.

Grape-forcing.—Thin the vines in coolhouses, but avoid handling the berries. The early crops, now ap-

proaching maturity, should be kept rather dry, and in a dry temperature of about 70 degrees, with 65 degrees at night.

Gooseberries.—There is now nothing in the way of growing those fine foreign varieties: the Whitesmith, Triumph, Industry, etc. Prof. S. A. Beach writes us that the gooseberry-mildew has been successfully treated at Geneva (Experiment Station) for five seasons. One cent's worth of potassium sulphide is enough to spray 25 bushes. For other treatment see *Currants*.

Horse-radish should be grown in the garden, where you can get nice large smooth roots, and not in the back yard or chip-yard, where you will secure nothing but slender, sprangly ones.

Hotbeds.—Keep well aired and watered. When vacant and out of use, remove sash to a place of safety.

Insect Pests.—Strict watch must be kept over almost all garden crops. Dry fresh wood-ashes sifted over cabbage, radishes, potato-vines, etc., will drive off flea-beetles, slugs, etc. Put a toad or two into the hotbed. Strong solutions of potash salts (especially of kainit and muriate of potash) sprayed on the plants and trees affected with greenfly, caterpillars, slugs, etc., may be used to clean them out. Spray apple trees with Paris green water, immediately after blooming, for codling-moth.

Lettuce.—Sow for succession. Keep soil well stirred and free from weeds.

Manure.—Treat garden, small-fruit patches and orchards liberally. Apply nitrate of soda (200 pounds or more an acre) to beets, spinach, radishes, cabbage, cauliflower, onions, celery, etc. To encourage small fruits, apply dissolved bone or acid phosphate and sulphate of potash.

Onions.—Finish transplanting the seedlings from the frames. Onions from seed sown in open ground require careful attention from the very beginning. Clean out the weeds and keep the hand wheel-hoe going.

Packages.—Procure your supply of berry-boxes, crates, trays, etc. Mark every package neatly with stencil-plate.

Peas.—Sow for succession.

Peaches under Glass.—As the fruit approaches maturity less syringing and watering will be needed. Gather

the fruit before it is dead ripe and keep in shallow boxes in a dry airy room until ready for use.

Pruning.—Remove all buds on budded stock except the one inserted.

Quinces are surface feeders. Give them rich soil and clean cultivation.

Raspberries.—Give good soil. Otherwise treat as advised for blackberries.

Rhubarb can now be used freely. Cut out the flower-stalks as fast as they appear.

Squashes.—Plant after the ground has become thoroughly warm, and on rich well-manured soil only.

Staking and tying in a judicious manner will often straighten crooked trees.

Strawberries.—Carefully remove all the fruit-stalks from newly-set plants. Cultivate and procure mulch for the fruiting-beds.

Sweet-Corn.—By planting earlier and later varieties, and the latter repeatedly in succession, a supply of corn may be obtained until frost, and a fine lot of fodder for the cow. For earliest we use Cory; for medium the Black Mexican, which many object to on account of color; and for late, Stowell Evergreen.

Sweet-Potatoes.—Set plants 18 to 24 inches apart May 20 to June 10, in well-enriched ridges four feet apart.

Tillage.—Try clean cultivation in orchards. The best success with peaches, quinces and pears cannot otherwise be looked for. Use disk and other harrows diligently between the tree-rows. Don't try to grow grain-crops in young orchards. It is death to the young trees. Instead plant hoed crops (potatoes, beans, cabbages, etc.), and manure with a liberal hand.

Thinning tree-fruits should be practiced by every intelligent grower. Better fruit and more money will be the result.

Tomatoes.—Set some early plants by May 15, or earlier if the ground is warm and the season fair. Should a late cold wave threaten them protect in some way, perhaps by covering with a handful of hay or by laying them down and covering lightly with soil.

Weeds.—Start the wheel-hoe among all garden crops just as soon as the rows can be distinguished, and continue through the season. Then it will be an easy and pleasant task to cultivate your garden, instead of a job to be dreaded.



HE THAT QUEYRIONETH

QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the fifth of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2862. **Draining in Yellow Clay.**—My place is underlaid with yellow clay subsoil, which holds water and is usually damp. Am told that it cannot be drained. Is this true?—W. P., *Lexington, Ky.*

2863. **Propagating Irish Junipers.**—What is the best method?—W. H. H., *Pennsylvania.*

2864. **Drying Figs For Market.**—Please describe the process. Where can fig-scions be procured?—M. W. D., *Georgia.*

2865. **Forcing Parsley.**—What is the best method for growing parsley in steam-heated greenhouse? Shall I sow seed outside and transplant, or sow directly in the bed? Would it not be better to plant the roots in good loam under the bench, than in flats as advised by Henderson?—A. G. C., *Massachusetts.*

2866. **Chrysanthemum Shows.**—What are the rules governing them? We wish to have a "mum" show in Denver next fall.—H. H. G., *Colorado.*

2867. **Grape-vines Ailing.**—While pruning this year I found a great deal of dead wood. It was hollow, and snapped when bent. Vines have borne only two years. What is the trouble?—A. W. R., *South Carolina.*

2868. **Violets Not Doing Well.**—The leaves and flowers are small, and few in number. Is this owing to poor soil? What can I do for them?—A. W. R., *South Carolina.*

2869. **Hardy Roses.**—Please give a few hints about their culture, and tell us how to destroy thrips on the bushes.—R. B., *Canada.*

2870. **Heliotrope From Seed.**—How should seed be started? I have no success with it.—D. M. D., *Cal.*

2871. **Evergreen Blackberry.** Can this variety, said to grow wild in British Columbia, be planted for profit? C. W. R., *Michigan.*

2872. **Strawberries for Indiana.**—What is the best variety for sandy or gravelly soil in northeastern Indiana?—R. A. R.

2873. **Palms for the House.**—Please give me some information as to the amount of moisture to be given; showering range of temperature, window exposure, etc.—G. A. W., *Vermont.*

2874. **Cranberry-Culture.**—Would a piece of low land with muck two or three feet deep and quicksand in places be suitable for cranberry-growing? How shall I manage the water in order to flood the patch?—W. L. E., *Ohio.*

2875. **Amaryllis vittata Not Blooming.**—The bulb is four years old, but has never bloomed. Is it likely to bloom yet, or shall I throw it away?—M. J. G.

2876. **Ornithogalum Arabicum.**—Will the bulbs bloom well the second season in pots, or is it better to plant them in outdoor beds after their first flowering?—M. J. G.

2877. **Crops for Burnt Muck.**—What crops can I put on a muck meadow which was badly burned last year? The muck rests on a hard-pan of clay and gravel.—W. B., *Wisconsin.*

2878. **Clearing a Willow Forest.**—Can I clear a willow forest of trees badly injured by fire, in any better way than by grubbing them out?—W. B.

2879. **Leached Ashes as Fertilizer.**—What quantities are safe to use?—A. W. G., *Oregon.*

2880. **Increasing Size of Vegetables.**—Is there a practicable method of making tomatoes, pumpkins, etc., grow to very large size for exhibition purposes?—W. A. K., *Pennsylvania.*

2881. **Remedy for Carnation Disease.**—Will sulphate of copper check the disease? If so, how strong should it be applied?—F. F., *New York.*

2882. **Root-grafting Weir's Cut-leaved Maple.**—Can this be practiced with success in fall or early spring?—F. K. P., *Wisconsin.*

2883. **Warranting Trees to Live.**—What percentage in addition to the price of trees is usually charged by nurserymen for such warrant?—F. K. P., *Wisconsin.*

2884. **Grafting Seedling Peach Trees.**—Can this be done? If so, when should scions be cut?—D. R., *Massachusetts.*

2885. **Fertilizers for Apple Trees.**—What are the best? Do you advise wood-ashes alone, or in combination with ground bone? If the latter, why?—W. G. S., *Connecticut.*

2886. **Growing English Walnuts.**—Will they succeed in Connecticut? Would it pay to set one walnut in the center of every square formed by four apple trees 30 feet apart?—G. W. S.

2887. **Japanese Peach-Worm.** Has it already obtained a foothold in this country?—C. G. A., *Maine*.

2888. **Tomatoes Decaying.**—My plants last year were well-laden with fruit when I cut back the tops. All specimens ripening first decayed. Was this due to trimming?

2889. **Dahlias Not Blooming.**—The bulbs were good and the season dry, but all buds blasted. What could have been the trouble?—D. D. P., *New York*.

2890. **Window Plants for Summer Use.**—Please give a list of plants that will grow well and look cool in summer in a sunny window.—Mrs. L. A. S., *Pa.*

2891. **Plants and Trees for Cemetery Use.**—Please recommend some good plants for vases; also some shade-trees that can endure drouth.—H. W., *Wisconsin*.

2892. **Bananas as Pot-Plants.**—Will they bear and ripen fruit when thus grown?—J. E. T., *Illinois*.

2893. **Primula obconica Poisonous.**—We have lately been poisoned in our greenhouse, and were told that *Primula obconica* was the cause. Is this plant really poisonous?—J. M. G. O., *Manitoba*.

2894. **Evergreens for Screen.**—Please give a list of low, quick-growing evergreens that planted small would make a screen 8 to 10 feet high in 8 or 10 years.—"GARDEN."

2895. **Mushroom-Growing.**—How are mushrooms usually sold, and at what price? Is the market in large cities usually well supplied with them? At what season can they be most profitably grown?—S. H. H., *Indiana*.

2896. **Grasses for Orchard and Forest.**—What mixture of grasses would you recommend for young orchards and for sowing under large forest-trees?—G. R.

2897. **Making Oil from Sunflower-Seeds.**—What kinds of sunflowers should be used, and how is the oil extracted?—A. A. B., *Ohio*.

2898. **Coal-Oil Stove in Greenhouse.**—Will the odor from an oil-stove used for heating a small greenhouse during the night be injurious to the growth of orchids and other plants?—G. R., *California*.

2899. **Plums and Apricots.**—Would Japan plum and Harris apricot prove hardy and profitable along the Merrimac river? Would you set two acres of them here?—J. H. C.

2900. **Hardy Black Raspberry.**—What is the hardiest variety of good quality?—F. G. M., *Nebraska*.

2901. **Preparing Grape-Bags.**—Would soaking paper bags in the ammoniacal solution of carbonate of copper have the same effect on the berries inside as if the latter were sprayed with the solution?—W. S. H., *New Jersey*.

2902. **Tomatoes on Clover-Sod.**—Would it be well to plant on clover sod one year old? Or would cut-worms be troublesome?—A. J. F., *Wisconsin*.

2903. **Cauliflowers for Market.** What is the best variety to use?—A. J. F., *Wisconsin*.

2904. **Remedy for Snowy Tree-Cricket.**—Some of the canes in my vineyard are punctured by an insect. What is it, and what can be done to prevent the mischief?—G. M. H., *Virginia*.

REPLIES.

2654. **Large Potato Yield.**—When the St. Patrick potato was first introduced, a neighbor gave me one tuber weighing less than a pound. I cut it into 40 pieces, splitting every eye except those at the seed end. The pieces were planted 5 inches deep and 2 feet apart in a row. Of these 38 came up, and when the plants were 4 or 5 inches high I cultivated thoroughly and put on a 4-inch mulch of straw. Nothing more was done until the potatoes were ripe, when I removed the straw and harvested 172 pounds of nice, smooth potatoes. Twelve of the largest weighed 17 pounds.

2703. **Most Desirable Rose.**—The best monthly sorts are The Gem, Marie Guillot, Sunset, Perle des Jardins, Bon Silene, Malmaison, Papa Gontier, Queen's Scarlet, Marie Van Houtte, Etoile de Lyon, The Bride, and others too numerous to mention. Hybrid Perpetuals: Gen. Jacqueminot, Gen. Washington, Magna Charta, Louis Van Houtte, Perfection des Blancs, Paul Neyron, Vick's Caprice, Dinsmore, Grand Duke Nicholas, Fisher Holmes, Prince Camille de Rohan, La France and Mad. Plantier.—H. C. T.

2711. **Cranberry-Growing.**—In order that a cranberry crop may be profitable, the soil in which it is grown must be damp enough to preclude all possibility of the roots becoming dry, and must contain vegetable mold to the depth of at least one foot. A stream of water flowing through the bog, having a dam, sluiceway and gates for flooding the crop, is also a prime requisite. There are two methods of preparing soil for cranberries. The first is to make the surface nearly level by means of a turf-hoe, covering it 3 or 4 inches deep with sand. This sand must not contain loam, and must be clear enough to crumble apart after being crushed together in the hand. In the other method the land is cultivated for three years to kill all vegetation, cleared of stumps and graded. Drainage must be given by means of a system of ditches, and these should be connected by smaller drains through which the water flows constantly, never rising higher than 6 inches from the surface of the soil, nor falling lower than 18 inches below it. April and May, and November and October, are the best months for setting cranberry plants or cuttings. The latter are as good as rooted plants if set more thickly—2 or 3 to every 15 inches of soil. They are set deeply, leaving only one or two inches of stem above ground, and the soil is pressed firmly against them with the foot. The ground must be kept clear of grass and weeds for two or three years after planting, and flooded during winter. The plants may be expected to begin bearing the third year, and picking should be finished before frost. After this the meadow may be flooded to float loose berries, and to straighten plants that have been trampled in picking. Draw off the water again until December, when it may be turned

on for winter flooding. The vines should be entirely covered with water, because otherwise they might be frozen in with surface ice and pulled out of the soil by a sudden rise of water. May 1 the water is drawn off, but is turned back again the latter part of the month, that it may kill the worms in the soil. For vines which do not seem vigorous fish compost or a similar material applied after the spring flooding proves beneficial. Growers are much troubled with a disease of the cranberry called rot, or scald. It first appears in small specks on the berries, but gradually spreading turns them white, and they soon become soft and worthless. All infected specimens must be carefully sorted out.—W. F. BASSETT, *New Jersey*.

2715. **Best Yellow Gladiolus.**—The most satisfactory yellow ones are Golden Scepter, Isaac Buchanan and Martha Washington.—H. C. T.

2717. **Remedy for Grape Diseases.**—There are many vineyards in the inquirer's vicinity, and we know that some of their owners have tried almost everything advertised or recommended as "sure remedies" for mildew and rot. The only one they have found reliable as a preventive is copper in its various forms and mixtures. For the first application only, and this as a wash rather than a spray, a saturated solution of sulphate of iron (green coppers) is used. Bordeaux mixture is next applied, followed later by the ammoniacal solution of copper carbonate. This treatment is one which we know to be reasonably successful, and on this alone we can rely.

2733. **Training Dewberries.**—Drive stakes into the ground 10 or 12 feet apart and 8 to 10 inches high. Across the top nail a strip of board about a foot long. On these cross-bars stretch tightly four wires, one at each end, the other two at equal distances between. W. M. KELLOGG, *Illinois*.

2738. **Ventilated Barrel.**—This is manufactured by Marshall & Greenler, Defiance, Ohio.—WM. CARTER.

2746. **Peanut-Culture.**—Among the essential conditions of success is, first of all, good locality. There is little prospect of growing peanuts profitably far north of Virginia. The states of Virginia, North Carolina and Tennessee produce the bulk of the peanuts grown in the United States. The *American Agriculturist* gives the following account of peanut-culture: "All the nuts retained for planting must be kept perfectly dry through the winter, as dampness and fermentation would destroy their germinating power. Every shell must be opened and the seeds extracted. The planting was formerly done by hand, but it is now performed by means of a machine, with which one man can plant 6 to 8 acres per day. Though the shelled peanut is nearly the same in size and form as the bean, the same implement cannot be used in planting both. The slightest cracking of the pink skin would spoil the peanut for seed purposes. Five pecks, or 20 pounds of shelled seed are required for an acre. Planting time is from the middle of May to the middle of June. The most critical time comes immediately after planting. If the weather is too wet, the seed rots in the ground; if too dry, it withers and perishes.

Then the newly-planted seed is subject to the depredations of nearly every kind of bird and small animal which inhabits the region. In nearly all cases more or less replanting is necessary. The culture consists in going frequently between the rows with a small plow of peculiar shape. If grass or weeds appear in the rows they are cut out with hoes. But after the plants have fallen over they cover the earth so thickly as to smother the weeds. It is the aim of the peanut-grower to have the crop mature before frost. The pods must be lifted from their earthy beds to keep them free from stains. A plow is run under each row, cutting off the main roots and throwing out the pods which adhere to the branches. After they have lain on the ground until partly dried, they are stacked in the field. Stout stakes are cut in the forest, the large ends sharpened, short strips nailed across them near the sharpened end, and they are then driven into the ground in rows at convenient intervals through the field. The gathered plants are stacked around these stakes, the cross-strips being designed to keep them from contact with the ground. Each stack is seven to eight feet high and three to five feet in diameter. The stacks are sometimes hauled to the barn for the purpose of picking the pods, but it is generally done in the field during the autumn and winter. The vines, after being stripped of the nuts, make forage nearly equal to clover-hay, and stock of all kinds eat it greedily."

2754. **Shrubs for Kentucky.**—*Araucaria imbricata* is by no means a shrub, but a large tree when fully developed. It may possibly survive in Kentucky, but will hardly prove satisfactory. The Oonshiu orange will not stand unurt, fully exposed, a temperature lower than 18°. Ours came through the winter of 1890-1 entirely unurt in a very exposed place, but last winter the freeze of January 26 stripped them of leaves, and the same freeze made them leafless in Florida. Mine are still alive, and in a sheltered place here would doubtless be unurt, for my gardenias, sheltered under the college walls, did not lose a leaf, and I feel sure they would have been killed had they stood where the oranges are. Figs having the same exposure as the oranges are killed to the ground, while figs in sheltered places are unurt. I do not think there is any chance for this orange to survive in Kentucky. *Citrus trifoliata* will live and thrive there without any trouble, and also *Elaeagnus longipes*. Any variety of fig must have good winter protection in Kentucky. The best varieties for the inquirer will probably be Brown Turkey, Brunswick and White Marseilles. The only way to grow figs successfully in his latitude will be to branch them from the ground, and when the leaves are cut off by frost (for the fig is naturally evergreen in frostless countries) bend the branches to the ground, and cover with earth. They will then be perfectly secure until frost has gone, when they may be allowed to rise. An abundance of figs for family use can be grown in this way in Kentucky and much further north. Here we find that sticking long evergreen boughs along the rows to break off the wind is sufficient.—W. F. MASSEY, *A. C.*

2774. **Grass for Shady Places.**—We do not believe that any grass suitable for a lawn will succeed in shade better than the hardy, tenacious Kentucky blue-grass (*Poa pratensis*) and red-top (*Agrostis vulgaris*). When the shade of trees is too dense for the kinds named above to succeed, it is too dense for comfort and health, and it is better to let in air and sunshine by removing some of the trees.

2777. **Packing Mushrooms for Market.**—"Most market-growers around New York city," says Wm. Falconer in "How to Grow Mushrooms," "sell and deliver their mushrooms to hotels, restaurants and fancy fruit-dealers. Those who live at a considerable distance from the city, sell through commission merchants in New York. They in turn sell in quantities to suit customers. Mushrooms are sold by the pound, and come into market in boxes made of strong, undressed paper. Some growers have light wooden boxes made that hold from one to four pounds each. These make convenient and strong packages for shipping by express. They may be sent singly, or several can be packed together in crates or boxes. In sending directly to hotels cheap baskets holding from one to twelve pounds are often used, but in sending to commission merchants, who have to deal them out in quantities to suit customers, mushrooms should always be packed in one, two, three or four-pound boxes or baskets—preferably one-pound. Mushrooms are not like potatoes or apples, that can be handled, remeasured and repacked without damage. Each handling will certainly discolor and perhaps break a good many of them, rendering them unsalable if not worthless. The utmost care in gathering and packing for shipment is of primary importance."

2786. **Plums for Western Ohio.**—We do not think the Green Gage profitable. The German prune would probably succeed much better, but we prefer Lombard to any other variety.—H. W. T., *Western Ohio*.

2787. **The Excelsior Peach.**—Trees of this variety may be obtained of the Farmers' Nursery Co., Tadmor, Ohio; also of J. H. Hale, South Glastonbury, Conn.—W. W. T.

2791. **Best Street Trees.**—Elms, maples and lindens all are useful for highway planting. The American elm is the ideal street tree, for the reason that its top as a rule is V-shaped and does not require so much trimming as "round-headed" maples and lindens. But if the inquirer's place is laid off in broad avenues and walks, where low-branching, flat-topped trees would be no objection, we can recommend maples, lindens, horse-chestnuts and oaks. All these would be fine, especially if planted 35 feet or more apart. We suggest that the trees be grouped according to variety, the varieties mingling only where the groups meet.

2792. **Carl Holt Fuchsia Coming Double.**—There is a tendency in this variety to depart from the normal single form, but we have never seen this sporting proclivity sufficiently marked really to entitle the flowers to be called double. Should yours be unusually so, it might

be well to propagate the branch thus inclined, with a view to securing the quality in a fixed form. Many superior varieties of flowers have originated through the sporting tendencies of their parent plants.

2793. **Trimming Norway Spruce Hedges.**—Begin to prune when the hedge is not more than three feet high, and plan to have it advance not more than two or three inches annually. The best time for pruning is in spring. If the chief purpose is to govern shape, then the cutting had better be done just before the growth of the season begins; but if we wish to secure dwarf habit and denseness then it is better to trim the young shoots when about half-grown.

2809. **Wintering Paulownia imperialis.**—We have had no difficulty in wintering this tree in the latitude of Niagara Falls. We grow it in a well-drained spot, and cover with marsh hay or manure.

2827. **Best Late Pears.**—The best and most reliable winter pear, all things considered, is the Anjou. For late fall and early winter the Duchess is also indispensable. This we would grow as dwarf, the former as standard.

2841. **Forcing Cucumbers.**—The English forcing varieties and some of our ordinary sorts for outdoor culture will set and perfect fruit even without pollination. In growing the latter sorts, however, it will always be safer, and often necessary, to fertilize the fruit-blossoms by hand. Gather some pollen from the male flowers by means of a camel's-hair brush, and touch with it the pistils of female blossoms when first opening.

2862. **Draining in Yellow Clay.**—If you have an outlet several feet lower than the lowest spot of the surface, I can see nothing in the way of draining the land. Lay out the drains so that the water from adjoining land or springs will be cut off, and your forty-acre plat will soon be dry enough.

2865. **Forcing Parsley.**—You can start plants in open ground and transplant to permanent location, or sow seed where the plants are to grow. I think there is no need for keeping plants in flats. The good loam ground under the bench will answer every purpose. Parsley is so easily grown, outdoors, in the greenhouse, or even in a light cellar, that no further directions are necessary.

2871. **Evergreen Blackberry for Profit.**—There is no evergreen blackberry known to horticulturists that is worth growing for profit, and probably none worth growing for pleasure.

2872. **Strawberries for Indiana.**—Try Wilson and Haverland. Try to get plants of Wilson from a locality where it is known to succeed, or from growers like J. M. Smith, of Wisconsin, who grows it in all its original perfection.

2875. **Amaryllis vittata Not Blooming.**—Keep the roots confined in a smaller pot than you use for other amaryllis if you wish to be sure of flowers.

2876. **Ornithogalum Arabicum.**—As a rule no bulbous plants that are taken in and forced in winter are fit for forcing next season.

2878. **Clearing a Willow Field.**—Grubbing out is the only method we could suggest.

2879. **Leached Ashes as Fertilizer.**—Use them without fear. I would like nothing better than to be able to give all my land a dressing of ten tons per acre.

2880. **Increasing Size of Vegetables.**—I have tried a good many devices for growing large tomatoes but have never been very successful. Thinning the fruit, plentiful feeding and watering, careful prevention of injury to the foliage—this is about all that can be done. I wish somebody would give us the details of the method by which the French fruit-growers, near Paris, obtain their enormously large specimens of fruits.

2881. **Remedy for Carnation Disease.**—A full account of this is given elsewhere in this issue. It is claimed by some florists that the application of air-slaked lime will check the disease.

2884. **Grafting Seedling Peaches.**—Budding is the simplest and safest method of top-working peaches, and it is wasting time to try the grafting process. Bud in August or September.

2885. **Fertilizers for Apple Trees.**—As fertilizers for fruit crops we cannot well improve on wood-ashes and bone-meal. If the ashes are leached and applied liberally enough, say at the rate of even ten tons per acre, nothing more will be needed in most cases. Should yellow foliage and slow growth of wood indicate lack of nitrogen, this can be applied in the form of nitrate of soda, dried blood, ground fish, cotton-seed meal, sulphate of ammonia, etc., whatever is easiest to procure, or cheapest in your particular locality. Bone-meal contains over 20 per cent. of phosphoric acid and 4 per cent. of nitrogen, and if added to the unleached ashes, at the rate of 200 or 300 pounds to a ton or two of the ashes per acre, will make a complete and well-balanced fruit-tree fertilizer. Usually this combination is one of the cheapest, and at the same time most effective, of all manures available for the purpose.

2886. **Growing English Walnuts.**—Some of the English walnuts are certainly hardy enough to thrive and fruit in protected locations of Connecticut, even if they would not in open fields or full exposures. In the gardens of Germany they are usually planted along the rear wall, which forms the boundary, and affords protection to the fruits and vegetables which the garden contains. In the northern states this nut seems to be most successful in and near the cities and towns, where buildings, etc., temper the winds, and take off the cutting edge of winter's cold. But we think very lightly of such a hybrid monstrosity as a "nut-apple" orchard. In the first place we do not wish forest growth in an orchard. A nut-tree should branch low, and give the grower a chance for picking or knocking off quite a good share of the nuts while standing on the ground beneath it. Walnut trees require a good deal of space, and we would not have them closer than apple trees. But to plant apple trees thirty feet apart and a nut-tree in the center of

each square would crowd the trees too closely. You would have a dense forest by the time the trees were in their prime. Don't do it. Don't plant apple trees closer together than 40 or 45 feet each way. You may, however, plant a peach tree between each two apple trees, and this course will be safer than to plant temporary apple trees (like the Wagener) to be cut down by the time the permanent trees need the space. You are pretty sure that the peaches will be dead and out of the way when the apples need room. If you are "cramped for space," simply plant fewer trees and get good fruit. Do not crowd a large number together and make the whole plantation worthless.

2887. **Japanese Peach-Tree Worm.**—We are not aware that the insect has yet been introduced into America, but in view of the free exchange of horticultural products between this country and Japan, the probability is that we shall be visited by it sooner or later, and the peach-grower in America should watch for it.

2888. **Tomato Decaying.**—Perhaps the inquirer cut off the foliage of his plants to such an extent that the fruit was exposed to the direct rays of the sun, and became sun-scalded (cooked).

2889. **Dahlias not Blooming.**—You say it was very dry in your section. Perhaps also your soil was not very rich. If so, there was sufficient reason why the plants did not bloom well. Dahlias delight in a rich soil and plenty of moisture at the roots. These are the essential points in their cultivation. Set the tubers low, leaving a slight depression in the soil at their crowns, and then fill the depression with water at intervals in summer, applying it in the evening.

2890. **Window-Plants for Summer Use.**—The following kinds should do well for embellishing your bay-windows in the summer: Acacias, agaves, amaryllis, araucaria, *Aspidistra lurida* and the variegated form, *Begonia Weltoniensis*, cactuses, callas, coleus, cuphea, dracenas, euonymus, *Ficus elastica*, geraniums, hoyas, ivies, *Latania Borbonica*, madeira-vine, maurandia, mesembryanthemum, myrtus, *Plumbago Capensis*, *Pteris tremula*, tradescantias, vallisneria, vincas. This selection is given with the assumption that your sunny window would have the shades drawn daily for several hours about noon.

2891. **Plants and Trees for Cemetery Use.**—One of the prettiest hardy plants suitable for a cemetery vase, is money-vine (*Lysimachia nummularia*). The hardy vines are also very appropriate. Among tender plants palms and aspidistras are good, as they do not absorb moisture as rapidly as many other kinds. Geraniums, coleus, achyranthes, lantanas, alternantheras, ivies, maurandia, mesembryanthemums, *Saxifraga sarmen-tosa*, tradescantias and variegated thymes, are all easily grown in vases. For shade-trees, we can recommend nothing better for cemetery use than such kinds as elms, maples, lindens, oaks, horse-chestnuts, birch and weeping willow.

2892. **Bananas as Pot Plants.**—The various species of bananas (*Musa*) are unsuitable for cultivation in the house because of their large size. As plants for the hot-house they are very effective, but of such size that they must usually be grown in large pots or tubs. A common way also is to plant them out in the soil of the apartment where they are growing.

2893. **Primula obconica.**—It is certainly poisonous to some people.

2894. **Evergreens for Screens.**—Comparing the Austrian pine with Norway spruce for the purpose of a moderately high screen, we do not see that the former has any advantage over the latter, as both are rapid, strong-growing trees. The Austrian pine in time reaches 100 feet or more in height. Both of these trees can be kept in low form by pruning. The white pine (*P. Strobus*) also submits readily to cutting back. Perhaps the dwarf Mugho pine (*P. Mugho*) would be best adapted to your requirements of all the pines, as this is a lower grower naturally, and very handsome. It is somewhat higher priced than the others, but its elegance should easily justify the increased expense. The Siberian arbor-vitæ is also a tree naturally of smaller size than the two species first named. It is a handsome grower of great hardiness.

2895. **Mushroom-Growing.**—Mushrooms are sold by the pound and are usually in good demand at an average price of fifty cents a pound. More attention is now being paid to this industry, and the grower will probably meet more competition than in the past. The best time to commence operations is in August or September. Fall and winter is the usual time of marketing the crop and making it profitable.

2898. **Coal-oil Stove in Greenhouse.**—Connect a small pipe from your stove with the open air for the escape of bad air and gases, and all will be right.

2899. **Plums and Apricots in Massachusetts.**—Our experience with the Japan plums has inspired us with

great confidence in at least one of the varieties. This is Botan or Abundance. It should not cost more than other plum trees, and can be depended upon to bear early and yield regular and full crops. The only other Japan sort that might come into consideration for extensive planting under the same climatic conditions is the Burbank. It is praised without stint by H. E. Van Deman, D. S. Willard, and other authorities, as the best of that type. In regard to planting apricots, we can only repeat our advice to be cautious. The chances are rather against success.

2901. **Preparing Grape-bags.**—If ordinary bags are put on before spores of the rot-fungus have found lodging upon the berries, the latter will be as safe inside as they would be if the bags were soaked in a copper solution. Yet we cannot expect good fruit, especially of best quality, if the foliage is not perfect. It is just as necessary to protect the foliage from disease as the fruit. Hence we do not see how bagging can take the place of spraying. We believe in both.

2902. **Tomatoes on Clover Sod.**—A much worse selection of soil could be made for tomatoes than clover sod. With some additions of animal fertilizers, ashes, potash salts, fish, acid phosphate, etc., a good crop should be grown. Cut-worms may trouble the plants when first set. To kill these worms the best way is to scatter pieces of green sod, the grass side sprayed with a Paris green solution, here and there over the field to be planted. A paper collar placed around the stem, at time of setting the plants, with lower edge, entering in the ground, will keep the marauders off.

2903. **Cauliflower for Market.**—There is less difference between different kinds than one would suppose. Snowball for early, has usually given us good heads. We feel entirely safe in planting it, as also Early Dwarf Erfurt.



CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Cleaning Brick Flues.—I take half-inch gas-pipe of lengths to suit, screw them together until I have the required length, and use in place of a line for running through the flues. It cleans them well.—*Am. Florist*.

The Soja or Soy Bean, the papers tell us, has been tried by the stations, and the reports are all good. *The Rural New-Yorker* tried this bean at least 10 years ago, and reported it as comparatively worthless.—*Rural New-Yorker*.

Tobacco-Waste as Manure.—Tobacco takes from the land more of nitrogenous and mineral plant-food than any other. For this reason the waste from tobacco-factories that can usually be procured at cheap rates makes more valuable manure than anything else at the same price.—*American Cultivator*.

Lombardy Poplars.—It does not seem to be generally known that this variety of poplar never seeds. It is simply a variety of another poplar, and must be increased wholly from cuttings. The pollen-bearing form, so far as known, does not grow in this country. The plant is wholly pistillate.—*Mechanics' Monthly*.

The Darwin Tulips constitute a new strain of late-flowering self-colored or "breeder" tulips, remarkable for their brilliancy of coloring. From a botanical point of view, as well as from the standpoint of the florist, there is great interest in watching the changes that occur, and in endeavoring to arrive at some explanation concerning them. At the Paris Exhibition these tulips attracted great attention, not only for their beauty of color, but for their hardihood and power of enduring both sun and rain. Among them is the "black tulip," described as "the most absolute black in the vegetable kingdom."—*Gardeners' Chronicle*.

Gladiolus, the Bride.—This variety is sometimes known as *Colvillei alba*. It is one of the most beautiful of gladioluses, and one of the most useful white flowers that we possess. Its bulbs are by no means dear when purchased by the dozen or hundred, and all who have the slightest demand for cut-flowers should grow this variety in quantity. It is well suited to pot-culture, and succeeds admirably in beds and borders in the open air. The bulbs are no larger than those of an ordinary crocus, but I have often found such bulbs to produce from three to five bloom-spikes 12 to 18 inches in height. Their culture is easy. If pots cannot be spared, quantities of

them may be planted and grown in boxes, *i. e.*, where the flowers are wanted only for cutting. Their spikes last an unusual length of time when cut, and their graceful appearance fits them admirably for artistic decoration. After blooming, their bulbs are not useless, but go on flowering year after year. In the flower-garden, too, they have a charming appearance, but I am as much pleased with them in the herbaceous border as anywhere, and as the bulbs are thoroughly hardy, and may be planted out at any time during the winter, this gladiolus may justly be classed amongst the best of hardy flowers.—*Gardening Illustrated*.

Pop-corn for the Children.—Children enjoy popping corn, and it is a pleasure easily procured for them. Pop-corn requires the same cultivation as other corn. It is a little tedious to shuck, but produces abundantly, giving three to six ears to the stalk, and four to six stalks to the hill. The hills may be two to three feet apart, or even closer. There are several good varieties—the Eight-rows White, the Yellow, the Rice and the Pearl. The Yellow is excellent for buttered pop-corn, and the White for candied popcorn-balls. A surplus is easily sold, indeed some farmers make a neat little sum by growing several acres on purpose for market. As it is not a perishable product it may be held for a good price, its value increasing with age.—*New York Tribune*.

Sowing Small Seeds.—Sowing seeds too deeply is one of the most common mistakes of beginners, and is a sufficient reason why so much of it fails to come up. All small seeds, such as carrot, cabbage, lettuce, celery, etc., should be left within an inch of the surface; larger seeds, such as peas, beans, corn and beets, within two to three inches. Small seeds sown when the ground is in good condition and left unfirmed by the feet or the roller may be expected to die unless favored with a timely rain. Seeds should not be sown when the earth is so wet that it will stick to the roller, nor when it is parching dry. When freshly plowed up and prepared it is usually in the best condition for sowing, but it must be firmed.—*A B C of Agriculture*.

Beautify the Home.—If you have a back yard, large or small, you can do something to make it pretty. If you hang your clothes out on a roof, there can be a beauty-spot in the way of a few plants in boxes or large tubs. One of my neighbors has her back yard paved,

but there were just three inches between the fence and the stone, and she planted a row of balsams. These grew straight up, but had very brilliant flowers and were a restful spot to the eye after the glare of the sun on brick and stone. Another had a little place under her back step. She was country-born and bred, and on one of her visits brought some ferns and soil from the woods. The ferns flourished and were a cool bit of green in that wilderness of a city. A really tasteful thing, at the back of an old house where dwelt a cobbler, delighted me. A

Cannon-ball Tree.—This curious-looking tree (*Couroupita Guianensis*) is often met with in woods and pastures. Its peculiarity is principally due to the mode in which the flowers are borne on long branches, which grow from around the trunk, commencing at its base and continuing many feet upwards. They are arranged in terminal racemes, and fall soon after expanding; the peduncle, however, instead of falling or withering hardens and enlarges, producing racemes of flowers in succession at its extremity each season. Years afterward

the woody pedicels may still be seen upon the flowering branches. So nearly does the arrangement of the latter resemble a creeping plant growing upon a tree that it is difficult to convince people to the contrary, and that they bear the flowers of the tree itself. In color the large cup-shaped flowers are red within and yellowish white without. They measure 4 inches across. The large brown, ball-shaped fruits, unlike the fragrant flowers, emit a disgusting odor rivaled only by the flowers of *Termanilia Belevica*. The latter, when in flower, scents the atmosphere of the garden in a way which suggests to the uninitiated that the sanitary arrangements of the district are in a bad condition. The couroupita forms a large tree some 50 to 60 feet in height, and bears a dense mass of shining green leaves, becoming deciduous once, or sometimes twice, during the year. The leaves on these occasions fall very rapidly, and are replaced again in a few days by a new set.—*W. E. Broadway, Royal Botanic Gardens, Trinidad, in Gardeners' Chronicle.*

Nature's Chestnuts.—Nature planted the chestnut forests on light and well-drained soils, and especially on the red-sandstone formation of New Jersey and southward, where this tree is found in abundance and of great age and luxuriance. It also extends northward and westward on similar soils, but, so far as my observation enables me to judge, it avoids the heavy clays and localities where limestone is the prevailing rock. The mineral elements in the soil do not, however, appear to be of so much importance to the chestnut as good drainage, for we find it on the slate and granite hills in many of the eastern states, but rarely on the heavy clay; and for this reason I think a man would be unwise to select such a site for the chestnut orchard. Still, it is by running counter to nature in just such ways that we are enabled to show skill as horticulturists. If land be too wet, we



THE CANNON-BALL TREE (*COUROUPITA GUIANENSIS*).

hogshead was placed so as to catch the roof-water. He had planted morning-glories all around it, and fastened strings from the ground to the top. The lovely vines had completely covered the ugly barrel, and in the morning hundreds of graceful blossoms of every shade waved in the breeze. Put a box in your kitchen window, inside in winter, outside in summer, and plant parsley. The leaves are a rich green, pleasant to the eye, and make a nice seasoning for soups and grains, as well as a pretty ornament for dishes of meat and fish.—*Success with Flowers.*

ditch and underdrain; if too dry, we mulch and add materials to assist it in retaining moisture; so all along the way we are compelled to deviate from natural processes in the multiplication and cultivation of plants, in order to obtain a fair return for experience and labor.—*Andrew S. Fuller, in Tribune.*

New Ideas Wanted in Packing and Marketing Vegetables.—There has been a very marked improvement in this line recently. Not many years ago nearly all vegetables were carried to market unwashed, in old sacks, dirty barrels or in bulk, in a rough farm-wagon. Now, the man who succeeds, if he is doing much of any business, has a packing-house to which all vegetables are brought direct from the fields; here they are assorted, graded, measured, counted, trimmed, bunched and washed, as occasion or the variety may require. They are put up in the most approved manner possible, and loaded on wagons so as to make an attractive display. The market-gardener has learned that to sell his products to the best advantage he must first please the eye of his customers. I have seen asparagus, green and crisp, sent to market in old, rough boxes and tied with rough twine or bass-bark, sell at six cents a pound, while another lot, of no better quality, sold in the same market for ten cents. This advanced price came wholly from the appearance of the "grass," each bunch being neatly tied with narrow pink cotton tape, and then packed in new, clean white boxes, giving the whole stock a tempting, appetizing appearance, resulting in an advance of 66½ per cent. Celery not thoroughly cleaned and roughly bunched, as of old, can now be sold only at very low rates. To bring good prices it must be thoroughly cleaned, neatly bunched and tied with clean twine of some sort. Sometimes it is seen tied with blue cotton tape; this in contrast with the cleanly blanched stems makes a very fine show on the market, and causes more ready sale if not higher prices. I have known it to cause an advance of 25 per cent. in the price of the product.—*J. H. Hale, in American Agriculturist.*

Death of Shade-Trees.—Professor J. C. Arthur, of Purdue University, after investigating the cause of the death of the fine shade-trees of Cleveland, gives as his opinion that coal-soot is the principal cause of the blight that is destroying so many trees in that city. The soot closes the pores of the leaves and shuts off their supply of organic matter, besides interfering with their exhalation of moisture. Professor Arthur further says that the water-tight pavements are somewhat injurious and that the reduction of the water depth from eight to sixteen feet by the newer sewers has probably contributed to the disease of the trees. He recommends the discarding of maples and elms and the planting of poplars, red and white oaks and other smooth-leaved trees which are not so much affected by the blight.—*Western Rural.*

Effects of Different Soils and Situations.—The *Ampelopsis Veitchii*, because of its universal cultivation in that city, is often called "Boston ivy." On the same estate not far away are two vines differently situated.

The difference in their growth and in the coloring of their leaves plainly shows the effects of soil and situation. One of these ivies grows in poor, hard-baked soil with a northern exposure. Its leaves are delicate green in summer, changing in autumn to rich scarlet, crimson and yellow. The other ivy has a southern exposure and good rich soil. Its foliage in summer is richer and darker than that of the first, with larger, more succulent stems. In autumn its leaves change their color to dark maroon and bronze.—*New York Observer.*

A New Hardy Flowering Almond.—The beauty of the common almond in spring is well known, but even under favorable conditions it does not come into bloom



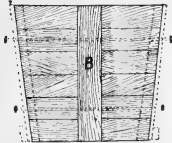
DAVID'S WHITE-FLOWERING ALMOND

till March, and in cold springs perhaps not until April. The advantage of the new plant *Amygdalus Davidiana alba*, is that it comes into bloom in the early part of February, even in the open ground. Some small plants of it in full bloom were exhibited at the last meeting of the Royal Horticultural Society, on the ninth inst., by J. Veitch & Sons, Chelsea. The flowers are of large size, pure white, and freely produced along the wood of last year's growth. There is a pale rose variety, under the name of *A. Davidiana rubra*, which flowers at the same time as the white one, and differs from it in nothing except color. The plants were taken from the open ground for exhibition, thus affording evidence of their hardiness, and early, free-flowering habit. Our

illustration of alba will give an idea of its bloom in mid-winter. Those who grow collections of the flowering almonds will find in this new variety a valuable addition; and those who have not an almond in their grounds will be delighted with it as a hardy and ornamental winter-flowering shrub.—*Gardening World*.

Prof. Massey's Vegetable Notes.—A great many new beets are continually offered, but for family use the old Extra Early Bassano is as good as any. Some object to its light color; but this is only a fancy, for in quality it is vastly superior to the dark Egyptian. Its big top makes it objectionable to the market-gardener, but as I am writing mainly for amateur gardeners, I would say use the Bassano and Eclipse for early sowing, and sow a few seeds a little earlier than you consider safe. Once fairly above the ground, they will stand some frost; but if caught just as they are coming up, they are easily killed. Some gardeners sow salsify and parsnips very early because of their hardy nature, but I have found that this is an error. The early sowings get into a stunted condition about midsummer, and later on begin to grow again. In this latitude (N. C.) salsify makes its best crop sown in July, while at the north seeds sown in June will make better roots than those sown earlier. The Sandwich Island salsify is so much better than the old sort that we use it altogether. While spring-sown spinach does not amount to much, it can very well be allowed to occupy the land intended for snap-beans later on. The beans can be sown between the rows of spinach, and by the time they need work the spinach will be gone. Onions sown in a coldframe and transplanted to the open air, we find to make a much heavier crop than if sown and thinned out where they are to grow.—*Garden and Forest*.

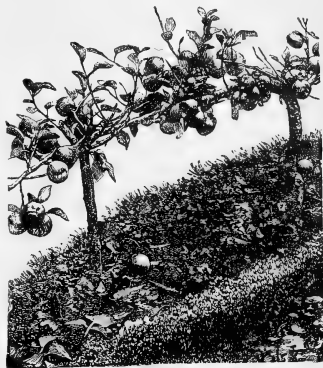
Low-Trained Fruit-Trees.—Dwarf bush trees can be grown and kept fruitful for many years without much repression in the way of pruning. For small gardens these little trees may be utilized as backgrounds to divisional walks with very good effect, and produce the finest fruits. Pears, apples, plums and cherries do well on this system. Espaliers, or trees trained horizontally on wood or iron and wire supports, are among the oldest and certainly most useful forms of trained trees we have.



SECTIONAL BOXES FOR THE REMOVAL OF LARGE PLANTS.

In situations much exposed to storms of winds they are invaluable, as the fruit holds on during the most violent gale if securely tied to their supports. Arches of wood or iron for spanning the walks of fruit or kitchen-gardens may be made to add considerably to the ornamental and

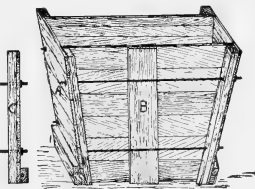
useful character of the place by training pears, apples and other fruits on them, and the fruit, being fully exposed to the sun and air, attains a high color. Cordons are much used in large fruit-gardens as edgings to the fruit-tree quarters, and when well kept give a nice finish



HORIZONTALLY-TRAINED APPLE TREES.

to the whole. They are simply formed by confining the tree to one or two branches, and training them to a stout wire fixed to short posts set into the ground at about 1 or 1½ feet from the ground; they are kept closely pinched and spurred in, and yield very fine fruits. The illustration shows horizontally-trained cordon apple trees in fruit.—*Gardening Illustrated*.

Removing Large Plants.—J. M. Samuels, chief of the Department of Horticulture of the World's Fair gives the following directions for the construction of sectional boxes and the removal of large specimen plants to be used for the coming exhibition. The box represented is the one most commonly used for good-sized specimens, but the dimensions must necessarily vary



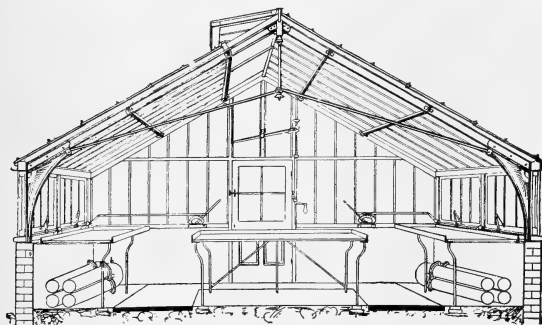
according to the size of the plant to be moved. The box is made in four sections, and for one of the following description 1½-inch boards should be used. "A" shows the inside of two opposite sections; 4 feet wide at top, 3 feet 4

bottom and 3 feet deep. Scantlings 2x4 are nailed to each end, through which are bored holes to correspond with the size of the iron rods to be used. "B" shows the outside view of the other two sections; 3 feet 4 inches wide at top, 2 feet 4 inches at bottom and 3 feet deep.

A strip 1x6 is nailed across the center to strengthen them. "C" gives an end view of section "A," showing the position of the iron rods, and a 2x4-inch strip on the outside, to which to nail the bottom of the box. Prepare to remove the specimen by carefully digging around it with a sharp spade, in such a manner that the sides of the adhering earth will conform to the shape of the box to be used. Do not attempt to remove the specimen before fixing the box permanently. This should be done by first placing the sections "A" on opposite sides of the ball, passing the rods through the holes already bored in the ends of each section to hold them in position; then drop the two sections "B" in place on the inside of the rods, and screw up the nuts sufficiently to secure the earth. If any soil has broken away from the outside of the ball, fill in carefully with fine soil and crowd down tightly with a pointed stick. Then cut the roots off carefully, level with the bottom of the box, lay the specimen over

ing on the tubers will give stocky shoots, often three inches long, with long roots. These will be tough and bear handling without any serious damage. The tubers should not be cut till ready to plant, unless they are put at once in a cool dark place, and then they should not be kept over two or three days, as they will heat and the sprouts will be damaged more or less. I have seen sprouted seed come up and grow large enough to be cultivated with a horse in ten days. The furrows were made, the seed planted, fertilizers put in and all covered up within an hour. The crop was immense, and I give most of the credit to the saving of the moisture for starting the plant.—*Home and Farm.*

Moles in New Jersey Gardens.—What terrible work a few of these rascals will do in hotbeds and cold-frames! They ruin hundreds and thousands of plants in short order, and worry the life of the poor gardener right out of him. He may set traps and catch some of the intruders, but others come to take their places. My old neighbor, a market-gardener, tells me that he repeatedly found half-grown lettuce pulled right down into the mole runs, and partly eaten. At first he was inclined to lay the blame on meadow-mice following in the mole-runs; but he could never succeed in catching one with any kind of trap. At last a mole was caught in the act of pulling a plant down, and another was caught a few days later in the same way. So it seems that even the mole may need or like a little succulent food from time to time, as a change from the usual worm diet. It is a pity that the stomachs of the animals caught were not examined to settle the



PARHAM'S NEW GREENHOUSES.

on its side and nail on the bottom firmly, leaving spaces for water to escape. The sides of the box should then be nailed firmly all around. In boxes of the size given as an example, or larger ones, the rods should remain in place, but if of smaller size they may be removed after nailing. Water the specimens thoroughly and remove to a shady place to prevent too rapid evaporating. Before their final disposition the boxes should be filled with soil level with the top; boards should then be placed to form a cover and to protect the ball from fracture, and strong protecting strips nailed across this cover. Whatever sized boxes are used, they should be uniform in shape and proportionately on the same lines as in the example here given. Some deep-rooted specimens will require boxes of greater depth.

How to Have Potatoes Early.—Except for very expensive seed the best and easiest way to start healthy potato-sprouts is to lay the whole tubers in a single layer in a warm light place. It may be necessary to turn them once, after a good growth of green leaves has started, to give the other sides a chance. The sun shin-

ing on the tubers will give stocky shoots, often three inches long, with long roots. These will be tough and bear handling without any serious damage. The tubers should not be cut till ready to plant, unless they are put at once in a cool dark place, and then they should not be kept over two or three days, as they will heat and the sprouts will be damaged more or less. I have seen sprouted seed come up and grow large enough to be cultivated with a horse in ten days. The furrows were made, the seed planted, fertilizers put in and all covered up within an hour. The crop was immense, and I give most of the credit to the saving of the moisture for starting the plant.—*Home and Farm.*

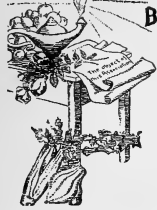
question beyond dispute. But all this does not help us solve the problem, how to get rid of the mole in beds and greenhouses, and thus put a stop to the destruction of plants. What can be done?—*Farm and Fireside.*

Greenhouse Construction Simplified.—The accompanying illustration is reproduced from the catalogue of an English firm. The material used is mostly glass and iron. The house is put on an under-framing of wrought girder-iron, and glazing-bars and glass form the roof. There are no wood principals or purlins. The iron framing will support any weight. The wood glazing-bars are channeled on their upper side and the glass panes lie on them as closely and tightly as on puttyed bars. Drip grooves are worked on the sides of the bars.

Greenhouse construction is becoming more perfect and more simple every year. Our French and English neighbors have not yet surpassed Yankee invention in this line. Although we quickly and thankfully adopt any good ideas furnished by them, we lend to them as many of our own.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN



Land for Peaches.—Soil for peaches needs to be thoroughly underdrained. The intermediate wet sand lands, so far, where deeply underdrained, have proved to be well adapted to the growth of pears and plums, and particularly to that of small fruits. Peach trees may be grown on the sandy ridges along the lake shore with success.—*Mich. State Horticultural Society.*

Resin Washes.—The use of these washes and their value against scale-insects has been fully established in California, and will become so in other parts of the country. The plants treated should be thoroughly coated over, which can be best done by a coarse spray. One of the best formulas is: Resin, 18 pounds; caustic soda (70 per cent. strength), 5 pounds; fish-oil, 2½ pints, and 100 gallons of water. The first three are put into a large kettle and covered with water, then kept boiling hard until all are dissolved and for one hour afterward. The due proportion of water can be added when required for use, and the mixture run through a strainer to insure equality of consistency.—*Prof. C. V. Riley, American Pomological Society.*

Willows from Cuttings.—As to preparing cuttings, almost any time will do. I have cut them nearly every month of the year, yet would prefer cutting and planting right along through the month of May, as being then liable to less loss and better growth. As far as willow, cottonwood and Lombardy cuttings are concerned, good, fresh, healthy ones are about as sure to grow in Minnesota, if properly handled, and under the most favorable circumstances, as either corn or potatoes. Do your work intelligently and thoroughly, and at the proper time, and success is the rule. In selecting cuttings, choose clean, two-year-old wood, or strong, well-ripened one-year. Cut from eight to 10 inches long, and as near one-half inch in diameter as economical cutting will allow. Larger cuttings will root and do nearly as well, but are more expensive to transport and handle. Never cut them when frozen. If cut in autumn, or during warm days in winter, pack in damp straw or sawdust until wanted. These will bear transportation long distances, even with careless packing.—*Minnesota State Horticultural Society.*

What Arbor Day is Doing.—Arbor Day in schools has proved an effective method of calling attention to the importance of economic tree-planting. In New England, and all the Atlantic states, there are large areas of barrens, worth-

less for field crops, that may profitably be devoted to wood-growing. Our Atlantic sand-plains that were once covered with wood can be reforested. Over 10,000 acres on Cape Cod, which, 30 years ago, were barren sand-plains, are now covered with planted forests. The 200 acres of forest at Woods Hill, and the 300 acres of planted trees at East Greenwood, R. I., are genuine object-lessons for New England. On almost every farm there are waste places where trees might be earning dollars for their owners, growing by the brook or river, or on hillsides or overhanging cliffs too steep for cultivation. Arbor Day has proved as memorable for the home as for the school, leading youth to share in dooryard adornments, and in planting trees by the wayside. Much as has been done on limited school-grounds, still greater improvements have been made on the homesteads and by the roadsides. The home is the objective point in the hundreds of village-improvement societies recently organized. The old motto: "As is the home so is the school," or conversely, "As is the school so is the home," suggests the close connection of these vital forces. The United States census shows a remarkable increase of interest in horticulture, arboriculture and floriculture.

The reports collected from 4,510 nurserymen give a grand total of 3,386,855,778 trees, vines, shrubs, roses and plants as then growing on their grounds. Arbor Day in schools and village-improvement societies is not least among the many happy influences which have contributed to this grand result.—*B. S. Northrop before Massachusetts Horticultural Society.*

The Best Four Peaches?—New Jersey growers answered this question before the last meeting of the State Horticultural Society as follows:

Mr. Creely—Mountain Rose, Oldmixon, Crawford and Foster or Wheatland. Mr. Black—Mountain Rose, Reeve's Favorite, Stump and Crawford Late for light soils; Stump, Crawford Late, Stephen Rare-ripe, Beers Smock for heavy soils. President Blackwell—Mountain Rose, Moore Favorite, Elberta and Beers Late. Mr. Mr. Carhart—Mountain Rose, Stump, Crawford Late and Keyport White.

Manure for Fruit-Trees.—Prof. Voorhees thought they required the same elements as other crops, namely nitrogen, potash and phosphoric acid, with some lime. He claimed that these ingredients could be had in commercial forms at cheaper rates than in stable manure, and with much less labor in handling. The organic or

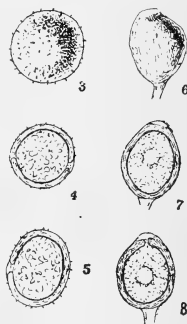


FIG. 2. Three Uredospores (3, 4 and 5), and Three Teleutospores (6, 7 and 8): Numbers 3 and 6 are Drawn as Seen on the Surface, and the Others as Seen in Optical Section. (See page 316.)



FIG. 1. Leaf Section with Several Rust Pustules.

vegetable matter in stable manure furnishing humus could be supplied by turning under green crops. This element gives porosity to soils and renders them more friable.

It was found that stable manure for peach trees made more wood than commercial fertilizers containing less nitrogen. Home-mixing was favored as admitting of furnishing the elements needed in the proper proportion. Cotton-seed meal furnishes nitrogen in a quickly available form, while muriate of potash is the cheapest medium of obtaining potash, and for that reason preferable to the more expensive sulphate, though the latter is credited with imparting improved quality to potatoes. Whether it did so with fruits he was unable to say. Mr. Beebe thought mechanical condition of soils of decided advantage in securing the full benefits of commercial fertilizers. Judge Strong strenuously urged the use

of kaimit and odorless phosphate. Four hundred pounds of each per acre on his soil enriched it more than larger expenditures for other commercial fertilizers. He advocated the growing of the most paying crops adapted to the soil, and buying supplies of such as could not profitably be raised.—*N. J. State Hort. Society.*

A New Destructive Carnation Disease.—Its distribution is already quite wide-spread. It is now known to occur in Massachusetts, Pennsylvania, New York, Ohio, Michigan and Indiana, and is reported from more than one locality in most of these states. Probably it has also invaded other states. This rust has long been known in Europe, and is especially common in Italy and Germany.

The cause is a vegetable parasite *Uromyces caryophyllinus*, that invades the stem and leaves of the plant, and after a time produces a quantity

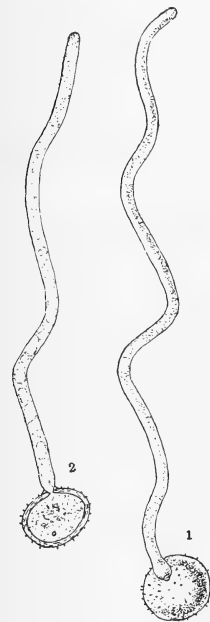


FIG. 3. GERMINATING UREDO-
SPORES. 1. SURFACE VIEW.
2. OPTICAL SECTION.

of spores to spread the malady. The first intimation of rusting is the appearance of oblong pustules, a sixteenth to an eighth of an inch long, or even larger, somewhat raised above the surface of the leaf (fig. 1, page 315). At first the pustule is covered with the gray outer

membrane of the leaf, but this is soon pushed aside, and a brown or blackish mass of spores is exposed. The spores come away easily, and readily adhere to the hands as a brown dust. The pustules are usually scattered, or somewhat clustered, upon both sides of the leaves and on the stem. Plants sometimes become so covered with the rust that they drop the spores as a dust whenever shaken or handled.

The fungus that does the harm is inside the leaf or stem. Even under the microscope it can be brought into view only with much difficulty. After a time spores are

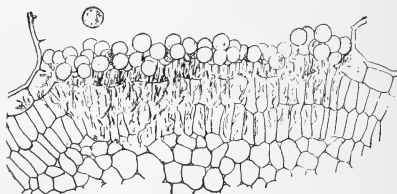


FIG. 4. SECTION THROUGH A PUSTULE OF UREDO-
SPORES.

produced by these concealed parasites, which forming in masses soon rupture the surface-covering of the leaf and are exposed to view.

The spores are for spreading the fungus. There are really two kinds, one for immediate service (uredospores) and one for use after a considerable period has elapsed (teleutospores) (fig. 2, page 315). The only difference the naked eye can detect between them is that the latter are of a slightly darker brown. The uredospores will start to grow as soon as ripe, if placed in water, but the teleutospores will only grow after they have passed a certain period of rest. Growth of the uredospores takes place by pushing out a delicate tube from the spore (fig. 3, this page) which reaches its full development in less than twenty-four hours, and dies unless it has in the meantime penetrated a carnation-leaf. If this happens, the tube draws nourishment from the juices of the leaf and branches and ramifies through the tissues, and within a month, possibly in a week or two, is ready to bring forth a new crop of spores. In this way the rust is very rapidly propagated from leaf to leaf and from plant to plant, whenever the atmosphere is moist enough to permit a thin film of water to remain on the leaves a few hours, in which the spores may germinate. The resting spores (teleutospores) do not behave in this way. They germinate (probably after some months) upon the ground, forming still more minute sporules, which are borne to the carnation-plant by the wind, and there establish the rust again.

From this knowledge of the habits of the fungus we may draw some very important suggestions to guide us in fighting it. So far as possible remove the affected leaves, or even whole plants, taking care not to scatter the spores unnecessarily, and burn them, in order especially to destroy the resting spores. Spray the plants with some solution that will check the formation of spores in the

old pustules, and at the same time will render the germination of spores falling upon the surface of the plants impossible. Take no diseased branches from cuttings, and watch the young plants closely to destroy any signs of disease. Use no soil that has become contaminated with spores. At the earliest opportunity remove the soil from benches that have grown diseased plants, depositing it at a safe distance, fumigate the house with burning sulphur to kill any stray spores, and refill the benches with clean soil. Careful and persistent attention of this kind will rid an establishment of the pest in one or two seasons. By concerted action among carnation-growers, it will be quite possible to remove all traces of the disease from this country, and by vigilance on the part of importers to keep it from again gaining a foothold.

The use of some fungicide is almost imperative. Experiments are yet needed to determine what is the best fungicide to use and the best method of applying it. An old Swiss gardener now at Richmond, Ind., is familiar with the European aspect of the disease, and says it can be controlled by spraying with water in which green vitriol (sulphate of iron) is used at the rate of one-third to one-half a pound in a gallon of water. I am inclined to think that this treatment would be reasonably effective. There are good reasons to suppose, however, that some form of copper solution will be more effective. The Bordeaux mixture is the best known, but is not so easily prepared as the ammoniated copper-carbonate. The latter may be bought ready for use under the name of copperdine. The materials for these remedies are not especially expensive, and if a suitable spraying apparatus is at hand the application will cost but little in either time or money. A precautionary measure after the rust has appeared in a house is to keep the air as cool and dry as compatible with the health of the plants, thus retarding the growth and distribution of the spores. It is interesting to note that some varieties are more affected than others, Silver Spray proving itself particularly susceptible.—PROF. ARTHUR, *before the Am. Carnation Society.*

Prof. Goessman on Manures for the Garden.—The cheapest form of potash in the market is the German muriate, and it answers well for many crops; it is not, however, adapted to tobacco, which demands the sulphate or carbonate. The latter is the chief valuable ingredient in wood-ashes. Cotton-seed ashes are often very rich in potash, some samples analyzing 32 per cent.; they must, therefore, be applied with care. All strong chemicals should be thoroughly mixed with the soil. Ashes vary much in strength, and should always be bought and used by analysis. Nitrogen is an essential element in a complete manure, and almost every soil and every crop demands it, and will pay for its application. Nitrate of soda is at once the best and cheapest chemical to use; sulphate of ammonia is slower and less certain to give satisfaction. Fine ground Carolina and Florida rock, known as "floats," and the fine ground guanos, as well as the Thomas slag, which crumbles of itself into an impalpable powder, constitutes a better application in gen-

eral than the dissolved bone or dissolved phosphatic rocks, because, being very cheap, the farmer can afford to apply them liberally, and their effect will last for many years. The Thomas slag has a great future before it, and it is likely to be produced in immense quantities at the smelting furnaces. Garden vegetables have shown that the muriate of potash was the best form of potash for cabbages, but failed with lettuce, and was not good with celery. By far the best results with tomatoes and potatoes were obtained with the sulphate of potash.—*Boston Market-Gardeners' Association.*

Principles of the Evaporation of Fruits.—Fruit will cook in water at 212°, or bake in an oven at 225°, but if the air circulates fast enough the fruit will not cook or burn or even become heated at the temperature of 300°, for the evaporation of water is a cooling process. The air in motion, together with the heat, causes the fruit to dry rapidly. The chemical changes which belong to truly evaporated fruit will now begin, and the albumen is coagulated precisely the same as in an egg when boiled. All the fruit-jelly remains in the cells or is left upon the surface by the evaporation of the water in which it was dissolved. The germs of animal or vegetable life are destroyed by the high heat. It is by these changes and uniting a part of the water already contained in the fruit with the fruit-starch, that the truly evaporated products are rendered more wholesome, more digestible, less perishable, and consequently more valuable.—GEO. A. DAVIS, *before a Farmers' Institute.*

Adulteration of Copper Mixtures.—Copper sulphate in the form of large crystals may be regarded as being fairly pure, but when in the form of powder it is always safe to test its purity. Copper carbonate, on account of its rather high price, and also on account of its powdered condition, is probably quite liable to adulteration, and should always be tested. While the help of a chemist is needed to tell how much copper a substance contains, the following suggestions will enable anyone to test copper sulphate and copper carbonate as well as Paris green in regard to their purity: Copper sulphate, if pure, should dissolve completely in water, making a clear solution, free from sediment or suspended matter. Copper carbonate should dissolve completely in nitric acid, commonly called aqua fortis. If it does not dissolve completely, it is impure and probably adulterated. Copper carbonate, if pure, should dissolve completely, or very nearly so, in a considerable quantity of strong ammonia-water. Both tests should be used. Of course, copper carbonate could be adulterated by using powdered copper sulphate, but this adulteration could easily be detected, since copper sulphate easily dissolves in water, while copper carbonate does not. Paris green should, if pure, dissolve completely in strong ammonia-water, used in liberal quantity. Such simple tests as the foregoing may be applied by anyone, and they will serve as a fairly reliable guide regarding the purity of the compounds mentioned. When adulterants are added they have been found by common experience to exist in the form of some finely powdered white substance, as barium sul-

phate, for example, which is insoluble in water, alkalis or acids. Fruit-growers who have to use large quantities of copper compounds should, for the sake of economy, buy the separate ingredients and do their own mixing. Persons who have occasion to use only small amounts of spraying mixtures may find it advantageous to purchase prepared compounds ready for use, if they can be sure that the preparation is reliable in strength and not extravagantly high in price.—*Prof. T. T. Van Slyke, Western New York Horticultural Society.*

Pennsylvania Horticultural Society.—The annual spring exhibition was opened in Horticultural Hall, Philadelphia, March 29. This, the oldest horticultural society in America, seemed to have made great strides in advance of its previous exhibitions. The arrangements were complete, and when the doors were thrown open the sight was indeed delightful. From the entrance to the last niche the decorations were pleasing. The main stairway leading to the grand saloon through a bower made of wild smilax, laurel, etc., was festooned with wreathings. On either side of this entrance into the general exhibit dafodils made a pretty edging, their bright yellow showing to good effect. Under the balconies a beautiful hedge was formed, which extended around the entire room. This feature, which met the applause of the visitors, was an innovation, the idea never having been carried out before at any of the exhibitions. The various classes of flowers were well filled with competitive exhibits, which naturally made the show one of rare beauty. The many rare and beautiful contributions from private conservatories, as well as from commercial establishments, insured a display of unusual excellence. In the main saloon, which was devoted to plants alone, were seen palms, ferns, crotons, pandanus, azaleas, etc., growing to perfection, each and every one being a specimen of its class. The beautiful exhibits from the conservatories of Miss M. L. Baldwin, George W. Childs, A. J. Drexel, Charles Dissel, Mrs. Harry Ingersoll, W. P. Henzsey and many others, were of unusual excellence. The foyer was set apart for the orchid and cut-flower exhibits. This section of the exhibition was a show of itself well worthy of special notice, the orchids alone taking up double the space ever used at any of the previous exhibitions. The many forms and rare coloring of this family of plants compel all to stop and pay respects. The space allotted to the several orchid exhibits was the scene of a reception or levee, every one stopping to drink in the beautiful sight. These rare gems were not from local private and commercial establishments alone, but traveled by railway for miles to add to the attractiveness of the Pennsylvania Society's spring opening. The exhibits from the orchid-houses of Pitcher & Manda, Short Hills, N. J., and Siebrecht & Wadley, New Rochelle, N. Y., were especially elaborate and fine, notwithstanding the long distance traveled. Among local growers Edwin Lonsdale made a large and handsome display of orchid-plants. Their abundant bloom and perfect health added materially to the attractiveness of this department. The collection of cut roses was unusually attractive.

The flowers were shown on long stems in neat vases, nearly all of the leading sorts being exhibited. The new rose "Bridesmaid," never before on exhibition in this city, was shown by J. N. May and Frank L. Moore. The exhibition was well attended, and the managers state that financially and in every other respect this was by far the most successful spring exhibition ever held by the Pennsylvania Horticultural Society.—D. D. L. F.

Maine Pomologists.—The winter meeting and fruit-exhibit of the Maine State Pomological Society was held in Cornish, February 17 and 18. Secretary B. W. McKeen of the State Board of Agriculture, urged that more attention be given pomology in this state, where soil and climate are specially adapted to fruit-culture. "As we study the mysteries of our art and become more proficient in it, we necessarily become better men and women, capable of higher achievements."

President Charles S. Pope took a retrospective view of the progress of fruit-growing in Maine. The most marked development has been in small fruit, especially the strawberry. Plum-culture, once abandoned because of black-knot, gives promise of again becoming an important industry. The aim of the society should be to induce farmers to take better care of trees already planted rather than greatly to extend the number.

J. W. Tree, in his paper, "Our Labors and our Rewards in Fruit-Culture," urged greater care in setting an orchard. In his experience it had been necessary to do some blasting of rocks in order to bring the trees into rows.

Secretary D. H. Knowlton traced the development of fruit exhibitions. The ideas of traffic, recreation, competition and instruction should be made prominent. In too many instances recreation is the leading object. A collective exhibit is of value as furnishing opportunities to study varieties from different localities. In competitive exhibitions, representative varieties should be selected, and the intrinsic merit of any variety should go far toward determining the award. It is advisable to have a separate table for the exhibition of varieties not in competition. The number of varieties in competitive exhibits should be limited; wrong impressions are given by the exhibition of varieties which barely live but do not thrive in a given locality.

S. H. Dawes concludes that dwarf pears are more profitable than standards. As to varieties, Bartlett is his best summer variety, and he plants one-fourth of his orchard in this sort. Louise Bonne has been found the most satisfactory autumn variety; its worst fault is a tendency to overbear. Duchess is next in importance, but is not always satisfactory. The most serious obstacle to pear-culture is the blight. A treatment apparently successful as a preventive of this disease is to "split the bark in spring, just as the buds are swelling, and apply with a force-pump or brush a thin whitewash to which sulphur has been added in the proportion of 1 pound to 5 gallons."

Professor W. M. Munson uses for codling-moth a mixture of 1 pound of Paris green to 250 gallons of water;

though excellent results were obtained in some cases by using a mixture of 1 pound to 320 gallons. Spraying with the copper compounds is beneficial in checking the attacks of the apple-scab; the increase in first-class fruit amounting in many cases to nearly 65 per cent. There is little difference in the effectiveness of modified eau celeste and the ammoniacal solution of copper carbonate. The materials for the former being readily obtainable of local dealers, that mixture will probably be more commonly used. Simple carbonate of copper in suspension has no marked effect on the fungus. A large proportion of the fruit was but slightly affected, the attack being recent. It appears probable, therefore, that spraying late in the season will prove beneficial and the trees begin the next season in a healthy state.

S. H. Dawes says there is a marked difference in the number of windfalls from sprayed and unsprayed trees.

H. W. Brown sprayed his orchard once with 1 pound Paris green in 200 gallons of water. As a result, from 300 barrels of Baldwins there were not four barrels of wormy fruit, while in adjoining orchards the fruit was badly affected. He advised girdling as a method of inducing earliness in the ripening of grapes. Z. A. Gilbert urged the necessity of winter protection, and the uselessness of depending on grapes for profit in Maine. Only a

few varieties will mature there. Moore Early does passably well, but is not certain. Worden gives very satisfactory results and deserves more attention. Green Mountain is doing well, and is probably as good as any we can grow. Hartford, with all its faults, is valuable for this climate. It has failed to ripen only once or twice in twenty years.

Charles E. Wheeler said that the exercise of neatness and care in packing, as well as the use of neat packages, will go far toward maintaining the good reputation of Maine fruit. Steps should be taken to prevent careless packing. Edward Peake, of an English commission house, stated that Maine is growing some of the best shipping fruit in the world, and the English market will handle large quantities of the best quality. Too much inferior fruit has been shipped this year, and prices have been low. Maine King and Baldwin are always in demand, and Ben Davis has sold well. Newtown Pippin has lost its reputation because of inferior fruit. King is now the most popular apple in the English markets.

The exhibit of fruit was of good quality. An interesting feature was a collection of forced vegetables from the State College, consisting of tomatoes, English cucumbers, radishes, carrots and snap-beans; also specimens of the pepino or "melon pear."—*W. M. M.*

NEW OR NOTEWORTHY.

AMONG the new roses now offered to the trade it would be hard to find one more promising than Bridesmaid. This, like The Bride and Waban, is a sport from Mermet, showing the character of its parent strongly in habit and growth. The color, however, is totally distinct. While Mermet is shell-pink, fading into yellowish white in bad weather, Bridesmaid is bright satiny pink, devoid of yellow, and it bears dark weather admirably. Waban has been a disappointment to many, though it would be unfair to condemn it without further trial. Bridesmaid, it will be remembered, was first offered under the title of "Hugh," being named after Hugh Waban, but this name was superseded by the later and more euphonious one. There is much in a name, as every florist knows.

IT IS BELIEVED that by another year we shall find the new French cannas among desirable Easter plants. Both Madame Crozy and Star of '91 have been flowered well all winter, proving their value as decorative plants indoors as well as out. A good many growers in this country are now trying their luck with seedlings; some fine new dark-foliaged varieties are promised.

APHONOGETON DISTACHYON, grown in a tub in any greenhouse, will furnish fragrant flowers all winter, and it is amazing to see the size attained both by flowers and leaves in these circumstances. Another thing to be grown for its perfume—though it has beauty as well as fragrance—is *Hedychium coronarium*. The hedy-chiums are not very much grown, though of easy culture, and their fragrance is delicious.

AN OLD FRIEND, whose virtues are recognized anew, is *Solanum jasminoides floribunda*. In the winter it is a desirable greenhouse-plant, giving abundance of starry white flowers, convenient for cutting; while in summer it is highly satisfactory for bedding when placed against a trellis.

THIS YEAR Easter has been essentially a festival of pot-plants; cut-flowers were compelled to take second place. For gifts, azaleas took the lead, the pots being placed in ornamental baskets. As usual, lilies were used to an enormous extent, but the crop has been very large this winter, and they did not bring extravagant prices. Kalmia, wistaria and snowballs were among the more unusual forced Easter flowers. The golden genista was more popular than ever. Among hydrangeas Otakasa leads, though Thomas Hogg is admired; but the trusses are rarely so large as in the first-named variety. As a rule we find flowers suggestive of spring sell best at Easter, and white ones are especially popular.

A VERY DESIRABLE CASE for packing cut-flowers is to be seen in use among the rose-growers. It is made of "leatheroid," a preparation of paper-pulp, both light and durable; the case is shaped like a lady's dress-trunk. Inside it contains two shallow wicker trays, each tray having two elastic straps buckled across to hold the flowers in place. The straps are put across the stems; the flowers are thus held firmly without risk of bruising. This case is especially desirable for packing big hybrid roses. It is neat, durable and light, and certainly economizes time in packing.

E. T. R.

THE POULTRY YARD.

The Best Site for a poultry-yard is a dry piece of ground having a southern or southeastern exposure, and being protected by buildings, high, tight fences or evergreen screens at the north and west sides. Failure is pretty certain on level clay soil. Drainage, preferably natural, is indispensable.

Plant Fruit-Trees in Poultry-Yards.—As soon as the weather opens, set out peach trees in the poultry-yard. They will not rob the hens of any room, and will assist in providing shade after they grow. The hens will also protect the trees to a certain extent, by keeping down insects, weeds and grass, and the manure from the hens will be washed into the soil for the support of the trees. A poultry-yard can just as well be used for supplying peaches as eggs, and the reason peach trees are suggested is because they grow rapidly.—*Farm and Fireside*.

Small Eggs are often the result of overfeeding, especially with corn and other starchy food, when the fowls are not laying. If the birds are overfat, give no more food of a starchy nature.

Thinning Out the Flocks.—Every male bird not needed for breeding purposes is a damage. The sooner you get rid of these "weeds," like superfluous plants in the garden, the better. Hens will lay as well without as with males, and the eggs will be better and keep better. Males in that case are only useless eaters and destroyers of the peace in the yards. If eggs are desired for hatching, one male to 20 hens is better than two or three. Eggs will usually hatch better and make stronger chicks. Our best hatches and strongest chicks came from a flock consisting of over 40 hens and only one rooster, all of the black langshan breed, and having unlimited range. People as a rule are not discriminating enough in the selection of breeding stock. We should pick out from among our best hens the best layers and most perfect birds otherwise, and put them apart from the rest, keeping the best male with them for a day or so every week, and feeding them reasonably well with a variety of food, but not excessively. Then use their eggs for hatching. This common-sense plan, if generally followed, would soon result in a material improvement.

Poultry-Manure.—Now clean out the hen-roosts. Put the stuff where it will do the most good. As a top-dressing in the garden, put on after plowing and before harrowing, it is the right thing in the right place. You can use it pretty freely without fear of injuring land or crops, if you only mix it well with the soil. Clean out every corner in the buildings and sheds and let none of the material go to waste.

Oyster-Shells for Laying Hens.—A series of experiments recently made at the Agricultural Experiment Station, Geneva, N. Y., seems to show that the feeding of oyster-shells during the laying season is to be recommended. One pound contains lime enough for the shells of about seven dozen eggs. Fine gravel containing limestone will probably as well supply the deficiency of lime existing in most foods, but the use of some sharper grit

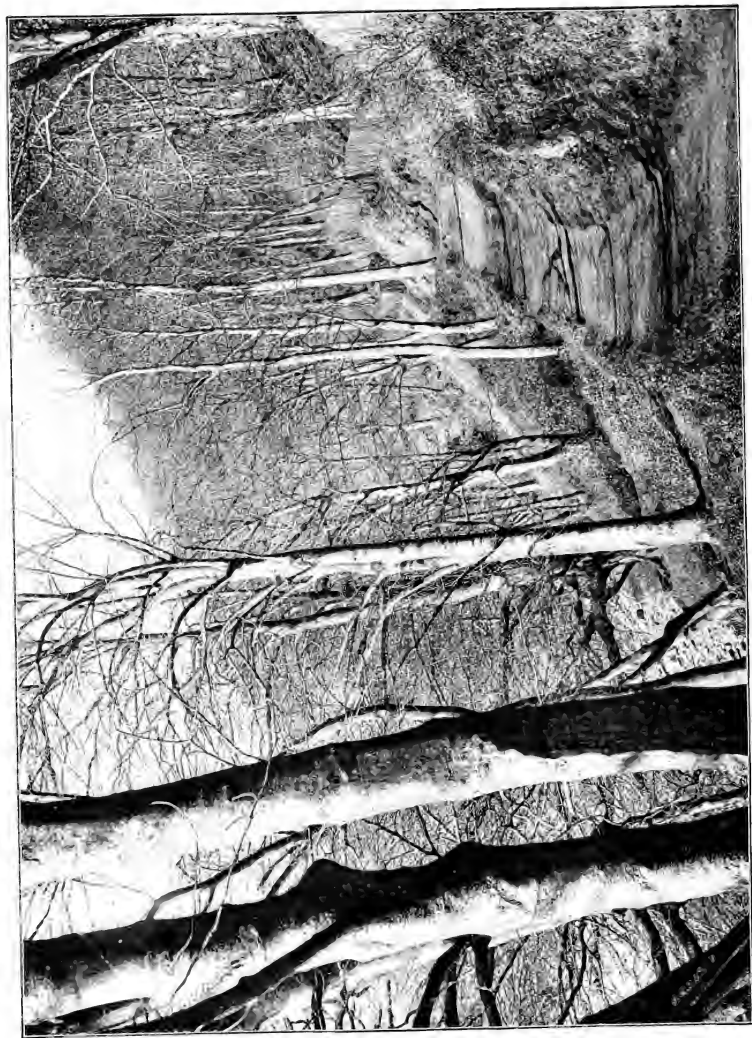
with it may be of advantage. Long or sharp splinters of glass or dry bone should be avoided. The size of the particles of grit had, for hens, better be larger than that of a kernel of wheat and smaller than a kernel of corn. An unlimited supply of pounded glass has been attended with no bad results when the food and other grit available to the fowls contained an abundance of lime, but when the food was deficient in lime, and no other grit was attainable, hens ate injuriously large amounts of glass.

Cost of Raising Chicks.—Under ordinary conditions chicks ought to be hatched, making a fair allowance for value of eggs and food for sitting hens, at a cost of less than five cents apiece. The highest cost per pound gain during any week, while growing chicks to 3½ pounds average weight, was less than seven cents, and the cost averaged much less than six cents. At the prices generally obtained, the growth was certainly a profitable one. With chicks having the liberty of the fields it seems reasonable to expect a still cheaper production of meat, and it would appear that a profitable use for some of the skim-milk of the farm would be in the growing of chicks for home use or for market. An unlimited supply of sweet skim-milk can apparently be given to chicks with advantage, but sour milk must be fed with caution. Where sour milk only is available it is best to coagulate thoroughly by moderate heating, and feed only the curd, straining out as much of the whey as possible.—*Bulletin N. Y. Agricultural Experiment Station*.

What to Feed.—The morning ration for fowls that kept them healthy and in good laying condition through spring and summer has been: One-third each of oats, wheat-bran and chopped corn, mixed and dampened to mealiness. Since moulting began, a tablespoonful of linseed meal is added for every 15 birds, and three or four nails are kept in the drinking-water. Table-scrapers are given the middle of the afternoon and the fowls are allowed to forage for themselves in a grassy yard the rest of the day. When cold weather comes they will be given another feed of whole corn before going to roost. Not a case of cholera or overfatness has occurred in this flock, and the egg-production has been surprising.—*Tribune*.

Profitable Egg-Production.—There is money in supplying near-by city markets with fresh eggs. If you can guarantee them fresh, you can get several cents more than the market price, and if you can supply choice city customers direct with choice eggs, you will have no fault to find with the poultry business.—*Ex*.

Managing Chicks in Brooders.—When they have good appetites, but have leg-weakness, still otherwise appear lively, it denotes rapid growth and is not necessarily fatal. Feed the chicks on clean surfaces or in little troughs; never leave food to ferment. Clean off the brooders and floors daily. Keep dry earth in the corner of the brooder-house for the chicks to dust in. When you see the chicks busy and scratching it is a sign of thrift. A single night may ruin all. Never let the brooder become cold for an hour. Once the chicks get chilled they never fully recover.—*P. H. Jacobs*.



A WALK SUCH AS EVERY SUBURBAN TOWN SHOULD POSSESS. Of little cost, but of priceless value for pleasure and health.

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OUR PUBLIC HIGHWAYS.

PLANS FOR IMPROVING THEM.



PROFESSIONAL fruit and vegetable growers, florists and nurserymen have every reason to take a deep interest in the adoption and maintenance of a good road-system. The condition of the highways frequently affects them and their finances more deeply than it does the ordinary farmer and his pocket-book. Some horticultural products are of delicate structure, and are easily reduced in money value by long transportation and rough treatment on the way. Berry-growers in Niagara county, N. Y., for instance, usually haul their produce in wagons to Buffalo, a distance of from 17 to 25 miles. It makes a material difference to them whether the roads over which they must transport these fragile articles are rough or smooth. The condition of the road affects not only the time of travel, and the traveling outfit, but also the price of the berries.

The road problem, without doubt, is of immense importance and worthy of full and free discussion. Our average "highways" hardly deserve the name. They are only a makeshift, and a positive disgrace to a country of such wealth, progress and civilization as the United States. Yet these poor apologies for roads, while not involving much outlay for first construction, are very expensive to maintain, and give the poorest service for large expenditure of time and money.

The road-tax, whether paid in labor or money, is an infinitesimally small item compared with the amount representing aggregate losses and expenses in time, depreciation of products, wear-and-tear of vehicles, harnesses, horses, etc., which are direct results of our bad road-system.

This idea is well expressed in a recent report of the Department of Agriculture:

"While our railway system has become the most perfect in the world, the common roads of the United States

have been neglected and are inferior to those of any other civilized country in the world. They are deficient in every necessary qualification that is an attribute to a good road; in direction, in slope, in shape and service, and most of all, in want of repair. These deficiencies have resulted not only from an ignorance of the true principles of road-making, but also from the varied systems of road-building in force in the several states in the Union, due to defective legislation. The principle upon which several states have based much of their road-legislation is known as the 'road-tax' system of personal service and commutation, which is unsound as a principle, unjust in its operation, wasteful in its practice, and unsatisfactory in its results. It is a relic of feudalism borrowed from the 'statute labor' of England, and its evil results are to-day apparent in the neglected and ill-conditioned common roads of the country.

"By the improvement of the common roads every branch of our agricultural, commercial and manufacturing industries would be materially benefited. Every article brought to market would be diminished in price; the number of horses necessary as a motive power would be reduced, and by these and other retrenchments millions of dollars would be annually saved to the public. The expense of repairing roads and the wear-and-tear of vehicles and horses would be essentially diminished, and thousands of acres of land, the products of which are now wasted in feeding unnecessary animals in order to carry on this character of transportation, would be devoted to the production of food for the inhabitants of the country. In fact, the public and private advantages which would result from effecting this great object in the improvement of our highways are incalculable, not only to the agricultural community as a class, but to the whole population as a nation."

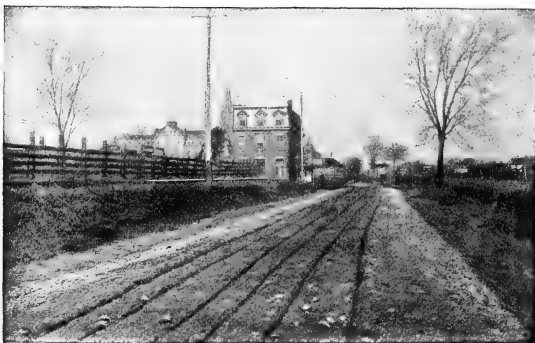
People acquainted with the condition and maintenance of public roads in Europe will not accuse the Department of being too extravagant in the use of language, or too

sanguine in its conclusions. France, England, Germany and other countries have long since learned that it is cheaper to put money into the construction of first-class permanent roads than into repairing poor ones. Our illustrations show typical roads of Europe and America for comparison. They plead more eloquently than words

Shall the road-tax be paid in money and the latter be expended under the direction of skilled road-builders, or shall the state be made to take charge of the roads? A writer in *The New-York Tribune* suggests state-prison labor as a way out of the difficulty. He says: "Our city (Fort Scott) keeps its convicts

breaking rock. For crime a man is sentenced to so many days 'on the rock-pile'; so it always has material ready to repair its streets. Why could not the labor of state-prisons be thus utilized?"

Practical suggestions from readers will be gladly published. AMERICAN GARDENING stands for the best in rural life, and its crusade against useless fences may fittingly be followed by a vigorous effort to awaken the country to the fearful money loss sustained annually through bad roads. A conservative calculation of only the expense caused by bad roads in detentions in spring hauling presents the startling total of over eighty millions of dollars, more



A PENNSYLVANIA SUBURBAN DIRT ROAD CUT BY NARROW TIRES.

could do, in favor of a thorough and speedy change in our road system.

There can be no question as to whether we can *afford* to build and maintain high-class roads. "Our country is rich and populous," says Isaac B. Potter. "We claim to be intelligent and enterprising. We have cleared up our forests and exterminated the last wild beast from most of our states years ago, while the French government is still paying a yearly bounty for the pelts of slaughtered wolves. A glance at the statistical returns of New York, Pennsylvania, Massachusetts, New Jersey and Connecticut will show that the population per square mile of these states is more than fifty per cent. greater than that of Europe, while a dozen other states might be added to the list without materially changing the ratio. We are scarcely aware of our own prosperity."

Indeed, we cannot afford to do without better roads any longer. Neither our reputation, nor patriotic pride, nor material interests will permit the continuance of existing conditions. The only question that is worth consideration at this time is, How shall we make the change?



A MACADAMIZED ROAD IN HOLLAND, THAT WOULD DO CREDIT TO ANY COUNTRY.
(From *Good Roads*, by permission.)

than enough to construct sixteen thousand miles of good Macadam road annually! We pay for the good roads, but through inattention, we do not have them.

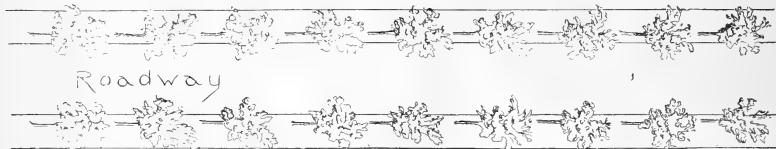
We propose to present details and methods of construction from time to time, and invite practical thoughts and suggestions from those who have ideas or experiences in modern road-making.



A PICTURESQUE BIT OF COUNTRY ROAD IN BRITTANY.

ROADSIDE PLANTING.

Roadside planting is another phase of this question. The highways of Germany and many other parts of Europe are often made beautiful and comfortable for many miles at a stretch by the planting of roadside trees. Native forest trees are frequently employed, and extend in magnificent lines for long distances, affording shade and

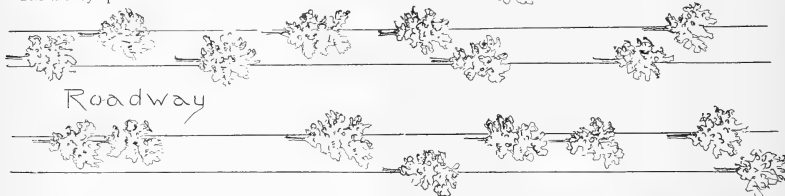


FORMAL STYLE OF ROADSIDE PLANTING. FIG. 1.

beauty in summer and breaking the force of gales in winter. In some localities fruit trees, usually sour cherries, are grown; their fruit is sold every year to the highest bidder, and the proceeds applied to the maintenance of the road.

It would be well to consider the systematic planting of highways at the earliest possible moment in this agitation of the road question, for the reason that it takes a long time for trees to reach maturity after planting. The expense of planting trees along highways would not be great. It would only be necessary to interest landholders in planting trees along their highway frontage. That this would not be a difficult undertaking is shown by the fact that many farms are so planted without the stimulus of public agitation.

The money spent for trees would be a small item. A



IRREGULAR STYLE OF ROADSIDE PLANTING. FIG. 2.

farm with 100 rods of frontage would require but 50 trees for one side, if properly set at a distance of two rods apart. These trees can usually be obtained from neighboring clearings or from nurseries at a cost of from 10 to 40 cents apiece.

In the selection of kinds of trees for highway planting, those that are indigenous to a locality are best. No more suitable trees can be found for this purpose than our native elms, maples, lindens, oaks and beeches, with some coniferous larches, pines and spruces sparsely mingled with them here and there. It would not be desirable to have an entire township planted with only one kind of tree, as this would give a monotonous effect. A

far better plan would be to plant a dozen species, massing each one by itself. There need be no system in the planting beyond having it understood that it is better for all not to plant alike; then let each planter be guided largely by convenience—only he should plant *some kind*.

How shall the trees be arranged in planting? To most persons it would seem that to set them in lines on each

side of the road, at an equal distance apart, would be the proper way. An objection to this is that it tends to monotony. When roadside planting becomes universal, the monotonous effect of two straight equidistant rows of trees will be more apparent than it is now.

In the engravings given, fig. 1 shows the effect, on a small scale, of the last-named style of planting. Fig. 2 is designed to represent the same highway planted with the same number of trees, but these are set somewhat irregularly, placing some close together on both sides of each grass-plot, and leaving more open spaces elsewhere. One good point in the latter system is that trees standing back from the road, either about the home-buildings,

lanes, or in fields and along fence-lines, harmonize very much better in effect with the highway trees than when the latter are arranged in stiff lines.

Unquestionably the judicious planting of the roadsides is no small factor in the improvement of our roadways and rural districts. This work would be in the line of forestry, and make some amends for the past ruthless destruction of our forests. It would tend to increase the value of all farm-land, the beauty of the general landscape, and the comfort of man and beast, by providing shade from the sun in summer and protection from winds in winter. Besides all this, the advantage of tree-planting as affecting rainfall is well known.

THE FERNS OF NAPA VALLEY.

SOME CALIFORNIAN BEAUTIES.



N SHADED cañon, in sheltered dell, in many a rocky, moist nook in this valley, grow in charming gracefulness and in goodly variety that class of plants which for all lovers of beautiful vegetation has a peculiar fascination—lovely ferns. Even on rough, barren, rocky mountain-sides may be found one or more varieties, seemingly setting at naught one law that seems to govern fern life, that of abundant moisture.

There are probably few counties in this state that possess a greater variety of fern life than Napa county. Beginning to put forth their delicate fronds soon after the first rains of autumn, one kind succeeds another in its appointed season quickly and continually, till in the late spring months all of them have sent up their tender shoots from the dark ground to the light and warmth of the cloudless sun. By the time tardy comers have made their appearance, the avant-couriers of the yearly recurring procession have passed their prime and made preparations for closely folding their fronds and retiring from view.

It has been said, that in the whole United States there are probably less than one hundred varieties of ferns, and of these about one-half are found in California. Scarcely twenty of them can be considered peculiar to the Pacific coast.

POLYPODIEÆ.—The fern that earliest responds to the long-deferred fall rains of California is the *Polypodium Californicum*, a leathery, evergreen fern, whose life is prolonged till late in the season. It is often found growing on rocky surfaces where the soil is thin, its large root-stalk creeping here and there beneath a thick carpet of velvety moss. This variety is found in California from San Diego northward. The fronds are usually of large size, from ten to eighteen inches high, and from three to five inches broad.

By far the finest of all this tribe of ferns is the *Polypodium Scouleri*, which grows on trees and stumps, rarely on the ground. It sometimes grows to the height of two feet, and is fleshy and evergreen, with sori or fruit-dots one-fifth of an inch in diameter. This fern has been seen growing at a height of from 150 to 200 feet above the ground on fir trees, in Oregon.

THE GOLD-FERN.—The beautiful gold-fern, *Gymnogramme triangularis*, is an old acquaintance of all ramblers in our woods and cañons. The stalks are slender, blackish brown, polished and in full-grown specimens from six to eight inches long. Its fronds are five-angled, from two to five inches in length and almost as broad. The upper side of the fronds is of a deep green color, with nearly smooth surface. The great

beauty of this fern lies in the wonderful coloring of the under side of the frond, which is usually of a clear, sulphur-yellow color, but varies from deep orange to pure white, owing to the powdery coating. Specimens that are of a very light color are frequently called silver-ferns, but are considered by botanists to be a variety of the gold-fern. Only two species are known to exist in the United States. This fern is common in California, and is said to exist as far north as Vancouver Island.

ADIANTUMS.—The adiantums or maidenhair ferns make rapid growth in sheltered, moist localities. No bouquet of ferns gathered in our woods and cañons is considered complete without many fronds of the bewitchingly graceful variety *Adiantum emarginatum*, of which species we have three varieties.

By far the most beautiful species of the whole genus is *Adiantum pedatum*, the so-called five-fingered fern. It grows in moist rocky places from Santa Cruz northward as far as Unalaska. It is common in the Atlantic states from North Carolina to Canada and is also found in Japan. This is one of the most delicate and graceful of our ferns. Like several other varieties found in this county, it has its peculiar habitation and is found only in favored localities. When potted it makes a beautiful ornament for the conservatory or drawing-room, its feathery fronds being perennially green.

THE WOODWARDIA.—The tall woodwardia or "chain-fern" so popular for decorative purposes, is quite a common fern. It is evergreen, hardy, and grows to perfection in shady, well-watered ravines. Through the winter months, when it is difficult to obtain other ferns, this vigorous-growing variety can be found in considerable quantities in the localities that it chooses for a home. This variety is a member of the genus *Asplenium*, which finds its greatest development in the southern hemisphere, and contains about sixty species.

Woodwardia radicans, when fully grown, has strong stalks eight to twelve inches long. The fronds stand from three to five feet high, their pinnæ being from eight to fifteen inches long, and from two to four inches broad. The sori are oblong. This fern is found from Long Valley to southern California. The type is found in Madeira, and along the Mediterranean in India and Java. In our own country it is found in almost every state. It bears transplanting readily, as the roots are always vigorous.

THE LADY-FERNS.—One of our most graceful ferns, delicate and finely serrated, is the lady-fern. *Asplenium Filix-fœmina* and *A. commune* are the ones most common, but they are not found in every locality. Like several other kinds of ferns they choose their own company. Some fine specimens have been gathered along

Sarcos creek that would rank with choice specimens from foreign lands. The frond is ample and delicate, from two to four feet high; the pinnæ are from four to eight inches long; sori short. They make splendid plants for the house and have a silent though expressive language all their own.

The sword-fern, *Aspidium munitum*, is one of our hardest varieties, and is popular for decorative purposes. The stalks are often a foot long; pinnæ numerous, three to four inches long. It is one of the handsomest American ferns, and like many others, subject to considerable variation. Sometimes it is called shield-fern. *A. Californicum* has fronds long and narrow, and is quite common.

LACE-FERNS.—At this season of the year may also be found the delicate *Cheilanthes gracillima*, appropriately called the "Lace-Fern." This fern grows in crevices of rocks or cliffs where there is a considerable moisture, and is found in many portions of California. *C. Californica* resembles the above and may readily be taken for it. This variety is found in shady ravines of the Coast Range.

One naturally seeks for ferns in moist shady places, but the home of the genus *Pellea* seems to be on rocky mountain-sides. *P. ornithopus* is often called the bird-foot fern. Its fronds are very rigid, from a few inches to a foot long, the lower pinnæ bearing from a few up to fifteen or sixteen pairs of trifoliate pinnules. This is an odd kind of fern, devoid of gracefulness, but having an individuality all its own. It is common throughout California, growing mostly on dry hillsides in tufts among rocks exposed to a long summer sun. The pinnæ, when trifoliate, as they are in a state of nature, strangely resemble the claws of a bird's foot, hence the specific name.

Pellea ornithopus belongs to the family of cliff-brakes, and is a cousin of *P. Andromedaefolia*, which although often found among dry rocks, loves moisture more than does the former. It is sometimes called the "coffee-fern," as the pinnæ when well fruited resemble the coffee-bean in shape and color. The stalks growing in a clump are from two to twelve inches long, about equaling the ovate, usually tripinnate fronds. It makes a very pretty pot-fern. *P. densa* is also said to be found in the Coast Range.

BRACKEN.—Everybody that has ever strolled along the foot-hills or on the sides of our mountains is well acquainted with *Pteris aquilina* (Linnæus), the common brake or "eagle-fern." It is too coarse for bouquets or for nice decoration. It is to be found throughout this state and northward to Sitka. In one form or another the common brake occurs in almost every region of the earth. In northern California and Oregon it often forms dense thickets higher than a man's head, and many acres in extent. In some localities the young fronds are boiled and eaten as a substitute for asparagus.

There are to be found in Napa Valley a few other species of ferns, the most of which are small, delicate and fragile, but quite attractive. The principal species have been named.

No more attractive plants can be obtained for the house or conservatory than some of these wonderful creations, and all, or nearly all will grow in moist, shaded nooks in the flower-garden. No plants of our fields or cañons will afford, for so little care, more pleasure or satisfaction than these ferns.

California.

A. WARREN ROBINSON.



BEST EFFECTS WITH RHODODENDRONS.

HOW TO PLANT AND CARE FOR THEM.



THE RHODODENDRON always makes satisfactory returns for care and attention bestowed upon it. There is a vast difference between a fine, well-grown plant, furnished with leaves almost to the ground and plump flower-buds terminating every branch, and the specimens we too often see, looking in winter like a small catalpa, with a half-dozen leaves at the tips of its branches. When well grown no plant can exceed the rhododendron in richness and beauty. It rivals the rose in the loveliness of its flowers, and when they are

gone its large and handsome leaves of shining green give an effect ever pleasing to the eye.

I have seen fine effects produced by the proper grouping and massing of different colored rhododendrons. The effect of such groups is greatly enhanced by careful selection in the colors of flowers and sizes of plants; and also by planting other shrubs, both evergreen and deciduous, in conjunction with them.

In planting the rhododendron select plants of different sizes; their lack of uniformity will give your mass an irregular and unconventional air much more pleasing than if the plants were all of the same size. The different

varieties have different habits which it is well to know. I have found the light-colored sorts to be nearly all tall growers. *R. album elegans* is an exceptionally tall-growing sort, yet it does not become lanky unless badly treated. *R. roseum elegans* is of rather dwarf habit.

Some plants that may be used with good effect among masses of rhododendrons are *Acer polymorphum sanguineum*, *Spiraea Van Houttei*, *S. lanceolata*, *Thuja occidentalis aurea*, *Retinospora squarrosa*, *R. plumosa aurea*, *R. filifera*, *R. obtusa nana* and *R. ericoides*. These plants may be used as a background for large masses of rhododendrons, the tallest sizes of the latter being planted next to them. Each variety and species should be planted so as to retain its own individuality, and yet all should so mingle and blend as to form a harmonious group.

Most writers advise planting rhododendrons in partial shade, but my experience has led me to believe that if the rhododendron is properly planted at first, well cared for during the growing season and protected from cold north winds during winter, it is better to give it the full benefit of sunlight. In May, 1888, I planted three hundred plants of rhododendrons for P. Lorillard, sr., at his residence, Tuxedo Park, N. Y. They included the following varieties: *Rhododendron album elegans*, *R. Everestianum*, Charles Dickens, *R. Blanchianum*, *R. album grandiflorum*, *R. purpureum elegans*, *R. purpureum crispum*, *R. roseum elegans* and *R. roseum superbium*.

I prepared the soil for the plants by forking-in about four inches of equal parts of leaf-mold and well-rotted stable manure. Where I planted them a considerable distance apart, I simply dug a fair-sized hole for each plant and mixed the compost with the soil that was filled into the hole again. They were well watered at the

time of planting, and the roots have since been kept well worked, a mulching of manure or leaf-mold being applied in the spring and worked into the soil during the season. In dry weather they have been given an abundance of water each season.

These rhododendrons were planted on a slope facing the south, and have no shade of any kind. During the month of June, 1888 (about one month after the plants were set) the weather was excessively hot, the thermometer registering 96°-98° in the shade for several days in succession. From the time they were planted until the present time they have remained without shade or shelter of any kind, with the exception of a barrier of brush and leaves, built on the north and west sides to protect from cold winds during winter. When set, these plants ranged from one to two feet in height. Today they range from 18 inches to 5½ feet and are very healthy and shapely. Many of them have at this time from 30 to 60 flower-buds. During the past two blooming seasons they were one great mass of color and a source of the greatest delight, both to my employer and myself. As soon as the flowers were gone each year the seed-vessels were taken off at once.

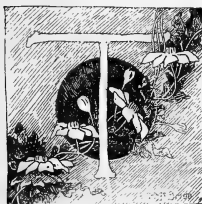
The fact that these plants have borne the strongest rays of summer and winter suns for nearly four years, and the fact that I have seen large plants in fine condition when grown for years in full exposure to the sun, leads me to conclude that the rhododendron is not greatly benefited by shade; that if given fair treatment it will succeed better if planted in full exposure to the sun's rays. *Rhododendron maximum* is the only exception to this rule; it grows best when planted in considerable shade.

Dutchess Co., N. Y.

I. L. POWELL.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XX.

EFFECTS OF OUTSIDE APPROPRIATION IN PLANTING SMALL FARMS.



THE subject of our present article is a reader's farm of 21 acres, situated in one of the hilly counties of southwestern New York. It occupies a position near the top of a large hill, at an altitude of 400 feet above Lake Erie, which body of water is in sight from one part of the grounds.

The farm is an excellent one for treatment in this serial for several reasons. It is considerably larger in area than most of our subjects have been, and affords an opportunity for showing how a small farm—and many of our readers are interested in small farms—may be given fine landscape effects, without impairing its utility or

spending a great amount of money. "Outside appropriation" may be made a prime factor in the treatment of this farm, and it is one too often overlooked by ornamental planters.

By outside appropriation is meant the adaptation of the planting within one's own domain to outside surroundings and distant views, so that they shall contribute to its beauty and seem to form a part of it. This makes the home seem the center of the vicinity in which it is located, and well-directed planting may seemingly amplify the grounds, include all beautiful views and shut out all unpleasant ones.

The plans and sketches given for treatment of the farm which forms our present subject are based upon a careful study of the place, and were made in part upon the grounds while the writer was visiting there. The main features of the place, as considered from a landscape-gardening point of view, may be understood by a

reference to the general diagram, fig. 1, given herewith. In this diagram the four outer corners of the farm are shown by X. A indicates the residence; B, the barn and carriage-house; C, C, sections to be devoted to meadow, with spots of lawn about the house and tree-groups; D, space for oats and other crops; E, permanent pasture; F, cultivated plot; G, orchard; H, forest of deciduous trees on an adjoining tract, the land about on

with a free scattering of trees toward the farm; L, the direction of Lake Erie, a glimpse of which is obtained between the hill-tops on the opposite side of the valley; M, a small dwelling occupied by the farm-laborer.

The present owner of the farm purchased it two years ago, erected the buildings during the spring of 1891, and undertook to do some planning and planting on the grounds a year ago. He was assisted by a traveling

nurseryman, who, as it now appears, was more disposed to work off his surplus nursery-stock at exorbitant figures than to serve the real interests of his customer. The planting was haphazard and not commendable. A single drive extended straight in from the highway, along the left dotted line (fig. 1) to the house, at which point it made an awkward curve toward the porte-cochère, and from there led to the barn. Around the house was a square plot of almost an acre and a half of land, planted too thickly with maples,

Kilmarnock willows and a few other ordinary kinds of trees in a stiff, regular order. The whole effect was narrow and cramped, seeming to limit the enjoyable part of a 21-acre farm to a small angular plot of grass directly surrounding the house.

When invited to suggest ideas for remodeling the place, the writer first pointed out how it would be easy to introduce gardening features throughout the farm so that even the more distant parts might be rendered accessible and interesting, thus carrying out the owner's idea of a pleasant, liberal-sized farmhouse for summer occupancy.

Next, planting according to the

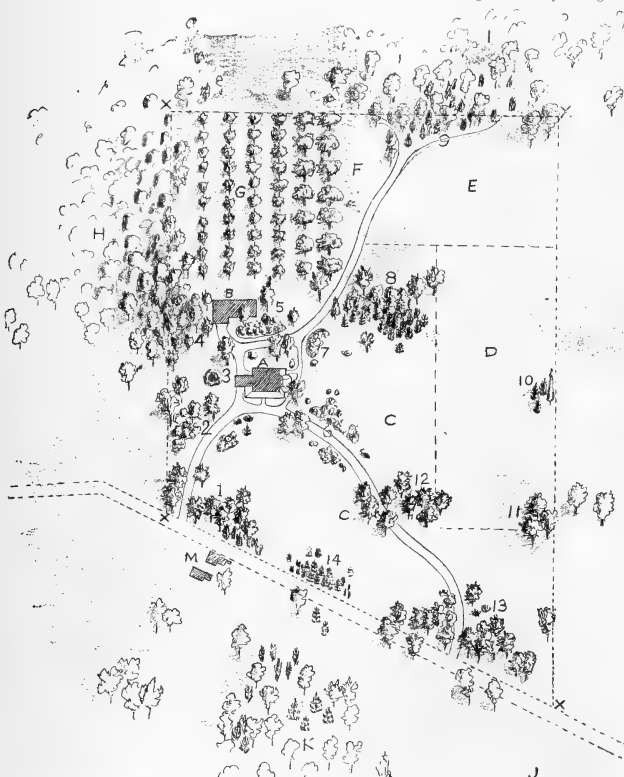


FIG. 1.—GENERAL PLAN FOR IMPROVING PLACE IN SOUTHWESTERN NEW YORK.

a level with that on which the house and barn stand. I marks an outlying forest of deciduous and evergreen trees and bushes, occupying a point considerable higher than A, a regular slope intervening between forest and dwelling. J is in the direction of a magnificent valley view, extending for miles away and including numerous farm-buildings, trees, fields, forests, etc. K shows the location of a forest of hemlock and deciduous trees in the valley,

principle of outside appropriation was suggested, in order that the home might be made to appear the center of all that was attractive in a locality abounding in extensive landscape vistas. The composition and location of masses of trees and shrubs, the change of the former carriage approach from the street to the house, and the formation of new driveways, as shown in the general plan were recommended as simple means for securing such effects.

From fig. 1 it will be seen that the longer arm of the highway approach is designed to pass through three masses of shrubs and trees, respectively indicated on the plan by the figures 6, 12 and 13; thus the passage over the course, either on foot, by carriage or on horseback, would be an interesting one. The short arm of the front approach is planned to extend by a continuous curve from the entrance to the house. Then there is a rear drive or lane leading from the buildings to the woodland (9) as an objective point. As the pasture lot is at E, this drive will be convenient for leading the cow along in taking her to and from pasture.

But the grouping of trees and shrubs must be our chief reliance for producing the fine and marked effects planned

in fig. 2, group 4. In the list below, some trees are suggested for planting here. The figures preceding them denote the number of each kind to be set in the locations denoted by the letters following them :

One red or slippery-elm, A; 3 white European birch, B; 1 double white cherry, C; 3 American beeches, D; 1 weeping tooth-leaved poplar, E; 3 European lindens, F; 2 American chestnuts, G; 3 scarlet oaks, H; 2 Canadian poplars, I; 3 silver or soft maples, J. The trees of this list are mostly of rapid growth, and if the soil where they are planted is well enriched and the surface is kept tilled and clear of weeds, they will, in a very few years, produce a striking mass of foliage, hiding the intervening line-fence and giving the idea that the whole grove

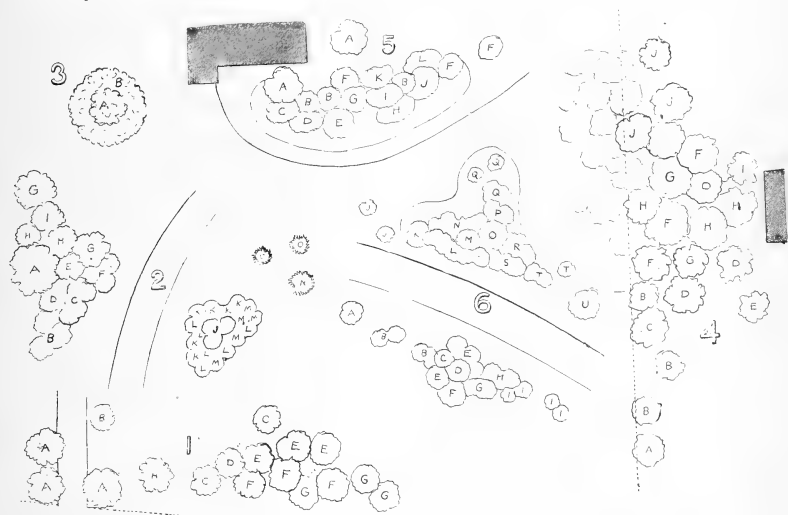


FIG. 2—GROUPS 1 TO 6 OF FIG. 1 IN DETAIL

in the transformation of this farm. Of the 14 groups introduced, shown by figures on the general plan (fig. 1) and presented elsewhere in detail, numbers 4, 9 and 14 are the most important, because we rely chiefly upon them for uniting the farm to the entire outlying scenery. Their use may be explained as follows :

In the direction of H, in the general plan, as has been stated, there is a delightful forest or grove of deciduous trees on outlying land. This forest occupies a prominent place on a hillside, and being in sight for miles from various directions, is a very commanding object in the neighborhood. Why should not the farm grounds be given the benefit of its proximity and "appropriate" it in effect? This can be done in a measurable degree by extending the forest into these grounds after the manner indicated

beyond extends very near to the residence. This grove will also serve as wind-break for the orchard.

In the direction of I is the highest point of land near to the residence. It is clothed with forest trees and shrubs, including many spiral-formed and low-growing evergreens. Here again it is suggested that some planting be done inside the grounds, with a view to making it appear as if this conspicuous mountain forest extended into them. Our suggestions for accomplishing this is set forth in group 9, fig. 3 (page 330), which might be planted with the following stock: 6 Scotch pines, A; 6 red cedars, B; 3 American arbor-vites, C; D, trees of last year's setting now to be moved.

Group 14, Fig. 3, is in the same line with the two last named. In this direction, scattering evergreen and decid-

nous trees reach from near the highway far down into the valley. By interposing group 14 at the point indicated, seen from the house, there would seem to be a strip of woodland beginning on the farm and reaching a mile or more away. This is not all. It happens that the highway is in a slight depression, and is not defined by fences; so to the right of group 14 a park-like vista stretches away from the house for miles away down into the valley. To the left of the group is a similar but less extensive view.

The groups described below serve special as well as general purposes. Group 1 (fig. 2) is composed of 3 American elms, A; 1 Wier's cut-leaved maple, B; 2 Norway maples, C; 1 bird-cherry, D; 3 Canadian poplars,

through the porte-cochère from the sitting-room and veranda: 9 *Prunus Pissardii* (broad-leaved plum), A; 18 variegated-leaved Cornelian cherry, B.

Group 5: 2 Norway maples, A; 3 *Ailanthus glandulosa*, B; 3 *Spiraea sorbifolia*, C; 3 *Aralia Japonica*, D; 3 *Tamarix Africana*, E; 3 royal willows, F; 3 *Spiraea Billardii*, G; 3 cut-leaved elders, H; 1 *Paulownia imperialis*, I; 3 hibiscus, or althæa, J; 3 *Eleagnus argentea*, K; 3 *Clethra alnifolia*, L. Perennial and other flowers should be used along the margins of this group or be mingled with the woody growths.

Group 6: 1 English elm, A; 3 *Weigelia candida*, B; 1 rose acacia, C; 1 oak-leaved mountain ash, D; 9 Japan quince, E; 1 double-flowering thorn, F; 3 *Spiraea sor-*

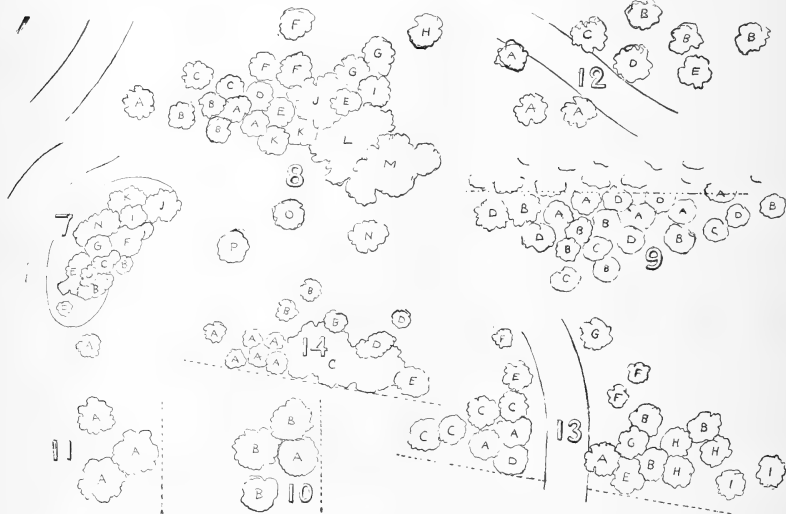


FIG. 3.—GROUPS OF 7 TO 14 OF FIG. 1 IN DETAIL.

E; 3 European larches, F; 3 Scotch pines, G; 1 white oak, H. The trees selected for this group are of rapid growth, so that the buildings at M (fig. 1), which show plainly from the residence and mar all views from it, may soon be hidden by foliage.

Group 2 (fig. 2) is planted as follows: 1 large elm (now on the place), A; 6 *Hydrangea paniculata grandiflora*, B; 3 lilacs, C; 1 *Eleagnus argentea*, D; 1 white flowering dogwood, E; 3 mock-oranges, F; 2 white oak trees, G; 2 snowy mespilus (amelanchier), H; 1 cork-maple, I; 3 cercis, or red buds, J; 6 calycanthus, K; 6 weigelias, L; 6 *Forsythia suspensa*, M; 1 Colorado blue spruce, N; 2 Mugho pines, O.

Group 3, designed to be planted with growths of very striking foliage, is near the house, and shows very plainly

bifolia, G; 6 variegated-leaved dwarf weigelias, H; 6 weigelias in assortment, I; 2 *Magnolia speciosa*, J; 3 kerria, silver-variegated, K; 12 spiræas in assortment, L; 1 Chinese double-flowering crab, M; 6 *Forsythia viridissima*, N; 1 European bird-cherry, O; 3 mock-oranges, P; 6 *Viburnum plicatum*, Q; 3 *Spiraea Billardii*, R; 6 *Tamarix Chinensis*, S; 3 dogwood, red-branched, T; 1 European larch, U.

Group 7 (fig. 3): 1 Mugho pine, A; 6 *Deutzia gracilis*, B; 3 European berberry, C; 3 double-flowering plum, D; 9 purple-leaved berberry, E; 3 *Rhus cotinus* (purple fringe), F; 3 hibiscus, assorted, G; 6 Japan quince, assorted, H; 3 *Colutea arborescens*, I; 6 deutzia, Pride of Rochester, J; 6 *Deutzia scabra*, K.

Group 8: At this point there is a knoll, which would

look well planted with a clump of handsome, bold-growing trees, including some of spiral forms. The following selection was accordingly made: 3 cut-leaved white birch, A; 3 white spruce, B; 3 European beech, C; 1 Canadian poplar, D; 2 Lombardy poplar, E; 3 horse-chestnut, F; 2 rock, or sugar-maple, G; 1 black walnut, H; 1 butternut, I; 6 Norway spruce, J; 2 European larch, K; 6 white pine, L; 6 Austrian pine, M; 1 Colorado blue spruce, N; 1 River's blood-leaved beech, O; 6 *Cornus elegantissima*, P.

Group 10: This is to occupy a point directly in line with the chief window of the dwelling, although some distance away. The trees, accordingly, are kinds having conspicuous outlines: 1 Lombardy poplar, A; 3 Norway spruce, B.

Group 11 is a knoll, upon which 3 American elm trees might be planted with good effect.

Group 12: 3 scarlet oak, A; 3 white oak, B; 1 Kilmarnock willow, C; 1 weeping willow, D; 1 double-flowering horse-chestnut, E.

Group 13: 3 European linden, A; 3 American linden, B; 3 European beech, C; 1 American chestnut, D; 2

English elm, E; 3 arbor-vitæ (Siberian), F; 2 Norway maple, G; 3 silver maple, H; 1 weeping willow, I.

Group 14: 6 red cedar, A; 3 white spruce, B; 12 Norway spruce, C; 3 hemlock spruce, D; 3 Irish Juniper, E.

The assortment of trees and shrubs thus submitted to our correspondent, and approved by him, embraces nearly 100 distinct varieties, with an aggregate of 400 trees. All are of approved hardy kinds suitable for western New York. Besides the trees, a list of 75 hardy perennials was submitted and approved. The owner of the grounds for whom these lists were prepared submitted them to one of our leading nurseries for prices. He was told that the entire order would be filled for \$137, to which amount the cost of packing must be added. The amount paid for trees a year ago to the traveling nurseryman referred to was fully equal to the amount named above; and his assortment of ornamental kinds was both meagre and unsuitable, the result being that now, a year later, there is little to show for the money expended. In the rational plan for planting given above, there has been "no ax to grind," and the interests of the owner of the farm are made paramount.

FLOWER-SCREENS AND MOUNDS

FOR LAWN ORNAMENTATION.



LOWERING vines, when used as screens or lawn ornaments, cover all defects in the often rough, homely trellises which support their graceful tangle of bloom and beauty. A pair of old clothes-bars—the larger the better—set as a screen would be, in a sunny spot back from the street and covered with flowering vines is both useful and ornamental. Sink the legs of the clothes-bars in deep holes, driving a long stake beside each one to strengthen it. Then spade the ground deeply for a foot each side of the bars, making a narrow bed. Save the turf to put in some other place where it is needed. Mix with the soil some well-rotted manure and a few bushels of sand. Should the soil when spaded prove to be hard and yellow, it is best to remove it and fill in with good garden loam before adding the manure. After spading rake it over until fine.

For one panel of the screen plant sweet-peas.

"Oh, restlessly
The gay sweet-pea
Nods on her slender stem,
For, far up in the sunny skies,
She sees the sailing butterflies,
And longs to go to them.

"She wonders why
She must not fly,
Her warm heart's love to say.
Her pink and white and scarlet wings
Were surely made for better things
Than thus at home to stay."

This ambition of the sweet-pea does not at all unfit it for covering screens. Its rapid growth over strings nearly resembles flight. Sow seeds of it very early, as

soon as the frost is out of the ground, and the latter is dry enough. Mixed seed from a trustworthy dealer, purchased by the ounce, generally gives good satisfaction. Scarlet, Painted Lady and Princess Beatrice, are good varieties, and not as high-priced as some of the new kinds. They should be sown deep in order to get well-rooted, that they may be able to withstand summer drouth. When the plants are a few inches high hoe the soil well up to them, nail a slat across the bottom of the clothes-bars, and tie strings of wrapping-twine from bottom slat to the top, for the peas to run up on. Some growers make a network of the twine, running both ways. Other vines suitable for covering such a screen are morning-glory, canary-bird flower and cypress-vine. These, and the others hereafter named, may be planted as late as June.

For the second panel plant madeira-vines. Let the ground get warm, set a row of tubers, and cover well. Fasten strings the same as for sweet-peas. In August they will cover the panel with their graceful waxen dark green vines, and later produce fragrant lace-like white blossoms.

For the third panel I would choose the climbing nasturtiums. There are many fine varieties. Spittfire, Lily Smith and Queen Victoria are scarlet; Asa Gray is sulphur-yellow, and King of the Blacks dark brown. They require but little care, grow from eight to ten feet high, bear hot dry weather better than other plants, and are not troubled with insects. The best mixed seed purchased by the ounce gives good results. If you do not like nasturtiums, morning-glories make a pretty vine, and the mixed seed gives a variety of colors. Mountain-fringe or Alle-

ghany vine is a beautiful climbing plant, and makes a lovely panel, but must be sowed the year before to make good strong plants, with which to cover a frame

If you have a large mound in your grass-plat which you would like to make a thing of beauty, construct a circular wire frame with the center raised high, or look about for an old umbrella-frame with a strong handle. Take off the cover, cut the knob off the handle, and sharpen it so you can drive it into the center of the mound; fasten the end of each rib in the earth so that the wind cannot loosen it. Buy a good supply of cypress-vine seed and soak twenty-four hours before sowing. Make the soil mellow around the outside edge of the umbrella-frame,

sow the seeds quite thick but not deep, covering them lightly with sand. Run wires or cords between the ribs to the top of the handle and fasten. After the seeds are sown, if there are cold nights, throw an old carpet over the whole, remembering to take it off in the morning after the sun is up. When the plants are up a few inches loosen the soil with a trowel around them, and when they begin to show signs of climbing start them on the strings and they will soon cover the frame with a mass of lovely foliage and star-shaped blossoms. The scarlet variety is more desirable than the mixed seed, and will give better results when treated as above.

Illinois.

M. J. ASHTON.



HOME-LIFE ON A RENTED PLACE.

PRACTICAL HINTS TO RENTERS.



BE "only a renter" is the condition of the majority of people in the larger towns and cities, and a miserable condition it is in most cases. Much of the tendency to wildness among young people arises from a lack of attractive homes; and this is too often the cause of trouble between older members of the family. Toiling all day amid dreary surroundings, week after week, is not likely

to make sweeter or more cheerful the temper of the wife. If, on the other hand, the husband comes home after a hard day's work, forces his way through a gate off the hinges, across a dreary, flowerless yard and up rickety steps, stubbing his toes against stray bricks, he isn't an angel by the time he gets into the house. But if you ask him why he doesn't put a couple of screws in that gate-hinge, get up a bit earlier to-morrow and sow some grass-seed about the yard, and spade up some flower-beds after tea, his reply is sure to be, "Oh! I am only a renter, and you don't catch me fixing up for some one else."

Such a man may remain in the same place for five or six years, but will be "only a renter" still. All improvements that he can't coax or browbeat the landlord into making are unmade, and so he and his family drag out lives that seem merely mechanical. If he only knew it this man is not capable of nearly so much good work as if he were blessed with restful, cheery, home surroundings.

My experience has shown that the landlord who finds you inclined to improve his place and keep it attractive will be much more willing to furnish you with paint, paper, repairs, etc., even though he be a skinflint with

every one else. Try this plan for a time and see how it works. Don't expect results the first week, but wait three or four months and then see if he has not softened a bit.

In your morbid fear of benefiting some one else you are only cheating yourself. The greatest outlay necessary to make your rented place a real home in all but permanent possession is in muscle. The work can easily be done by your own hands, and if you don't know how to do it, it is high time you learned. Of more actual importance to you is the fact that this work in the open ground and open air, done by your own will and for your own benefit, is just what you need physically. If you do not believe me, try it for a week or ten days, getting up in the early morning and doing what you can before leaving home for your day's work, and see if you have not a better appetite, and do not feel more like taking up regular daily employment.

An outlay of 25 cents will buy a rake, with which you can level your yard, and a dime will purchase grass-seed. But don't stop here; have at least one flower-bed, plant two or three good outdoor roses and some lilacs. Grapevines will not be out of place, and small-fruits, like currants and raspberries, will save you money for your table in two or three years. All these plants are cheap and easily cared for, will make the home attractive to yourself and family, and (a great point to be gained) you will learn to like the place.

Moving is very expensive business, when you come to look at it carefully, and a working-man can easily keep himself poor by moving every spring and fall, as so many do. Money and property cannot be accumulated by a married man in running about the country or moving from place to place every few months; so if you are forced by circumstances to rent instead of own the place where you live, try to make a home of it and stay there.

Michigan.

D. M. FARNSWORTH.

MAKING A VINEYARD.

A "RURAL NEW-YORKER" SYMPOSIUM OF FACTS AND EXPERIENCES.



THE SET of questions given below is repeatedly asked by amateur growers of the grape. These questions have been well answered in *The Rural New-Yorker*, from time to time, by veteran vineyardists of established reputation. Their methods of culture and propagation will be of interest even to experienced cultivators.

1. How do you prefer to propagate grape vines?
2. At what season do you make cuttings?
3. Of what length do you make them, and when and how do you plant them?
4. Do you prefer fall or spring planting for vineyards?
5. What kind of trellis do you prefer?

THE WHOLE STORY WELL TOLD.

1. I prefer grape vines grown from mature or ripe wood, the cutting being 6 to 10 inches in length, according to the length of the joints, including not less than three eyes. Such cuttings are better than one or two-eyed cuttings or grafts from layer-grown soft wood, because they give stronger, more symmetrical plants having both deep anchor-roots and feeders above ground. In this climate (Grayson county, Texas) a vine with only the surface feeders, such as most *Labrusca* varieties make, is feeble and short-lived.

In the picture, fig. 1, the comparative character and relative strength of plants grown from different cuttings are shown by the figures 1, 2, 3 and 4: a four-eye cutting of mature wood at 1; a one-eye cutting of mature wood at 2; a green-wood slip started with bottom heat at 3, and at 4, layer-plants, to be cut apart at A, B, C, D. It is clear that plant 1, with its anchor-roots, has a de-

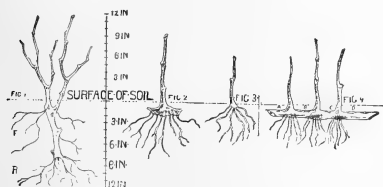


FIG. 1.—MUNSON'S METHOD FOR GRAPE CUTTINGS.

1. Four-eye cutting of mature wood.
2. One-eye cutting of mature wood.
3. Green-wood slip, started with bottom heat.
4. Layer plants—to be cut apart at A, B, C, D.

cided advantage, especially in a hot, dry climate, over the others, with only small shallow roots.

It is a well-known fact that a vineyard set with strong, deeply-rooted plants of any variety, when all other conditions are the same, stands a far better chance for profitable aftergrowth than one set out with small or stunted

plants. Plants that are grown as in the left-hand cut of fig. 1 (at 1) are, in my estimation, worth more than twice as much as those shown at 2 and 4; while those grown from soft wood, as at 3, are scarcely worth the setting. The layer-plants at 4 are worth more than such as are

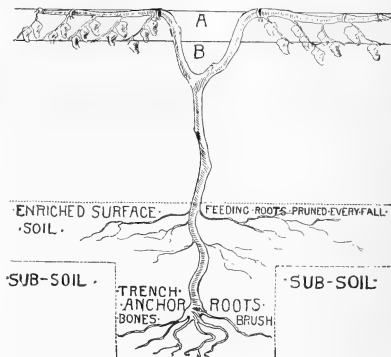


FIG. 2.—ANCHOR AND SURFACE ROOTS.

Vines trained on two parallel wires, A and B.

seen at 2—single-eye plants—especially if the plants are set deep, say down to the third or fourth eye on the shoot, when put in the vineyard. The French consider no plants good unless grown from very long cuttings, say 12 to 16 inches.

The distinction between feeding and anchor-roots is an important one, on which the manner of propagation has an essential bearing; for in the growing season the feeding-roots work throughout the surface-soil, consuming about all the assimilable grape-food, and when the ground is plowed or spaded over and fertilizers are worked in, the feeding-roots are greatly mangled and injured; and if the vines have no anchor-roots they suffer greatly both from disturbance and in severe droughts.

The most successful vineyardists in hot climates each year, at pruning-time, trim away all the last year's feeding-roots, as well as superfluous bearing-wood. Then the surface-soil should be thoroughly pulverized several inches and fertilizers be mixed in, so that each year the ground affords a fresh pasturage for the young thrifty roots that start from above the anchor-roots. If the subsoil has not good drainage, and is neither rich nor porous, trenches should be dug two feet or more deep, with slopes to drain off the excess of water, and the bottoms should be filled with bones, rotting brush or logs to

serve as a permanent source of food for the anchor-roots.

Fig. 2 will help to make my ideas comprehensible. A vineyard planted in this way, with plants grown from long cuttings, will, with care, last indefinitely and bear heavy crops every year.

2. I prefer to make cuttings within one to three weeks after the leaves have fallen, before the wood has lost any vitality by hard freezing.

Any temperature near zero, or below it, consumes to a large extent the vitality of even the hardiest species and varieties.

3. This question is mostly answered under fig. 1; fig. 3 completes the answer. After they have been put up in bunches

in the fall, the cuttings are buried in loamy, well-drained soil till corn planting-time, in spring, when they are "lined-out" with a dibble, as shown in fig. 3.

4. In any latitude south of 35° I prefer fall planting for vineyards as well as for orchards.

5. After thoroughly trying all the trellises commonly in use, I have discarded all as more or less unnatural to the habit of vine-growth. The canopy, to shade the roots, body and fruit from the direct rays of the sun, is nature's plan. When that is modified to prevent matting, and to secure a perfect balance between root and top to prevent over-loading with fruit, one has perfect training. After a most thorough test of a very simple trellis, somewhat different from that used by a few vineyardists, I am fully convinced that it gives the best results with the least outlay of material and labor for our American grapes, which need long-arm pruning.

This system consists of two posts seven feet long, set two feet deep in the same hole, with tops flaring apart two feet; a pair are set at each end of each row and midway between every third and fourth vine, thus leaving three vines eight feet apart, as I plant common kinds

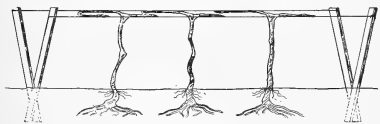


FIG. 4.—MUNSON'S SYSTEM FOR TRAINING THE VINE.

Two posts in same hole with tops flaring two feet apart. Two parallel wires support the vines.

between each pair of posts. A No. 11 galvanized wire is stapled on the tops of the posts, making two strands stretching along each row, in a parallel way two feet apart, at the same height from the ground (five feet), as shown in fig. 4.

The vines, shown as pruned with two arms, are tied at the end of the second year. As the vines get stronger more arms, even up to four for each vine (one four feet

long for each wire), or two of greater length (say up to eight feet each) are trained S-fashion from wire to wire, to suit the trainer's fancy or the amount of bearing wood possessed and capable of being utilized to advantage by the vine. Looking down upon the trellis when the vine is pruned and tied, it might present the various aspects shown in fig. 5.

The young shoots that are to bear fruit the next year should always be induced to start in sufficient numbers near the summit of the upright part or body of the vine, so as to allow all the old wood that has borne to be cut away back to the new shoots. Remembering always that American grapes bear better on the long arms than on the short, one to three-eye spurs, the rule should be a few strong long arms and not many short weak spurs, as the old systems induced.

This system of training has, among others, the following advantages: 1. It keeps the sun from baking the roots, bodies and fruit. 2. It costs little in material and labor to prune and train the vines. 3. It affords free ventilation below the fruit, leaving it hanging free in the most convenient position for spraying and harvesting, while it is out of the way of domestic fowls, and can be



FIG. 5.—TRAINING VINES ON THE TRELLIS.

W, W are wires, and A, B, C are vines.

easily sacked. 4. Cultivation is easily accomplished, and one can pass easily from row to row. 5. It maintains the equilibrium and life of the vine to the fullest extent, and secures all fruit possible from a given area. 6. Pruning and training are simplified, so that a novice can readily do satisfactory work after a few vines have been pruned and tied before him.—T. V. MUNSON.

TWO-WIRE TRELLIS: TWO-ARM SYSTEM.

1. By cuttings. 2. In the fall. After the leaves have fallen I cut the cuttings in lengths, say 16 to 20 inches, tie them in bunches, and pack them in moist sand in the cellar till they are wanted for use in the spring. 3. They should be six or eight inches long, with two or three buds each. Cut quite close to the lower bud, and leave about an inch of wood above the upper bud. As soon as the ground is in good working condition in the spring (having been previously prepared and cleared of stones), I make trenches or furrows about eight inches deep, place the cuttings in them in a sloping position about four inches apart, in rows one foot apart, so that the top buds will be just below or at the surface when leveled. The soil is then firmed and drawn over the top buds; sawdust is best for this. Keep the soil moist with mulch or water till the cuttings are well started, and allow no weeds to grow. Plant in vineyard the next spring as early as the ground is ready, in rows nine feet apart and ten feet apart in the rows. 4. Spring, although my experience; (Dutchess county, N. Y.) does not include fall planting. 5. The two-wire trellis and the "two-arm" system of

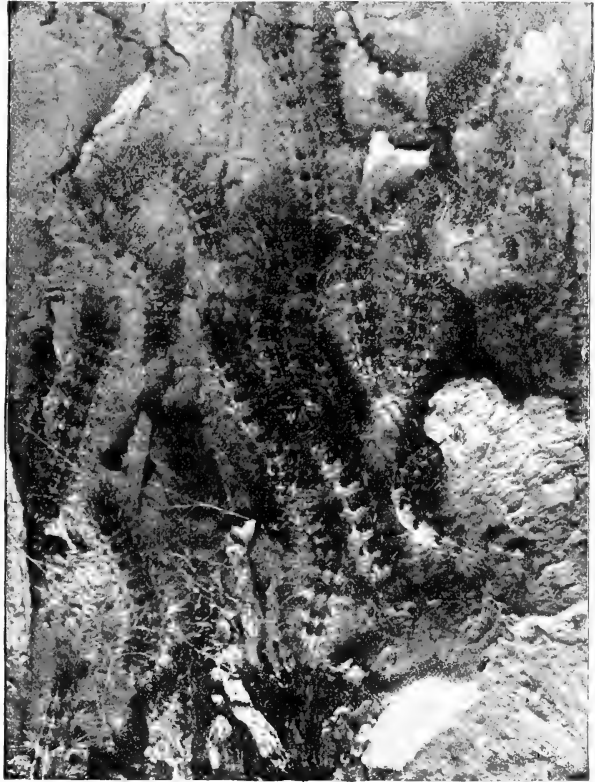
trimming. This system has been steadily growing in favor here for several years past, and wherever it has been adopted instead of the "four-arm" or Kniffin plan, it has proved advantageous without, to my knowledge, a single exception. Since spraying has become a necessity, the greater convenience of doing the work under this system has been so manifest as to induce a large proportion of our growers to adopt it. In this system two arms are left for the top wire, each having ten or twelve buds, the arms being about four feet long and extending along the top wire. It has been found beneficial to wind the arm around the wire two or three times, which checks the downward flow of sap and aids fruit-development. The arms should not be so long as to touch those of adjoining vines, as this would cause a mass of tangled growth at that point, unless the buds or shoots were pruned away. A space of a foot is not too much to leave between the tips of the arms. One or both of these arms may be brought down to the lower wire, as shown in fig. 5; but this would detract from convenience in spraying, with no corresponding advantages of an increased yield of even an inferior quality of grapes. Let me say here that a theoretical objection to this system advanced by some—that after a few years the vine would become worthless, for the reason that the arm left for fruiting would necessarily be further removed from the main vine each year—has no foundation in practice, as new shoots are produced near to or out of the main vine sufficient for this purpose. A greater consideration than convenience in spraying is the fact that better grapes are produced with less work in trimming and tying by this system than by the "four-arm" plan.

—WARD. D. GUNN.

AN OHIO EXPERT'S METHOD.

1. Personally, here in Delaware county, Ohio, I prefer

to propagate grape vines from single eyes, and grow them in cold greenhouses the first season. For my own use I prefer vines so grown to any others. The objection to this mode is the expense. It does not pay to grow any except the new and high-priced varieties in this way. 2. I have cuttings both for out door and under-glass planting made in autumn soon after the fall of the leaves and perfect maturity of the wood. 3. One and a-half to two



GYPSY-MOTH CATERPILLARS ON THE TRUNK OF A TREE. (See page 340.)

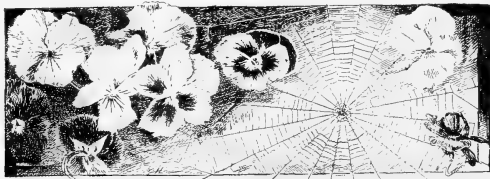
inches for single-eye cuttings, planted in sand-beds with artificial bottom heat early in April. Nine to ten inches in length, with two or three eyes, the bottom cut just below the lower bud, for open-air planting. These are planted in spring as early as the ground can be put in good condition. 4. Fall planting for the south, or wherever the winters are mild; spring planting for northern

or cold regions. 5. My choice has always been a trellis of three galvanized wires, from four and a half to five feet high.—GEORGE W. CAMPBELL.

FROM A VETERAN HORTICULTURIST.

1. By cuttings if many plants are needed, or by layers if only for a plant or two. For rare or very costly varieties, by single eyes with bottom heat. 2. Preferably in autumn after the foliage has fallen. 3. I make cuttings six to eight inches long, with not less than two eyes apiece. Here (Van Buren county, Michigan) I plant in spring, after they have calloused by being buried through

the winter and early spring, with the butts upward, in a warm exposure. We open a trench east and west; slope the north side, facing the mid-day sun; lay the cuttings against the slope, with the upper buds at the surface; cover with an inch of earth, and partially fill the trench with well-rotted manure. If the weather is too dry, we cover to the level of the surface with earth. 4. Preferably early spring; in mild seasons, early fall. 5. Where laying down and covering are necessary, I prefer an upright trellis with three wires; in climates where laying down is unnecessary, a horizontal trellis with four wires will answer best.—T. T. LYON.



HARD-STEMMED GREENHOUSE PLANTS.

SOME SPECIAL DIRECTIONS FOR THEIR CULTURE.

(Continued from March issue.)



YOUNG hard-stemmed greenhouse plants should also be removed to their winter quarters during the autumn season, when large ones are housed. During winter their treatment is confined to watering and airing. Give air as often as the weather permits and remove any damped-off shoots with a sharp knife as soon as noticed. This trouble spreads very rapidly if not promptly treated.

In April those plants which are strong enough are shifted into larger pots. After potting keep the plants close for a time, until they have rooted through the new soil. Protect from the sun's hot rays for the first few weeks after setting out, but shading is to be diminished, and at last left off altogether. As the plants grow on, they may be treated like older plants.

The season for shifting begins in the latter part of spring. All plants which are in small pots in proportion to their size should be repotted into larger ones. Sickly plants should be taken out of their pots and the soil removed until healthy roots are found. Be careful that no roots get broken; decayed parts should be cut off with a sharp knife. The soil used in repotting hard-stemmed greenhouse plants should always be adapted to their individual likings, but must be kept porous by the addition of silver sand. The pots into which they are transferred should be from two to five inches larger than the diameter

of the ball of earth clinging to their roots, so that a supply of fresh soil may be given the plants. Drain the pots well and upon the drainage place a layer of dead leaves, moss or coarse peat. Fill in some soil upon this and press it down firmly. Now set the plant's ball of roots upon the soil, taking care that it is neither too high nor too low. The new soil filled in about the roots should cover the upper roots about one inch, and the surface of this soil should be an inch or more below the rim of the pot. In top-dressing those plants which do not require repotting, loosen the surface of the soil until roots appear; then remove the loose soil and replace it with new and fresh compost, which must be well crowded down. Look the plants over, cut out all dead branches and pick off dry and yellow leaves.

The hardier kinds of plants may be placed in the open air the second week in June. Prepare beds of ashes or gravel for plunging the plants in up to their rims. These beds should be about 12 inches deep, and raised above the level of the soil, to allow water to run off without hindrance. Choose an open space for them, where they will not be shaded by trees or buildings, but exposed to the sun. They should be arranged in rows, three rows to each bed, so that water may be given them easily. If plants of small size only are to be plunged, five and even six rows may be planted in one bed. It is a great protection to the plants if there is a wall or high hedge not far from these beds, to protect them from winds. Shade the plants during midday for the first few days, or the sun

will change the color of their leaves from green to brown.

Tender kinds of hard-stemmed greenhouse plants should be kept in the house, air given freely and water applied whenever needed. In fact, it is advisable to go among them with the water-pot several times during hot days, in the house as well as outside, to prevent any of the plants from getting so dry as to flag.

The plants which are outside must be removed to the house early in autumn, as their young and tender shoots are liable to be hurt during cold nights. Before bringing

of them may drop their leaves. Space and air are needed for best development.

When all are housed, give them all the air possible during the daytime, and also at night, if the weather is mild. At this time of the year, frosts are not so severe as to injure housed plants, even if lights and ventilators be kept open. The summer's growth is not finished at the time the plants are removed to the house, therefore young shoots do not acquire a really woody character and are liable to damp-off during the winter, unless air is



WOODLAND INFESTED BY THE GYPSY-MOTH. (See page 340.)

them into the house, which may be done early in September, turn the pots around some cloudy day, to break off the roots which have grown through the bottom of their pots. I have found this a very good practice, as plants so treated do not droop like those whose roots are cut off as they are brought into the house. Besides, the plants are better prepared for their winter quarters, where they almost always have slight bottom heat by this treatment of the roots. In arranging plants on the shelves for the winter, do not set them too close together or some

admitted freely after housing. They can hardly have too much air, so long as there is no frost. Free circulation of air will quickly dry all moisture out of the pots, so give water plentifully whenever the plants require it. During the cloudy and foggy days of November and December, water more sparingly, as the temperature of the house is already filled with moisture. Injured foliage and dry flowers should be removed from all plants as soon as noticed, as they not only injure them but also give them an untidy, unattractive appearance. Even in mild weather

at this season, a little artificial heat will be found useful in order to dry the atmosphere in the house. Generally speaking, hard-wooded greenhouse plants do not require much heat during the winter; an average temperature of 40-45°F. will be most suitable. Therefore fire is needed most during the night and in the early morning. In regard to watering, it is better to keep the plants rather dry during winter, but if hot-water pipes run under their stages, it will be necessary to look them over every day and give water to all plants in need of it. The shelves should be dampened early in the morning, and also in the evening as long as artificial heat is given, in order to prevent the atmosphere from getting too dry.

During the winter, look all plants over and wash off any dirt which may be upon their leaves with a sponge and soapy water. Also stake plants which are not able to support themselves. The insects which trouble these

plants most are greenfly, thrips and mealy-bug. The two former may be kept off by syringing the plants occasionally with strong tobacco-water; mealy-bugs may be destroyed by syringing them with strong soapsuds to which a portion of paraffine is added. This is to be used very carefully and it must not be applied to very tender plants. The latter should be washed with soapsuds or syringed with clean water, after dipping them in strong soapsuds. The insects are stupefied by the soapsuds and the syringe afterward removes them. Promptness in fighting all these insects is of vital importance.

Toward spring the plants will start fresh growth. They should then be watered more freely and given air whenever the weather will allow it. With spring, potting-time will come round again, and this brings us to the point from which we started.

PAUL LESSER.

Royal Botanic Gardens, Kew, Eng.

PRESENT CONDITIONS IN COMMERCIAL FLORICULTURE.

RECENT ADVANCES—REMARKABLE DEVELOPMENT—INTEREST IN FINE PLANTS—FERNS, ORCHIDS, CHRYSANTHEMUMS—INDEPENDENT SHOWS NEEDED—FLOWER MARKETS—AN APPRENTICE SYSTEM WANTED.



VERY intelligent grower or dealer can trace a remarkable growth in floriculture, even within the last decade. Looking backward, it seems but yesterday when all the roses were "Boston buds;" when the funeral designs all looked as if they were made by a mason, in good serviceable mortar; and when a hand bou-

quet, wooden-stemmed and tightly bound, looked for all the world as if modelled after a Devonshire birch besom. The camellia—familarly called a Japonica—was then the queen of flowers. Had anyone then predicted the present fancy for orchids or chrysanthemums he would have been regarded as but two removes from active lunacy. Looking at the remarkable development in horticulture within a few years it may be especially noted that it is all in the direction of better taste—no doubt the result of popular education in the art idea. Men who depend on their work for a livelihood cannot afford to be in advance of popular demand; they must simply keep up with it. As one clever designer recently remarked to the writer, men who strike out on an entirely new idea rarely realize as much from it as those who take it up afterward.

A remarkable change in commercial horticulture is the increase in the use of plants for decorative purposes. The extent of the palm trade alone is now really enormous, and the increase in the use of ferns is almost as large. Many trade-growers who formerly devoted themselves entirely to cut-flowers, such as roses and carnations, now find the sale of such palms as arecas, kentias, seforthias and latanias to be the most profitable part of their business. This is not because the flower trade has

decreased of late, but because of the great and recent increase in the plant trade.

Again, ferns were formerly regarded as among the least profitable things, commercially speaking; the use of fronds was comparatively limited, and few of the plants were called for in trade. Now we find adiantum and pteris perpetually in demand; in fact, last winter, though the supply was large, the demand was still larger, and at one time there was a positive famine in small pot ferns. We find these pot ferns continually used in conjunction with cut-flowers for decorative purposes, having advantages both in appearance and economy.

Naturally these changes in the trade have produced changes in the growers, and we find this essentially an age of specialties. Among wholesale growers we often find a man devoting himself entirely to one flower, sometimes only to one variety. The American Beauty rose is essentially a specialist's flower. Again, we find another grower giving his undivided attention to Easter plants, content to reap his harvest at that one season.

A notable change made in recent years was the rise of the chrysanthemum. This flower was comparatively unknown in America ten years ago, outside of the trade. The general public knew little of the flower, excepting as the old-fashioned artemisa, until the large exhibitions in New York, Boston and Philadelphia laid the foundation of the chrysanthemum craze. Since then the number of chrysanthemum shows has increased annually, many being held in the smaller towns, where one would hardly look for the luxury of flower-shows. The chrysanthemum is now the most popular of all autumn flowers, and though for a time it seemed as if the efforts of growers were directed rather towards eccentricity than beauty, they have now returned to a better standard of excellence.

Speaking of chrysanthemum shows, one is reminded how much we owe to the amateur growers. Although purely trade organizations are an absolute necessity, both for protection and comparison, any horticultural society bent on securing fine shows will find the coöperation of the amateurs an imperative necessity. Not only do they give aid, both financially and in plants, but the shows thus appeal more heartily to the general public. When a show is managed entirely by men in the trade, people often look on it much in the light of an advertisement, whereas the assistance of outsiders prominent in the social or business world removes that suspicion. The most successful shows given in this country have owed much to the generous aid of the amateurs. The taste for horticulture is growing, too, although wealthy Americans rarely take so warm an interest in gardening generally as the representatives of a similar class abroad. Still, there are plenty of flower-lovers, especially among people of moderate means, and they form a class we should endeavor to interest in horticultural societies.

When every town has a horticultural society that gives an annual show of some sort, we shall feel that the florists' millenium is not very far off.

Another requirement, which we still hope to see filled, is the establishment of proper flower-markets. New York is woefully deficient in this requirement. It is true there is the open-air market in Union Square, where



* APPLE ORCHARD STRIPPED BY THE GYPSY-MOTH CATERPILLAR. [See page 346.]

plants are sold, but wholesalers and retailers alike want a real market for the cut-flower trade. They want to do away with the middleman, for one thing; and they want

to arrange sales on a business basis, in the hope of avoiding some of the extraordinary fluctuations now equally disastrous to buyer and seller. There is no reason why flowers should not be sold under the same rules as any other perishable commodity, but at present the lack of a central market, which would regulate prices by giving a just idea of supply and demand, frequently causes heavy loss to the grower, and annoyance to the retailer. Many and varied are the complaints against the commission man and his exactions, though it is not likely his lot is altogether a happy one.

A question often debated in the trade is the need of the apprentice system. A very large proportion of the leading men in the trade, especially the elder ones, learned their business abroad, either in Great Britain or on the continent. With few exceptions, they began to learn the business when mere boys; they were expected to study all branches of the trade, instead of confining themselves merely to roses, or carnations, or some other specialty. Consequently they are what may be called "all round plantsmen," especially when their education has been finished in some place famous for shows. It is really difficult to get the same class of help here. Growers often complain that it really does not pay to teach a boy, because you cannot bind him for any length of time, and as soon as he knows enough to pay for the instruction given him he is sure to leave. There is a prejudice against employing boys in greenhouses, too; it is all very well to have one, but where several are employed there is usually so much "larking" that the

amount of work done is reduced to a minimum. Some of the most prominent men in the trade, however, are disposed to make good openings for intelligent boys possessing at least a good common school education, thinking rightly that such material will continue to raise the standard of the trade. As present the number of foreigners holding good positions in the trade is rather discouraging to anyone who believes essentially in America for Americans.

There is no doubt that great benefit has accrued from the founding of the Society of American Florists. It has brought the trade together in a variety of ways, producing an *esprit du corps* before lacking, and the conventions give an opportunity for the interchange of ideas which would be impossible in any other way. The other protective societies which are connected with it are not only beneficial, but give the trade a commercial footing similar to that of other large industries.

The trade will have an opportunity to distinguish itself greatly at the approaching Columbian Exposition, and it is to be hoped that the chance will be taken. The Centennial did a great deal in that way, moving us out of the old ruts, and this later affair should show plenty of improvement. There will be a fine opportunity for outdoor effects, of which Mr. Thorpe will doubtless avail himself to the utmost, but he would be greatly hampered without the free coöperation of the trade. It is to be earnestly hoped that this will be made an epoch in the gardening world.

EMILY LOUISE TAPLIN.

PROMPT TREATMENT OF THE GYPSY-MOTH.

METHODS USED IN MASSACHUSETTS.



ONE of the most destructive insects on record is the gypsy-moth (*Ocnera dispar*) which for the last three or four years has been devastating large areas. It has been found in more than twenty townships in Massachusetts, embracing a territory of 200 square miles. With characteristic energy and thoughtful system in the presence of a public evil the old Bay State established a commission of capable men—experts and practical workers—and equipped them with ample means (\$50,000) for fighting the pest; an example which might well be followed in other states.

Their efforts were so well directed that the spread of the gypsy-moth seems to have been effectually checked. When the caterpillars appeared, a large force of men and teams was employed to spray the trees infested with Paris green and other mixtures. Thirty teams with large spraying outfits were in use. To prevent the transportation of caterpillars by teams, a large force of police was employed to guard the roads leading from the infested territory; but it was found impossible to make their work effective, and a code of rules was adopted, which we epitomize:

All persons were forbidden by law to remove the gypsy-moth, its nests or eggs, from one place to another, in any city or town, and requested to exercise care against so transporting the gypsy-moth on teams and carriages.

All persons were forbidden to remove any hay, manure, wood, bark, trees, rags, lumber or shrubbery of any kind, without a written permit from the department. All loads must be covered with canvas.

All vehicles leaving the district might be stopped and delayed until their contents were inspected.

No person might remove the bark from trees, nor attempt to scrape and clean them, without first notifying the department, and having said trees thoroughly inspected and, if found infested, cleaned under its direction.

Owners or tenants were requested to gather and burn all rubbish and useless material upon their premises that might provide nesting-places for the insect, and to fill with cement or other solid material holes in trees upon their premises.

Windows of houses were protected by screens during the summer months, as the insect lays its eggs in the houses wherever it can gain admittance.

Fences and buildings could be torn down if necessary, and the owners were to be recompensed by the state.

When spraying ceased, every effort was made to destroy the creatures during the short time they remained in the pupa and moth stages. The men were then set to gathering and destroying eggs. An effort was made by the men employed, to go systematically over the entire

infested territory, gathering and destroying the eggs of the moth. The progress was necessarily slow, as every tree, shrub, wall, fence, pig-pen, hen-house, shed, and even the dwelling-houses and barns in the most thickly infested territory, had to be carefully examined by the men, and afterwards inspected by the most expert among them. Old stone walls were burned out by the use of crude petroleum. The oil was forced among the stones in the form of a spray, by the use of pumps and spraying-nozzles. Large tracts of land covered with brush were burned over after the brush had been cut and sprayed with petroleum, and in some cases woodland was cut and burned over after the wood worth saving had been examined and removed. Wherever worthless, hollow trees were found infested, they were felled and burned. In this way vast numbers of moths and their eggs were destroyed during the season.

As it was observed early in the campaign that the distribution of the caterpillars was effected largely by their falling from the trees upon teams, an effort was made to destroy all eggs upon trees on or near the highways. Before the hatching of the eggs, many large street-trees were banded with strips of tarred paper as a means of protecting them from the gypsy-moth and canker-worm. This remedy proved very effective. Great numbers of eggs had been deposited on buildings, fences and other objects near the trees. As soon as the young caterpillars left the eggs, instinct led them to the trees, and, as they crawled upward to find food, many were entangled in the cotton-waste under the tarred paper and perished.

Paris green gave better results than any other mixture. When it was properly applied to plants, all newly-hatched caterpillars that were fed upon them died within a few days; glucose was added to the mixture to retain the poison upon the foliage.



TREES STRIPPED BY THE GYPSY-MOTH CATERPILLAR.

The work carried on last season was so effective that all large colonies of the moth were destroyed. Where in past seasons the trees bore neither leaves nor fruit, last year a good crop was realized. Where last season thousands of eggs were seen upon the trees, now very

few can be found. There is still a large area in which the eggs have not been destroyed. This will have attention during the present season.

The accompanying illustrations (pages 335, 337, 339 and 341) give a good idea of the "abomination of desolation" left in the wake of the gypsy-moth, and the prime

importance of fighting it promptly and vigorously as soon as its appearance is noticed. The above cited Massachusetts experience outlines the methods necessary to destroy this pest, so no time need be wasted in experimenting. The great importance of concerted action may also be noticed.



FIG. 1.—ROSA RUGOSA. (Brought by Professor Budd from Central Russia).

THE RUGOSA TYPE OF ROSES.

NEW AND PROMISING SPECIES.



ANY cultivators of flowers have not yet introduced into their grounds the Japanese strain of roses, of which *Rosa rugosa*—the wrinkled-leaved rose—is the type. This is the more to be regretted because, in these days when the complaint about the devastation of roses by insects is so wide-spread, this comparatively new type is, to a remarkable degree, free from the insects that infest roses.

The rugosa species has frequently been illustrated and described in this journal, (see AMERICAN GARDEN, Vol. XI, pages 182, 422, 665, and Vol. XII., page 755.) It first attracted the attention of Europeans when, in 1845, it was introduced from Japan. It is time that this species, and the varieties and hybrids arising from it, were known

in every American garden, for all are hardy, handsome and desirable.

This wrinkled-leaved rose is very distinct in character, and at once attracts attention among other kinds by its rich, dark green leaves, conspicuously wrinkled, and by its peculiar habit of growth. In the engravings given of (pages 342 and 343) *R. rugosa*, as brought from Central Russia by Professor J. L. Budd, the handsome single flower, some foliage and fruit-vessels of the species are shown, all considerably reduced in size. The original flower of the engraving measured six inches across. The flowers of the typical form are large, solitary, of a beautiful rosy crimson, with the sepals reflexed and very narrow. There are new varieties in other shades of red and pink, even down to white, all possessing otherwise the characteristics of the original form.

But beautiful flowers and foliage are not the only attractions of *Rosa rugosa*. The fruit is generally considered even more ornamental than the bloom. It varies in color from orange-red to deep red, is very large and showy, adheres to the plants until autumn. The seed germinates easily, hence it is not difficult to increase the stock of plants to any desired extent. These roses grow in a mass in good soil, where they will receive full sunlight; it forms an attractive object from blooming time in June until freezing weather in autumn.

The form of *rugosa* from Russia, illustrated in fig. 1, when grown side by side with the ordinary type is about two weeks later to bloom, and a little darker in color. Where the ordinary *rugosa* has only two or three buds and flowers in a cluster, this one averages about four or five. The buds show a rich dark red between the narrow sepals, and besides being very long, they are very pretty.

The double form of the rose shown in fig. 2 is also an introduction by Professor Budd from Russia. It seems to belong to the *rugosa* strain, and is known as *R. cinnamomea*. The blooms are six inches across, quite double, crimson in color, not quite so glowing as the type of *rugosa*, but more fragrant. The leaves are slightly serrated, bright green and leathery.

An interesting rose, possessing *rugosa* blood, is the new hybrid produced by Bruant in 1888, and called Madame G. Bruant. This is an exceptionally hardy and vigorous rose, which develops into a handsome bush. The flowers are pure white, fragrant, and are produced

freely in clusters, at intervals throughout the summer; they are semi-double. The buds of Madame Bruant, as is usually the case with semi-double roses, are long, pointed and handsome.

There are good grounds for believing that some marked

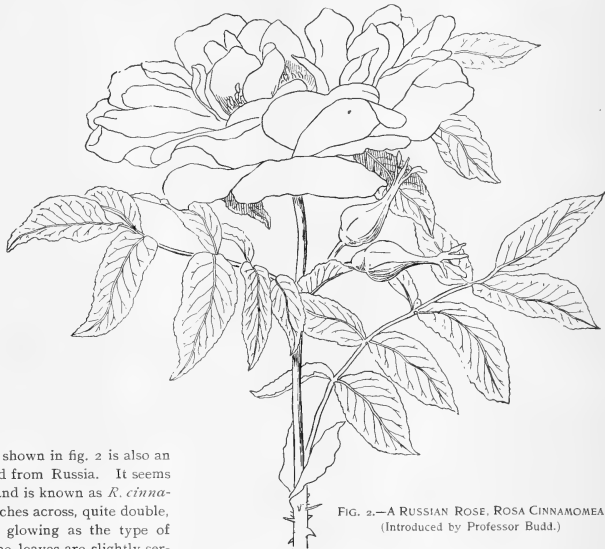


FIG. 2.—A RUSSIAN ROSE, *ROSA CINNAMOMEA*
(Introduced by Professor Budd.)

additions from the race of *rugosa* roses may be made to our list of hardy garden roses within a not distant period. The fact of their comparative immunity from insects is encouraging and in every way much in their favor, and their own peculiar beauty will give them increasing popularity as they become better known.

JUNE ROSES.

SOME FAVORITES NORTH AND SOUTH.



IT MUST have been in June-time that those old sybarites of whom we read strewed their paths, floors and couches thick with rose leaves; for only in June, when roses are plentiful, would such prodigal waste of beauty seem possible. During this month the faithful everblooming teas are thrust into the background by hosts of so-called June or garden roses, hybrid but not perpetual.

This class of roses grows yearly more popular, but the name is misleading. Hybrid "perpetual" roses are all derived from hardy varieties that bloom only once in a season, such as hybrid China and damask roses, crossed

with some variety of tea, Bourbon or Noisette; some of them are second crosses in the same direction. The hardness of one parent and the free-blooming habit of the other are thus both present to some extent in hybrid perpetual roses. After their season of profuse bloom in June, they make new growth and produce some flowers in autumn; but varieties differ greatly in this respect—some are quite liberal and others very stingy with their autumn buds.

All hybrid perpetual roses cannot be pruned alike. Those having a strong, vigorous growth need much less pruning than low, dwarf varieties, for if cut back too far they devote too much energy to their favorite pastime of

wood and thorn-growing. The required difference in treatment does not seem to be well understood, and is not often given. This may be one reason why hybrid perpetual roses are not more popular in the southern states. Here they are frequently grown in hedges, the plants set two feet apart, and mercilessly sheared. One grand blossoming they give in early summer, but for the rest of the season they revenge themselves, most of them, by growing into formidable thorn trees, guiltless of bud or blossom.

The soil and climate of the south suit these roses too well; life is made too easy for them. On our rich clay soils they act very much as if they were imbued with the spirit of the idea that the first and most important duty of all roses, to nature, their owners and themselves, was to grow, and blossoming a secondary consideration. Of course, there are exceptions everywhere to every rule.

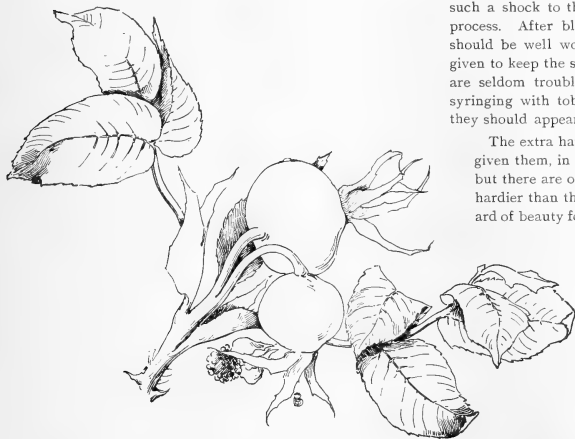


FIG. 3.—FRUIT OF *ROSA RUGOSA*.

I have some fine old hybrid perpetuals in my garden that I would not give up for twice their value in money. The finest of them all is Prince Camille de Rohan, a royal crimson-scarlet rose, with deep rich velvety shadings that seem almost black. The flower is large, finely formed and very fragrant. In June, bushes of this rose bear heavy crops of flowers, are cut back moderately soon after blooming, well fertilized and mulched, and in autumn give again a profusion of flowers as richly shaded, but not so double, as those borne in June. Ellwanger describes the Prince Camille type of roses as being shy of bloom in autumn, and the flowers only moderately full. This is true of other roses of this type, but Prince Camille in our garden is freer blooming in autumn than any other hybrid perpetual rose, and its June blossoms are very large and double. Jean Liabaud and Abel Car-

riere are other fine roses of this type. General Jacqueminot, under our hot southern suns, loses its exquisite bud form too quickly, and its rich tints soon fade into a purplish crimson. It is a much finer rose north than south.

Among light-colored hybrid perpetuals or remontants, Baroness Rothschild, Perfection des Blancs and Gloire Lyonnaise are some fine sorts. Gloire Lyonnaise was introduced as a new yellow hybrid remontant, which it proved not to be; but it is a superb cream-colored rose. The growth of hybrid perpetuals is so strong and bushy that they seldom need staking or tying in this their blooming season; but June is by no means an idle month for careful and loving rosarians. There are dead faded blossoms to be cut away—cut so that this will be sufficient pruning. One-half of a rose-bush may be pruned and starting new growth before the other has opened all its buds. I like this system of gradual pruning; it is not such a shock to the plants as the simultaneous shearing process. After blooming, a good dressing of fertilizer should be well worked about their roots, and a mulch given to keep the soil moist about them. Outdoor roses are seldom troubled with insects to any great extent; syringing with tobacco-water will soon destroy them if they should appear.

The extra hardiness of hybrid perpetual roses has given them, in cold climates, an advantage over teas; but there are other fine old garden roses that are still hardier than they, and with some of us, whose standard of beauty for roses is not number of petals or size of blossoms, these are still favorites. Quaint old Scotch roses (*Rosa spinosissima*), with their tiny early flowers, nine leaflets and thorny stems; and crimson Boursaults (*R. Alpina*), almost free from thorns, are still seen in some old-fashioned gardens. The crested Provence or cabbage-rose (*R. centifolia mucosa*), with full, globular flowers, rich perfume and straggling growth, is a more general favorite. These centifolia roses are grown in immense quantities for the production

of oil of roses and rose-water. By some rosarians this rose is thought to be a variety of *R. Gallica*. Some of our best yellow roses are derived from the old Austrian brier, with coppery yellow flowers and spiny, chocolate-colored shoots; none of the hybrids need to be ashamed of their parentage.

Some more tender roses that bloom only in early summer are the Ayrshire, Banksia, prairie, multiflora, damask, hybrid China and sweet briars. Most of them require a soil only moderately rich, and very little pruning. The Banksia roses are much used in warm climates as stocks upon which to graft less vigorous varieties. Lady Banksia's own roses are produced in clusters—dainty double little blossoms, with an exquisite odor like that of violets. The smooth, slender, rapid growth of this rose makes it one of the most graceful and desirable of climbers. Its

leaves are long, dark green and shining, often but three in number, and the flowers are white, yellow and rose-colored. But the Banksias are tender roses, and are valuable only in warm climates.

Cherokee roses do not get their meed of praise in this day and time. Their waxen white blossoms, thick and shining, with clusters of golden stamens nestling in the midst, their shining foliage and quick, rapid growth should make them more general favorites.

But the old wild sweet-brier is, to my mind, the sweet-

est June rose of all. Its single pink flowers have a grace and beauty inimitable, and after a warm summer shower, or when wet with morning or evening dew, the fragrance of its foliage makes fields, gardens and hedgerows sweet. After all, we cannot improve upon it, with all our doubling and crossing and hybridizing. It should be given a corner all to itself in every garden, and allowed to tangle over it, without pruning or cultivation, in its own sweet wild way.

North Carolina.

L. GREENLEE.

Sweet-brier Bush, My Soul would List to Thee.

Sweet-brier bush, my soul would list to thee.

For breathing incense from thy storied tongue

'Doth hold the briefs of all that hath been sung

Of love and law, of art and history.

To learn thy riddle solves all mystery.

Thy primal root, embalmed when earth was young,

Hath on the scroll of grief its garments flung;

Thy virent bud fortelleth bliss to be.

The golden rays of thy divided stem

'Discern life-motives in evolving stars;

Their parted leaves, might we interpret them,

Rosarial steps disclose to sacred bars;

Thy spurs, as peaks of Galapagos' sea,

May moor the ark of proved philosophy.

—H. CHANDLER.

Buffalo, N. Y.

RASPBERRIES FOR HOME AND MARKET.

SOME COMPARISONS WITH THE STRAWBERRY.



AS A MARKET berry, no one, especially the amateur, should build too high hopes on the raspberry. For home use you cannot get cheated, if you place confidence in it, because it is one of the best berries for family use, and comes in season immediately after the strawberry. The raspberry, too, unlike the strawberry, is excellent for canning, for jellies, and for preserving. Raspberry preserve has a most delicious flavor, peculiarly its own. There is no way to preserve the strawberry's flavor and lusciousness after it goes into the kettle. Heat and sugar almost destroys the distinctive acid strawberry flavor, so enjoyable in fruits fresh from the vines.

But when we come to profitable marketing, the strawberry is superior to the raspberry. Still, there are markets where the Cuthbert raspberry may be made quite profitable. I have been speaking in a relative way concerning the two berries. The raspberry has this advantage: A plantation once set, if rightly handled, will last for several years, while the strawberry plant must be renewed bi-annually. I know a fruit-grower who received \$450 an acre from a plantation of Cuthbert raspberries during some seasons, but he lives near a city market, and has practically no competition. Berries at from

14 to 18 cents a quart wholesale, cannot fail to be profitable when the bushes are well cultivated.

It is very important in raspberry culture that hardy varieties be selected. No matter how early or fine-fruited a variety may be, if it winter-kills, discard it; it will not be profitable. If one has a young orchard, and the trees are set as they should be, 25 or 30 feet apart, this would be a fine place for growing red raspberries. But they should be well cultivated, the soil well fertilized and the rows kept free from weeds. The partial shade from the tree will be an advantage to the plants.

Don't make the mistake of setting raspberry rows too near together. It is better to have the plants form a continuous hedge in the rows than to have the rows so near together that a horse and cultivator cannot be run over the plantation every spring. Seven feet is near enough to set raspberry rows, as the intervening space will gradually be contracted by the growth of plants.

Raspberry bushes should be pruned early and mercifully. Varieties such as Cuthbert and Turner make a tall, rampant growth. If properly pruned, when their canes are two or three feet high, and the laterals well trained, so that they may not become scrawly, thick bushy plants, that will yield immense crops of fruit, are soon formed.

Maine.

LYMAN A. ABBOTT.



NEW AND OLD PLANTS AND METHODS

TESTED ON THE EDITORS' GROUNDS.

THE PERENNIAL GAILLARDIAS.—Special attention has been paid to the perennial gaillardias for only a short time. Their ready tendency toward improvement has lately been noticed by hybridizers who have succeeded in producing some remarkably fine additions to our collection of herbaceous perennials. When once increased attention is given to any class of plants, new possibilities for beauty in them are almost certain to be revealed. Now that such interest in hardy perennials is at its height, we may expect to see remarkable improvements in many species of hardy flowers.

A most noteworthy quality of *Gaillardia cristata Templeana* is that it comes nearer to being a perpetual-blooming hardy perennial than any other on our grounds. We have an abundance of perpetual-blooming tender perennials, such as geraniums, heliotropes, lantanas, cupheas, etc., but similar bloomers among hardy flowers are decidedly rare. The above-named variety is probably a hybrid. It begins to bloom in our grounds about July 1, and continues to produce its remarkably handsome flowers unhurt until October. A flower, barren seed-head, and a branch with a young bud upon it, are shown in the engraving on page 347, slightly reduced below natural size. The flower is perhaps the most brilliant one among all our perennials. The prevailing color is bright red, changing to yellow and orange near the outer edge of the petals, and shading to rings of color. The center of the flower is a deep maroon-red, in marked contrast with the yellow in the petals.

Some other perennial gaillardias are named below, which we have not yet tested but in which we would have much confidence, because of the excellence of the one just described.

Maxima.—The finest variety yet produced. Flowers of immense size; color intense crimson, margined with yellow.

Admiration.—Flowers very symmetrical; color rich golden yellow, with zone of bright vermilion around disk.

Perfection.—Dwarf; flowers brilliant scarlet, margined with yellow.

Splendida.—Flowers of great substance; color rich crimson, margined with orange.

Lutea.—A large yellow flower with brownish disk.

Thomas S. Ware, of Tottenham, England, is one the leading growers and improvers of these fine flowers.

Gaillardias thrive in good garden soil of a friable nature, but they do not take kindly to one that is either cold and stiff, or one that is too light and dry. Best effects are produced by planting them in bold masses.

PLANTING LARGE GROUPS.—A visitor recently asked us the best method of carrying out a plan for forming at planting-time a group of trees and shrubs. This is a subject of considerable interest with all home-improvers, hence we will describe the method practiced here with very satisfactory results. Let us take for illustration a supposed group consisting of three trees and 25 shrubs, the latter in five kinds.

The first thing done was to get out a lot of rough stakes of five different kinds of material, viz., old weather-colored pine laths, new laths, rough-sawed boards, planed boards and split barrel-staves. When we have needed more than five kinds, sometimes stakes made of split shingles, or of branches of trees, etc., have been used. In planting, each kind of stake was made to represent a distinct kind of shrub—say in the group we are supposing, those of old lath stand for weigelas, the new lath for forsythias, the rough board for cydonias, etc. Then the stakes were set about the place to be occupied by the group, following the plan we thought of as to the place and distance apart of each. After the right number of stakes, place, a corresponding to the shrubs and trees, were in careful look was taken over the ground and such slight adjustments of the stakes were made as would insure their being quite evenly distributed over the place, allowing for differences in the habit of growth of different shrubs.

In the process of planting that followed, holes were dug beside each stake and the stakes set back into the holes to show which kind of shrub was to be planted there. Now as the five old lath stakes represented weigelas in this instance, so five weigelas were brought from the heeling-in place, distributed in the five holes marked by old lath, and planted at once. Next, five forsythias were in turn planted in the holes marked by new lath stakes—other kinds in similar manner. As each shrub or tree was planted, the stake was laid aside for use in planting other groups. In the case of some large groups requiring many kinds of shrubs, we have begun the planting at one end and proceeded regularly to the other, using the same stakes over and over again.

COPPER MIXTURES ONCE MORE.—Carbonate of copper in suspension has been frequently tried and mentioned as a fungicide. We do not believe that it is of the least value for such a purpose. The substance is insoluble in water, and entirely neutral and inert. To show the fallacy of the claim that copper can poison the soil, we mixed the carbonate with ordinary soil in various proportions, so freely, indeed, in one case, that to prepare an acre of soil nine inches in depth in the same way would require about 6,000 pounds of copper carbonate. Yet various seeds (sunflower, radish, etc.) planted in such soil sprouted promptly; the young plants grew thriftily

and made root-growth as perfect as that of plants growing in soil of the same character containing no copper. The supposition that this inert copper-salt will kill even so delicate a thing as a fungus-spore, seems to lack reasonable foundation, and we believe that applying carbonate of copper in suspension means nothing else but throwing away work and money.

The idea that the application of copper mixtures in the quantities used for fungicidal purposes might poison the soil, seems to us simply ridiculous. We have seen that copper in the form of carbonate has no such ill effect. If dissolved in ammonia and applied to the soil in large doses, we would be more likely to see this alleged soil-poisoning. In one of our tests we planted various seeds in soil treated the day before to a reasonably free application of ammonia-water. None of these seeds sprouted, and even now, weeks afterwards, the soil seems to be perfectly dead. Yet ammonia when applied in such minute quantities as are used in spraying with the ammoniacal solution of copper carbonate, would act only as a stimulant, and beneficially rather than otherwise. Neither scientific nor practical people have yet solved the question as to which of the several agents employed really kills the fungus-spores. For the present season we can do no better than to make our fungicidal preparations according to formulas that have proved most beneficial in the past. The Bordeaux mixture and ammoniacal carbonate of copper (or copperdine) are those most generally used and most trustworthy. Nearly all other mixtures may be easily dispensed with.

We have no trouble in manufacturing our own supply of copper carbonate, when we cannot buy it. The ingredients can be bought in any drug-store, and the recipe is simple. In a half-barrel, or similar vessel, dissolve three pounds of copper sulphate in two gallons of hot water. In another vessel dissolve three and one-half pounds of common washing-soda or sal-soda in one gallon of hot water. When cool, pour the second solution slowly into the

first; then as soon as all action has ceased add enough water to bring the whole up to eight or ten gallons, and stir thoroughly. In 24 hours pour off the clear liquid, taking care not to disturb the sediment. Add fresh water to the sediment and stir again. Again allow the solution to stand 24 hours and pour off the clear liquid

as before; then remove the sediment, which is copper carbonate. Prepared in this way $1\frac{1}{2}$ pounds of copper carbonate are formed at an expense for materials of approximately 18 cents a pound, provided you have bought your copper sulphate at a reasonable figure, say 7 cents a pound, and not at druggist's retail prices, which may not

be less than 25 cents a pound. The copper-carbonate paste may be immediately dissolved in two or more gallons of liquid ammonia. This concentrated fluid should be kept in well-corked jugs, and when

ready for use should be diluted at the rate of one pint to 12 gallons of water.

MURIATE OF POTASH FOR APHIS.—Our last season's trials with solutions of potash salts for plant-lice and various worms and grubs were so satisfactory and promising that we must once more urge our readers to experiment in the same direction. Potash salts are not expensive, and will usually repay all their cost by their fertilizing effects, for they must, in the end, reach the soil and plant-roots, no matter how applied. We used saturated solutions of muriate of potash and kainit, and these, when sprayed on infested foliage,

soon cleaned them from plant-lice. Possibly weaker solutions might suffice, and further experiments are in order. These potash salts also seem to be quite an effective remedy for grubs and maggots in the soil. For radishes, cabbages, onions, etc., we need not hesitate to



A PERENNIAL GAILLARDIA.

soak the soil with strong solutions of these salts. The plants live, and the worms vanish. Our currant and gooseberry-bushes were last season freed and kept free from worms by means of the muriate spray. Altogether these potash salts seem to us worthy of more extended trial in the warfare against insects.

EARLY POTATOES.—We have again planted our old favorite, the Early Ohio, for early use. Our seed, last year, came from a locality where it is customary to plant large seed-pieces, and where, consequently, this variety has retained all its original vigor. Our crop from this seed last year was as satisfactory in yield and quality as at the time of its introduction by Mr. Gregory, many years ago. The Early Ohio is remarkable for its keeping quality. In fact, it is much slower to send out sprouts in spring than are the great majority of the late kinds. We have no difficulty in preserving tubers in best condition for planting, plump and fresh, almost up to July. The variety likes rich, rather moist loam, and is just the potato for garden culture. Early Ohio is almost in-

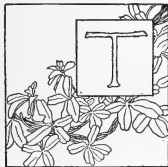
variably in great demand for seed purposes, and brings good prices in spring.

Gardeners are often at a loss as to what second crop they shall plant on a piece of land just cleared from early peas, cabbages, etc., especially one that will not require a very large amount of labor and yet will bring in some money. In many such cases the Early Ohio will prove suitable and profitable. We shall plant some more Ohios in June to keep over for seed.

We have also planted a quantity of Freeman potatoes, another good sort, although as yet high-priced. The Ohio will do well with heavy seeding, and give only a few large tubers in each hill. The Freeman, under the same conditions, inclines to produce a large number of tubers, and requires either lighter seeding or thinning of the stalks, if the grower wishes to produce a uniform lot of large tubers. This is a potato worth testing. It is a trifle later than Ohio, of quite vigorous growth, is productive, and its tubers are of the very best quality for table use.

THE VEGETABLE GARDEN IN JUNE.

SEASONABLE HINTS FOR MARKET AND HOME GROWERS.



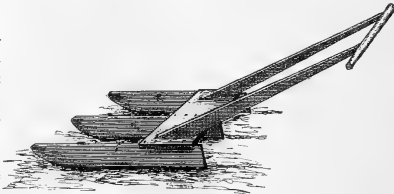
THE SEASON of seed-sowing in the garden lasts from March or April until snow flies. Hardly a week, during the chief growing season, passes in which we have not more or less use for seed-sowers or markers. AS AMERICAN GARDENING has already pointed out, the disadvantage of the

old-style garden marker is that it has to be pulled, the operator walking backward, so that it is not easy to keep the rows straight. In order to see exactly what a person is doing while marking, he wants a tool that can be pushed ahead, like a wheel-barrow. The simplest device of this kind we have yet seen is the one here illustrated. It consists of three pieces of inch board, 6 inches wide and 18 inches long, rounded off in front like a sled-runner. The cross-piece at the rear, which is firmly nailed on, holds these runners the proper distance apart. The handle is attached to the cross-piece in the manner shown. This tool is easily pushed ahead, and the operator will not find the least difficulty in running it in straight lines.

For earliest use, celery plants of the White Plume variety should now be set out. Of course we do not want them in trenches. This method requires too much labor, and the plants will not do so well as when they have more light. A mere suggestion of shade, given by setting a board edgewise on the sunny side of the celery rows, or by planting the celery on the north side of a row of tall pears or corn, will be of service in hot, dry weather; and we now invariably provide this little shade for celery plants when first set out, and during July. But this

must not be overdone. Celery needs light and sunshine, like most other plants, and will not do its best if kept away from full exposure to the life-inspiring light too long.

We plant our tomatoes in reasonably rich, well-manured soil. In fact, we never had soil too rich for the crop. We do not even fear to use large quantities of manure that is rich in nitrogen, provided that the latter can be made available in the early part of the season, instead of becoming so in mid-summer, and that the mineral plant-foods, especially phosphoric acid, are also present in the soil in abundant supply. The richer the soil, or the more proper plant-foods applied, the greater the yield. Such, at least, is our experience. Still, if any one should use nitrogenous manure in excess, or coarse barn-yard manure, the nitrogen of which would only become available very gradually, we would expect large tomato-vines and little fruit. Old, well-rotted manure, with a little



SIMPLE GARDEN MARKER.

bone-meal or acid-phosphate added, makes a superior fertilizer for tomatoes. Any of the high-grade vegetable or potato manures offered by responsible manufacturers are sure to give good results on tomatoes. Put a handful or

two in a circle around each plant, and work the fertilizer into the soil with a hoe. As a rule, the more liberal you are with the fertilizer, the more fruit you will get from your plants. In place of the prepared fertilizer you may use a combination of ashes or other forms of potash, and acid-phosphate or bone-meal.

Sweet-potato cuttings should be planted early in June. In the latitude of western New York we can only hope for successes with this crop by planting very early varieties on warm sandy soil. To set them in moist muck, or strong clay loam, no matter how well manured, means wasted effort. A recent bulletin of the Louisiana state experiment station gives the following hints about growing the crop: "Sweet potatoes require for their best development a loose, friable, sandy loam, especially fertile in phosphoric acid and potash. An excess of nitrogenous matter frequently causes an inordinate development of

vines at the expense of roots; hence, excessive quantities of ammoniacal manures are to be avoided in the growing of this crop." This exactly accords with our experience. Commercial fertilizers, especially the already mentioned high-grade manures, applied in the hills, have usually given us good crops, while on land heavily manured with barn-yard manure and fertilizers broadcast, the result was "all vine and no root." In case we have to use yard-compost for this crop, we always put it in the hill, and find this perfectly safe.

Our method of planting sweet-potato cuttings is to prepare ridges about four feet apart, and set the cuttings not less than 15 inches apart on top of the ridge. Leave a slight depression around each plant, into which pour a half-pint of tepid water, which will usually be sufficient to settle the soil firmly around the roots and start the plant anew.

DIFFICULTIES IN CELERY-GROWING.

HOW TO OVERCOME RUST AND INSECTS.



THE article on "New Celery Culture" published in *THE AMERICAN GARDEN* for December, 1891, was so comprehensive that apparently there is little more to be said on the subject. My own experience, however, brings me to the conclusion that the half has not been told, and that the *case* of celery-culture is sometimes an elusive quality, especially in old gardens where the soil is heavy and rich.

Man is ever a progressive animal; he labors to save himself labor and—alas!—sometimes gets only his labor for his pains. Such was my experience when I followed the example of my elders and betters, and transplanted good plants, grown in sunshine, into the shade and dampness of deep narrow trenches. I watched the slow, sprawling growth of these plants and the effect of frequent irrigation by summer showers, and charged the injury thus done them to the weather bureau. Comparatively few plants matured sufficiently to admit of banking, or were even worth taking up.

No wonder that celery was once considered an expensive luxury and its culture too laborious for the amateur to attempt. Shallow trenching and surface hilling have greatly simplified the matter, and now the culture of celery has become quite general. Where celery is grown in well-drained muck—the ideal soil for it—the process is no doubt just as easy and delightful as it looks on paper, but I have labored in vain for the past five years to perfect celery in my garden "with little labor." The "ease" of celery-culture will never be demonstrated in clay-loam. Although celery plants grow luxuriantly in

such soil if properly worked, it is not fit for even partial banking.

I have had very indifferent success in blanching with boards. The process is slow, and I think all celery, whether self-blanching or otherwise, when not banked with earth lacks a certain crispness and delicacy of flavor, which can be imparted only by this method. The ordinary tying-up process often results in crooked stalks. A small boy holds up the plants while some of the various "Solomon Levis" who work in my garden shovel the earth about them and hill them up in the most approved manner; and what is the result? Open a row of White Plume celery after a long rain, and you have before you a sight which ought to delight the heart of a naturalist; at all events here is proof that moth and rust doth literally corrupt. Fine large plants, which would otherwise be white as snow, are plaided and striped with rust; furthermore, the stalks are furrowed and feather-stitched, nibbled and chiseled by all manner of creeping things. Indeed, I am positive that more creeping, crawling earth-worms, slugs, snails, etc., can be found in my celery-patch than ever went into or came out of the ark; and the havoc they make is appalling.

Place a large bunch of celery grown in the above manner, root and all, in a glass jar of water, and you have a well-stocked aquarium before you. Even our valuable sub-soiler, the angle-worm, forgets his legitimate calling and fills himself with celery-pulp instead of his native soil. He suffers, in consequence, and so do we. It is a clean case of old-dog-Trayism not looked for so low down in the animal kingdom. To break up this rendezvous of insects and rust and also to lighten the soil, I had several loads of sand drawn to the field and banked a few rows with this. The experiment was successful so far as rust and vermin were concerned, but the plants made no better growth and the blanching was slow and uneven.

For home use or for special customers who are willing to pay a fancy price for a superior article, I advocate the following method, which has grown fine plants in my garden: Set the plants in rows four or five feet apart, and about seven inches apart in the row; plants thus grown on the surface have the advantage of direct sunshine, make a rapid growth, and are easily kept free from weeds. One very essential point is to keep all soil out of the heart of plants until they are large enough for blanching. To make sure that this is not done by careless hoeing, I usually go through the rows myself with a push-hoe. When the plants are well grown, I wrap each plant in a paper jacket, and then hill up almost to the top of the papers. For this purpose I usually buy common straw-paper and cut it into strips from twelve to fifteen inches wide. After a little practice the wrapping can be done as quickly as the ordinary tying-up. The loose end of the wrapper may be kept in place by a handful of earth thrown in with a trowel, or if the plants

are very bushy it is less work to fasten the ends together with an ordinary pin.

Last fall I placed a light protection over the celery rows when rain-storms were imminent, and was well repaid for all my trouble. The bunches were immense and of fine quality, and the blanching was perfect. This year I think I have a better scheme in view and propose to use a light-weight oil-paper, similar to that used for building purposes. This paper costs less than two dollars per roll, will cut to advantage and is water-proof. Straw-paper of course will rot if left in the ground too long, and a "diet of worms" will be likely to follow.

The space between celery rows should always be used for some quick-growing crop, like radishes, kohlrabi or early cauliflower. Care should always be taken in hilling to give a broad base to hills, as the soil may need to be drawn up higher later in the season. Personal supervision of all these details is important.

Vermont.

G. A. WOOLSON.

TREASURES FOUND IN WOODS AND SWAMPS.

THE RICH FLORA OF NEW JERSEY.



AS THERE ever a country whose surface expression was so at variance with its real character as this one of New Jersey? These sand-barrens, seemingly so flat and sterile, hold rare delectable qualities that take shape in a surpassing variety of fruits and flowers. Given a little moisture and mingled with rich dark soil, into what beauty will they not bud and blossom? The white sandy roads of the barrens, as they lead down into the swamp region where the soil is moister, firmer and darker, are bordered with a denser and more varied growth of forest-trees, from whose cool, dark depths comes a musical jangle followed by long clear notes, for this is the home of the hermit-thrush. Here on rich, black soil the magnolia rises among cedars, above thickets of alder and azalea, and wherever they can find room giant ferns spread their fronds in tropical exuberance. The road is replete with interest as it compasses the borders of the swamp. Crowding mosses and trailing vines take up the roadway, till we reach the edge of an open marsh, where myriads of pendent ruby globules hang low over lush beds of moss and grasses—the barren has ended in a cranberry bog, where a feast of beauty is spread.

These open, wet, half-cultivated meadows are favorite haunts for other interesting forms of plant-life. Pitcher-plants, the edges of their brims stained with carmine, and rare and beautiful grasses grow here, and in just such localities throughout the state a floral life is found that is the wonder of the botanical world. Geological disposition of strata and the slope of our low-lying seaboard toward warmer latitudes partly account for this extensive and beautiful flora. East Indian lilies take kindly to these temperate waters; beautiful orchids and

asphodels, *Pyxidantha barbulate* and the rare helonias grow in the swamps and marshes, and bright-hued flowers and grasses give to low meadows fringing the Atlantic a red autumnal tint.

Even in early spring-time New Jersey bogs and byways are plentifully sprinkled with flowers. The "pyxie" in russet winter foliage, with its pink buds half-blown as early as March, is found in moist open spaces about the wood, sharing its bed with the mosses which it slightly resembles. The leather-leaf's dainty, brave white blossoms are sometimes found amid the snow, and roseate, waxen clusters of arbutus peep from beneath their weather-bronzed foliage very early in spring. The white banners of the dogwood are unfurled all through our woodlands; rose-red honeysuckles tint the thickets; columbine, anemones and wild geraniums grow about sunny slopes and forest ways, and big blue wood-violets with golden stamens are waiting along the old roads.

Can one wander too far in these half-broken wilds, or fear to lose one's way, with such a multitude of upturned faces in attendance? If, at a glance, one could see the characters of beauty inscribed upon forest-floors and the white sands, one might read the claim of New Jersey to the title of "Garden State" in its floral life, as well as in its wealth of fruits, roots and melons. Wreaths of white laurel are twined amid the shadows of the wood and overflow its edges in clouds of pink and white bloom—a study of delight in the rough wild setting of the thickets. There are patches of blue in meadow-courses where the iris is unfolding its pennons among bright green water-sedges; crowslips and ranunculus are out in the marshes, and golden hudsonia is stewing the sand-barrens with the hieroglyphics of the sun. Pretty red moccasin-plants grow about the wood, in just such places as may have been pressed by the footsteps of a departed race,

suggesting the fancy that their curious sacks hold the archives of the forest and memorials of a people that a careless civilization has well-nigh forgotten.

The robe that midsummer wears in New Jersey is perfumed with sweet herbs and the flowers of white alders, and brodered with blue-bells and pogonia, sundew and hoary pea, foxglove and spirea, polygala and purple starwort blossoms. Tawny tiger-lilies bloom on upland slopes, and in meadow-pools we see the white barges of pond-lilies afloat with their freight of gold. Clematis-blossoms make beautiful the hedges, gerardias in roseate vestments bend for recognition, and meshes of golden dodder are tangled across meadow-paths. The tidal-water of this level country is an open sesame to the finny tribe. Bright, iridescent creatures swim above beds scooped in the shining sand, and darker forms lurk in shadowy places where arrow-head and pickerel-weed grow.

Autumn adds many beauties to our list of wild-flowers. The cardinal-flower here lights its torch and flames along the ditches, and the meadow-beauty blooms near the water's edge. Finely-developed species of goldenrod give an August glow to our waste lands; bur-marigolds make gay the creeks and ditches and blue gentians bloom along wood roads.

Even the winter season in New Jersey is a delightful one for being outdoors. One finds innumerable tiny-leaved plants with but a touch of russet, despite the frost and cold. Evergreen cedars, pines and laurels brighten the brown and gray tints of winter, and even December has some gay bits of color. The scarlet berries of the black alder blaze like forest-fires in gray and leafless thickets, masses of dark green privet are abundant, and cranberry and sand-myrtle prove as hardy as they are beautiful, in the ordeal of winter's cold. Trailing its long red runners over mosses, green and gray, the swamp-blackberry still holds its pretty leaves, and winter-green with its glowing crimson berries brightens the southern side of the swamps.

When the swamps are denuded of foliage, the winter season discovers in the world of lichens and mosses a life beautiful and unique. Over old trunks these forms run riot in tufted silvery lace-work, or hang in weird gray festoons from branches of trees. One occasionally sees serious-looking owls perched about among the lichens and mosses in winter. On western New Jersey borders winter birds are plentiful; and with so much of the beauty of bird and plant-life left us, winter does not seem bleak or long.

Gloucester Co., N. J.

KATE CLEMENT.

FRUIT AND VEGETABLE NOTES.

PRACTICAL HINTS BY PRACTICAL MEN.



LAST SPRING, after my grape-vines had made a growth of about six inches, they were severely cut by a late frost. Most of them started out again, but made only a sickly growth, and by fall those that did survive were not as large as they were the year before. A fact that made this all the more vexatious was that among them were quite a num-

ber of new varieties sent me for testing. I had hoped to make a report of these next fall. The advantage of elevation was well shown in this case. The two upper rows, which are about 50 feet higher than the valley, were but little hurt; while the next row, only seven feet lower, and all rows below it, were frozen.

Some people have an idea that at a certain elevation grapes will not rot. I had an acre of Concord vines 500 feet above the level of the Missouri river, and expected they would escape the disease; but after bearing two crops of sound fruit they rotted as badly as any on low ground. Now that we have this disease under control by spraying, grape-growing will be plain sailing for some cultivators, but not for me; to make sure of the fruit I must bag the clusters. There are 100 swarms of bees within as many yards of my old vineyard. The birds, wasps and yellow-jackets puncture the skins of the grapes, and then the bees go to work and soon suck the sweet juice out. I have had a row of 20 Martha grape-vines cleared of fruit in two days. There were probably 200 pounds

of grapes on the vines in the row. How much honey all this fruit made I cannot say; but I did get some of the honey after paying for it in grapes and again in cash. There are two reasons, however, why I do not murmur about this: First, I love the bees, and consider them entitled to all they can get, as they are workers and honest. They are the property of my sons, who have quitted horticulture for bee-keeping. Second, I give credit to the bees for the successful crops of cherries we have gathered since their advent—a treat we seldom had before they came.—S. MILLER, *Missouri*.

SMALL FRUITS IN NEW ENGLAND.

A favorable season and thorough cultivation produced very satisfactory results in New England during 1891. I find by consulting the reports of experiment stations that the conclusions arrived at in regard to some varieties of fruits vary so widely that no definite idea of the fruits' real merits can be gleaned from them. This, perhaps, is mainly due to differences in locality, nature of soil and peculiarity of season, and goes to show the importance of individual tests for ascertaining what varieties are best adapted to certain soils and localities. One trial, however will not suffice for forming an intelligent opinion of the value of varieties tested.

My soil is rather dry for strawberries, and I find that long-rooted, vigorous varieties, like Cumberland, Glendale and Jessie, are best adapted to it. Gregg and Souhegan seem to be the standard varieties of black raspber-

ries, but in point of flavor and beauty they are inferior to some of the wild ones that used to grow on my farm in New Hampshire. Gregg is of no value to me, as red varieties sell better than black ones in this market. The best variety of cap raspberry that I have tried is the Shaffer. Bushes of this kind bear heavy crops of fine fruit of large size, and continue in bearing for a long time. For delicacy of flavor the Golden Queen is unsurpassed. It has proved with me to be very hardy, vigorous, a good bearer and an excellent variety for home use.

The season was an especially favorable one for ripening grapes. Those trained on the south side of buildings usually ripen a week in advance of others in unprotected positions; but there was no difference the past season in the time of ripening. Moore Early, Cottage, Worden and Concord make a reliable succession of the Concord type. Lee Early (a valuable early red grape that originated here), Brighton, Delaware and Vergennes give me a supply of grapes of superior quality throughout the whole season. The Vergennes I have kept until March 23 in good condition. I consider Lee Early, Worden and Vergennes my most valuable grapes. Eldorado is the best in quality, but a shy bearer with me. Martha is good, but is too late.—WM. C. LITTLE, *Mass*

AN INDIANA AMATEUR'S SUCCESS.

The first tree I ever planted was a Hyslop crab, set out on my town lot six years ago. Now I have on the same lot 14 varieties of plums, 8 of peaches, 5 of pears, 35 of apples and 3 of cherries; besides walnuts, hickories, mulberries, persimmons, figs and other trees, deciduous and evergreen. A walnut planted on Thanksgiving Day in 1886 is growing finely. A mulberry put into the ground July 7, 1889, is now one of the handsomest lawn-trees in this section of country. Those samples are merely mentioned to show that trees can be made to live in adverse circumstances when proper care is exercised in planting and cultivation. I am growing the filbert and hard-shelled almond with every prospect of getting them to fruit in time. An outdoor fig tree is now 13 feet high, and will probably bear this year. I give it winter protection by bending it down and covering it with earth.

In the line of vegetables not generally grown here in amateur gardens, I have succeeded with celery, growing the plants from seed. I find it about the most profitable crop in the garden. Cauliflower is difficult to grow here. Very early spring plants have given me some nice heads, but the green cabbage-worm must be fought early and often. The same is true with egg-plant, except that the enemy is the flea-beetle. I have tried soap-suds, ice-water, hot water, red pepper, tobacco-dust, tobacco-tea, air-slaked lime, road-dust, hellebore and other remedies, but all without success.

Grape-growing is my hobby. For years it was said that grapes could not be grown in this climate. I have the Early Victor and Moore Early, the earliest ripening outdoor grapes in this latitude, and Jefferson and Vergennes, the latest. For four successive years all have borne abundantly. A grower a few miles distant from

me has had good crops of Concord for 14 consecutive years. Another grower in this locality has 10 acres, embracing 50 varieties, and gathers full crops every year.

On a lot measuring 100x265 feet, with a house built in the center and a barn and other out-buildings in the rear, I have 65 trees (none of which, excepting the plums, are crowded), 65 grape-vines, a good supply of raspberries, two square rods of strawberries, a dozen currant-bushes, half a dozen dwarf juneberries, half a dozen rhubarb plants, a good supply of herbs, and garden room for enough choice vegetables to supply a medium-sized family. I tend it myself, and besides give ten or more hours to newspaper work every day.—AMATEUR, *Floyd county, Indiana*.

GIRDLING THE GRAPE.

In order to solve the question whether it is possible to continue the operation of girdling long without injury to the ripening roots of the vine, I have continued this treatment for a number of years. Previous to the swelling of the buds last spring no difference could be detected between girdled and ungirdled vines, but soon afterwards we noticed that the vines which had been girdled the previous year broke unevenly, that the clusters of buds were smaller, and the early growth of the canes less vigorous. These defects became more and more apparent as the season advanced. While all were entirely healthy, the vines that had been girdled in 1890 were thinly set with fruit and grew smaller and weaker canes for fruiting in 1892. The favorable weather of September enabled these canes to make up their deficiency in some degree, and at the close of the season they all looked well and were perfectly ripened. None of them were girdled this year.

To determine the influence of last year's girdling I kept the fruit grown upon the different plats separate. Plat No. 1 had never been girdled; No. 2 had had one-half of each vine girdled; and No. 3 the whole of each vine. Each plot contained 120 vines, and covered about 11,500 square feet. All were contiguous and fairly comparable with each other. After the leaves had fallen I measured with calipers the diameter of each cane of these 360 vines, 720 in all, at half their length (three feet) from the trunk.

In the following table, column 1, 100 is assumed as the product of normal ungirdled vines. In columns 2 and 3 appear the percentages of the half-girdled and the full-girdled vines respectively. The difference between the total fruit and that denominated first-class consisted of small and fragmentary clusters which could be disposed of only at inferior prices. The quality of all was satisfactory:

	Ungirdled.	Half girdled.	Full girdled.
Total fruit	100	83	62
First-class	100	77	59
Diameter of new canes	100	97	87

It seems to me that the results as here given go to show that wherever a grape will ripen fairly by natural processes, girdling is a complete draft upon the future, without prospect of means to pay it through the gains of the present. With me the increase in weight of the fruit

was more than offset by the waste through split berries and the consequent extra time required to prepare the whole for market. There was no gain in price from the ten days' earliness. The Concord does not reach market soon enough to command early prices. If, therefore, there is nothing realized from the operation during the same season, and there follows a loss of nearly or quite 50 per cent. in the value of the product in the succeeding one, then it can only be commended for situations where it is impossible to ripen the fruit naturally, and where, after one season's girdling, the vines may be allowed a year in which to recover through generous feeding and entire abstinence from fruiting.—DR. JABEZ FISHER, *Mass. Experiment Station.*

WHAT AND WHEN TO SPRAY.

For the Apple.—Spray for the destruction of the spores of the apple-scab and leaf-blight with sulphate of copper, 1 pound to 25 gallons of water; or sulphate of iron, 1 pound to 2 gallons of water. For the destruction of the tent caterpillar, canker-worm and bud-moth use the Bordeaux mixture, one-half the strength of the old formula, with Paris green, 1 pound to 150 gallons of mixture, just before the blossoms unfold; and the same for the codling-moth as soon as the petals have fallen. Make a third application of the Bordeaux mixture and Paris green in about two weeks from the time the petals fall, if there have been heavy rains since the last application. Then use the ammoniacal carbonate of copper (formula: 6 ounces of carbonate of ammonia and 1 ounce of carbonate of copper), 1 pound to 50 gallons of water, at intervals of from 2 to 4 weeks, according to the weather, until the middle of August. We would recommend the trial of sulphate of copper, 1 pound to 500 and 800 gallons of water, after the middle of June. Should no rain occur after the use of any fungicide or insecticide, no further application need be made until it does rain; but if the interval has been long, spraying should immediately follow a heavy rain.

For the Pear.—For scab, leaf-blight, cracking of the fruit and codling-moth the same treatment should be given as for the apple, except that no Paris green need be used till after the petals have fallen, and only two applications of that need be made. If the pear psylla should appear, spray the trees thoroughly with the kerosene emulsion, 1 part to 20 parts of water. Dr. Jabez Fisher's formula for this emulsion is one-half pound of common yellow or rosin soap dissolved in a gallon of boiling water, to which is added 2 gallons of kerosene, and the whole churned together by means of the hydro-sprayer or other syringe for from 3 to 5 minutes, producing an emulsion and separating the kerosene into minute globules, the whole looking somewhat like whipped cream.

For the Plum.—We would advise the same treatment as given to the apple and pear for the plum leaf-blight, the black-wart and the fruit-rot. For the plum-curculio use Bordeaux mixture, one-half strength, with Paris green, 1 pound to 200 gallons. One application of the ammoniacal carbonate of copper should be made after the middle

of August, to prevent the rotting of the fruit and the leaf-blight.

For the Peach.—To destroy the plum-curculio, spray with the Bordeaux mixture, one-fourth strength, and Paris green, 1 pound to 200 gallons. For the fruit-rot, spray with the ammoniacal carbonate of copper, 1 pound to 50 gallons of water. Try the sulphate of copper, 1 pound to 1,000 gallons of water for the fruit-rot.

For the Grape.—Spray with the concentrated solution of sulphate of copper every part of the vines and trellis before the buds unfold. Just before the blossom-buds unfold, spray with Bordeaux mixture, one-half strength, with Paris green, 1 pound to 100 gallons. As soon as the petals have fallen, spray again with the same; then at intervals of about two weeks use the ammoniacal carbonate of copper, 1 pound to 25 gallons. Try the sulphate of copper, 1 pound to 500 and 800 gallons of water, at the same intervals.

For Blackberry and Raspberry.—For the anthracnose of blackcaps and the yellow-rust of the blackberry, use the concentrated solution of sulphate of copper before the buds open. Then spray with the Bordeaux mixture, one-half strength, or the ammoniacal carbonate of copper, before the blossom-buds unfold and two or three times after the fruit has been gathered, at intervals of two or three weeks. The first disease attacks the canes principally, and more attention in spraying should be given to them than to the leaves.

For the Strawberry.—Spray with the Bordeaux mixture, one-half strength, and Paris green, 1 pound to 100 gallons, for the leaf-blight and "spotted paria," as soon as growth begins in the spring. Just before the blossoms open use the Bordeaux mixture same strength, but no Paris green. After the fruit has been gathered, Paris green and Bordeaux mixture should be used if the bed is to be carried through another season.

For the Potato.—As soon as the larvæ of the potato-beetle begin to appear, spray with the Bordeaux mixture, one-half strength, and Paris green, 1 pound to 100 gallons. Use the same mixture as often as they appear in sufficient numbers to be injurious. If the weather should be warm and moist, applications of the Bordeaux mixture, one-half strength, should be made at intervals of from one to three weeks after the vines have blossomed. Or use the ammoniacal carbonate of copper, 1 pound to 50 gallons of water, and spray even if there are no larvæ present. The sulphate of copper, 1 pound to 500 gallons, should also be tried on a small scale to test its value.—PROF. S. T. MAYNARD, *Mass. Experiment Station.*

FIGHTING THE CABBAGE-MAGGOT.

Last season my cabbage and cauliflower plants were set out on sod-ground which had been plowed the previous autumn. They were stocky plants, grew well from the first, and the field of four thousand cabbages and cauliflowers looked quite promising.

One warm day, however, I found many of the plants wilted. I knew at once that the white grubs were working in the stems and roots, and that unless heroic meas-

measures were adopted the whole patch would be doomed. Too much work had already been expended on them to let them go without an effort. So taking between us a coal-scuttle filled with a mixture of unleached ashes and bone superphosphate in equal parts, my man and I got down on our knees and began operations. Taking a row each we removed the earth from around the stem of every plant so as to expose as much of it as possible without disturbing the roots. Then rubbing the thumb and finger quickly up and down the stem, we made short work with the maggots embedded therein. Next, the stem and exposed roots were thickly dusted with the mixture we carried. Last of all, the earth was replaced around the plants with a quick movement of the hand. After a little practice this could be done very rapidly, and we went over the whole patch in a day.

Many of the plants were too far gone to be saved, but those not too badly honeycombed soon recovered. The result was highly satisfactory. Freed from the incubus of the maggots and invigorated by the mixture applied, the plants took a fresh start and were soon out of danger; and the cabbages were finer and more solid than any I had ever raised. To make this remedy effective it must be applied when the first sign of the presence of the grubs is noticed. A few days delay may ruin the crop.

—SUBSCRIBER.

EFFECTS OF COAL-TAR ON LETTUCE.

Among the several varieties of lettuce grown in our greenhouse last winter was a plant of the Grand Rapids variety. All the lettuce-plants seemed healthy and to be growing well, until one day I noticed that the Grand

Rapids had a peculiar appearance. A few days later the ends of the leaves were badly wilted. I called the attention of our botanist to the fact, and he made a careful examination, but could find no signs of fungous disease. No variety was affected except the Grand Rapids. The leaves of this variety, where they had wilted, finally dried up and broke in pieces; the plants recovered and began to grow again, but their growth had been so much retarded that they did not amount to much.

About a month later the same thing happened again to our plants of Grand Rapids lettuce. Then I noticed that the dying of the plants occurred about the time that we put strips of tarred paper around under the greenhouse benches to darken our mushroom-beds. I put about two inches square of the paper with some Grand Rapids lettuce, under a bell-glass that held about one-half a cubic foot of air. In a short time the lettuce under glass with the paper wilted as it had done in the benches, and then died. We had put nearly enough paper in the house to give the same ratio to the atmosphere as was given under the glass, but the ventilation probably saved the lettuce. The Grand Rapids seems to be tenderer than other kinds of lettuce. I placed several varieties under a glass case with some tarred paper, and succeeded in killing every plant of Grand Rapids without injuring the other sorts in the least. The Grand Rapids lettuce also shows a marked contrast with other lettuces in another respect. With us it remains entirely free from mildew, when other varieties are badly affected; thus showing strength in one direction and weakness in another.—E. C. GREEN, *Ohio Experiment Station.*



HORTICULTURE AT THE WORLD'S FAIR.

NOTES ON THE WORK IN CHICAGO.

HORTICULTURAL exhibits for the World's Columbian Fair in 1893 will be much better than they were for the Fair of 1876. A foremost European authority remarked, while attending this fair, that, had it not been for the contributions of one leading American nursery, the horticultural exhibit would have been indeed discreditable to our nation. With Chiefs Samuels and Thorpe to carry out the plans that have for some time been maturing in active minds, there is every promise for the greatest exhibition of horticultural objects that the world has ever seen. Still, since the display must primarily depend on the assistance of all engaged in the trade of horticulture, it well becomes all thus

engaged to exert their very best individual efforts towards the success of this department.

A feature of the World's Fair that will be sure to attract great attention is the one-acre rose garden, a ground plan of which is given on page 355. In the center of the garden is to be a pagoda, reached by four main walks. At the four places of entrance, marked A, the walks will be spanned by arches of wire, covered with climbing roses. The dotted lines, marked T, that define the garden proper, will consist of wire trellises, which will support climbing and wall roses.

THE "Wooded Island" in the Exposition grounds is beginning to assume the character of a gigantic flower-garden. Already the floricultural department has received 27,000 rose-bushes and other plants, several thou-

sand of which came from abroad. These have been transplanted on the island.

THE Australian exhibit at the Fair will include some tree-ferns from Sidney, New South Wales. These have always been a popular exhibit at London expositions. Chief Samuels has been assured by Arthur Renwick, commissioner for New South Wales, that a number of rare specimens will be sent. The ferns vary in height from eight to fourteen feet. At the close of the Exposition many of them will be given to the park commissioners of Chicago.

FROM the Royal nurseries for Ireland information has been received that two cases containing 1,550 plants have been shipped to the World's Fair. The announcement came through Alexander Dixon & Co., who maintain the nurseries. It is also stated that H. Cannell & Son of Swanley, England, have sent one hundred varieties of herbaceous peonies and a large number of perennial phloxes to the fair.

IDAHO's exhibit at the Fair will include a practical illustration of the system and benefits of irrigation. A large section of sage-brush soil will be transported to Chicago. Through this ditches will be run, and trees, fruits and flowers will be grown in the soil by the irrigation system.

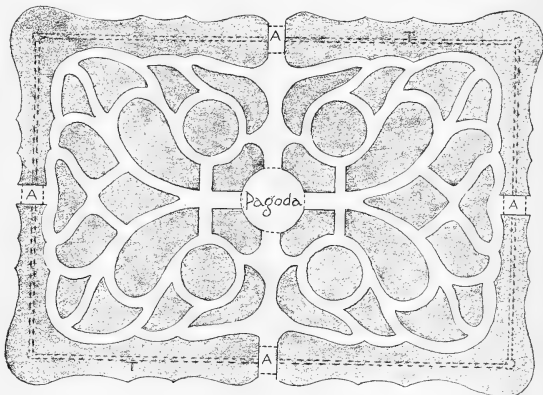
A "BIG TREE" (*Sequoia gigantea*) has been selected in Tulare county, California, for exhibition at the Fair. A committee of the board of trade, after an extended tour of inspection, chose a tree measuring 87 feet 9 inches in circumference at the base, 85 feet at 5 feet above the ground, and 65 feet at a height of 16 feet. A 100-year-old bearing orange tree, from San Gabriel, is one of the exhibits announced from California.

THE chief of the horticultural department gives the following information for intended exhibitions: There will be eight large propagating houses, covering a space of 20,000 square feet. Limited room in these houses will be assigned to exhibitors who will propagate plants of unusual merit, which cannot be transported from their distant homes, and the remaining space will be devoted by the department to growing a reserve collection of plants with which to replace specimens that have ceased to be attractive, and for storing those whose season of beauty has passed. A large number of cold-frames will occupy adjacent grounds, to be used for cultivating pansies, various annuals and bulbs, and for the

storage of half-hardy plants. The classification provides for complete exhibits of greenhouses, hothouses and conservatories, with best methods of heating and ventilating them; and it is expected that many of these will be arranged in a suitable manner for exhibiting and developing the growth of various select plants.

The space assigned to the department for exhibits of trees, shrubs and plants that will be hardy in the open ground during the time of the exposition, embraces about 25 acres, and includes the greater part of a beautiful island that is centrally located, artistically laid out in beautiful walks, and the choicest part of the Fair grounds. Through this entire area will be placed a complete network of pipes to supply all the water necessary to insure vigorous and healthy growth of all trees, shrubs and plants.

EXHIBITORS in different classes should, when possible,

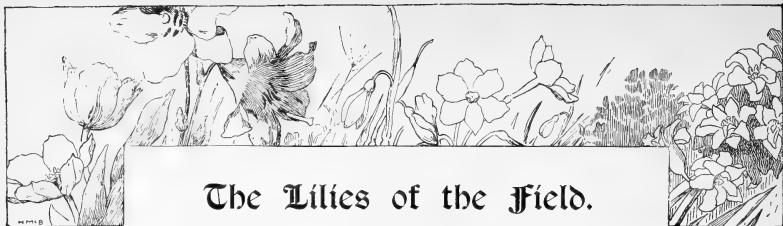


ROSE GARDEN AT THE COLUMBIAN FAIR.

combine their interests, and thereby show not only the articles exhibited but the various ways in which they will be used; thus, heating apparatus in connection with hothouses, vase plants in artistic vases, climbing plants on wire trellises, etc.

FOR the purpose of preserving a uniform manner of mounting dried specimens of plants, circulars giving illustrations of cards and other information will be mailed to all who apply for them. All exhibits intended for competition must be placed in the horticultural building or upon the grounds assigned to the department. Premiums will not be awarded by the Exposition to displays made in the state buildings.





The Lilies of the Field.

HOW THEY GROW: WORK AMONG THEM.—Our early spring garden is gorgeous enough with the old-fashioned bulbs that gladden our eyes in March or April; that is to say, when Jack Frost and his brother Boreas condescend to retire early enough to let us know there is such a season as spring. This year the hyacinths were just unclosing, and the daffodils debating whether to smile or not, when a blinding snow-snow storm came, and we all looked for the complete destruction of these unfortunate flowers. However, the snow did not stay long enough to cause much injury either to plants or flowers, although it was discouraging for the time being.

Early bulbs, when planted the previous autumn, make a very effective filling for beds occupied during the summer by tender plants, yet many of them are best left undisturbed year after year, because these make their best development in large clumps. For this reason we like to use them about the shrubberies, sometimes forming a border around the late-flowering shrubs and evergreens, or else dotted irregularly among these plants in places where they get the spring sun. Bulbs which have been forced in the house are treated this way, being put outdoors when their flowering is over. After resting a season or two, they bloom nicely, and do much to brighten up a group of dark conifers. The varieties of bulbs for early use are almost endless. The little Siberian squills and grape hyacinths should not be neglected among showier sorts, while narcissuses alone are varied enough to form a garden. It is especially desirable that the narcissus should always be grown where it will be undisturbed year after year. The old-fashioned, double trumpet daffodil is one of the best for naturalizing in masses, being very hardy and an abundant bloomer. Another good sort is *Narcissus poeticus*, the Pheasant's-eye daffodil, both single and double. The Hoop-petticoat narcissus (*N. bulbocodium*), and the polyanthus varieties are tender, and therefore need covering in our climate, but it is easy to select plenty of perfectly hardy sorts, if these are preferred. In naming bulbs dotted about the lawn, we should not forget the spring and autumn-flowering crocuses. The autumn crocus (*colchicum*) is quite an oddity, with its checkered blooms sent up in the fall quite independently of its leaves, which do not come up until spring.

However, the spring bulbs are only a memory now, and though June is a trifle early for many of this class, our garden offers some very showy flowers, the most

conspicuous being the irises, or flower-de-luce. The iris may be divided into two classes: the bulbous and the tuberous-rooted varieties. They are all impatient of disturbance, succeeding best when naturalized in masses. Planted in a sunny situation, where protected by shrubs from north and east winds, they succeed wonderfully; flowering more abundantly each year. The Japanese iris (*I. Kaempferi*) is one of the showiest sorts grown, some of the varieties having flowers ten inches across. We grow this, bordering an old-fashioned lawn, in a delightful tangle, where daffodils, iris, pæonies and flowering shrubs live in harmony together. It is dreadfully irregular, of course, and as far removed as possible from show-gardening, but it is very charming—just such a border as Lord Bacon would have approved. The Japanese and Iberian irises may also be used in a semi-aquatic situation, being planted in peat with an understratum of clay. The writer recalls a little aquatic garden where the water was surrounded by a border of iris and *Cypripedium spectabilis*, having a background of *Lilium Canadense* and *Caladium esculentum*. Most of our lilies are much at home in the wild garden.

The Siberian iris is another June flowering sort; the color a bright lilac, veined with purple. These are all very hardy. Of the bulbous section, both *Iris Persica* and *I. reticulata* are early bloomers, flowering in April. They are both very fragrant—suggestive, indeed, of violets. We can hardly suggest a better example of the lilies of the field than is offered by the iris, for certainly the glory of Solomon himself could not excel its gorgeous array. Some one calls it the orchid of the garden, and the comparison is not very far-fetched, for many iris flowers suggest some of the showier orchids, both in shape and coloring. Since the conventionalized iris, or flower-de-luce, is now the most popular of all decorations, the plant itself should be first favorite in the garden—fashion often gives a rank which beauty alone cannot attain.

As for lilies proper, we shall have our bravest show a month or two later. The finest lilies we have ever seen outdoors were grown in a stiff soil, with an understratum of clay. Both Japanese and Californian varieties were grown here, and their luxuriance was amazing. The most gorgeous sight of all was a mass of *L. tigrinum splendens*, with shining black stems six feet high, supporting a regular pyramid of glowing flowers. This bed always attracted much attention, its

only rival being an equal mass of *L. auratum*. This is often termed the "Queen of Lilies." It is one of the many floral beauties for which we must thank Japan. The broad golden band, extending from the base to the tip of each petal, may be regarded as its one unchanging glory. The flower has been greatly improved since its first introduction, both in size and coloring. One variety has quite a marked violet stripe, and the velvety dots vary a good deal in color. Not the least among its good points is its perfect hardiness, but this may be said of most Japanese lilies.

It is hardly necessary to remind bulb lovers that nearly all of this class should be planted in the autumn. October is a good month for such operations, and there is usually plenty of fine weather, though it is not quite so romantic to stay at home and spade up a lily bed as to wander off in search of autumn leaves. One can hardly expect to grow every variety with equal success, especially since they vary a good deal in choice of soil, but most of them flourish with ordinary care. One point to be observed, however, is deep planting. Large bulbs, such as *L. auratum*, should be planted eight to twelve inches deep; smaller bulbs, four to eight inches. Another point to be observed is the purchase of good strong bulbs, which should be planted before they have time to become shriveled. It is a mistake to buy cheap, job-lot bulbs of any kind; many fall into this error in purchasing winter-blooming bulbs for the house, and much dissatisfaction ensues, which usually reacts, not very justly, on the seller.

JUNE WORK AMONG BULBS.—The spring blooming of Dutch bulbs is always so delightful and satisfactory that it gives us an enthusiasm for bulb-planting. Often we wish that our entire gardens might be planted with hardy flowering bulbs and shrubs, so sure are they to bloom, so independent of our care, and so brightly and delicately beautiful.

Autumn planting does not monopolize all the bulbs, nor yet the spring season. If, perhaps, the dweller in cities comes with June to his country home, there are yet some bulbs, which planted now, will bloom before frost. In the southland, where the summers are long, gladioluses, tuberoses, tigridias and dahlias are planted for succession throughout the month of June. But north of Washington the tuberose and dahlia have not time to develop bloom outdoors after such late planting. Tuberoses that are to bloom for the early winter or holiday season may be planted at the north in June, preferably in sunken pots, so that their roots may not be disturbed when they are lifted in September, to grace the window or conservatory. They will not need to be hurried forward with copious watering and stimulants, as are the bulbs for autumn outdoor bloom. If planted in rich soil, full sunlight, and given water occasionally in dry weather, the independent bulb-spirit in them will carry them safely through the summer and perfect a fine spike of buds before September. The opening of these buds can be hastened or retarded at will, in proportion to the amount of light, heat and water given after the

plants are lifted from the border. Tuberoses that have been started in the house for early autumn blooming are turned from their pots into outdoor beds early in June.

The gladiolus is a prime favorite among bulbs for summer gardens. It is a flower that any one can grow, and is lovely enough to satisfy the most exacting of tastes. Delicate shades of color, and deep, dark, rich and brilliant ones, all come within its range. The gladiolus seems to have adopted America as its chosen country, for it seems to thrive so well in no other. It has been greatly petted and improved in France, but in Europe is subject to a disease which seldom attacks it upon American soil; to plant a gladiolus bulb here seems to insure a good spike of flowers. It is not strange, therefore, that this bulb has become so popular among florists for exhibition purposes and floral decorations.

For early bloom the gladiolus is planted at the north during May. Southern growers begin to plant in April and continue planting, at intervals of a week or more, until June 30. Bulbs planted later than June 15, north of Washington, would hardly bloom before frost.

The gladiolus grows well in any rich well-drained soil. Its flower-spikes are larger and more richly colored if the bulbs are planted in a sunny situation. For best effects, plant in large clumps, setting the bulbs four or five inches deep and the same distance apart. They will require but little care until blooming time, when their rich, heavy spikes of flowers will need some support. This may be given by means of stakes, if planted in clumps, or wires, if planted in rows. Named flowers of any kind are usually most satisfactory, but unnamed collections of gladiolus in assorted colors often give fine flowers. The only objection to these assortments is that there is so little difference between many of the shades of color. Some of the newer varieties of gladiolus are both fine and costly, but a number of old, standard varieties that cost only 15 or 20 cents each, will give flowers quite as beautiful in their way as varieties costing \$4 or \$5 each. Snow White, lately introduced, and *Gladiolus Colvillei*, a fine little white dwarf for winter forcing, are nearer pure white than any varieties grown. After frost in cold climates, gladiolus bulbs should be dug, dried, and stored in a dry place for winter keeping. In the south they are merely given a slight protection of leaves or evergreen boughs.

Tigridias require the same treatment as gladioluses, and like them, may be planted in June. Their gayly-spotted flowers, of shining surface and silken texture, are airily poised upon slender stems, so that, fluttering in a gentle breeze, they look much like butterflies. This butterfly beauty lasts but for a day; the flowers open early in the morning, and at sundown hang withered. But through the sheathing spat at the base of the withered flower other flowers are sent up each day, so that a spike really blooms for a week or more. The tigridias are old-fashioned flowers, known in our grandmothers' gardens as Sicilian lilies. I remember one sweet old garden where, when a child, I counted 100 of these airy blossoms dancing above a single clump.



As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc., the publishers make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this magazine will be given. The articles will be judged only by the practical and useful ideas or suggestions in them. Besides this premium, the gain accruing to readers should be a sufficient inducement to contribute such notes.

I. LITTLE TWIGS.

"May is a pious fraud of the almanac,
But June is full of invitations sweet."
—Lowell.

AN AMERICAN "ROSE SOCIETY" has been proposed. A good suggestion.

HORTICULTURE is to be taught in the public schools of England.

ANNUAL CHRYSANTHEMUMS are best when grown in poor soil.

FOR FRAGRANCE the ten-weeks stock is not well enough appreciated.

SOMEONE has aptly said that a garden is an effort after the lost Paradise.

THE AVERAGE PERENNIAL will winter better if no seeds are allowed to ripen.

NO USE planting egg-plants unless the ground is actually filled with manure.

IRRIGATION is an important question that now puzzles us. How is it to be accomplished most easily and at least cost?

THE JESSIE STRAWBERRY I find much better in every respect when grown on clay-loam than on sand.—E. M. MILLER, *Ohio*.

ROSES WILL GROW WELL in sod, if the sod is dead and inverted. Do not judge your rose-plants by the blooms of the first year.

FLORICULTURE is a fine art which all may study. Mignonette will flower as sweetly for the poorest child as for a millionaire.

THE INDUSTRY GOOSEBERRY on sandy soil seems to be a slow grower and shy bearer, while on rich clay loam it bears abundantly.—E. M. WARNER, *Ohio*.

PLANT A MASS OF LILACS, two dozen bushes—a good

assortment of varieties—in good soil, and see if in two years they are not worth twice their cost.

WHO IS NOT CHEERED in body and spirit as he moves through sunlight and shade, down fragrant garden paths, amid the bright shining faces of buds and flowers?

IF YOUR NEIGHBORS are not enthusiastic gardeners, flowery June is the time to interest them in the great art. Suppose at the same time you introduce this magazine!

LILY OF THE VALLEY beds are a feature of Mr. Elwell's Brooklyn garden. They are situated under the grape-arbor and contain 10,000 or more pips. They do quite well in this position.—J. A. B.

THE POPULARITY OF CACTUSES.—At the Philadelphia spring exhibition, the display of grotesque and unique cactus plants attracted so much attention that towards night it was impossible to get near them for the crowd.

PLANTING BEANS, RADISHES and various other things around cucumber and melon hills is often recommended for keeping off striped bugs. Sometimes it seems to help, at other times, when bugs are plentiful, melons suffer just the same.

AN ERROR.—The leading article in AMERICAN GARDENING for May on "The Development of Landscape" was, by a combination of oversights, credited to Bernard Barton, long deceased! The poem at the beginning should have been credited to Mr. Barton, but the article was written by George C. Butz.

JUNE PRUNING OF SHRUBS.—Spare the knife and spoil the bush applies to many shrubs. The best time for pruning the majority of May or June bloomers, is just after they have flowered. The old wood should be shortened or cut out, thus strengthening the young wood, which is to flower the following season.

QUICK RETURNS FROM PLANTING.—I have had walnut trees fruit in 8 years from time of planting seed, apple in 2 years from grafting and cherries in 3 years from budding. Last season, in Missouri, I saw fifty pears on a tree 2 years old from bud, and five blooms on an American chestnut tree 2 years old.—THOMAS BASSLER, B.S., *Kan.*

A NEW USE FOR TILE.—Common drain tile can be put to a very pretty use. Paint a light color, with the new enamel or metallic paints, and when dry arrange pretty colored scraps on the surface. Stand the tile on end, place a pot of ferns or flowers on top, and set it wherever it will be effective, in the hall, on top of staircase, or on the lawn.

THE FALL SHOWS.—Now is the time to begin training plants for the fall flower-shows, and each plant-grower should take in hand the training of some fine specimen plant. This is a much better plan than to neglect the show-plants now, and during the show season trust to a band of music, instead of fine plants, for enthralling visitors with interest in horticulture.

GOOD ROADS and fine gardening necessarily go together. The editors of this magazine solicit the cooperation of its readers in the promotion of the movement for the improvement of country roads. To this end we solicit photographs of good and bad roads, road-side scenes, road-side planting, etc. Brief descriptions of the scenes depicted by the photographs are also desired.

"**SAVE THE HAMILTON TREES,**" very sensibly urges the *New-York Tribune*, referring to the 13 trees which Alexander Hamilton planted as a memorial of the 13 original states, near One Hundred and Forty-Second street, New York City. Mayor Grant offers to contribute to a fund for the purchase of the ground where the trees are, and it is hoped that enough public-spirited citizens will join with him to save them.

UNION SQUARE in New York City, has been converted since April, into a flower-market for one hour every morning. The object is to enable private buyers to deal directly with growers of plants and flowers, instead of depending upon peddlers. This arrangement will be continued until some time in July. The idea of thus devoting a busy city square to flower-trading before the regular bustle of the day begins is a Parisian idea, and a good one. It could be adopted advantageously in many cities and towns of America.

AN ERROR NOTED.—In the April issue of *AMERICAN GARDENING* (page 251), under the heading "Garden Craft," the illustrations of clipped yews at Elvaston Castle and Levens are wrongly named. The upper illustration should be Levens instead of Elvaston Castle as named, and the lower one is taken from Elvaston. Besides the various forms of yew and box illustrated, there are at Levens two hedges of beech that are perhaps the finest in the world.—J. J. WILSON, *Lorain Co., Ohio.*

A FINE DOUBLE-FLOWERING PLUM TREE.—The *American Florist* recently illustrated a remarkable specimen of the double-flowering plum (*Prunus triloba*) that grows on the grounds of J. L. Temple, Davenport, Iowa. The tree has been planted twelve years, has a diameter of fifteen feet and is eight or ten feet high. Mr. Temple writes that the tree is very hardy and free from disease. He believes that thorough drainage of the ground is a sure preventative of the blight that effects this tree in some places.

THE JAPANESE are skillful, without doubt, in the introduction of effective groups in their landscape gardens; but if we may judge from an authentic drawing of an elaborate Japanese garden, in a recent issue of *Garden and Forest*, we must conclude that the gardeners of the sunrise land lack appreciation of two most delightful qualities in landscape—breadth and repose. We would rather go to England or France, than to Japan, for ex-

amples of effective landscape-gardening, if the illustrations we see of gardens of the latter land are to be relied upon, as undoubtedly they are.

HEATING GREENHOUSES WITH HOT WATER.—Should greenhouses be piped overhead or beneath the benches? Trials made to discover the advantages or disadvantages of these different systems have thus far given meager results. The Ohio Station reports that the snow melts more quickly on the house where overhead heating is practiced, and the plants in this house are rather taller than in the other, but so far as lettuce is concerned, the average weight per plant is about the same in the two houses. At present it would seem to be largely a matter of convenience as to which method should be adopted.

WINDOW PLANTS FOR EXHIBITION.—A writer in *Amateur Gardening* calls attention to the trouble that often arises between exhibitors of window plants, because it is not stated in the schedule how long a plant requires to be actually grown in a window to come under the window class. "That a rule of this kind is absolutely necessary to guard against such a contingency, all will, I think admit, as it is unfair to the bona-fide cottager who does not own a glass house, when another competitor places on the exhibition table plants which, until a few days previous to the date of the show, were located in some greenhouse."

II. THRIFTY SAPLINGS.

The Progressive Tomato.—Sixty years ago the tomato was not recognized as possessing culinary value. So eager is the Englishman of to-day to have the tomato on his table that, according to a reliable authority, more than one million square feet of glass is devoted exclusively to its cultivation, for market purposes, in the British Isles. The season there is unsuitable to the general cultivation of the succulent in the open air, so it is grown under glass. While this is a disadvantage in several ways, it is a gain in the one respect, that there is no great difficulty in prolonging the fruiting season until mid-winter. The price of the crop varies all the way from eight cents to fifty cents per pound. What would our grandfathers think of such a development in the "love apple" of their day?

Perennial Phloxes.—We now have them in brilliant shades, fine form, and immense panicles of bloom. It is pleasing to note that these deserving plants are growing in popularity. The lists of hardy flowering-plants in the catalogues are increasing in length from year to year, and this is a step in the right direction. The new mammoth varieties of perennial phloxes are quite desirable, and one can point with pride to a collection of the named sorts. Their culture is simple, as they do well in almost any place, but I have noticed them to be much finer when given a little shade and a moist soil. I think the best time to reset old clumps is in the fall, for they begin to push early in spring and should not be disturbed after they have grown three inches in height. Get new varieties early in spring, thus giving them a chance to establish themselves.—J. BASTING DIEMER.

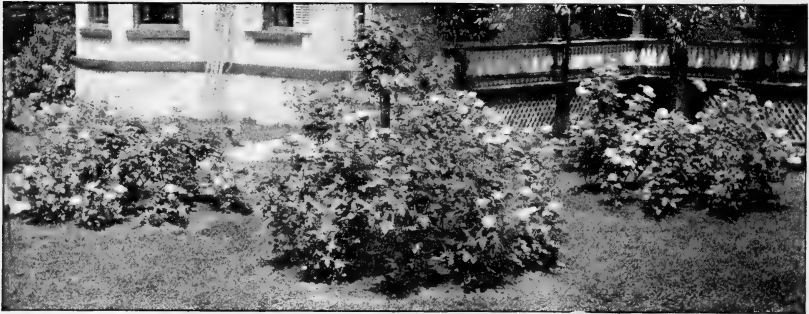
Petunias for Pails and Tubs.—If you want a pretty lawn ornament, paint a tobacco-pail a delicate lavender-gray, bore several holes in the bottom, put in two quarts of coarse charcoal, over this a layer of moss, and fill the pail with very light rich earth. In the middle, plant a thrifty young double-fringed petunia, preferably pink, set the pail in a sunny situation, give the plant plenty of water every day and you will be richly rewarded with beautiful blossoms. A large candy-pail similarly treated, holding three plants, is prettier; and an old tub or half-barrel, containing five, is prettiest. The plants may be all alike, or each one different; suit your own fancy about this, you will be pleased in any case.—ELDER'S WIFE.

Success with Tender Roses.—We have tried growing tender roses on the south side of a wall for several years, and bushes that we set out six years ago are doing well, though they have had no protection during the past winter. They are in an ornamental bed close to the house, sheltered by the front wall, have never been

to the shipment of trees and plants? Railroads, in order to protect themselves from becoming innocently liable for heavy damages, would have no alternative but to refuse any and all shipments of nursery-stock. Trees that even experts pronounce perfectly sound and healthy, might carry disease-spores by the million. Who will be bold enough to guarantee a tree to be free from them? The bill should be killed, and that thoroughly and forever. The Nurserymen's Association, which is taking active steps to prevent the passage of the bill, has our hearty sympathy, and should have the support of every horticulturist. Write your protest on a postal and forward it to your Congressman at once.

Large Trees Planted on the World's Fair Grounds.

—Six trees were recently planted on the grounds near the World's Fair horticultural building, as a permanent exhibit, and as a practical illustration of the successful methods of transplanting large ornamental trees. They are an elm, 50 feet high and 2 feet in diameter, commemora-



ROSE-BEDS ON THE LAWN. (Photographed in a Subscriber's Garden.)

moved, grow vigorously and bloom freely. We have Safrano, La France, Etoile de Lyon, Catherine Mermet, Beauty of Stapleford, Mad. Lambard and other varieties in this bed. One dark-red, semi-double, large-flowering sort blooms in clusters all through the summer and fall, beginning early in the spring; I have lost its name. Last spring the wood was alive to the very tips of the branches on all these bushes; we cut them back about half. March was a hard month for roses; the bushes were killed half way to the ground, but there's plenty of wood left for an abundance of bloom.—Mrs. WADE BURDEN, Mo.

Danger Threatening to the Nursery Trade.—Not only absurd in the extreme, but absolutely vicious, is a bill introduced into Congress, which lays heavy penalties on the shipment of trees and plants infested with any injurious diseases. Was the wise law-maker who fathered it aware that, should this bill be passed, its stringent provisions would strike a serious blow to the very life of the nursery trade, and practically put a stop

tive of General Sherman, brought from the woods in 1876; when 50 years old, and planted on the nursery-grounds at Rose Hill; a hackberry, 40 feet high and 2 feet in diameter, commemorative of General Grant, also transplanted from the woods in 1876; a linden, 40 feet high, with 18-inch bole; a willow, 30 feet high, having 30 feet of spread; a sugar-maple, 40 feet high, with 10-foot stem, and an ash, 35 feet high, with 14-foot stem. It required a force of 22 men and 12 horses to transplant the trees, and the cost of the work was about \$700.

City Street Tree-Pruners.—Tree-pruners are not always tree-butchers, although many of them are no less than this. Evidently the woman in Washington, D. C., of whom a correspondent in the *Florists' Exchange* speaks, does not discriminate between tree-butchers and the intelligent pruner. The writer says that, while the park commissioners of that city always succeeded in convincing Senators and other influential men of the necessity of pruning, they have met their match in an old Irish lady referred to, who objects to having the trees in front of

her house trimmed. She appeared recently at a second-story window with an old musket, and pointed it out just as the men were beginning operations. In less time than it takes to tell it, there wasn't a park commissioner or a man in their employ to be seen within a square's distance.

Cut-Flowers on Graves.—The trough form of flower-holders, designed for use on graves, is not yet so well known as it deserves to be. These flower-holders can be filled so that they will look very pretty by the use of a



FIG. 1.—TROUGH FORM OF FLOWER-HOLDER.

moderate quantity of foliage and flowers, as shown in the engraving (fig. 1) of the cross annexed, for there is no special incentive to crowd the flowers. Flowers placed

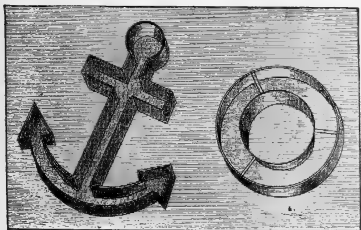


FIG. 2.—TROUGH FLOWER-HOLDERS.

loosely in water keep much fresher than if they are crowded. By placing a little sphagnum moss in the bottom of the troughs, and then filling them with water, the foliage and flowers may be kept fresh nearly as long as the water lasts. The holders may be made of zinc or tin, the first being preferable, on the score of durability.

The forms most in use are shown in the engravings (figs. 1 and 2). They can be made by any tinsmith at small cost. The metal should be painted green on the outside, so as to be inconspicuous when the designs lie on the sod.

Cost of Fighting Potato-Blight.—Potato-blight has become regular visitors. The Bordeaux mixture is now generally spoken of as our most effective weapon against them. The Rhode Island Experiment Station gives the following recipe for the mixture: "Six pounds of sulphate of copper (blue-stone) dissolved in four gallons of hot water. 2. Four pounds of lime dissolved in four gallons of cold water. When the former was cold, the lime solution was thoroughly mixed with it, and when desired for use, the mixture was diluted with cold water to 22 gallons, and strained. It costs, not including labor, 2½ cents per gallon. The amount

needed for a thorough spraying will depend upon the number of rows sprayed and the apparatus employed. The whole five applications required 300 gallons an acre. For one application, therefore, about 60 gallons an acre would be needed, costing about \$1.50. The Bordeaux mixture, as we apply it now, however, is only one-half the strength of that used by the R. I. Station, and consequently the treatment for blight will cost about 75 cents for each spraying. The market-gardener who raises 250 or 300 bushels of potatoes on an acre, and gets 50 cents or more a bushel, can well afford to make these applications, especially for his early crops. Not more than two or three sprayings will be needed to insure safety from blight.

Birds and Crops.—A careful observer in Buffalo—Professor E. E. Fish—gives as his estimate, that birds save to crops annually over \$100,000,000 in the United States. He remarks that "In many sections insect-life is still so abundant as to make human life almost unendurable. In other sections it is only kept in check by birds, and there is no place in which, were this check removed, it would not clearly hold the balance of power. The number of flies, mosquitoes, gnats and other small insects destroyed in one day, in a small area, by warblers, swallows and flycatchers alone, is beyond computation. From daylight until dark, all through the summer months, these birds wage incessant war on the enemies of man. It is known that the bird-hunters of Florida kill birds while they are rearing their young—because of the greater beauty of their plumage at that season—and leave the little ones to starve to death. One who went through the hunting-grounds speaks of the horror it gave him to hear the pitiful screams of these dying little birds."

New Tomato Diseases.—The tomato, also, has its blights. According to reports given by growers in the Pacific states, some of them lost every plant in their hotbeds by a disease, the true nature of which has not yet been discovered. The plants simply wilt and die. We believe this blight is closely related to that which has proved so destructive to cucumber and melon-vines in various parts of the country. Another fungous disease has made its appearance in the tomato forcing-house of the Cornell Experiment Station. "The first indication of the presence of this disease in tomatoes," says E. G. Lodeman in *Garden and Forest*, "is shown by the foliage. Small, often vaguely defined leaf-areas lose their dark green color, and become light green; these portions soon turn yellowish, and at the same time the leaf begins to curl, the outer edge being generally drawn downward. This causes the leaves to appear considerably smaller, which is quite characteristic of the disease. The discoloration of the leaves progresses slowly, while the portions which were first affected gradually die, giving the leaf a spotted appearance. The spots increase in size, their form becomes very irregular, and in this manner each leaflet succumbs. Upon the fruit, the first symptom is a translucent appearance of portions of the outer wall. The centers of these portions turn brown and then

black, while the disease spreads more or less rapidly at the outer edges, where a border of the translucent tissue is found. The fruit borne by diseased plants also appears to be more irregular than that upon normal plants."

Fine Effects with Vines and Shrubs.—The engraving given below is taken from a beautiful bit of made landscape on the grounds of Ellwanger & Barry, Rochester, N. Y. How simple the whole matter is. There is a fine stretch of green lawn, skirted by ornamental trees and shrubs, with vines festooning the only building visible. The same effect might be produced with common kinds of trees and shrubs, although we invariably commend a good variety of growths, for the reason

her much more. But who buys all these bulbs from the florists, I should like to know. The bulbs are hardy here and are left in the ground year after year. They increase very rapidly and are often in bloom the last of February. The rich crimson flowers of this amaryllis are quite showy, and if bulbs are dug in the fall and dried off, by planting them at intervals, we can have flowers for weeks in succession. There seems also to be quite a rage for crinum, white spider-lilies, etc. *Pancratium rotatum* grows wild here in ponds and flat, wet places, and is collected and sent to florists. The pan-cratiams are all very satisfactory plants, with flowers delicate and fragrant, and bulbs sure to bloom; but I



LANDSCAPE VIEW IN THE MOUNT HOPE NURSERIES, ROCHESTER, N. Y

that a garden or landscape becomes at once more attractive in detail by their use, while the general effect may not be improved thereby.

On page 360 is given another pleasing garden view of some rose-beds on a subscriber's lawn. How much better the verdure and bloom of the roses appear, when seen amidst the grass, than when placed in the midst of a cultivated tract of considerable area, as is usual.

Demand for Southern Bulbs.—What has caused the call for so many "*Amaryllis Johnsonii*" bulbs? I know of one lady here who has "raided" the town and a large portion of the surrounding parishes for them. She has collected and shipped to florists several barrels of the bulbs, and is still calling for more. She buys them in lots, paying cash, and of course the florists pay

hope the collectors will leave us a few of these lovely flowers.—MARGARET CAMPBELL, *Louisiana*.

Blessings of Outdoor Life.—We would all like to live to be one hundred years old, at least if our mental and bodily powers could be kept in decent working order, and the "outdoorites" come near to solving the problem of how to do it. Of a family in a New England town, the father and mother died with consumption, but the oldest daughter is now 105, her sister 90, and the brother 87. They were telling me the other day that being outdoors did it. "When we sit down, instead of staying in a close room we take our rocking-chairs to the back stoop. Summer and winter the windows in our sleeping-rooms are open, and nine months in a year we all find plenty of garden or outside work to do every day." It is astonish-

ing to me how women in the country can stay in the house when they have all out-doors right around their houses. And what a prejudice they have against letting outside air into their homes at night! Brother and I rode through our village about eleven o'clock the other evening, and we did not see one bed-room window open for even an inch. Many of the barns had breathing places, and folks are more wise regarding their dumb beasts than for themselves. There are hundreds of "fads," wise or otherwise, in these days. Why shouldn't we try the outdoor fad and see if we can't live to be a hundred or over?—SISTER GRACIOUS.

Bird-of-Paradise Flower.—This flower, of which an engraving is annexed, is not so often seen in green-



BIRD-OF-PARADISE FLOWERS (*Strelitzia Reginae*).

houses as in former years, although we cannot understand why its popularity should decrease. Botanically

it is known as *Strelitzia Reginae*, having been named in honor of the wife of George III., Charlotte of Mecklenburg-Strelitz. The flowers show a combination of orange and purple in their coloring, are large, abundantly produced, and bear a fancied resemblance to a bird of bright plumage. The plant (shown at the bottom of the engraving) is easily cultivated as a pot or tub plant. A soil consisting of light fibrous loam and a small part of manure and sand suits it well. It requires a good deal of water during the summer, but very little need be given in winter. It is chiefly propagated by divisions of old plants

Homes, not Houses.—It was a queer business for a woman, and yet she was doing very well, and every year laid by a comfortable sum. She would buy a cheap lot in the growing part of the city, and have built a small pretty house with one feature to please the women of a family—plenty of closets. Her houses were sold soon after finishing, and she said it was because she spent fifty dollars or more in fixing up the front yard. She had it turfed, laid out a small flower-bed, and planted it, too, with a few things like bleeding-heart, lillacs, stevias, etc., with a Virginia creeper fastened to the little porch in front. A nice apple, pear or cherry tree was also planted in the yard. She told me it paid every time to spend money in this way. "Why!" said she, "first looks are everything. A man or woman seeing my dear little house, with the new, crude look taken off by the turf, the flower-bed, the vine and the trees, see a home in it right away, and I rarely have difficulty in selling. I notice, too, that after buying, the habit of working outdoors is kept up, and in a few years the garden is very beautiful. I generally begin in the fall, build my house to sell, and take real pleasure in fixing the outside in the spring; and it pays too!"—S. G.

Size of Tuberosc-Bulbs not Material.—I have been for two seasons past a close and interested observer of the tuberosc. Growing the bulbs as a field-crop for wholesale trade, it behooves me to note closely, and to remember facts pertaining thereto. Two years ago I failed to get my bulbs grown to the size demanded by trade (from four to seven inches in circumference), losing thus my entire profit on the crop. I wrote to several kind friends asking about them. One friend wrote me that the size of bulbs was of no great consequence if we could only get buyers to credit the fact; and that in his experience, "small, well-cured bulbs bloomed just as well as the large ones." This was corroborated by my last year's experience. I had thousands of small bulbs, too small to sell, but in my eyes too valuable to throw away. One kind adviser said, "plant your small bulbs deep, and get grand ones for next season's sales." I tried the experiment, though sparingly, only planting about two thousand. Nearly the entire planting has flowered abundantly, but strange to say, the original bulbs planted have increased very little in size. This convinces me that, with our long seasons south, it is needless to cultivate the bulbs for more than one season. I feared to trust these small bulbs for my own pleasure-

grounds, therefore bought three hundred of a more successful grower, with the result that since June 15 I have had an abundance of tuberose-flowers, first from the purchased bulbs, and since from the small bulbs planted. Some of these were fully equal in grade to those of the extra-sized bulbs purchased. These same small bulbs had been housed in a cold basement (brick walls), where they froze hard. That tuberose-bulbs are not always injured by freezing is also proved by the fact that a relative of mine left some bulbs undug the entire winter, unprotected in any manner. To our intense astonishment many of these bulbs developed just as fine heads, and as large individual flowers as those kept in frost-proof places. The bulb-buyers invariably ask for bulbs averaging from four to seven inches in circumference, with long necks, etc. You rarely find that one bulb in a thousand measures seven inches. Tuberose-growers could afford to sell at the usual prices, and make a good profit, if purchasers could be persuaded that small bulbs were just as good as the large ones. The only difference which I have noticed in the blooming of large and small bulbs, is that the latter require a longer time to perfect their flower-spikes after budding.—Mrs. J. S. R. THOMSON, *S. C.*

Fences in the Garden.—While we strongly advocate the use of the least amount of fencing that can be made to answer for the garden or the fruit-farm, yet when there is no alternative but to have a fence, let us



FIG. 1. LIGHT BOARD FENCE FOR BACK YARD.

have a good one. At the side or rear end of a town-lot a tight fence is usually required to cut off the back-yard from other back-yards. Instead of the ordinary board fence, with straight top, one made after the pattern here shown (fig. 1), affords relief to the eye among so many straight-topped fences and is less inviting to boys who

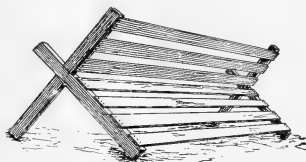


FIG. 2. PANEL OF PORTABLE WIND-PROOF FENCE.

climb and play on fences. In any event, the back yard fence should be mantled with climbers of several kinds. Ampelopsis and climbing *loniceras* are fine for this purpose. Where a cow is kept on a small farm, it is often a

matter of convenience to have a few dozen panels of fence that can be used in improvising a temporary pasture-lot. The form of panel shown in the illustration (fig. 2), has the important merit of being wind-proof—that is, the wind cannot overturn it, as it can other styles of portable fence. Its construction is so simple that no directions other than the engraving will be required.

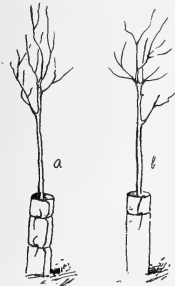
How Fine Roses were Grown.—The finest roses I have ever seen were grown in a little country village of northern Ohio, by a woman, nearly forty years ago. There were no insect enemies to contend with then. A row of centifolia roses blossomed for a full month in early summer. Yellow ones rivaled in height the lilacs and snowballs, between which they stood, and were a mass of golden color for weeks; their buds and blossoms were so thick as to completely hide the branches. Three climbing roses covered the three front windows of the house. One bore large clusters of small, very double blush flowers on slender stems that swayed with every breeze. Another was a semi-double crimson rose. After quite darkening the windows it festooned itself over and through the lattice at the door-step. One season it sent up five canes, three of which were fifteen feet long, one thirteen and the last one twelve feet seven inches. But the crowning beauty of the house was a Queen of the Prairie, that climbed quite to the top of the roof after covering a front and side space of about fifteen feet. Bushels of roses were picked from this climber, without visibly lessening the supply. The village was quite a favorite stopping-place for parties of pleasure-seekers from a neighboring city, and in its blooming season that rose-bush was always a center of attraction. A sweet-briar, tall, slender and graceful perfumed the air at a side window. These bushes never had at any time any animal manure. Every spring the bushes were carefully examined, all old and unhealthy wood cut out smoothly with a sharp knife, leaving only the strongest shoots of the previous year's growth left, and around each bush was spread a wheelbarrow load of rotted chips from the woodshed. Then the ground was deeply spaded, carefully raked level and each bush had a half-bushel of leached ashes raked into the surface soil. Occasionally, during warm weather, the soapy water from the weekly wash was dashed over the roots of the roses.—M. E. H., *N. C.*

Growing Ferns.—Ferns are propagated by seed or division of the plants. Where the latter plan is adopted they should be potted in pots as small as possible, in a mixture of light loam, wood's-earth and river-sand, then set in a cool moist place and shaded until well established. The spring season, when they are just starting into growth, is the best time to propagate them, although it may be done safely at any time. Some sorts have small fronds growing on their large ones; these should be pegged down in a pot filled with the proper soil, until ready to be detached from the parent plant. The most interesting mode of propagation is by seed. Most kinds will germinate readily in moderate heat if given sufficient moisture. All ferns require a light open soil. The best

for either hothouse or greenhouse varieties, is a mixture of fibrous turfy loam, leaf-mold, and plenty of sand. The following are a few good free-growing greenhouse ferns that may be easily managed by anyone: *Adiantum cucuciatum*, *Alsophila australis* (a fine tree fern of rapid growth) *Asplenium bulbiferum*, *Nephrodium Sieboldii*, *Lomaria gibba*, *Lygodium scandens* (climbing fern), *Nephrodium molle*, *Nephrolepis exaltata*, *Pteris argyrea*, *P. hastata* and *P. tremula*, *Woodwardia radicans* and some of the lycopodiums. With the hardy wood-ferns you could make a splendid outdoor fernery in some dark shady nook where nothing else will grow.

—MRS. L. H. GALE.

Tree Protectors.—The great objection to most of the tree-protectors, such as woven lath, wire screens, etc., is that they cost too much. We want something cheap. We use the veneer protector, cut from poplar 9x13 inches and 1-12 inch thick, which cost only \$3 per 1,000. By wetting them a little they can be easily wrapped around a tree and wired, and will last two or three years. We could not buy wire screen for less than \$20 per 1,000. With the commercial orchardist this cost makes a great difference. In putting on these protectors the wires



VENEER PROTECTORS FOR TREES, SHOWING TWO WAYS OF WIRING.

should be fastened in some way, so that they will not slip down when the wood gets dry and shrinks. The top wire can be hooked over the upper edge of the veneer, as shown in the illustration (fig. b), or if the edge of the veneer, which comes on the outside, be notched as in fig. a, the wires will stay in place. The protector should be sunk in the ground a little at the bottom and will then serve as protection against borers and rabbits. Some orchardists seem to be afraid to use this protector, thinking that it will injure the tree. We have seen it used, however, for several years, and in every case with the very best results.—E. L. POL-LARD, Mo.

Monuments in Garden Cemeteries.—Along with the growing appreciation for the modern garden cemetery, there arises a feeling that the custom of erecting monuments and marking-stones is too generally followed, even in some otherwise fine landscape burial places. In the annual report of J. M. Curtiss, concerning the beautiful Riverside Cemetery, of Cleveland, Ohio, advanced views are expressed on this subject, but we doubt not that they are views that will more and more widely prevail as the years pass. He says: "And now indulge me in a few words upon the utter uselessness of disfiguring our lawns with slabs, shafts and grave-stones to mark the resting place of the departed. You ask, Would you then discourage these marks of affection and remembrance? I answer freely, that the sole object of placing these obstructions to the natural beauty of the landscape is to mark permanently the spot where our loved ones are laid to rest. Have you ever stopped to consider how futile this puny effort is in the light of the history of the past ages? All must have noticed the unsightly and often disgraceful appearance of old and neglected cemeteries, with their broken, tottering and crumbling grave-stones. Do they accomplish the one practical object? Do they afford a permanent and lasting guide to the spot where their forefathers sleep, for the descendants of future generations? All that tread the globe are but a handful to the tribes that slumber in its bosom: Where are the graves of the departed millions since time began? Where are headstones of past generations? Disintegration and final decay is the certain fate of every trapping and adornment of this nature. The great Daniel O'Connor is said to have made this last request: 'Whatever mausoleum or monument may be erected above my grave, I desire my body to be deposited below the surface, in touch with mother earth.' Nature's green mantle which renews and beautifies itself is the most permanent—the most appropriate, as well as the most beautiful covering for the dead. A block of solid granite sunk to the level of the earth, with a simple inscription, is all that is required of loving and willing hands. These thoughts are set down, not so much with a view of working a radical change at once, as to direct thought in the right direction. The beauty of our grounds is being marred by a mistaken conception of the requirements of love and duty."

COMMENTS BY READERS.

[One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

Destroying the White Grub.—(Page 190.) The wild sunflower is plentiful here. Every plant of it that we carelessly leave standing, when pulled up the latter part of June, has among its roots from 5 to 25 May beetles; of course they are there for the purpose of depositing eggs. I never find them in the roots of other weeds, and

I do not see that the grub injures anything on my grounds except strawberry-plants. If the beetles select the sunflower, in preference to any other plant, around which to deposit their eggs, by leaving plants enough, say one to every square rod, I think we could easily capture every beetle, and destroy every egg deposited. A few

rows of the weed now and then left in a strawberry plantation, and pulled up at the proper time, would perhaps capture nine-tenths of the beetles and destroy nearly all their eggs. I am of the opinion that the young grubs hatched from the eggs that might be left in the ground after pulling the weed, would perish for want of food as soon as hatched, being unable to reach any other vegetation in ground kept clean. I often find them in roots six or seven inches below the surface of the ground. I shall examine cultivated sunflower-roots this season.—C. L. MYERS, *Kansas*.

The Umbrella China-Tree.—(Page 136.) In the spring of 1890, five trees of *Melia Azedarach*, from 24 to 30 inches high, were planted here in an open, exposed place. They grew vigorously, and by October were very pretty young trees, about five feet high. No protection was given them through the winter, as we wished to test their hardiness. The thermometer did not fall below 7° above zero. After all other trees had put forth new growth in the spring, these umbrella-China trees had not shown a sign of life; even the roots, which are very fleshy and brittle, were lifeless. It is to be regretted that they are not hardy at the north, for they are certainly handsome trees.—HAROLD OTTER, *Pennsylvania*.

Age of Nut-Trees to Fruit.—In Question and Answer No. 2782, you say that walnuts, pecans and hickories must be 15 or 20 years old before one can expect them to bear well. Such is not the case here in the gulf-coast country and in Louisiana. There are many instances where trees have begun to bear when five, six and seven years old. I know of trees in this town, from nuts planted in 1876, that have borne a bushel of nuts at ten years, and at 13 years two bushels, the yield increasing with age. There are dozens of these trees, and they are 12 inches in diameter. This means trees well cared for. I would like you to insert this for the benefit of planters.—JOHN KELLER, *Ocean Springs, Miss.*

Forsythias from Seed.—I have raised many thousands of forsythias from seed, in order to prove that there is only one species in cultivation and was rather surprised at your answer to a correspondent (Question and Answer No. 2828), in AMERICAN GARDENING for April. There is a large group of seedlings at Dosoris, and all raised from the seed of *F. suspensa*. Not one in ten retains the varietal form, but nearly all have gone back to the form of *F. viridissima*, the only species in cultivation. Seedlings from self-sown seed come up every year under old plants in my garden, and I presume the same thing occurs in other gardens.—A. S. FULLER, *N. J.*

The Trilliums.—(Page 206.) In nearly the whole of the hardwood region of Wisconsin, with which I am familiar, *Trillium grandiflorum* carpets the woods. Strangely enough, I never found but one variation. It was a plant with four green leaves and a four-petaled blossom, so robust in appearance that I noticed it 150 feet off. I dug it up and carried it in my pack for a number of days, until I could mail it home, but it was afterwards lost, presumably by being dug up. This was

on a four week's trip, during which I walked through townships ablaze with trilliums. My intention was to raise seedlings from the trillium to see whether the sporting tendency would increase. A botanical friend of mine once saw here a completely double trillium. It had been picked by some one and then dropped in the road so that he could not find the root. I have noticed the tendency to color variation only in one locality—over across the lake; but the stripes and blotchings are usually green. I have quite a number of these trilliums growing in my garden and find this variation is constant. I have encouraged the planting of trilliums in every way and love them.—CHAS. L. MANN, *Wis.*

"Fragrance" in Trilliums.—In the article on "The Trilliums" (page 206), it is said of *T. erectum* that it has "no odor, which leaves much to be desired." As our trillium is not yet in bloom (April 25), I cannot send a specimen flower to show its odoriferous quality; so to refresh my memory I refer to Wood, who says of it: "A conspicuous plant in woods; of fine appearance, but of an intolerable, offensive odor." If I remember rightly, the offensive odor of this trillium is only surpassed by that of *Smilax herbacea*, sometimes called carrion-flower. Even the skunk-cabbage, *Symplocarpus foetidus* is more tolerable.—T. S. GOHL.

[The copy for the article on trilliums, referred to, shows that it was written "having an odor which leaves much to be desired."—EDITOR.]

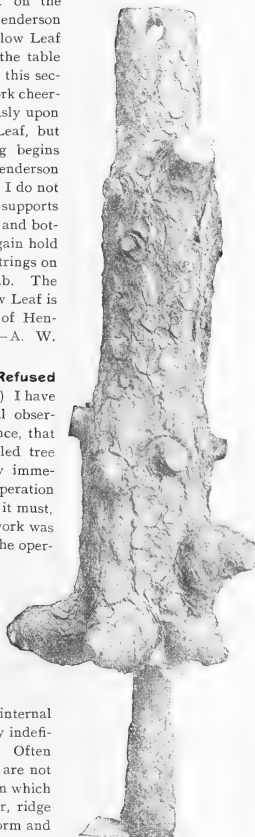
Saving Manure for Hotbed Use.—(Page 151.) In his article on "How to make a Hotbed," Joseph Harris fails to touch upon one important point, namely: How to keep manure for months in good condition for heating the beds. Manure that has once fermented is nearly worthless for hotbed purposes. Horse-manure, thrown out in the usual way, becomes cold, wet and soggy; the ammonia, which it contains while fresh, is completely lost. For many years I have found the hog-pen of more value to me as a place for storing and keeping my horse-manure in good condition, than as a place for growing and fattening hogs. We keep six or seven horses, which are liberally bedded with straw. The manure from their stalls is thrown every day into pens where there are from 12 to 20 hogs. The hogs work the pile over, and tread it down firmly and compactly, so that it is safe from heating until thrown out for use. Then, if pulverized, it will become red-hot in from 10 to 24 hours, and is ready for use in a week's time or less.—EUGENE MILLETT, *N. Y.*

Pole Lima Beans.—(Page 681, November.) One pole lima "must not go" from my garden until I find a better substitute for it than any that has yet appeared. This is the Willow Leaf Lima or Sieva. I think this bean will supersede Henderson Bush Lima, where large crops of green or dried beans for market are desired. Both these beans are either sports from our old Sieva, of the south, or else Henderson's Bush Lima is a sport from Willow Leaf. The pods of both beans are much alike; when green they are smooth and shed rain, when dry

they are hard and brittle, not absorbing moisture, as the true large limas do when green or dry. The beans and pods of Willow Leaf are larger than those of Henderson Bush Lima, and being held up by wires, they suffer less from rain when left upon the vines too long. The Willow Leaf is the most productive bean I have ever known. Twenty ounces of seed on 210 yards of row yielded 300 pounds of perfect seed and 25 pounds of beans nipped by frost. Planted on the same day with Henderson Bush lima, the Willow Leaf will give beans for the table quite as early. In this section, pickers will work cheerfully and continuously upon rows of Willow Leaf, but after cotton-picking begins will not pick the Henderson bean at any price. I do not use poles, except as supports for strong overhead and bottom wires, which again hold the small wires or strings on which the vines climb. The flavor of the Willow Leaf is quite equal to that of Henderson's bean.—A. W. SMITH, Georgia.

That Elm that Refused to Die.

—(Page 209.) I have learned, by practical observation and experience, that the death of a girdled tree does not necessarily immediately follow the operation of girdling; though it must, after a time, if the work was thoroughly done. The operation may appear to be thorough when it is not, as when by reason of previous injuries there may exist folds of liber that have been produced by overgrown scars, thus forming internal connections that may indefinitely support life. Often small fibers of bark are not severed by girdling, in which case an external layer, ridge or bridge will soon form and greatly extend the life of the tree. The bark may be entirely stripped off for a space of many inches or even of feet, during the period of exuberant early summer growth, but if the cambium be not thoroughly removed, nature will completely rebarb the tree, especially if it be of cer-



GIRDLED PINE.

tain species, like the *Ulmus Americana* (white elm), that are known to have great vital force and tenacity of life. The girdling of a tree, if the bark is removed and the cambium not allowed to bridge over the wound during a season of exuberant growth, will result in its death. The tree does not die immediately, because life is sustained through the pores of the alburnum or white wood. It does not enlarge below the girdle, while above, the cambium layer is arrested like water above a dam, thus enlarging the tree with an additional layer of alburnum for each consecutive season that the tree survives. Trees like the basswood (*tilia*), white elm and gum (*nyssa*), with a large amount of alburnum, will survive the effects of girdling longer than such as have a smaller proportion. This is owing to the fact that the circulating pores are closed by the drying process, and until this arrests the upward flow of sap, life though enfeebled, is still apparent. If, however, we cut through the alburnum in girdling a tree it dies almost immediately, proving again that the upward flow of sap is through the pores of the whitewood. Now here is the explanation of the prolonged life of the elms referred to. They had either interior folds of bark, or they had rebarbed themselves, as noted in the second instance above, else they must inevitably have died, life slowly yielding to the drying and closing of the pores of the alburnum. The time required for this was exactly in proportion to the thickness of the layer of white wood and the exposure to drying influences, whether rapid or slow. Certainly the same influences must ultimately have killed the Scotch pine tree (referred to on page 758, 189r, and of which I now have the pleasure of sending you a correct photograph), but in which case at least two circumstances conspired together to produce the greatly extended prolongation of life; the first, being the resinous and slowly-drying character of the pine sap; and the second, the fact that the roots of the tree were sustained and kept alive by a whorl of live branches below the point of girdling. The latter condition *must exist* in order to produce a duplicate of this singular specimen, for otherwise the roots would fail and the tree would surely die.—W. H. RAGAN, *Sec'y Ind. Hort. Society.*

Collecting Plants for a Wild Garden.

—(Page 139.) In a shady portion of our yard we have cultivated, under the limbs of a huge elm, a wild garden that has flourished for nearly 20 years. We find it necessary to keep watch, lest the coarse-growing plants crowd out finer and more delicate ones. Our first expedition is made when the ground is carpeted with the spring beauty (*Claytonia Virginica*), and from this time until the blossoming of gentians in October, the woods are full of spoils. It is not so pleasant to "tramp" amid summer heat and dust, but the woodlands are then full of flowery rewards. Wild roses, corn-flowers, asclepias and bouncing-bets are but a prelude to pond-lilies and cardinal-flowers. *Lobelia cardinalis* is indeed rich and glowing in color. The owner of a woods-garden will find one of its greatest charms to be the associations connected with the collection of its flowers.—L. G. PATTERSON.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE GARDENING.

Abronia umbellata is a fine trailing plant, well suited for rock-work, baskets, or beds, flowering freely during the autumn months. Seed may yet be sown, although it would be better to use plants started earlier.

Achimenes.—Give liquid manure occasionally, to prolong their beauty.

Alpine plants flourish well on a well-constructed rockery, but in our hot dry summers they require shade and shelter. Rockeries supply the required thorough drainage, and the long fine roots of the plants can run down into the crevices, where the soil is cool and moist. If such plants are to grow in the border, excavate it to the depth of 18 inches; put in a layer of stones or rubbish six inches deep, and fill up with a mixture of good fibrous loam and leaf-mold, with sand enough to keep it porous. After planting, the surface of the soil may be covered with small stones or rough gravel.

Annuals.—Seed of most kinds, except of late bloomers, may yet be sown. Keep those planted earlier free from weeds. Thin at an early stage, and stir the ground around them often.

Antirrhinums. Allow no seeds to form during the summer; its plants will bloom all the more freely and will push up young, vigorous shoots that will safely endure the winter.

Azaleas should go into the open air for the summer. Put them into a sheltered, shady position, or place lath shutters, with lathes an inch apart, over them. Their pots should be plunged.

Begonias.—The tuberous varieties may safely be planted out after they have sprouted. Select a warm, moist, half-shaded situation. Flowering begonias for next winter may still be propagated. An inverted glass tumbler placed over the cuttings provides desirable moisture, and thus aids in rooting.

Bignonia radicans, or trumpet-creeper may be trained into a weeping-shrub form by stopping first the stem at the desired height, and afterwards the laterals.

Bulbs, that have bloomed may be lifted as soon as they begin to wither. Lay them in clumps in a shady place, with some soil over their roots, to insure perfect ripening.

Cacti.—After blooming, plunge their pots in a warm, sunny border to complete their growth.

Calceolarias usually do better for winter flowering if seed is sown now, than if this is put off until July or August. The seeds germinate more freely now, and the plants will have a longer period of growth before the flowering season. Too much pains cannot be taken with these fine seeds, which bear neither covering nor watering from overhead any too well.

Callas may be bedded out in good soil during summer. This will check their growth, and cause them to lose most of their leaves, but they will be replaced by new

healthy ones later. Early in September lift and pot the plants, preparatory to their season of bloom.

Chrysanthemums, whether in pots or bedded out, should now be making good growth. Before the end of the month pinch them back for the last time. These plants like plenty of food and moisture, with at least four or five hours of sunshine each day.

Cinerarias.—Sow seed as directed under *Calceolarias*.

Climbing plants in houses require special attention during the summer. Their growth should be moderately free, and thinning, training and stopping be given as needed.

Cyclamen.—See directions given for *Calceolarias*

Dahlias are apt to be broken down by wind storms. It is not safe to leave them without a support of some kind.

General Greenhouse Management.—Shade the glass overhead with a wash made of naphtha, so mixed with white lead as to resemble thin milk; or with ordinary lime-water (white wash). Keep windows and ventilators open; and sprinkle the walks and under the benches freely. The greenhouse may thus be made an attractive and not an uncomfortable place all through the summer. Orchids, climbers, hanging-baskets, etc., can be used to advantage for tasteful decoration. Such plants, as azaleas, oranges and most tender shrubs are managed most easily by being moved outdoors for the summer into partially shaded places.

General Lawn Management.—Timely use of the lawn-mower must not be neglected. Cut out all coarse perennial seeds. Keep edges of walks and drives in good order and free from weeds. Early in this month, put some sort of mulch around dahlias, carnations, chrysanthemums, rhododendrons and other plants in the borders.

Gladiolus may yet be planted. Stake those planted earlier to prevent their being harmed by wind and heavy rains.

Hedges.—Both deciduous and evergreen kinds may be shorn just as the present season's growth begins to harden. This checks growth without injury to the plants.

Hibiscus.—Strike cuttings for next year's bloom. The old plants that flowered in the house last winter may be set out in the garden.

Hollyhocks require thinning when standing close together.

House Plants.—Plunge the pots up to their brims in earth, sand or coal-ashes. This will save much labor in watering plants during the summer. Smaller inverted pots, placed under those that are plunged, prevent the roots of plunged plants from entering the soil below, and keep earthworms out of their pots.

Lemons and Oranges.—Treat as advised for azaleas.

Lilies in bloom need an abundance of water. Make a basin around each plant and water liberally.

Orchids will finish their growth before June 30, and will need a lighter position in which to mature. Those still in vigorous growth must be given abundant heat and moisture. *Odontoglossums*, and others requiring cool treatment, must not be given a temperature above 70°.

Pansies.—Sow seeds for fall flowers.

Pegging down trailing or other plants, is a simple process that often greatly increases their growth and bloom. Bring some of their strong young branches down to the ground and fix them there by wooden or metal hooks, or by crossing pegs over them. *Roses*, *achyranthes*, *alternantheras*, *lantanas*, *clematis*, etc., may be treated in this way.

Petunias, *verbenas*, and many other plants in borders will need attention in the way of pegging down.

Pinks.—Stake and tie.

Primroses.—Provide with heavy shade overhead from now on until October, especially double white ones.

Propagation.—It is still time to make and strike cuttings of *fuchsias*, *geraniums*, *petunias*, *heliotropes*, *sweet alyssum*, etc, for winter-flowering stock.

Pruning Shrubs.—Shrubs which bloom in spring and early summer, may be pruned as soon as the blooming period is past. During the summer flowering branches for next season are formed. By judicious trimming at this time we can improve the shape of the shrub. Pruning any time after the growing season, means nothing less than cutting away flowers.

Repairing greenhouses, where needed, is also now in order, whenever other work is not pressing. Everything should be in shape by the time the houses are to be re-stocked next fall.

Seed Sowing.—Plants, such as *calceolarias*, *cinerarias*, *mignonette*, *pansy*, *sweet alyssum* and many others needed for use in the house next fall, winter and spring, may now be started from seed.

Summer-blooming Stove-plants, while in flower, may be removed to cooler quarters.

Tritomas.—Treat as advised for lilies.

Winter-Bloomers.—Plants in pots or bedded out, such as *carnations*, *bouvardias*, *heliotropes*, *poisettias*, etc., should now, in their early growth, be pinched freely to induce shapely forms.

II. GARDENING FOR TABLE AND MARKET.

Apples.—Spray trees for scab.

Asparagus.—Cutting should cease by middle or end of this month. The plants need top-growth to aid in root development.

Beans.—All kinds may now be planted. Nothing is gained by waiting. *Limas*, started earlier in pots or on inverted sods under glass, should now go out to their permanent quarters. Where poles are scarce, use a wire trellis and twine. With a little care, all beans can be easily transplanted. We always fill gaps in the rows

by taking plants up with the spade, where too thick, and setting into vacant spots. Plant snap-beans for succession. For a field sort try the *Burlingame Mediums*.

Beets.—Sow the table varieties for succession; the mangels for main crop.

Blackberries.—Tie the young canes to stakes, and clip tops off three feet from the ground.

Cabbage.—Market the early crop. Set plants for late fall and winter; or sow in open ground, 5 or 6 seeds in a place, just where you want the plants to stand, removing all but the best plant in each hill.

Carrots.—For table use you want young tender roots. To secure them, sow the *Chantenay* or any other good sort. Cultivate and thin the earlier plantings.

Cauliflower.—Treat like cabbage.

Celery.—Set *White Plume* for earliest use at once, and in very rich, highly-manured loamy soil. Keep the plants growing vigorously. Slight shading for a time is beneficial. Cultivate and hoe often. The plant-beds for later plantings should be kept well stirred, free from weeds, and plants properly thinned. Apply nitrate of soda in small quantities, if you can get it conveniently. For fall and winter use begin setting plants the last of this month.

Corn.—For late use plant the sweet varieties all through this month.

Cresses.—Sow for succession.

Cucumbers.—Plant for pickles at once. Plants started earlier under glass should now go outdoors. Prepare the hills by mixing some old rotted manure in each one. The dwarf sorts, like *Early Russian*, may be planted in hills $\frac{3}{2}$ or 4 feet apart each way, the ordinary varieties—*Long Green*, *White Spine*, etc., need 5 or 6 feet each way between the hills, especially if the soil is quite rich. When plants are well out of danger from bugs, thin to 3 or 4 good plants in a hill. Bugs can be kept off by covering the ground around the plants with an inch layer of tobacco dust, bone meal or a mixture of both. Cucumbers in frames require an abundance of water both over the foliage and at the roots.

Currants.—Destroy the worms by spraying with hellebore-water, tobacco-water, or solutions of potash salts. As new growth appears it is well to remove a portion of the shoots.

Dill.—Sow seed for flavoring cucumber-pickles. This is much liked by Germans.

Egg-Plants require a warm season, soil and location. They will thrive in almost clear manure, and will not give satisfaction if planted in soil not excessively rich. Set in rows 2 feet apart; plants 15 to 18 inches in the row.

Grafts of recent setting will require attention. Young shoots growing just below grafts should be removed before they draw much nourishment away from them.

Grapes.—On newly-set vines, only one shoot should be allowed to grow. Keep the older vines carefully tied to trellises. Spray frequently with fungicides; at this season preferably with the reduced *Bordeaux* mixture. Vines that overbear should have their fruit thinned.

Grapes Under Glass.—Early vines that have ripened their fruit must be carefully brought to a resting condition, by gradually withholding water and exposing the wood to the sun and air, day and night. In the cold graperies, while the vines are in flower, the temperature may be as high as 85° or 90° at midday. Water should be given sparingly just now. Give the clusters each a gentle shake when in blossom, to aid in the distribution of pollen. Thin the fruit when berries are of the size of peas. One bunch of fruit is enough to leave upon each cane. Tie up the shoots as the weight of fruit increases.

Gooseberries.—The English sorts, if planted in parts of the garden where the soil is always cool, thrive nearly as well as in the Old World. Where there is not a particularly shady piece of ground, the surface of the ground underneath the gooseberry tree may be covered with old corn-stalks, or litter of any kind, to keep the rays, of the sun from warming the ground. Under these circumstances the English gooseberry often escapes mildew. Even the placing of stones underneath the bushes has been found very effective in some instances. Spraying with a solution of sulphide of potassium, at the rate of ½ oz. to a gallon of water, has proved effective in preventing mildew. The pruning of the gooseberry is a matter of some consequence. Thin, weak shoots should be trimmed out, leaving only the stronger ones.

Horse-radish.—Plant sets for main crop.

Insects.—All leaf-eating caterpillars on trees and bushes can be destroyed by means of spraying with arsenical solutions. Borers should be cut or probed out wherever they are found. Curculios begin to be troublesome this month. Jar the trees, and gather the insects on sheets previously spread under the branches. Plant-lice are easily destroyed by spraying with kerosene emulsion, tobacco-tea, or solutions of potash salts. The red spider often finds lodgement in vineries, and does much mischief before it is observed. Paint the heating-pipes with a mixture of sulphur and skim-milk, and in the evening, when the house is closed, take clean soft water and a syringe and sprinkle the pipes for about fifteen minutes, thoroughly steaming the house. This will

also dispose of the thrips. For the potato-beetle and slugs, which are especially fond of egg-plant, use Paris green in plaster, air-slaked lime or water. Dry, unleached wood-ashes, sifted over the plants when wet with dew, is also a good remedy.

Lettuce.—Sow for succession where it is to grow, and thin.

Melons.—Treat as directed for cucumbers.

Peas sown after this time seldom succeed. Clear the ground as soon as the crop of early-planted ones is harvested, and plant late cabbage, celery, turnips, etc.

Pepper.—Treat as directed for egg-plant.

Pineapples require an abundance of moisture in the atmosphere to prevent exhaustion during the hot weather that now prevails. Close the house early, syringe and water the floor freely several times a day.

Radishes.—Sow the summer varieties for succession every week or two.

Raspberries.—Treat as advised for blackberries.

Spinage.—Sow for succession.

Squashes.—Plant the bush sorts in hills 4 feet apart each way, the winter sorts 10 or 12 feet apart each way, according to richness of soil. Give plenty of manure, and thorough cultivation. The space between the hills can be devoted to radishes, lettuce or other quick-growing crops that will be out of the way by the time the squash-vines will need the space.

Strawberries.—On new beds all flower-stalks should be removed, to save all the strength of plants for their own development. Also keep runners off for some weeks. Pull up, or hoe out any stray weeds appearing in the patch. Mulching around the plants before the fruiting season is a commendable practice. It keeps the ground cool and moist and the fruit clean.

Thinning of garden crops, such as beets, carrots, onions, lettuce, parsnips, etc., should be done as early as practicable. The removal of surplus plants is just as necessary as the removal of weeds. Tree-fruits should also be thinned out severely.

Tomatoes.—Plant at once for main crop. Give plenty of space, especially on rich soil. Cultivate and hoe freely.



CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Why Not a Parcel Post?—If Canada is satisfied with four cents per pound postage for merchandise, why not the United States? Is there good reason why we have to pay exorbitant express rates, merely to make a few men or corporations immensely rich? Why not a parcel-post, as enjoyed by other nations? Why cannot Uncle Sam carry our packages as well as our letters and papers, etc., at first cost?—*Rural New-Yorker*.

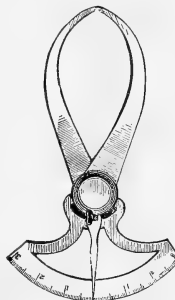
The Best Tools are Cheapest.—So much of the work of the garden is done by hand, that a farmer is inexcusable who does not provide himself with the best tools that are made. Some do not appear to realize that as much improvement has been made in tools for garden-work as for cultivating and harvesting farm-crops. When he sees the weeders and cultivators operated by horse-power, he will find that the amount of work necessarily done by hand has been greatly reduced, and is not at all burdensome.—*American Cultivator*.

Self-Registering Tree-Caliper.—The old-fashioned homely and clumsy tree-caliper, while answering its purpose reasonably well, does not satisfy the tastes and demands of people who have a preference for neat and accurate tools. The self-registering caliper here illustrated, taken from the catalogue of Weaver, Palmer & Richmond, Rochester, N. Y., will please such people. It is quoted at 50 cents.

The City of Flowers.—There is probably no town in the United States so devoted to the holding of flower and fruit-festivals as Los Angeles. No sooner is one fair over than another commences, and the same spirit is observable in all the smaller towns. It is this spirit which encourages the growth and culture of flowers, and undoubtedly there are few spots where flowers are given so much care. Everybody seems to possess a garden, and the consequence is that flowers can be bought more cheaply in the shops of the San Francisco florists than they can in the Los Angeles flower-stores. What strikes the stranger as most singular are the floral displays in the offices. There is not a bank in town upon whose high desk great bunches of roses do not rest. The paying and receiving tellers' desks, the cashier's desk, the manager's desk, the president's desk, the bookkeeper's desk, in fact, nearly every desk, has a bunch of exquisite roses.—*San Francisco Chronicle*.

Garden Burial Places.—Brooklyn has no grander glory than her Greenwood, nor Boston than her Mount Auburn, nor Philadelphia than her Laurel Hill, nor Cincinnati than her Spring Grove, nor San Francisco than her Lone Mountain. What shall I say of those country graveyards where the vines have fallen down and the slab is aslant and the mound is caved in, and the grass is the pasture-ground for the sexton's cattle? Were your father and mother of so little account that you have no more respect than this for their bones? Some day gather together and straighten up the fence, lift up the slab, bank up the mound, tear out the weeds and plant flowers and shrubs. If you have no regard for the bones of your ancestors, your children will have no deference for your bones. Do you say these relics are of no importance? You will see of how much importance they are when the archangel takes out his trumpet. Turn all your graveyards into gardens.—*T. DeWitt Talmage*.

Arrangement of Trees in Country Places.—On plantations depends largely the successful composition and coloring of a country place. The first thing to consider before you begin to plant is the adjustment of your views, vistas, or outlooks. Ordinarily, except where you require for some reason a special outlook, the entire outside border of the place should be planted with a mass of trees and shrubs, making a hedge of irregular waving lines. Ordinarily, too, there should be about seven shrubs to every tree, the shrubs eight or ten feet apart and the trees forty or fifty feet. This rule applies, of course, only to large-growing shrubs; the smaller ones can be tucked in round about. It is an excellent plan to establish a lofty tree, like the elm, tulip, or poplar, at each marked angle of the place and at either side of the carriage-entrance. It tends to give character to the entire lawn. If you have room enough, one of the ways of emphasizing certain interesting parts of



SELF-REGISTERING TREE-CALIPER.

our country place, and especially the pleasant home character of the house, is to establish a grove near that building. Set out the best shade-trees—elms, maples, beeches, tulip-trees, liquidambar and lindens—and let them stand forty or fifty feet apart, so that they may grow into broad and lofty trees, dispensing abundant shade. Such a grove near the house will give perpetual delight throughout the year.—*S. Parsons, Jr., in Scribner's.*

Hillside Irrigation.—Between San Mateo and San Francisco, gardening is an extensive industry. The



HILLSIDE IRRIGATION IN CALIFORNIA.

hill-sides are neatly terraced, and water is drawn up by scores of windmills to irrigate and make productive, all the long year round, what otherwise would be barren hill-sides. The illustration shows the manner in which the water is distributed over the area.—*Gleanings in Bee Culture.*

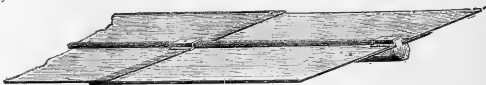
Potato-Planting in Michigan.—The Michigan Agricultural Experiment Station's report on potato tests, contains the following summary: 1. The seed-end is as good if not better than any other part of the potato for planting, and as a rule produces fewer small tubers. 2. As a rule, medium-sized potatoes cut into halves lengthwise, and used at the rate of from 13 to 15 bushels of seed to an acre, will produce best net results. 3. If smaller seed is used, the eyes should be 15 inches apart; pieces containing two or three eyes about 18 inches. Planted at distances more than 2½ feet the number of hills is so much decreased that the yield is lessened. 4. When potatoes are cheap, it does not pay to use small potatoes as seed, but when seed-potatoes are high, tubers the size of hen's eggs may be used for one year without greatly decreasing the yield. 5. Even on fairly rich soil, manure or fertilizers can be used with profit. When manure cannot be obtained without hauling two or three miles, 500 pounds of mixed chemicals or of some good brand of commercial fertilizer will be cheaper to use, and a profitable investment.

Set Poles for Limas Firmly.—The poles should be put in at least a foot deep; if heavy, deeper, and set before the beans are planted. Where it is desirable to economize room, or where the poles are expensive, one

pole can be made to serve for four by setting strong poles firmly and attaching to their tops either wire or stout twine, about twelve strands to each. These are to be fastened to pegs driven in a circle around the pole, 1½ feet from its base. The outer rows of late-growing, tall varieties of corn may be utilized for Lima poles, but only the south and east side of the patch will give these sun-lovers enough heat and light for their needs. To prevent having a large part of the crop caught by frost, one Illinois man saves his beans by pulling up poles and beans together before killing frost, and setting them compactly in a basement; thus he enjoys this delicious bean till winter.—*New York Tribune.*

Use for Coldframes in Summer.—Coldframes can be used to good advantage in summer for starting cuttings of roses and shrubs. Hybrid perpetual roses start readily, if planted in coldframes, about the third week in May, in this locality. Last year, after putting several buckets of sand in a frame, I planted a large number of rose-cuttings, some deutzias and a few other shrubs, in this manner. The glass was heavily whitewashed to keep out the sun. Almost every cutting made strong roots within three weeks. I transplanted fifty of the roses into another frame, 3x6 feet, using whitewashed sashes again and gradually accustoming the plants to direct light and sun. By August 15th the roses were too high to allow the glass to be put on, and on the 15th of November, after many of the plants had bloomed, I potted most of them. Several hybrid perpetuals were planted out in the open ground and given winter protection. Each of these hybrid perpetuals had sent up one or two shoots apiece, from two and one-half to three feet in height, and had woody roots averaging eighteen inches in length. Cuttings of the same varieties made in June, planted and cared for in exactly the same manner, were a total failure.—*American Agriculturist.*

Glazing Glass-Houses.—The new clip, made of zinc, for use in glazing all kinds of horticultural structures dispenses with the use of top putty, saves expense in the first cost of labor, and time in the making of repairs afterwards. The smaller illustration given shows the clip;



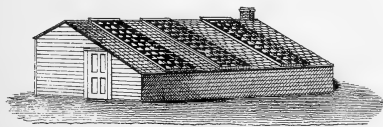
A NEW WAY TO GLAZE GLASS-HOUSES.

the larger one the manner in which the clip is used to hold the squares down upon the thin layer of putty underneath, and the stops to keep them in position. The clip itself is fixed to the sash-bars by means of a brass screw or tack. The special advantages claimed by the inventor, are a saving of 50 per cent. in the time required in glazing; no breakage from contraction or ex-

pansion; the easy replacement of squares broken by accident; and the prevention of loss of heat by the close lapping of the glass which this system of glazing permits.—*Gardening World*.

Planting Peanuts.—The season for planting depends entirely upon the conditions of soil and climate. Do not plant before the soil has become thoroughly warm and dry, as the peanut is more than sensitive to unfavorable conditions, and is therefore liable to have its germination so arrested that it would seriously affect the final outcome. In the latitude of Ohio, Indiana and Illinois, planting can safely begin May 20, as you are then reasonably sure of continued warm weather for a sufficient period to allow the vines to come to the surface; should unfavorable weather then set in, no appreciable damage would be incurred. In planting on rich soil ample space, from 25 to 30 inches between hills and rows, should be allowed for a luxuriant growth of vine, as proper cultivation is rendered impossible when the vines interlock. On poor soil 22 inches each way would be a sufficient allowance. Replanting this crop is a very simple operation. In from 10 to 15 days, should the seed be good, the earth around the hills will begin to swell and crack; when this does not occur in the time specified, replanting at once will be necessary, as it is a never-failing indication that the seed has not germinated.—*Farm and Fireside*.

The First Greenhouse in Chicago.—We present herewith an engraving of the first greenhouse erected in or around Chicago, from a drawing kindly furnished by John Goode, now the oldest living florist in that city. This house was located at the northeast corner of Dearborn avenue and Division street, on the north side. Mr. Goode thinks it was built about 1835 or 1836, as it had been standing 9 or 10 years when he came to Chicago in 1845. It was built and owned by a man named Thomas. The roof is composed of glass only in part; three sash admitting light on the south side, the short span to the north containing no glass whatever. It is interesting to



THE FIRST GREENHOUSE IN CHICAGO.

note that the three-quarter span style of roof for a greenhouse was in vogue as early as in the thirties.—*American Florist*.

Inarching Camellias.—Procure a few stocks of the common variety, which is increased from seeds or cuttings. The double varieties do not thrive so well on their own roots as when worked upon the more vigorous-growing single or semi-double varieties. This may be done by grafting or inarching. The latter is best done at the end of March or early in April. The difficulty of obtaining dwarf plants is the only objection to this mode

of increase. The parent plant should be plunged, while the pot containing the stock is placed on the surface of the soil, as shown in illustration. You can work upon the most convenient shoot, or even upon more than one,

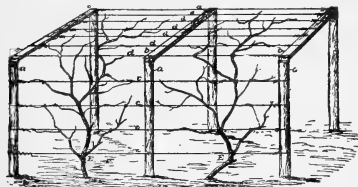


INARCHING CAMELIAS.

thus getting a good-sized plant of the superior kind in a very short time. Only one shoot is shown in the illustration in the process of being joined to the stock, but that on the opposite side, marked *b*, would be equally suitable for such treatment. You might also bend the upper part of the plant and use the shoots *e* and *f*. Begin by bending the shoot in the direction of the stock, so as to discover the part most easily approached to the stock without undue strain being put upon it. Now cut away a portion of the wood on the shoot; do the same to the stock, and take care that it is at the exact spot where the corresponding cut on the branch will come when the latter is inclined towards the stock. Bind both cuts firmly together, and either tie some moss around the stems where they meet, or cover over with a small piece of clay. This is to keep the air from the cuts, and so assist them to heal over and join more quickly. After some two or three months the inarched root will be sufficiently united with the stock to allow of its being removed from the parent plant. The top of the stock may also be cut off. This will throw the whole strength and sap of the stock into the severed portion of the camellia. When the shoot is first joined to the stock, do not remove all the growth, nor be in any hurry to sever the young plant from the older one. I would not advise it to be done until the plants are at rest again.—*Amateur Gardening*.

Grape-Arbors.—A neighbor of mine has a Concord grape-vine from which he has sold 400 pounds of fruit in one season, besides having a large quantity for his own

use. This vine now covers a large arbor-like trellis. Such an arbor can be made very cheaply, and will not only give a good support to a few grape-vines, but it will afford a fine shelter for children to play under during hot summer weather. The diagram shows such an arbor, 16



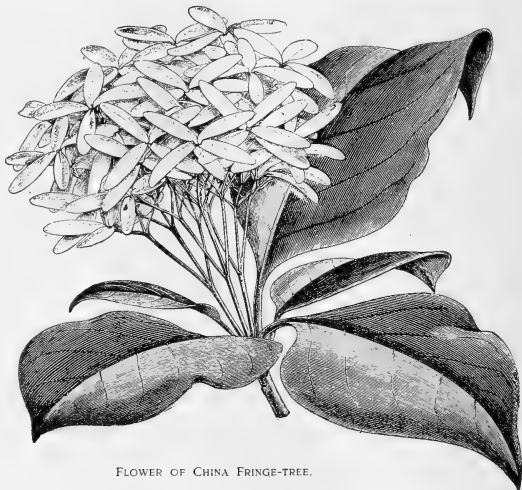
GRAPE-ARBOR FOR FOUR VINES.

feet long, 6 feet wide and $6\frac{1}{2}$ feet high. Six posts 9 feet long; three scantlings, $2\frac{1}{4}$ inches, 6 feet long; fifteen wires 16 feet long, and a few nails and staples, are all the material required. One day's labor will be sufficient to build the arbor and plant the vines—two on each side of the arbor. A good selection of varieties would be one each of Concord, Worden, Brighton and Niagara—all strong-growing sorts which would soon cover the arbor entirely. I believe more grapes can thus be grown on the same ground than with the ordinary trellis system.—*Farmers' Advocate.*

Orchids for Windows.—*Cypripedium insigne* is a capital plant for the south windows of a living-room, where no gas is burned. This is one of the handsomest of orchids, and its bloom lasts for six or more weeks when properly managed. The blooms must be carefully preserved from water overhead, but the roots of the plant must always be kept duly moist. This will be specially necessary after having a fire in the rooms, because the soil quickly dries under these conditions; and if not watered soon after becoming dry, the plants speedily become unhealthy. During the spring and summer they should be sprinkled overhead to wash away the dust and dirt, and may be stood outdoors when a steady warm rain is falling; such a washing will be found to benefit the plants greatly. The pots for the reception of this orchid should be half filled with broken pieces of pot, and above this a good layer of sphagnum moss should be placed, using for soil a potting mixture composed of peat and loam in about equal parts, to which may be added some chopped sphagnum moss and a little dried cow-manure. Press the compost down firmly about the roots, and thus prevent the richness of the soil from being use-

lessly washed away; in the latter loose state the strong roots could not work through it so well. The best time for repotting is immediately after the blooms have faded, and if a favorable opportunity occurs it may be done just before that time; but do not repot merely for the sake of doing so. If the plants do not want a fresh pot, then re-surface them with fresh earth at this time, dividing the stem and making several more plants. And here I would speak against the absurd practice of using the knife for the purpose of division; it may be wanted just to separate the growths, but afterward this instrument should be put out of reach, as the roots can be carefully unraveled without its aid.—*Gardening Illustrated.*

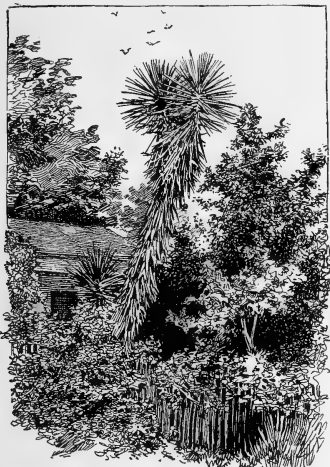
The China Fringe-Tree.—The botanical name of this plant is *Chionanthus retusus*, and the generic name comes from two Greek words signifying snow and flower, in reference to the snow-white flowers. The plant is a low shrub, a native of China and Japan, whence it was introduced into this country in 1850. It flowers in May, and the blooms are produced in cymes terminating the shoots. Just before expansion they resemble the flowers of a snowdrop, but when in full bloom they are erect, with deeply four-parted corollas, the segments of which are narrow, as in the flowering ash (*Fraxinus ornus*); both are members of the olive family. *C. retusus* has been grown in the open air in this country, and is hardy. The flowers are sweet-scented.—*Gardening World.*



FLOWER OF CHINA FRINGE-TREE.

The Spanish Dagger, or Angel's-Sword (*Yucca aloifolia*) is native in southwestern Texas, Mexico and Florida. Not indigenous to Alabama, Georgia, Mississippi and Louisiana, it was introduced into those states in ante-bellum times as a decorative plant, and has now

become common there. The tenacity of life in these plants is something remarkable. Plants that are ten to twelve feet high, and many years old, are as easily transplanted as seedlings. Indeed, in my practice with them I do not even trouble to dig them up by the roots, but simply chop them close to the ground, dig a hole as you

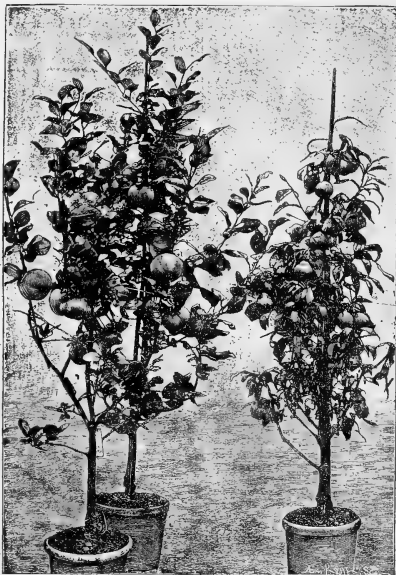


THE SPANISH DAGGER (YUCCA ALOIFOLIA).

would sink a post, stick the yucca into it, and it grows without dropping a leaf or even withering. Now that is what I call a very accommodating kind of a plant. If you are arranging a landscape or garden scene, and your yucca is too tall to give the desired effect, why, all you have to do is to lay it on the ground, chop as much as you desire off the end, and then plant it as you want it. What a prize one of these yuccas, so despised in the south, would be in a northern garden; and what excellent signs they would make if planted in tubs and placed in front of a retail florist's store! They would be very convenient at times in large decorations. Plants of any length, from six inches to 20 feet, could be shipped to any point safely. They are not hardy even at St. Louis, Mo., but they could be dug up in autumn, placed in a cellar or any place above freezing-point, and brought out again in the spring. As the plant grows in height the old leaves turn brown, die and hang down the trunk, as shown in the illustration. This old foliage can be easily stripped off if you will wear strong gloves to protect your hands against the strong, hard, sharp points of the leaves. This operation exposes the bark of the plant, which is a reddish brown, and when freshly stripped it presents a beautiful mottled appearance. This, however, soon fades to one color when exposed to the weather.

In the month of June this yucca bears a beautiful spike of white, bell-shaped, pendulous flowers, one foot to eighteen inches high, exceedingly pretty, but having a somewhat sickly odor. This flower retains its beauty for fully two weeks.—*The Woodsman*.

Fruit-Trees in Pots.—Apple and pear trees in pots cannot fail to be widely popular, the apple under glass being very remarkable for quality, size and appearance. The cultivation of pear trees in pots is singularly simple. The trees should be on the quince stock, grown as the engraving indicates. They can be placed in a glass shed at very close quarters until all danger from frost is past, when they should be plunged in an outdoor border prepared for them, over the rim of the pot, so that the roots may ultimately pass into the border. Pots perforated under the rim are preferable. The change which has taken place in the opinions held formerly about the cultivation of fruit trees in pots is curiously indicated by the fact that at one of the metropolitan shows, fruit grown in orchard-houses is not allowed to enter into competition with the ordinary classes.—*The Gardener*.



APPLE AND PEAR TREES IN POTS

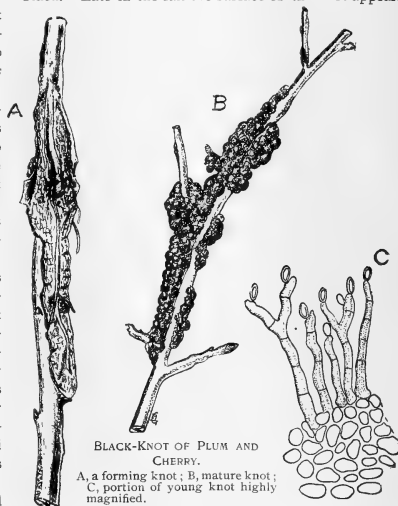
The Principles of Fruit-Evaporation.—Absolute essentials for rapid and uniform evaporation of fruit are: first, the greatest degree of heat possible without scorching and baking; second, a free, rapid and unobstructed current of dry air passing constantly and uni-

formly over the surface of the fruit. Heat alone will not evaporate fruit. Heat simply extracts the moisture, while the rapid current of hot air passing over the surface of the fruit sucks up the moisture like a sponge, in its passage upward and outward. If a dryer is not provided with this rapid and continuous air-current, it is simply an oven in which fruit will bake at 225 degrees, but with it, 300 degrees will not even overheat it. To obtain this current of hot, dry air, blowers, suction-fans and other appliances have been resorted to, in order to force the air up and through the fruit, but without any appreciable results. In spite of every effort the fruit drips and sweats; and the heated air, in its endeavor to escape, will rush to the places offering the least resistance, over-drying the fruit at such places and leaving the remainder comparatively green. The instantaneous removal of moisture by the dryer, as fast as heat brings it out, renders sweating and dripping impossible. It thereby prevents the fruit from sticking to the tray, and also leaves it clear, bright and of excellent flavor.—*Fruits and Flowers*.

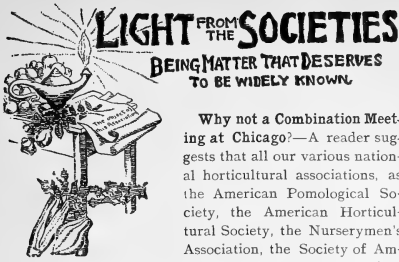
Hyacinthus candicans in Masses.—This is a beautiful bulb for beds and masses, and quite hardy. It is advisable to cover the surface of cold, wet soil, not to prevent the bulbs being frozen but to throw off excessive moisture. The bulbs do not long thrive in very wet ground, but in a well-drained position and sandy loam they do well. In a wet clayey border or bed the roots die back and the flower-spikes become small. In unsuitable soils this bulb well repays special cultivation; indeed, if peat and leaf-mold can be given plentifully, it is thoroughly at home. There are two varieties of *H. candicans*, and one is inferior—at least I consider it so. It is known as *H. princeps*, and has smaller and greenish-colored flowers. Both are known under the name galtonia, but *Hyacinthus candicans* is the best in every way. Its large pure white, fragrant, drooping flowers make it one of the most interesting of plants for beds or clumps. These bulbs are now so much grown for exportation to this country that they may be secured at a small cost, and when the long-lasting property of the flower is taken into consideration, they are worth good culture. If the small offsets from the large bulbs are saved and planted in a light compost, they soon make nice-sized bulbs. Plant in an open position, and avoid fertilizing with manures.—*Gardeners' Magazine*.

Black-Knot of Plum and Cherry.—The mature form of the disease appears as a rough, wart-like excrescence or distorted outgrowth from the bark of twigs and branches; in severe cases it may extend along the trunk for several feet. At A in the illustration is shown a knot only partly formed; B represents a mature knot on a small twig. The fungus may appear on any part of the tree above ground, and no portion of either trunk or branches is exempt from its attacks. The first outward sign of the formation of a new knot is seen in a swelling of the tissue within the bark, either in the fall or during the growing season of the tree. The swelling increases till the bark is ruptured, as shown at A. Over the sur-

face thus exposed the fungus sends out numerous threads (hyphæ), which produce a velvety appearance and are of an olive-green color. Microscopic examination of the velvety surface reveals multitudes of newly-formed and forming spores borne on these upright threads. These so-called summer spores, when full-grown, drop off from the supporting threads. When carried by winds, insects, or other agencies to another host-plant, under favorable conditions they start growth and form a new center of disease, from which, in time, other trees may be infested; and thus the disease spreads from tree to tree and from neighborhood to neighborhood. After a time the production of summer spores ceases, the velvety threads die away, and the surface of the knot becomes hardened, gradually changing in color to dark brown and finally to black. Late in the fall the surface of the knot appears



to be covered with pimples visible to the naked eye. These pimples are the outside covering of tiny spherical cases, inside of which, in long colorless sacs, the winter spores are ripened. They become mature and capable of germination in February or March. The fungus is perennial, and the best way to deal with thoroughly infested trees is to cut down and burn them. Trees not badly infested may be treated by cutting off affected branches some distance below the knot. This operation is best performed in the fall immediately after the foliage drops. The summer spores must also be taken care of in their season. As soon as there are any indications of the formation of a new knot, in spring or during summer, the branch on which it occurs should be cut and burned. The first outbreak would probably be noticed about the middle of May.—*Bulletin of N. Y. Experiment Station*.



Why not a Combination Meeting at Chicago?—A reader suggests that all our various national horticultural associations, as the American Pomological Society, the American Horticultural Society, the Nurserymen's Association, the Society of American Florists, and the National Forestry Association,

might be consolidated into one great association for the benefit of all. This would mean one meeting instead of five, larger membership, better attendance, and the best of work. The reports also would be more valuable and more sought after. Such a consolidation might possibly be an advantage in case of the American Pomological and American Horticultural societies, which work in similar lines, but the aims and interests of the others differ so widely that the idea is not practicable. Another suggestion of the reader—a grand combination meeting in Chicago in 1893, seems worth considering and agitating. A week's meeting in early autumn, in or near the Horticultural buildings on the Fair grounds, with one day set apart for each of the subjects of pomology, forestry, floriculture, market-gardening, landscape-gardening, and general horticulture, might be made a horticultural feast, and command a larger attendance than was ever seen before at any horticultural meeting.

Rose-Slug Remedy.—In the spring of 1890 the rose-bushes of the garden were divided into four parts, and as soon as the eggs of the rose-slug began to hatch were treated as follows: Division one, with whale-oil soap 1 pound, sulphur 1 pound, water 5 gallons; division two, Paris green $\frac{3}{4}$ ounce, water 10 gallons; division three, Paris green $\frac{1}{2}$ ounce, water 10 gallons; division four, white hellebore 1 ounce, water 3 gallons.

Each of these mixtures entirely destroyed the rose-slug, and the foliage remained fresh and green throughout the season, while a few bushes left as checks had all the foliage destroyed. A second treatment with hellebore was given for the second brood. This year two treatments with hellebore kept the rose-bushes free from slugs.—*J. C. Duffey before the Missouri State Horticultural Society.*

Horticulture in Missouri.—Secretary L. A. Goodman, of the Missouri State Horticultural Society, said recently: "If I should make the statement that now the various horticultural pursuits, the orchards, the vineyards, small fruit farms, nurseries, floral establishments and vegetable gardens of Missouri produced annually over \$20,000,000, scarcely one would be willing to believe it. Yet it is a fact, and we will see the day when it will reach much more. Why should we be afraid of the state's spending a few hundred thousand dollars in building up a cause of such benefit to the state."

Shrub Propagation.—The hydrangea starts from green cuttings as easily as the geranium. The secret of success lies in cutting back quite severely, as is practiced with some of our best roses. *Tamarix Amensis* also comes in the same category. We found it on the Volga in Russia. It is very like the tamarix of Eastern gardens, but is sufficiently hardy for our climate. In order to have a neat compact bush, cut back from year to year. It propagates from cuttings of 2-year-old wood put out in autumn like the currant, or from young wood in the greenhouse.—*Prof. J. L. Budd, Northern Iowa Horticultural Society.*

Evergreens for Ornament and Timber.—Evergreens are planted for three purposes—ornament, shade and timber. Nothing so beautifies a country home as planting and taking care of conifers, but too often they are misplaced. We see spruces planted in front of houses, shutting out all sight of them from the road. This is wrong; trees of this class should be placed behind the house to form a background. In front of the house should be planted only such trees as will be ornamental and will not hide it from sight. For shade a number of varieties can be used to advantage. If it be desired to grow a shade tree in the least possible time, plant Norway pine or pitch pine. Now as to evergreens for timber. If seasoned lumber is desired I would not advise any to plant evergreens; but if post timber is desired plant red cedar, and cultivate it well for at least two years. At the end of that time the trees will be making a good strong growth.—*John Wragg, Iowa State Horticultural Society.*

Irrigation with Fresh Sewage.—The capacity of land to dispose of sewage is fixed at the point where it becomes water-logged, which is determined by the character of the soil and relative moisture in the climate. At Croydon, England, with a moist climate and a clayey soil not underdrained, only 3,500,000 gallons per year could be used on one acre. At the Lawrence experiment station, and at Gennevilliers, near Paris, France, on a light, sandy soil, underdrained, and in a dry climate, even 12,000,000 gallons of sewage was advantageously used on one acre in one year. Thus it has been found that the number of persons whose wastes can be disposed of on one acre of land varies from 100 to 5,000.—*Dr. H. J. Barnes, Massachusetts Horticultural Society.*

One Crop at a Time.—We often see in the agricultural press notices of some one having raised a fine crop of spinach, peas, or some other vegetable, and at the same time stocking his ground with strawberry-plants for the next year. A crop of early peas may precede the setting of plants in July, provided a new ploughing is given, and there is no lack of fertility in the soil. We are never to forget that our strawberry crop is more than half raised the preceding year, and the question is pertinent, Which is better, a half crop of strawberries and a half crop of something else, or a full crop of strawberries?—*P. M. Augur, Massachusetts Horticultural Society.*

The Perfect Potato.—The most important point of an ideal potato is *quality*. It must cook quickly and

evenly; be mealy or dry, and yet not readily burst open and fall in pieces; of fine flavor, free from rank or earthy tastes. The form should be an elongated oval, as probably the best, all things considered, for cooking, as well as the most pleasing in appearance. There should be few eyes, and those even with the surface, making it smooth and handsome. The tubers should grow to a uniform size and shape, and should yield with fair cultivation not less than from 200 to 400 bushels an acre. To do this it must be of a strong, vigorous growth, able to withstand wet and drouth, not subject to blight—hence, free from rot. The tubers must keep well, remaining in good edible condition until new potatoes come again. Color matters little, so it is pleasing to the eye. As a rule, we find that those varieties which have the purest flavor are usually only moderate yielders, more subject to blight, more influenced by undue moisture and drouth than ordinary potatoes. On the other hand, those of great productiveness, as a general thing, are poor or only passable in quality. There has been a vast improvement in the potato in the last few years, and new varieties are constantly replacing older ones. In looking for a potato to produce the largest yield, we must select one not very far removed from the seed. If for fine quality it should be farther removed.—*Frank Ford, before the Ohio Horticultural Society.*

Reliable Currants.—The Victoria is a prime favorite, as it blooms late, produces enormous crops of large berries on long bunches, resists drouth and borers better than any other, and holds its foliage late. The next best is the old Red Dutch. Fay's Prolific, I presume, has disappointed more people than any fruit introduced in the last twenty years. I have seen a few bushes do fairly well in sheltered locations or when protected from spring frosts. It is a general failure in Michigan. In black currants, Lee Prolific and Black Naples are the best of the well-known sorts. Black Champion may prove superior; but don't waste any money on the Crandall—it is a worthless thing.—*Mich. Hort. Society.*

Fitting Poor Soil for Fruit Crops.—The poorest of all soils for this purpose is a poor sand resting on loose sand or gravel; but even this can be made to produce fairly well. Prepare it as follows: First apply a fair dressing of manure very early in the spring. Then plow not more than six inches deep; apply 75 or 100 bushels of wood-ashes, broadcast, and harrow in; then sow one peck of Mammoth clover-seed and roll or harrow in lightly. When the clover is nicely up, sow about 100 pounds of land-plaster to the acre. The clover will begin to show heads the latter part of July; put on a mower and cut the clover and weeds, letting them remain just where they fall. Next season let the clover grow as it pleases. In the fall or the following spring plow under, and your ground is in prime condition for fruit or any other crop; but there is one thing that must be done to make this plan always a success; the seed must be sown as early as the ground will work well; and another thing that must not be done, is sowing a crop of oats or other grain at the same time. Any land

that will not respond to this treatment is not worth cultivating. Where ashes can be secured in abundance, two or three hundred bushels per acre will be much better than less, but clover is almost certain to catch and grow well on any sandy land which has a dressing of ashes.—*Roland Morrill, Mich. State Hort. Society.*

Raising Strawberry Seedlings.—As soon as the fruit is thoroughly ripened, it may be broken up, the pulp or flesh well washed out and separated from the seed through a fine sieve or piece of muslin. The seeds are dried, and at once sown in a box of rather light soil, kept moist and in a shady situation until vegetation takes place, which will probably occur in two or three weeks. As soon as the plants are large enough to handle they may be pricked out into boxes, or potted off at once and afterward repotted from time to time, or planted out as may be required. Or the fruits may be dried in a sunny place and retained until early in the following spring, when the seed may be rubbed or picked out, sown, and treated as above. The former method has the advantage of gaining time, and from it I have been able to obtain fruit from some of the seedlings in about fourteen months after sowing the seed. The latter mode avoids the preservation of and carrying through the winter a number of small plants and the attendant risk of loss from slugs and insects.—*Thomas Laxton, before Conference of British Fruit Growers' Association.*

High Grade Fruit Wanted.—We cannot plant young orchards in land from which we have taken continued crops of grain and grass for years; and while the trees are growing continue to take off potatoes, oats and grass for fifteen or twenty years longer, and then hope to secure full crops of good fruit. The trees must be well planted in the first place, with roots pruned back to half their length and the tops cut in quite as severely. The branches of a nursery tree are not where they are needed; often two of them are nearly opposite, which will make the tree liable to split apart. Therefore, it is good practice to take off the top entirely, leaving only buds on the main trunk where the future branches are desired. When trees are thus prepared for planting, pruning for the next ten years can be done with a pocket knife, and the fruit and foliage will be where they are needed. Since the foliage plays so important a part in preparing plant-food for use, a good growth of leaves should always be ensured. It is of little consequence to use poisons against insects that devour fruit, and fungous diseases which destroy fruit, when the leaves are left to be infested with insects and parasites. Since I have sprayed the foliage of my orchard good Spitzenburgs can be grown once more. Before they were treated in this way these trees set full of fruit, but they never matured into large handsome apples. Healthy wood and healthy foliage are essential to vigorous fruit-buds and perfect fruit. There is a demand abroad for fruit of high quality. In the Old World flavor counts for more than appearance. Every barrel of Ben Davis apples we send abroad depreciates the value of the best American apples.—*Geo. T. Powell, Western N. Y. Hort. Society.*

Pruning Peach Trees.—Proper pruning is very essential to the beauty of the tree as well as to the production of first-class fruit. The first season's work should consist in rubbing off all shoots from the ground to a point about two feet high. The next year select from four to six small limbs along the space of one foot, taking care to have them as evenly distributed as possible around the body of the tree as well as up and down. If either side of the tree has a majority of limbs let it be on the side of the prevailing winds, and avoid the formation of crotches. This work is the laying out of the frame for your orchard, and will require a great deal of mechanical ingenuity, as well as imagination, to do it properly. The pruning after this will consist of rubbing off all shoots which start where not wanted this season. An annual trimming out of superfluous branches and cutting back of strong growths will be necessary in order to preserve reasonably open and well-ventilated tops and round, compact heads. Trees treated in this manner ripen their fruit perfectly, and it rots less than if the trees were allowed to choke up with inside branches.—*R. Morrill, Mich. Hort. Society.*

Fruit List for Wisconsin.—The special committee of the Wisconsin State Horticultural Society recommends the following varieties :

Apples.—Ten best varieties, hardiness, productiveness and quality taken into consideration, are, Oldenburg, Wealthy, Fameuse, Talman Sweet, Wolf River, McMahan, Yellow Transparent, Hibernial, Longfield and Newell. Additional list for special locations: Tetofsky, Red Astrachan, St. Lawrence, Fall Orange, Fall Spitzenberg, Alexander, Utter, Westfield, Willow Twig, Golden Russet, Walbridge, Pewaukee, Haas, Plumb Cider, Roman Stem, Transparent and Repka Malenka.

Crab-apples.—Whitney, Gibb, Hyslop, Sweet Russet, Transcendent, Martha, Novelty, and Spitzenberg.

Pears.—Flemish Beauty, Early Bergamot (for trial near Lake Michigan), Bartlett, Onondaga, (Swan Orange), Seckel, Winter Nelis, Clapp Favorite, Anjou, Doyenne d'Ete.

Plums.—De Soto and Cheney. Near Lake Michigan, Lombard, Imperial Gage, Yellow Egg (Magnum Bonum), Duane Purple.

Cherries.—English Morello, Early and Late Richmond (Kentish).

Strawberries.—For general cultivation and shipping—Warfield, Sandoval, Crescent, and Wilson. For near market and home gardens—Bubach, Warfield, Crescent, Jessie, Wilson, Haverland, Manchester, Sandoval, Bubach No. 5. Best varieties to furnish pollen for imperfect flowering kinds—Wilson, Capt. Jack, Michel Early, Jessie, Sandoval.

Grapes.—Moore Early, Worden, Concord, Delaware, Brighton and Telegraph.

Black Raspberries.—Gregg, Ohio, Souhegan, Nemaha (recommended with winter protection).

Red Raspberries.—Cuthbert, Turner, Brandywine, Shafter, Marlboro (with winter protection).

Blackberries.—Snyder, Stone Hardy, Ancient Briton. Winter protection is recommended for all.

Dezberries.—Lucretia, Bartel.

Currants.—Red Dutch, White Dutch, White Grape, Victoria, Fay and Lee (black).

Gooseberries.—Houghton, Downing and American Cluster.

Preserving Fruits.—When drying fruit it is important not only that it shall be sound and of good quality, but also that it shall be quickly prepared and rapidly dried. When all moisture is expelled it will keep for years in a dry place. One method of drying is to cook the fruit a long time, reducing it as nearly as possible to a paste; spreading this in thin sheets and drying in the sun or by evaporation. When free from moisture this fruit can be packed in boxes and will keep indefinitely. Another process of drying is to cook the fruit for a long time with sugar and water and then partially dry it. In this case the sugar is largely the preservative agent and the drying goes on only until no syrup drips. Then the fruit is packed closely in boxes or jars and will keep well in any climate; hardening, of course, when exposed to the air for a considerable period. This fruit is ready for use at any time, but is more of a confection than a sauce. The more modern process, and by far the most useful and healthful, is that of canning. The destruction of germs and the exclusion of air are the principles upon which canning is based. The article to be preserved is cooked for a short time and then put in jars from which the air has been expelled by heating them to the boiling point. They are then sealed, and when cold are set in a cool, dark place. If all the conditions be right the fruit will keep for an unlimited number of years, and when opened will be found to have nearly all the freshness and aroma of newly gathered fruit. Now, this is true of the majority of fruits, but not of all. The strawberry, subjected to this process, will come out a pale, spongy, insipid thing, whereas the raspberry seems to have its color, flavor and odor intensified. If, however, a generous amount of sugar be added to the strawberry in cooking, it will retain its shape, color and flavor. It is an error to attempt to can this berry without sugar or with only a small amount. Some fruits can be canned without heat or sugar. The jar should be packed full of the fruit and then placed under a faucet, having the water run in rapidly for a moment, that all the air in the jar be displaced; then sealed and put away in a cool dark place. Perhaps not many kinds of fruit would keep if put up in this manner. Certainly I should have no expectation of success with juicy fruit of any kind. I have, however, been successful with rhubarb. Green gooseberries and some kinds of plums can be preserved in this manner. It is a question with me if the acid in these fruits does not have a good deal to do with the keeping quality.—*Miss Maria Parloa, Mass. Hort. Society.*

Improving and Maintaining Fertility of Orchards.—Prof. I. P. Roberts' essay read before the Western New York Horticultural Society contained suggestions worth

remembering at this time. He said: "All plants love a fine soil, well aerated, relieved of surplus water, and well compacted, except a slight top layer. We must know the measure of fertility of the land before we talk about what fertilizers to apply. The roots of an orchard run all through the soil, a small part of the surface excepted. The land should be reasonably dry. If only moist, laying off in ridges might dry it sufficiently. Thus in some cases we simply sacrifice a little soil for the purpose of saving cost of drainage. Many young orchards are ruined by over-application of manures; others by starvation. What is wanted is healthy, hardy growth, without over-stimulation by nitrogenous application; for there is plenty of substance in the soil, but we lack the skill to get it out. Mineral applications will serve this purpose in many cases. When trees bear fruit the demand for food must be met at once; food should be in the soil before it is wanted. The roots have been feeding in the same places for years; we must put something there for them to feed upon. Prof. Roberts does not believe it necessary to plow bearing orchards. Clover should be planted and left to reseed itself. The amount of fruit on a tree should not be large for best fruit. Quality is essential in nearly everything; quantity floods the markets. The principle governing the pruning of grape-vines might perhaps be applied to fruit trees. The King apple might be improved by shortening the ends of its tree branches. Why not have the fruit nearer the roots? Do we want timber or fruit? Why should we not separate forestry and fruit-culture? Orchards should be treated moderately, liberally, or very liberally, according to their yields. Large yields cannot be expected without an abundant supply of digestible food. A combination of sheep-raising and orcharding will be found profitable. The orchardist is growing too much wood, too many seeds, too many poor-colored and poor-flavored apples. The remedy is heading back, thinning, and feeding a reasonable amount of plant-food. Peach and plum trees should be kept under constant cultivation, and fed with animal manures. Farm manures, however, are usually not so easily available as good commercial fertilizers. When the grower has not enough of domestic manures, let him liberally apply a good high grade fertilizer. Manures after exposure to the weather often cost more than commercial fertilizers.

S. Woodward says he makes a sheep-pasture of his orchards. The sheep is the best insect-killer, weed-killer, and destroyer of sprouts and suckers. A flock of 100 sheep are none too many for 10 acres of orchard. He pays the sheep for their work with linseed-meal and bran. His orchard has not been plowed in 14 or 15 years, and it is healthy and productive.

Pecan-Growing.—Fifteen years ago (at the age of 56), I was impressed with the belief that pecan-culture in the southern half of the United States was full of great possibilities, if due care and attention was given it. I purchased and planted the largest and best-flavored pecans that could be found, without regard to price. It was in this way that this new industry was begun; an industry

not only new to myself but new to the country at large. The pecan has now taken its place in the front rank, as the best and most profitable of nut-bearing trees, while the nut itself, where its merits are fully known, is pronounced superior to all others. And this industry must go on from year to year, increasing in popular favor as well as in profit to those engaged in its pursuit. Having on former occasions given figures showing actual results of my experience, I now only desire to refer, in passing, to one tree of the variety known as "Stuart Pecan," (soft shell), which has yielded this year over \$250 worth of nuts, at the price readily obtained for them. What branch of horticulture will pay better?—*Col. W. R. Stuart, Miss. State Hort. Society.*

Where Our Garden Seeds are Grown.—Seedsmen must draw on all quarters of the globe for their stock. Imported seeds are more extensively used in America than the average planter imagines. James J. H. Gregory recently spoke on seed-raising and seed-preserving before a farmers' meeting in Boston. He said: "Where the seed sold by American seedsmen is grown, is for the most part a question of cost and of climatic condition. Of the seventy or more species of vegetable seed, over half the varieties are imported. Of mangel-wurzel, about all; rutabaga, about nine-tenths; spinach, about nine-tenths; cauliflower, nearly all; lettuce, about half; carrots, about half; egg-plant, about half; parsnip, about one-third; radish, about all, with the exception of Landreth & Son, who raise their own. It is the general belief of American seedsmen that foreign-grown radish-seed is larger and better than home-grown. Parsley-seed is largely imported, Brussels sprouts, broccoli, chicory, endive, kohlrabi, and Swiss chard are almost wholly imported, as is salsify to a large extent. The finest varieties of celery are grown in this country in the vicinity of our large cities. Of cucumbers, but a few, and those of the fancy frame sorts, are imported. Of peas, most of the hard sorts are home-grown, and most of the softer, or wrinkled varieties. Dutch or rough-leaved turnip-seed is all home-grown. Of cabbage-seed, but few varieties are imported, and these are confined almost wholly to a few early sorts. Onion-seed, with the exception of the large Italian varieties, is almost wholly an American crop.

The foreign sources of seed are Canada, England, France and Germany. The importations from Canada are confined to peas. From England we obtain most of our mangel-wurzel seed, some of our early cabbage-seed, some varieties of carrot, celery, frame varieties of cucumber, leek, kohlrabi, parsley, peas, radish and turnip, and a portion of our flower-seed. From France and Germany come, as a rule, the choicer varieties of vegetable and flower-seed. When they want something rather extra in purity, or the finest strain in the vegetable or flower-seed line, such as cauliflower, celery, lettuce, egg-plant or radish, our seedsmen are very apt to turn towards France or Germany, rather than the mother country, even though they may sometimes have to pay rather a higher price for their purchase.

HE THAT QUESTIONETH

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists.

Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2905. **Propagating Oleanders.**—When is the proper time? I have no greenhouse.—MRS. McV., Mo.

2906. **Work on Botany.**—What one would you recommend for general use?—T. E. B., Conn.

2907. **Aucuba Japonica.**—Please give description and characteristics. Is it hardy in this latitude?—T. E. B., Conn.

2908. **Transplanting Large Fruit-Trees.**—Two apple and two plum trees, about six years old on my lot, must be removed. Can I transplant them safely? If so when and how?—H. M., Ohio.

2909. **Moles and Gophers.**—What can I do to prevent moles and gophers from eating off the roots of herbaceous shrubs, and riddling my lawn with runways?—MRS. McV., Mo.

2910. **Cure for Earthworms.**—Have tried salt in large quantities without avail. Soil has been heavily manured with stable manure for three years.—C. A. W., Ohio.

2911. **Fuchsia for Winter Bloom.**—How should I treat my plants in order to have them free-blooming next winter?—R. S. F., Mich.

2912. **Cold Storage for Winter Apples.**—How long can apples be kept in cold storage? Is the crop barreled immediately after gathering? Please give description of storage-house?—V. L.

2913. **Peach-Paring.**—Will someone tell me the best way of paring and pitting peaches for canning and evaporating?—N. A., Tenn.

2914. **Growing Various Vegetables.**—Please give plain directions for growing chard, spinach, endive, leek and kale.—SUBSCRIBER, Central Illinois.

2915. **Grafting and Pruning Fruit-Trees.**—Would like to see an illustrated article on these subjects.—SUBSCRIBER.

2916. **Greenhouse Heating.**—Tell us something more about Chas. Barnard's greenhouse. How would his heater do for a 15x15 conservatory, with an arch between it and a sitting-room, heated by a No. 4 base-burner?—SUBSCRIBER.

2917. **Keeping Dried Fruit.**—How can we prevent worms from getting into dried fruit that is kept over from one year to another?—A. C.

2918. **Growing Rhubarb.**—How shall I exterminate a long black beetle that attacks my rhubarb-stalks?—A. C.

2919. **Saving Girdled Trees.**—At what season should scions be inserted in trees that have been girdled or are diseased at the base? Some of my trees turned black just above the ground, and the bark died all around their trunks. We saved some of the trees by inserting suckers that had come up around them.—A. C.

2920. **Fruit Storage Cellar.**—Would like to see plans for fruit storage cellar, to be built of lumber, and mostly above ground. Thermometer sometimes reaches 35° below zero here.—L. S. J., Iowa.

2921. **Pruning and Training Grape Vines.**—What system is most easily understood and practiced?—C. F. T., Illinois.

2922. **The Kola-Nut.**—What are the characteristics of the tree; and could it be grown in the United States?—FLORIDIAN.

2923. **Lawrence Pear Grafted on Le Conte.**—Will it bear fruit freely? My trees set fruit sparingly. Would root-pruning cause them to be more fruitful?—C. P. C., Miss.

2924. **Pickling Barletta Onions.**—This variety makes choice little pickling onions. But to peel them is a terrible job. How can it be done most easily?—H. W., Conn.

2925. **Raising Seeds of Cauliflower.**—How is it done?—A. F. S., Washington.

2926. **Colors for Summer-House and Arbor.**—Give suggestions regarding colors that will best harmonize with the lawn, trees, etc.—H. S. G., Ohio.

2927. **Cyclamen and Primula in Summer.**—How should plants be managed that have bloomed all winter in the house?—J. H. G., New Jersey.

2928. **California Privet.**—Can it be propagated from cuttings?—E. H., Otsego Co., N. Y.

2929. **Remedy for Rose-Bugs.**—Our large rose-bushes last year were badly infested with these pests. What can we do to destroy them?—G. S. P., Pa.

2930. **Vitality of Seeds.**—How many years do seeds of cabbage, cauliflower, tomato, celery, bean, turnip, etc., keep their germinating power?—J. H., Ohio.

2931. **Making Cider-Vinegar.**—What is the best method of treating apple-cider to make vinegar of it?—J. L. E., Pa.

2932. **Pruning Growing Peach Trees.**—Will it injure the trees to cut them back severely after they bloom? Frost has killed the fruit. Trees are rather spreading.—G. B. B., Ohio.

2933. **Blackberries for Michigan.**—What varieties are safe to plant here? Is the Lincoln blackberry worth growing for market?—S. R., Mich.

2934. **Grass Among Fruit-Trees.**—Can alfalfa be grown in orchards without damage to the fruit-trees? Is there any other grass that will do for such a situation?—S. P. C., Texas.

2935. **Remedy for Currant-Borer.**—Is there any way to kill the worm that bores into currant and gooseberry-canec?

2936. **Layering Currants and Gooseberries.**—At what time should this be done?—J. C. S., Mich.

2937. **Onion Plants in Hotbed Dying.**—Plants turn yellow, fall over and die. What is the cause?—E. S. M., Ohio.

2938. **Early White Grape.**—Which is the best variety for New England?—W. C. L., Mass.

2939. **Cellar for Storing Roots.**—I wish to store from 10 to 14 hundred bushels of roots. Please give plan for cellar.—J. P., Ohio.

2940. **Remedy for Pear Scab.**—What can I do for my pear trees to keep the fruit from cracking and to free them from black spots?—J. H. F., Maine.

2941. **Asparagus Ped.**—Please give method of starting.—B. I. P. L.

2942. **Irrigating Gardens and Meadows.**—I would like to see an illustrated article on the best system of irrigation for small garden plats and for meadows.—C. H. C., *Mass.*

2943. **Irrigation Problems.**—What effect will it have on grass to spread water from a spring over it continually for days? What system will best irrigate a strawberry-bed 2x20 rods, that slopes gradually for 20 rods? How many gallons of water will a one-inch pipe discharge from a tank 20 feet high? How many a ¾-inch pipe?—C. H. C., *Mass.*

2944. **Onions Making Thick Necks.**—How can the formation of scallions be prevented?—J. B., *Col.*

2945. **Vinegar from Watermelon Juice.**—Can vinegar be made from watermelon juice? If so, how is it done?—J. B., *Col.*

2946. **Guano-Water for House Plants.**—How many spoonfuls of Peruvian guano should be put into a two-gallon watering-can for watering pot-plants?—E. O. N.

2947. **Cytisus Laburnum.**—Will it be likely to bloom in shade?—E. O. N., *Tenn.*

2948. **Grapes Under Glass.**—Which are the best sorts to grow in hot and cold houses? Could strawberries be grown on benches under the grapes?—W. M. W., *Montana.*

2949. **Commercial Fertilizers.**—What should I best use to grow gladiolus and lilies on hard clay timber-land, new, high and dry, gentle slope; plowed last fall, will be replowed and sowed thickly with buckwheat in June, plowed under when in bloom. Stable manure hard to obtain?—J. K., *Iowa.*

REPLIES.

2779. **Bleaching Celery by Tile.**—I think it much simpler to use boards for bleaching, but 3-inch tile will do very well, especially in the earlier part of the season. Wrap a piece of strawboard around a nearly full-grown plant, then slip the tile over it and withdraw the strawboard.

2815. **Growing Lettuce Under Glass.**—The length of time required for lettuce to reach marketable size, from the time seed is sown, depends on season, heat maintained, and management. If all conditions are favorable, marketable heads can be grown in two months.

2816. **Red-Spider in Hotbeds.**—This insect flourishes in a dry atmosphere. Persistent spraying will keep it in check. Try to have the spray reach the under side of all the leaves.

2862. **Propagating Junipers.**—Irish junipers are largely imported as stocks for most of the named varieties. The junipers are easily increased by seeds. They germinate more readily if the pulp is removed by maceration. Green cuttings, in sand under glass, root easily. Mature cuttings may be made in the fall and placed in a coldframe. Little protection is needed during the winter.

2870. **Heliotrope from Seed.**—The inquirer, who reports repeated failures, should try again, and keeping his seed-pans in a higher temperature than before.

2879. **Leached Ashes as Fertilizer.**—The difference in the value of leached and unleached ashes for fertilizers has often been pointed out in AMERICAN GARDENING. The firm of Munroe, De Forest & Co., of Oswego, N. Y., dealers in Canada unleached hard-wood ashes, thinks we should lay greater stress on this difference. They write us: "The process of leaching ashes removes their most essential fertilizing elements. A very large item in the cost of ashes, either leached or unleached, is transportation. The cost for transportation of leached ashes is considerably more than that for unleached, because the latter contain three or four times as much moisture. Hence, unleached ashes are easily worth three times as much for fertilizing uses as the leached. People who formerly used leached ashes but have once thoroughly tried the unleached, will not buy leached ashes again at any price."

2882. **Root-grafting Weir's Cut-Leaved Maple.**—This beautiful variety is usually propagated by budding or grafting on silver-maple stocks. Mr. Fuller says: "The scions should be taken from the trees early in winter and kept dormant until the sap has begun to flow quite freely in the stocks." Try root-grafting another season and report.

2905. **Propagating Oleanders.**—Oleanders are easily propagated by layering. This may be done by adjusting a flower-pot, suspended or on a shelf above the plant, in such a way that you can insert the tip end of one of the shoots through the drainage-hole. Then fill the pot with soil, and keep it there until roots have started, when the shoot may be severed from the parent plant. Cuttings can also be made of matured leading shoots. Insert them in single pots, and place in a close warm frame; or suspend small bottles filled with water in a warm room, and insert a shoot in each, wrapping cotton around the stem where it passes the neck of the bottle.

2908. **Transplanting Large Fruit-Trees.**—We have transplanted trees five to six years old, even quite late in spring, with entire success by taking up a good quantity of soil with the roots, and heading the trees back severely.

2909. **Moles and Gophers.**—The mischief-maker which destroys shrubs and herbaceous plants in our Missouri inquirer's grounds is probably the brownish, rat-like animal with broad forefeet (like a mole's), often called gopher—a name more properly belonging to a burrowing squirrel common in many parts of the country. We have no personal experience with them, but would advise the use of bisulphide of carbon. Pour a quantity into the runs, through a funnel and long tube inserted into the burrow, and quickly stop up the openings.

2910. **Cure for Earthworms.**—There is little need of worrying over the presence of earthworms in your manure-filled soil. These creatures have their place in the economy of nature, and it is yet an often-disputed question whether they are injurious or beneficial. In the soil of potted plants we do not want them, and can easily dispose of them by applying lime-water. In open ground we can also kill these worms by broadcast applications of powdered fresh (caustic) lime.

2911. **Fuchsia for Winter Bloom.**—In order to have plenty of bloom you should encourage new growth. Cut the plant down to the ground in September or October, that it may form an entirely new head. This gives you a chance to obtain a fine, bushy form, and plenty of bloom in winter.—H. W. E.

2912. **Cold-Storage for Winter Apples.**—We believe the fruit is usually barreled and headed up soon after harvesting. If kept in an equitable temperature, just at or above the freezing-point, it will keep almost indefinitely.

2913. **Peach-Paring.**—Parers for peaches are sold at hardware stores and by dealers in evaporators. Write to them for further information and prices.

2914. **Growing Various Vegetables.**—Swiss chard is nothing more nor less than a beet, having thrifty, rather curly, handsome foliage. The large white middle rib of the leaf is sometimes cooked like asparagus, the rest of the leaf like spinach. Its culture is simple. Sow seed as for beets in spring, thin to six or eight inches apart, and give clean cultivation. Chard and spinach are especially benefited by light dressings of nitrate of soda. Spinage for earliest spring use should be sown in autumn, and the plants lightly mulched during winter. Have the rows a foot apart, and plants about three inches apart in the rows. For summer use sow in early spring, just as soon as ground is in working order, and again later for succession. Cultivate freely and keep free from weeds. Endive makes an excellent fall salad, and grows well in hot weather. Sow seed in June or July, in rows one foot apart, leaving plants about eight inches apart in the row. A week or two before it is wanted for use or market, tie the tips of the leaves of each plant together over the heart, and thus bleach it. Kale is used for winter and spring greens. Sow seed in June or July, in rows two or three feet apart. Thin the plants to stand at least a foot apart in the row. In localities where winters are severe some light covering with marsh-hay or other litter may be required. The greens are fit for use only after they have been touched by frost in the fall. The young sprouts, in spring, may be boiled and served cold with oil and vinegar, as salad. Leeks are started from seed in early spring like onions. They should be hilled up and bleached before using.

2917. **Keeping Dried Fruit.**—Store it in a dry, cool, dark, closed room. If there is any danger of worms getting into it fumi-

gate with bisulphide of carbon by placing a saucerful of the liquid in the room and keeping it closed. But be sure to keep lighted candles and lamps away from the room.

2918. **Growing Rhubarb.**—Use plenty of rich, fine compost around the plants. Every third year take them up, divide the roots, and reset them, giving four feet of space each way to each root. The ground should be made quite rich.

2919. **Saving Girdled Trees.**—The use of suckers for that purpose is commendable. Insert them under the bark in early spring. If neglected until now, however, I would not fear failure if done at once.

2921. **Pruning and Training Grape-Vines.**—The Kniffin system is, perhaps as simple and easily practiced as any. Another renewal system much practiced in the lake region of western New York is thus described in the *Vineyardist*: The trellis, under this system, is made about 6 feet high; the first wire 30 inches from the ground, the next 14 inches above first, and the third or top wire 16 inches above second. The vine is trained straight, with one stem to first wire. This main stem is used year after year, and is all the old wood that is meant to be kept. When it reaches the first wire two canes are grown and tied to the wire opposite each other. These are used for fruiting. When done fruiting for the season these are pruned off, and two or more new vines or canes, which have started near the head of the vine (where the main stem meets the first wire) are retained. These vines are of one season's growth and have strong, vigorous, good fruit-buds, ready to replace the old ones pruned off, and to be tied down to the lower wire for fruiting. During the growing season, as soon as the young canes are long enough, they are tied to the upper wires, the result being that by July 1 or 15 the whole trellis is covered evenly from bottom to top, and the fruit is securely held between the first and second wires.—When the canes reach the top of the trellis they are allowed to droop over.

2922. **The Kola-Nut.**—This has often been mentioned as possessing great stimulating properties. "These nuts," says the *American Agriculturist*, "are the product of several species of the genus *sterculia*. The trees bear them grow from 30 to 60 feet high, in general aspect resembling chestnut trees. They are natives of Western Africa—the hot, moist lands lying between Sierra Leone and the Congo or Lower Guinea. The species of *sterculia* most highly prized is *S. acuminata*, of Beauvais, or the *Cola acuminata* of Robert Brown. The nuts are of an oblong shape, three forming a ball like a very large horse-chestnut, fully two inches in diameter. The individual nuts have a rugged, dark brown surface. Inside they are light brown, tough as wood, and have no flavor. Chemical analysis shows that the kola-nut contains from two to three per cent. of caffeine, much more than coffee-beans and tea-leaves do. To many African tribes the kola-nut is what coffee and tea are to us. It is not only esteemed for purposes of nutrition, but preëminently as a nerve and muscle bracer, and as a stimulant. The nuts are used fresh, and also in the form of dried powder. Kola is also invaluable to persons who make too free use of ardent spirits, as well as to all who undergo violent or long-continued exertion, or exhaustion of mind and body, enabling persons eating it to sustain prolonged effort without fatigue. The kola-nut could probably be grown in the hot, moist lands of our southern states bordering on the gulf of Mexico. The tree begins bearing about its fourth or fifth year, increasing the crop of nuts till the tenth year, when a single tree is said to average annually one hundred and twenty pounds of seed. When the tree reaches maturity it bears flowers and fruits continuously and two collections a year can be made. If people can succeed in furnishing kola-nuts cheaply, and in finding methods of making them as palatable as coffee or tea, they will compete with these articles, to which, in some respects they are naturally superior."

2923. **Lawrence Pear Grafted on LeConte.**—Root-pruning will be quite likely to improve the fruit-bearing tendencies of thrifty-growing trees that produce more wood than fruit. To bring fruit next year, root-pruning should be done in the earlier part of this season.

2924. **Pickling Barletta Onions.**—Peel them as the professional pickle-makers do: Put the little onions into brine just as

they come from the ground—tops, roots and all. After the salt has had its effect, the volatile oil, which causes the tears in one's eyes, has lost its strength, and the little bulbs are easily cleaned and trimmed.

2925. **Raising Seed of Cauliflower.**—Francis Brill, in *Farm Gardening and Seed Growing*, says: "The seed is mainly procured from Europe, and there is but little grown in this country, because of our hot summers. If planted very early it will blossom, and some seed will mature under favorable circumstances: but the surest way is to sow seeds in July, transplant, and keep the partially grown heads over winter in a coldframe or cellar. In spring set them out as we do early cabbages for the same purpose." The inquirer's climate (Washington) is probably well-suited to the production of cauliflower.

2926. **Colors for Summer House and Arbor.**—The best color for a summer house and grape-trellis is some plain unobtrusive one. The grays and browns of stones, rocks and tree-trunks show what colors harmonize well with natural garden beauty. Pale yellow, the color of sunshine, harmonizes very well with landscape or tree effects. Any of the foregoing are preferable as colors for garden objects to white, green, blue and pink.

2927. **Cyclamen and Primula in Summer.**—With the exception of choice double white varieties we seldom care to keep primulas over the summer, preferring to raise young plants from seed sown in June or July. These plants always give more satisfactory bloom in winter than older plants. There is no difficulty in keeping the double white varieties over summer, however. Put them into a frame or under a tree, as they love a moderate temperature, constant moisture at the roots, and a somewhat shaded position. In September take them out of the pots, cut off nearly all the roots and leaves, plant in smaller pots, and start into growth. Cyclamens may be given the same treatment.

2928. **California Privet.**—All the species of *ligustrum* are readily propagated by cuttings planted in the open ground, or under glass.

2929. **Remedy for Rose-Bugs.**—Hand-picking and knocking off on sheets early in the morning are almost the only ways of destroying rose-bugs, and they are not always successful when the bugs are present in large numbers.

2930. **Vitality of Seeds.**—Vilmorin gives the following average number of years that the seeds named will retain their germinating power: Bean, 3 years; beet, 6; cabbage, cauliflower, turnip, radish and kohlrabi, 5; carrot, 4 or 5; celery, 8; cress, 3 to 5; cucumber and endive, 10; egg-plant, 6; lettuce, 5; corn, 2; melon, 5 to 6; onion, 2; parsley, 3; pea, 3; pepper, 4; pumpkin, 4 or 5; rhubarb, 3; salsify, 2; spinach, 5; squash, 6; tomato, 4.

2931. **Making Cider-Vinegar.**—If you have good apple cider the process of turning it into vinegar is simple enough. Keep the barrels full and let the cider ferment. This drives nearly all impurities out through the bung-hole. The warmer the storage place, the more active will be this process, and the sooner the vinegar will be formed. After violent fermentation has ceased, draw off the cider, put a few gallons of strong cider-vinegar into a clean vinegar-barrel and fill half full with cider. The bung-hole should be covered with a small-meshed wire screen to keep out vinegar-flies. If the barrel is kept in a warm room, vinegar may form within six months.

2932. **Pruning Growing Peach Trees.**—As the fruit is killed for the season, the energies of the trees might now be directed toward the production of a well-shaped head, and of wood for fruit production next season. I would not hesitate to head back the straggling growers at once, quite severely.

2934. **Grass Among Fruit-Trees.**—For peaches, plums, dwarf-pears and quinces we would recommend clean culture. Apple trees in full bearing, however, are not injured by sowing alfalfa or any other grass among them, provided this is pastured by sheep or hogs.

2935. **Remedy for Currant-Borers.**—Cut out and burn in autumn or early spring all stems found hollow. During the period when moths and beetles are on the wing (June), they may

often be caught and destroyed, especially on cool mornings when they are comparatively sluggish.

2936. **Layering Currants and Gooseberries.**—Currant-cuttings strike root so easily that the layering process is seldom used. The cuttings are made of matured wood in autumn, and at once planted out in good well-prepared soil, or they may be tied in bundles and buried in the cellar in sand, then planted in the spring. Cuttings can also be taken in spring and placed directly in the ground. Many nurserymen prefer to take them in August, strip off the leaves and bury in bunches with the root end up. Green-layering is sometimes practiced with rare sorts, or single eyes may be used. Fay currant does not root as readily as other sorts, and perhaps layering may give good results. Gooseberries can also be propagated by cuttings, making them of the mature wood six or eight inches long, and inserting them two-thirds of their length in sand or soil. This method will be safer if the cuttings are taken in August or September, and stored during winter in the same way as currant-cuttings. For mound-layering, old plants may be cut back quite severely in autumn; this treatment will result in the production of many young shoots. Soil is then heaped over the stools and around the shoots. The shoots send out roots near the base, and straight, stocky plants are obtained. The shoots of English gooseberries are allowed to remain mounded two years; the American sorts usually only one season. The young plants are then taken up and planted out in nursery rows.

2938. **Early White Grape for New England.**—By all means plant the Green Mountain (Stephen Hoyt's Sons), or Winchell (Ellwanger & Barry). It is the best very early white grape with which we are acquainted, and we think it is perfectly reliable in the New England states as well as here.

2940. **Remedy for Pear-Scab.**—The trouble with the inquirer's pear trees is scab. Spray the tree repeatedly with the Bordeaux mixture. Formulas for making it were given in May number.

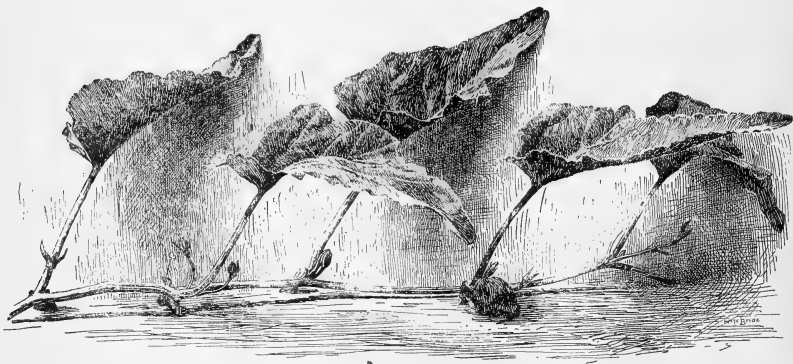
2941. **Starting an Asparagus Bed.**—Set plants in early spring six inches deep, in rows four or five feet apart, plants two feet apart in the rows. The soil should be warm and well manured. A southern or southeastern exposure is best, as it will produce early shoots, which always pay best.

2944. **Onions Making Thick Necks.**—To avoid scallions, sow good seed of good varieties, as early in spring as the ground can be prepared, on well-drained soil; or if you practice the new onion-culture, start your plants in February, and transplant as soon as ground is ready and weather will permit.

2945. **Vinegar from Watermelons.**—We see no reason why watermelon-juice could not be converted into vinegar. If the juice does not contain sugar enough, put in a little molasses or honey and let it ferment.

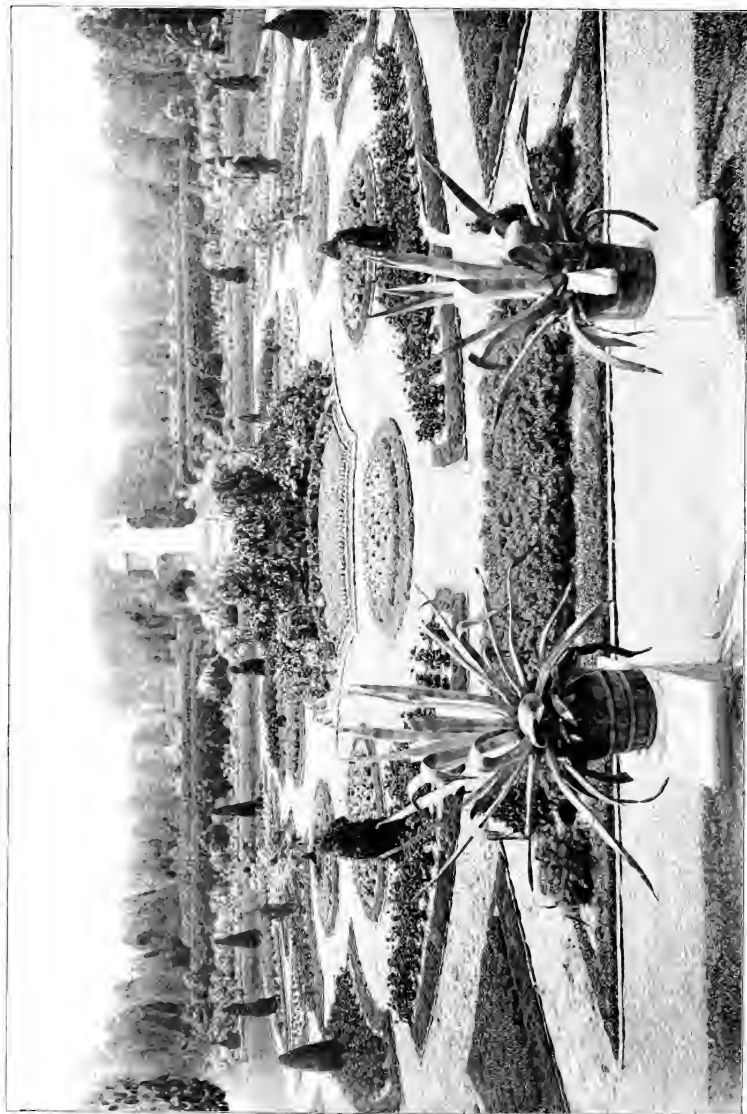
2946. **Guano-Water for House Plants.**—Guano does not contain as much nitrogen as house plants need. The amount to be put into the water used for a stimulant depends of course on the condition of plants, size of their pots, and the frequency of application. It is always best to be cautious. Put a heaping teaspoonful into your two-gallon can at first, apply once or twice, and note the effect. Then regulate accordingly.

2949. **Commercial Fertilizers.**—Work some ground bone into the soil. There are several so-called "plant-foods" put up by different dealers, which prove satisfactory in such cases, but they are rather expensive to use in a large space. The bone will be found more desirable than compound fertilizers, though some thoroughly well-rotted stable manure would be an addition in the stiff clay.



*In June 'tis good to lie beneath a tree
While the blithe season comforts every sense,
Steeps all the brain in rest and heals the heart,
'Brimming it o'er with sweetness unawares,
Fragrant and silent as that rosy snow
Wherewith the pitying apple tree fills up
And tenderly lines some last year's robin's-nest.*

—LOWELL.



SHAW BOTANIC GARDENS, ST. LOUIS. The Porterre with Herbaceous Grounds and Grove in the distance, as seen from the Plant-houses.

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No. 7

FLOWERS OF THE OLD GARDENS.

SOME SWEET AND STATELY BEAUTIES.

A brave old house, a garden full of bees,
Large drooping poppies and green hollyhocks,
With butterflies for crowns, tree-peonies,
And pinks and goldilocks."

LD-FASHIONED gardens were wide and roomy, sweet, restful and natural. In these days a garden is an artificial production with which nature has as much to do as with the weaving of a

Turkey carpet. The art of carpet-bedding has been carried to perfection, and, in consequence, we all know what to expect when we enter a flower-garden in the summer months. There are patches of scarlet, purple and white, as smooth and even as the emerald turf in which they are embedded. There is not a withered leaf nor a straggling spray to be seen, for it is the gardener's first object to repress the luxuriance of nature. What stately plants are these, and what dignified names they bear! Our grandmothers would scarcely recognize any of them, nor would they see many of their own favorites.

It was not so in the gardens of our youth. There was the stamp of character and all the charm of a surprise in the distinctive peculiarities of the old-fashioned walled gardens. One was famous for its peaches, sheltered from early frosts by the mossy roof of an old shed; another for its wealth of golden-drop plums. In one was a shady corner for lilies-of-the-valley; in another a sunny exposure where the autumn violets were the first to bloom. In all these were grass alleys, crooked and hoary old apple trees valued as much for their age as for their fruit, and a wealth and variety of pot-herbs. One wall was crowned by a patch of Aaron's-rod; another was fringed with wallflowers; and the old bricks were often covered with a network of delicate and beautiful creepers. There was the delightful smell of newly-turned mold mingled with the fragrance of a hedge of sweet-peas or that of a bed of clove-gillyflowers. Sweet-william and mignonette filled the vacant places, and the

bees from a row of yellow-painted hives were humming over all.

Once in a while, in the country, you will stumble upon a garden where some of these old-fashioned flowers thrive in their glory. Peonies, poppies, hollyhocks, columbines, sweet-sultan, clove-pinks and the like, were the delight of our grandmothers; and they are beautiful in color and form, but they are not fashionable. Generally the housewife has some excuse for their existence—"My husband dotes on pinks," or "The phlox was mother's favorite flower." In one garden that I know of there is in one corner a bed where, every year for more than a hundred years, English forget-me-nots have blossomed. The seed sows itself, comes up in time to bloom, and the flowers are as blue and star-like as when pretty Dolly Rutherford plucked a handful of them to wear on the breast of her dress the night she danced with Lafayette and Rochambeau.

In some of the old gardens one could find beds of Easter lilies mingled with clumps of spider-lilies, sweet-williams and columbines of every hue. Intermixed with them are such annuals as mignonette and sweet-alyssum, and the beds are edged with bluebells as sweet as a baby's breath. Not a few of the plants were set out perhaps by the first settlers or their wives, who brought the roots or slips from their older homes. If all these plants only bloomed at the same time, what an array of sweet, old-fashioned beauty there would be.

All along the banks of Kittery and the Piscataqua one will see a blaze of roses through the months of June and July, and the bushes are more than a century old.

In the old gardens around the Wentworth house, in Portsmouth—the same grand mansion that Longfellow called

"Baronial and colonial in its style"—

are many hedges of lilacs. They border the grounds, and even shut in one end of the mansion, with which they seem to hold sweet communion. When they are



in bloom, here is a sight worth seeing. The whole air is scented for rods around with the fragrance of the delicate pale lilac-blossoms. And they have bloomed here year after year ever since the lovely Lady Wentworth had the first ones set out in ante-Revolutionary days.

For most of us the old-fashioned flowers have associations. I never see a spray of lilacs or breathe the fragrance of sweet-williams and mignonette without thinking of the old school-house where these flowers, placed in an old pitcher or bottle, stood on the teacher's desk through long golden summer days. And the roses I have plucked

for my pretty school-mates, and the great peonies I have worn under my hatband, and the bunches of poppies and hollyhocks I carried to cheer a sick friend, all come to my memory whenever any of these flowers pass under my notice. These old flowers have a meaning and significance that newer favorites have not. They speak of another time—of the life of past generations—and their very perfume revives romances rich and varied as any of those in the Decameron.

New Hampshire.

FRED MYRON COLBY.



THE ECONOMIC PLANTS OF JAPAN.*

ROOTS AND TUBERS USED FOR FOOD.

(Continued from April issue.)



PTERIS AQUILINA, L., Jap., *Warabi*, the common brake, grows wild everywhere in Japan, as also in America. Starch made from its thickened underground stems is mixed with barley or millet and used for food in northern Japan, where it is too cold to grow rice. The plant is so abundant in the wild state that it is not cultivated. The starch from the

plant is also mixed with persimmon-juice to form a paste. This paste is used in the construction of umbrella and jinrikisha coverings, as it does not lose its adhesive qualities when moistened.

PUERARIA THUNBERGIANA, Benth. (*Fachyrhizus Thunbergianus*, Sieb. and Zucc.; *Dolichos hirsutus*, Thunb.). Jap. *Kudzu*. This very remarkable vine grows wild in great abundance on the lower slopes of the mountains in central Japan. It is a large, coarse, woody, deciduous vine which in its mountain home twines its long slender branches over bushes and trees within reach; or trails over the rocks and up the slopes on the bare ground, striking root from the nodes at frequent intervals, thus establishing new centers from which to radiate. It has no tendrils, but climbs by twining. The vines are of nearly the same thickness throughout, and the entire plant is covered thickly with short, rough hairs. The leaves resemble those of beans, having three leaflets

raised on long petioles, rough on both sides and frequently lobed. The illustration shows the end of a young shoot, much reduced, and one of the young leaves outlined natural size. The plant has three distinct economic uses. The roots are fleshy and yield starch of excellent quality; the tough fiber of the inner bark is manufactured into a sort of cloth which combines fineness with remarkable strength; and in certain situations the vine is unparalleled for ornament and shade. It is probably in this latter capacity that it will be prized in this country. The pueraria will thrive in any soil, though it attains its greatest vigor in a porous, rather sandy soil where the roots can push freely in all directions, like the soil formed by disintegrated scoria enriched by accumulations of humus, found on the mountain-slopes of its native land. I know of no woody plant that can at all compare with it in its extraordinary rapidity of growth, even under conditions which do not favor best development. In the summer of 1886 I planted a cutting just rooted (which I bought in a nursery for two cents), beside the piazza of the half-foreign Japanese house I occupied. It soon became established and made a good growth the same summer, but did not attract special attention, and was cut back to the ground early in the following spring. During the summer of 1887, when the plant was but two years old, it made what appeared to me so extraordinary a growth that I determined to take the combined lineal measure of all the branches. At the close of the season, when the leaves had fallen, the

* Copyright by the Author.

branches were accordingly cut down and careful measurement made, which showed that that summer's growth had reached a total length of 4,275 feet. It covered 400 square feet of the piazza-front with a dense net-work of branches and leaves. It was again cut back severely, so that only from twelve to twenty feet were left of each of the leading branches. In 1888 the growth was even greater. Cut down and separated as before the total growth of that year measured the astonishing length of 6,300 feet. Having thus become familiar with its habits and in a measure attached to its robust homeliness, it was with no

the spikes fade before the upper ones open, and those which prove fertile are followed by a large, flat pod.

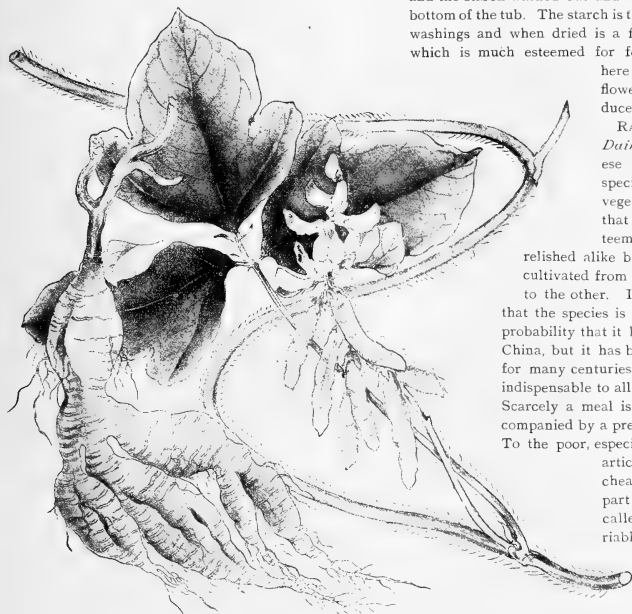
The root, which is always fleshy, is of variable shape. Sometimes it is comparatively short and compact, as shown in the illustration, but I have also seen it spread out in all directions, the fleshy portion of each of the main branches being from four to five feet long, as thick as a man's arm in the middle and tapering to both ends.

The wild plants are dug for these roots, and often with great difficulty. When a sufficient quantity of them has been gathered, they are cleaned, cut in pieces, crushed, and the starch washed out and allowed to settle to the bottom of the tub. The starch is then purified by repeated washings and when dried is a fine, pure white article, which is much esteemed for food. In the drawings

here shown the root and flower-spikes are both reduced in size.

RAPHANUS SATIVA, L.; Jap. *Daikon*. The giant Japanese radish belongs to this species. There are but few vegetables in the country that are so universally esteemed as this radish. It is

relished alike by rich and poor, and is cultivated from one end of the country to the other. It is not certainly known that the species is indigenous. There is a probability that it has been imported from China, but it has been cultivated in Japan for many centuries, and become well-nigh indispensable to all classes of the Japanese. Scarcely a meal is eaten which is not accompanied by a preparation of this radish. To the poor, especially, it is an important article of food because of its cheapness. It is for the most part made into a condiment called *okoko*, which is invariably eaten with boiled rice, and prepared by packing the roots in brine. In this form every household keeps a supply of the vegetable the year round.



PUERARIA THUNBERGIANA.

little gratification that I found on my arrival here a similar vine draping the doorway of the house I was to occupy. The vine grows here with its wonted vigor, though it is not equal in that respect to its fellow in Japan. It appears to be entirely hardy, as it has never been protected though the temperature occasionally reaches 20° below zero. The unmaturing shoots die every winter, but they should always be removed, whether they die or not, in order to facilitate training.

The flowers are not striking. They occur in large, purple spikes in the axils of the leaves in August, but only on wood several years old. The lower flowers on

The *daikon* is of rapid growth, being full-grown in from 60 to 100 days from the time of sowing. It can be grown all summer, but the main crop is sown from July 15 to August 15. The method of culture is the same in all cases. The seed is sown thinly in rows two feet apart, and when well up the plants are thinned to suit the size of the variety, the largest one and one-half to two feet apart in the row. The crop is usually manured two or three times with liquid manure, which is carried to the field in large buckets slung on the ends of a pole and borne on the shoulder. A fair average yield is about ten tons per acre. There are a large number of varie-

ties of *daikon* scattered over the country, many of them known only in small districts here and there, to which their culture is confined. Most of them are white in color, but one may also occasionally see red, black or purple varieties. As an article of food the *daikon* contains but little nourishment, nearly 95 per cent. of the root being water. It is eaten raw or boiled and pickled, but particularly in the latter form, as *okoko*. There are many brands of this condiment, which, however, differ chiefly in the time they have been in pickle. Ordinarily the white radish is colored yellow in the pickle by the addition to the brine of certain quantities of rice-bran. For this preparation the roots are pulled in September, and being tied in small bundles with straw-rope they are hung on poles to dry for about six weeks. At the end

to every 100 roots, and if it is to be kept for a couple of years, it being claimed that the flavor improves with age, the proportions are seven *sho* of salt and five *sho* of *nuka* to 100 roots. In all cases the roots must be kept completely covered with the brine. I am not aware that the rice-bran has any effect on the flavor. It gives the roots the rich yellow color which is considered essential, and it facilitates closer packing. When used the roots are cut into thin slices which are eaten with boiled rice. The flavor is not readily described. The strong radish-flavor which is still prominent is tempered by the fermentation, the brine and the strong peculiar odor. Let it suffice to say that the taste for it must be acquired before it can be relished. By another method in which no rice-bran is used, the *okoko* remains white. For this kind the roots are not dried, but can be pickled as soon as they are pulled and washed. Two *sho* of salt are used in packing 100 roots, and after eight days four *sho* of *koji* (the ferment used in making rice-wine) are added to the pickle, which is ready for use in a month.

SAGITTARIA SAGITTÆFOLIA, L.; Jap. *Kuwai*, *Gowai*, *Suita-guwai*, *Agi-nashi*. (Arrow-head.) Wild in ponds and marshes all over

the country. It produces edible corms, which form an important article of diet for Japanese people. It is quite generally cultivated where suitable places are found, and it has been under culture in Japan for upwards of 2,000 years. This being the case, we might naturally look for many varieties. The number is, however, not great, and there is little difference between most them. They must be grown in shallow water, either in ponds or sluggish streams. Propagation takes place from the small corms, which are set in rows in the mud two feet apart and 18 inches between the plants, early in May.

The yield is claimed to be best when they are planted with the base turned upward. Once planted they require but little further attention, and will continue in the same place for an indefinite length of time. Of culture, in the sense of working the bed, they receive none, and any weeds that spring up are disposed of by tramping them into the mud. Each plant produces from 15 to 20 bulbs or corms, which are pulled up with the old plant in the fall or winter. Enough bulbs will always remain to stock the bed with young plants, and often these are marshaled in rows after they start to grow.

STACHYS AFFINIS, Bunge (*S. Sieboldi*, Miq.); Jap. *Chorogi*. The roots of this plant produce numerous small, curly tubers, which are highly esteemed as a vegetable. Though the plant has been known to botanists



TRICHOSANTHES JAPONICA.

of that time nearly half the water has evaporated and the roots can be bent and twisted without breaking. They are then carefully washed and at once packed in tubs of suitable size between layers of a mixture of rice-bran and salt. When the tub is full, warm water is poured over the contents and the roots are weighted down with stones. A fermentation soon sets in, converts the roots into a sort of sauer-kraut, and at the same time develops a strong and disagreeable odor, which most foreigners regard as unbearably repulsive. When the *okoko* is designed to be used in from 30 to 40 days every 100 roots of the *nerima* variety requires nine *sho* of salt (a *sho* is about equal to 1½ quarts) to seven *sho* of *nuka* (rice-bran). If to be used during the following summer, it requires five *sho* of salt and five *sho* of *nuka*

for a long time, it is only comparatively recently that it has taken rank as a vegetable. It is rapidly growing in favor both in England and France; but in this country it is scarcely more than a novelty in the experimental stage.

The *Chorogi* is a native of Japan, and the edible nature of its tubers has been known to the Japanese for centuries. They gather the tubers from wild plants where these are abundant, and they also occasionally cultivate the plant, but it is not one of their common vegetables. It is partial to moist places and occurs most frequently in the north. The plant as it has come under my observation grows in thick clumps, the stems reaching a height of between two and three feet; foliage light green, rough, hairy; stems square; the plant having the characteristics of the mint family, to which it belongs. In the fall of the year the tubers are abundant; small (about the size of large filberts); and they appear curly from several sharp contractions which encircle each tuber. The Japanese usually boil the tubers as we boil potatoes and eat them with *shoyer*.

TRICHOSANTHES CUCUMEROIDES, Ter. (*T. quidricirrha*, Miq., *Platygonia Kæmpferi*, Nandin); Jap., *Karasuwari*. The Japanese name means literally crow-cucumber. A slender, herbaceous vine attaining at times a great height. Usually it is found in hedgerows, and rambling over bushes and small trees in the outskirts of forests. It climbs by tendrils which spring from the coils of the leaves. These leaves are dark green, dull or even velvety in appearance, cordate, obscurely three-lobed, dentate and much resembling a cucumber-leaf. The foliage is dense, varying much in size, and very orna-

mental. Flowers white; three to four inches long; margin of petals fimbriated. Its fruit is like small, oval cucumbers, red, about three inches long, and ripens in the fall just before frost. The whole plant is very ornamental and its profuse growth makes it a suitable covering for piazzas, summer-houses and trellises.

Its value as an economic plant lies in the root. The plant is perennial, the root is rich in starch and attains a great size with age. At ten years of age the starchy portion of the root will often measure three feet in length and eight to ten inches in diameter. The fine white starch made from these roots, besides being used as an article of food, is a favorite cosmetic among the Japanese ladies, and is called *Tenkwasun* (powder of heavenly flower). With it they powder freely their faces, necks and arms on feast-days and whenever there is occasion to dress unusually well. The seed of the crow-cucumber is also used as a cosmetic. It is ground or crushed, stirred in water and wrung through a cloth. It is claimed for it that it softens the skin and clears the complexion.

TRICHOSANTHES JAPONICA. Regel (*Gymnopetalum Japonicum*, Miq.); Jap., *Ki-karasuri*. In habit of growth and leading characteristics this plant resembles the preceding one. It is, however, smooth; the leaves are shining green and more decidedly lobed; the tendrils in the axils are five-parted, one finger being longer than the others. The flowers are white and also fimbriated like the last, but they are shorter and broader and the fruit is larger. Some idea of it is given in the illustration (page 388).

Kansas.

C. C. GEORGESEN.

SMALL FRUITS IN MAINE.

OLD VARIETIES STILL TAKE THE LEAD.



SOME writer not long ago advised horticulturists to discard the Crescent strawberry. That may be good advice for some sections, but in Maine the Crescent is the most popular market variety grown, and the most productive one. I can grow three quarts of this berry as easily as two of any other sort that I have yet tested. It begins to ripen early and lingers late. I know it to be perfectly hardy, as I have never given it winter protection. The snow in this latitude usually remains on the ground from the middle of December until some time in April. The only precaution necessary to observe in growing Crescent berries is to select ground inclined to the east or south, where the snow is more likely to blow on than off. But in spots where the snow has blown off and the vines have been much exposed, I have never known them to winter-kill. In fact the Crescent seems to bear the same relation to strawberries that the Baldwin does to apples, and the Lombard to plums. The local markets in this state, as a rule, prefer moderate size and quality, at

moderate prices, to large size or better quality at higher prices.

Next to the Crescent the Haverland strawberry is the most productive, and it is of rather better quality than most berries. The Bubach will give two or three fair pickings of very large but quite soft berries in mid-season. The Belmont is very hardy, and fairly productive of berries of good quality. I think the strawberry must be more capricious in this section than elsewhere. Many varieties that succeed elsewhere are entirely worthless with me. The Jewel and Jessie on my grounds will produce neither fruit nor runners. The Sharpless and Charles Downing make runners but no fruit. Of new varieties set last spring the Yale made no runners whatever. The Warfield No. 2, Shuster and Saunders seemed fairly vigorous, but Michel Early made more runners than the Crescent or any other variety on my ground.

When I first raised strawberries for market I got my plants from between the rows where I cut my paths in the spring. The plants grew late in the season and were not so strong as those that set earlier. I think it of great importance to set strong plants; and now I grow my

plants in a small bed of rich soil. I plant the Crescent in rows about four and a half feet apart, and train the runners to fill the vacant spaces during the season. This allows plenty of room so that the plants will not be crowded. The first runners are nipped off until the plants are able to produce strong ones. In the spring all are taken up, but the small, weak plants are discarded.

It is usually thought best not to follow strawberries with strawberries without an intervening crop, but this rule does not apply to Maine. Several of our strawberry-growers have planted the same land in strawberries for many years, resetting with plants the next spring after taking the crop off. Mr. Dawes, of Harrison, has done this for eight years without any signs of the crops diminishing. S. S. Smith, of Oxford, has raised strawberries for 16 years on the same ground without any signs of deterioration. To raise a crop of strawberries on our soil requires liberal manuring. The ground needs to be made rich enough to produce about 60 bushels of corn to the acre; to do this, soil not previously manured requires not less than 40 tons of manure to the acre. But after the ground is in such condition it does not require so much to keep it there as to bring another piece into proper condition.

The most of our land here is infested with witch-grass, and it is always necessary to exterminate it completely before the strawberries are set. I find that the easiest and most effectual way to do this is to plow the ground about four inches deep just before it freezes in the fall. Plow very deep the next spring and immediately plant

thickly to fodder-corn. By turning the grass in deep we prevent its getting started well, and one or two hoeings will keep it in check until the corn gets big enough to shade the ground. In the fall, after the corn is taken off, I never find any signs of witch-grass.

Blackcap raspberries succeed in this section, but are not much grown. The red raspberry and the blackberry seem more at home here than in warmer latitudes. Our most popular red raspberry both for home use and for market is the Cuthbert, and it usually succeeds without winter protection. The Shaffer is rapidly growing in favor, and on high land usually goes through the winter without protection. It is exceedingly productive, and not only the best raspberry for canning but the best for any domestic use. When allowed to remain on the cane until quite ripe and dark brown in color, it is of the best quality.

The Snyder is still the most profitable blackberry for market, and the Agawam for domestic use. Both are hardy and are not usually protected in winter. None of the new varieties approach the Snyder in productiveness, nor the Agawam in all the requisites of a domestic berry. The Erie equals the Agawam in quality and is of large size, but is not so productive nor hardy.

There are no indications at present that any of the new varieties will supersede the Crescent strawberry, the Cuthbert raspberry or the Snyder blackberry for market, unless one of these varieties should fail as suddenly as did the Wilson strawberry a few years ago.

Androscoggin Co., Maine. S. G. SHURTLEFF

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XXI.

DRIVEWAY APPROACHES AND GENERAL IMPROVEMENTS.



THE engravings annexed, fig. 1 represents a diagram of a subscriber's grounds in Ontario, Canada. It was sent to the editor accompanied by the following letter:

"I see you are doing grand work in teaching, through AMERICAN GARDENING, the young and rising generation how to lay out a place artistically and to the very best advantage as regards climate, conditions of site, etc. I am about to change my place somewhat, and would be greatly pleased if you would be so kind as to give me the benefit of a suggestion or two. The sheds are to be moved back a bit; the driveway could enter from the side street, and the present one be planted in nice shrubs. The ground is high, falling a little on all sides from the first row of grapes near the house, but most of all toward the southwestern corner of the lot, where the soil is heavy and rich; the knoll is all gravel. The lot has a frontage of 142 feet, and a total depth of nearly 300 feet."

Our intelligent reader having already discovered the defects of the old arrangement of his grounds, anticipates in his letter two of the most important changes it would occur to us to suggest, namely, the removal of the stable from near the side of the house to a point farther back, substituting flowers instead, and having the driveway enter from the side street instead of from the front. It

is a great pleasure to observe that in numerous instances the readers of these articles on home improvement, as a result of what we may assume is better knowledge of these matters, have observed the defects in the earlier arrangement of their grounds, and set about remedying them on rational principles, either with or without further aid from regular landscape-gardeners. In the present case the change of the stable and roadway as mentioned, from the position shown in fig. 1 to that occupied in fig. 2, at once opens the way for substituting a large measure of grace and beauty about the place, where before stiffness and regularity of arrangement prevailed.

It is noticed by comparing figs. 1 and 2 that the course of the front walk is also changed for the better in the latter. We wish here to point out the gain that in many cases would result from substituting a graceful curve for the straight walk in the front footpath to the house, which, in ninety-nine cases out of a hundred, prevails. The gain would be five-fold in nature: First as we approach the home from the street, it is a direct relief to the eye to have the house, in which straight lines and square angles everywhere abound, set off, by way of contrast, with a gentle yet bold curve in the outline of the

approach. Second, to approach a house from such a direction that a glimpse or suggestion of its side, in addition to the front, meets the eye, gives a more favorable impression than to come up from directly in front, with only one side visible; but this principle should not be applied to such an extreme as to make the walk lack directness, or to give it a strikingly serpentine course. Third, as seen by passers-by a residence of almost any style appears handsomer when observed from the front

in one or more beds on either or both sides of a straight walk, as in the original plan, fig. 1.

But one of the chief improvements over fig. 1 shown in fig. 2 is the opportunity for promoting certain bold effects in landscape vistas, and groups and borders devoted to woody and other growths. A magnificent view appears in fig. 2, extending back from the street toward and past the well, about in line with the former drive as shown in fig. 1. It was our correspondent's suggestion

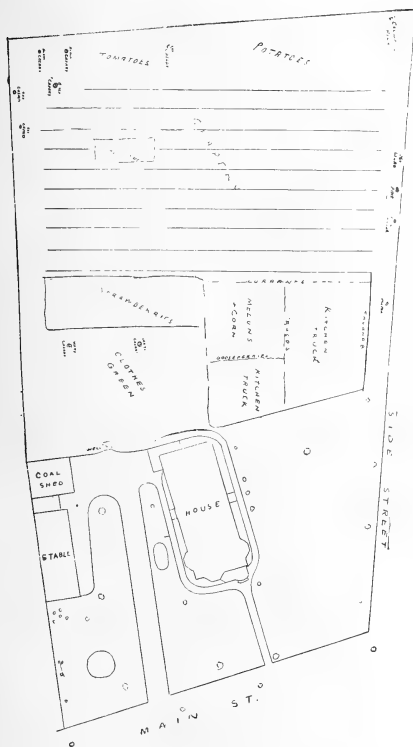


FIG. 1.—BEFORE MOVING STABLES AND MAKING OTHER CHANGES.

across a stretch of lawn than when seen at the end of a straight walk, directly in front of it. Fourth, the advantages that have been named will appear about equally marked in reverse order—to a person standing on the front veranda or looking from the front windows. Fifth, in the present instance the location of a bold, irregular group of flowering shrubs directly in front of the veranda gives a better effect than if the same shrubs were arranged

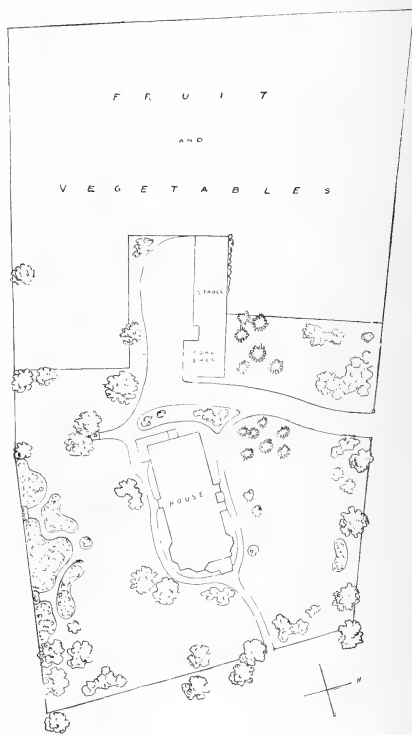


FIG. 2.—SUGGESTIONS FOR THE IMPROVEMENT OF FIG. 1.

that the place of this drive be occupied with shrubbery. That would have been only one step in the right direction. To occupy the ground here in the center with shrubbery would be to impair the vista alluded to, which is not to be thought of, especially as there is ample room for trees and shrubs elsewhere. We therefore recommend that flowering shrubbery, etc., be used freely next to the south boundary, where there is abundant

room to accommodate it on a liberal scale. Other clumps and some individual trees may be set on the side of the lawn toward the house, thus not only preserving but increasing the beauty of the view, since the clumps and trees partly define it. It will be worth while for the reader to compare carefully the general fine appearance of this south lawn, as shown in fig. 2, with the appearance of the same area in the original plan of



FIG. 3.—ARRANGEMENT OF A SMALL FRONT YARD. (See opposite page.)

fig. 1. If the contrast between the two seems quite remarkable as seen on paper, it would be decidedly more so carried out on the grounds.

The spot formerly occupied by the stable, coal-shed and drive, and directly south from the house, seemed to

us, after some study, as most suitable for the shrub and flower-garden. Learning from additional correspondence the owner's interest in hardy shrubs and plants, we suggested a somewhat elaborate plan for their arrangement. The arrangement consists of five beds of various sizes,

located in the grass in a way that provides lawn walks about four feet wide between them. At two points where these walks approach the boundary of the grounds it is suggested that seats be constructed, surrounded at the sides, back and overhead with lattice-work, upon which vines are to be trained. The arbors thus formed should not be more than three feet deep. They may be covered with sweet and attractive bloomers, such as clematises, monthly honeysuckles, etc. With the open side away from the sun and toward the beds, lawn and house, they would unquestionably be much frequented by the occupants of the home and by visitors in pleasant summer weather.

In planting these beds, hardy flowering shrubs in large assortment, including in the background some strong growers like althæas, single syringas, aralias, etc., should be arranged over the area, leaving some space next to the margin for flowering plants. The shrubs should be set about four feet apart, on an average; the space for plants may vary in width from two to four feet. The latter may comprise a general assortment of the finer hardy kinds, including Dutch bulbs, annuals and tender perennials. Altogether, in shrubs and plants, such a selection could be made as would afford an unceasing supply of bloom from early spring until fall.

In this group of beds (fig. 2) there is one—the smallest—of round form; this is nearest to the house. We suggest that this be set with early tulips and crocuses for spring adornment, to be followed by bright bedding plants, such as geraniums, coleus or cannas. Provision is made in this and other sections of the garden for masses of shrubs. In such masses we would plant varieties of weigelia, *Forsythia viridissima*, calycanthus, barberries, plumed hydrangeas, viburnums, *Deutzia gracilis*, Japan quince, lilacs, variegated dogwoods, dwarf evergreens, etc. If each clump were planted with a single kind of shrub, or at most two or three kinds, the effect would be finer.

To the north of the house no great change has been made in the grounds beyond carrying the drive across here to the street. Instead of the rear of the house being chopped squarely off almost in line with the rear end of the house, as shown in fig. 1, the new drive and walks of gracefully curving outline define this part of the yard, while some trees and shrubs planted beyond the drive would give an appearance of greater length to the ornamental ground on this

side of the buildings, especially as seen from the street in front of the house. The location of the trees and shrubs in this plat was governed by the desire to secure a pleasing balance of woody growths, an open lawn-center, and some fine vistas lengthwise through the grounds. Evergreens are suggested for use to the north and northwest of the house, for the sake of their peculiar beauty the year round and the shelter they afford from north and northwest winds. Several flower-beds have also been suggested for the north side of the house.

Fig 3 (opposite page) represents the ground plan of a reader's home in a city in Utah. The lot is 54 feet wide and 30 feet deep from the street-fence to the house, or a total of nearly 100 feet to the part farther back, here represented. A drive to the right of the house leads to a stable in the rear. The owner intended to have the front walk and the drive to the street straight, after the ordinary fashion, as shown by dotted lines in fig. 3. He requested assistance not only in arranging the approaches with some degree of grace and beauty, but also in selecting locations of some shrubs and trees suitable for effectively adorning the little place. The advantages of the curved form of drive and walk suggested to our subscriber are similar to those referred to under fig. 2. Garden features are thus so emphasized, and the prevailing straight lines of the surroundings so relieved by curves and irregularities of planting, that the general beauty of the spot is much enhanced. Instead of the drive starting in straight from the street and showing a continuous straight line beyond the house, this stiffness is relieved by a curve and a fine bit of gardening on both sides of the drive at the street end.

The part of the garden to the left of the walk is certainly more pronounced in its enlarged form, with the curving boundary on one side, than a straight walk arrangement could be. The plat directly back from the entrance, defined by a bold curve and filled by a massive

group, gives strength to the garden quality of the place, as seen either from house or street. This in itself is worth more for effect than would be the unbroken plat, lost in curving the walks. The very irregularity of the design throughout is its chief charm, while it cannot be denied that even in this small area an approach to landscape-effects is secured in the largest plat of the three, with its open center, in front of the house.

For planting this small place a selection of 50 kinds of trees, shrubs and flowers has been made. The names of these, together with their respective locations, are as follows—the numbers corresponding with the numbers on plan (fig. 3). Privet is planted at 1; 2, plumed hydrangeas (*H. paniculata grandiflora*); 3, Mugho pine; 4, cut-leaved weeping birch; 5, Chinese wistaria; 6, dwarf spruces; 7, golden-bell (*Forsythia viridissima*); 8, Japan quince in two colors, red and white; 9, red-bud (*Cercis Canadensis*, or *Magnolia speciosa*); 10, double deutzia; 11, *Deutzia gracilis*; 12, calycanthus, or sweet-scented shrub; 13, variegated-leaved weigelia; 14, weigelia; 15, Hall's honeysuckle; 16, clematises; 17, Japan viburnum (*V. plicatum*); 18, *Viburnum lantanoides*; 19, *Spiraea Thunbergii*; 20, plum-leaved spiræa; 21, double-flowering mock-orange; 22, variegated-leaved corchorus; 23, *Spiraea callosa alba*; 24, Reeves' spiræa; 25, Douglas' spiræa; 26, flowering almond; 27, flowering plum (*Prunus triloba*); 28, raised bed of bright flowers; 29, *Weigelia candida*; 30, *Spiraea sorbifolia*; 31, althæas; 32, *Colutea arborescens*; 33, purple-leaved berberry; 34, cut-leaved elder; 35, hardy perennial plants in assortment, including *Spiraea aruncus* and *S. palmata*; 36, *Ampelopsis Veitchii*; 37, tamarisk; 38, lilac; 39, scarlet honeysuckle; 40, trumpet-vine; 41, Dutchman's-pipe; 42, flowering-currant; 43, mock-orange; 44, Tatarian honeysuckle; 45, variegated-leaved Cornelian cherry; 46, *Mahonia aquifolia*; 47, box; 48, English ivy; 49, *Akebia quinata*; 50, *Ampelopsis Veitchii*.

HOW TO GROW ROSES IN CITIES.

NOTES FROM BROOKLYN.



WHEN I began to grow roses in the city I was told by a number of men clever in gardening that success in my undertaking was out of the question because of smoke, dust, gasses, foul air, etc. I paid no attention to their warnings or advice, well knowing that if the roses received six to eight hours of sunshine each day and care such as is given by skilled men in the country my chances for success were as good as theirs. I have grown pretty good roses of the leading monthly varieties in the city of Brooklyn for the last seven years.

Every year, about the first week in July, I set young rose-plants in fresh soil. The cuttings from which they

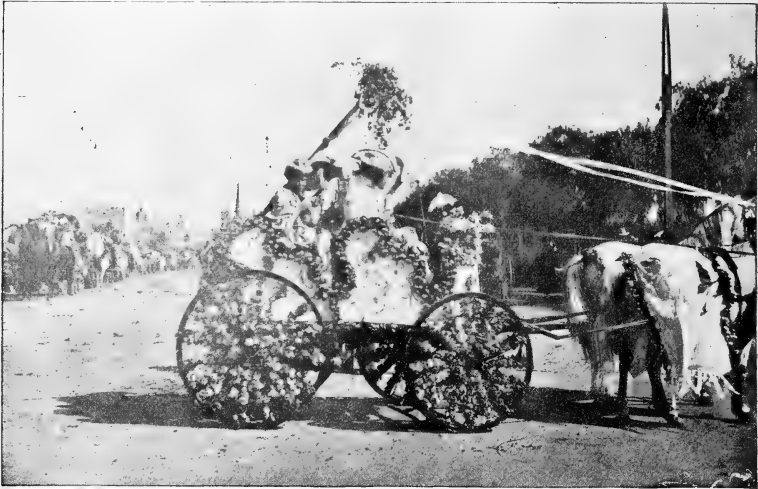
are grown are taken from healthy plants the preceding December and placed in the propagating-bed; they root in from 21 to 28 days. When nicely rooted I prick them off in flat boxes, setting the plants $2\frac{1}{2}$ or 3 inches apart, and grow them on until they are large enough to be placed in 4 or 5-inch pots. Great care must be taken that the roots of young rose-plants are not broken when removing them from flats to pots. From the 4-inch pots my plants are shifted into larger ones before planting in those that are to hold them while blooming. One re-potting would suffice, but I have in these pots old roses that I do not like to throw out—until they have ceased blooming and seem to need rest—for the accommodation of the younger ones. The old plants usually do well until July. I set all the plants outdoors four or five weeks previous to final transplanting; this hardens them

off, and they grow more rapidly when planted. Buds must be kept pinched out until the young rose-bushes are strong enough to bloom; with proper care they ought to be in good condition for this by September 30.

The house in my charge has a span-roof east and west, and is heated by hot water. I use for roses elevated benches five inches deep, with the bottom boards left wide enough apart to allow free drainage. I put a light layer of shavings over them to keep the soil from going through these openings. The benches are from 4 to 6 feet from the glass and I use galvanized wire to keep the roses in place. The wires are arranged like those over which smilax is trained, thus making a neat support for the plants. Stakes for roses should be discarded; they look so unsightly, rot so quickly, and in sticking them

lightly over all diseased plants; this is a sure remedy for mildew. The ventilators of the house are left open night and day until the evenings get chilly in September, after which I close the ventilators on the sides and shut down the top, leaving a little opening until obliged by cold weather to close tight. Night heat through the winter should range from 50° to 55°; day heat should be 60° in dull weather, allowing the temperature to rise 15° or 20° more with sun heat. I syringe the roses every bright day, heavily or lightly as the occasion requires.

Almost every one that has a greenhouse wishes to grow roses, but many people fail in such attempts, because they lack knowledge concerning methods of culture. Unless the house has a sunny aspect—sunshine from early morning until late in the afternoon—it is un-



THE SANTA BARBARA FLORAL FÊTE CARRIAGE IN LOUIS XVTH STYLE. (See next page.)

down there is danger of injuring roots. The soil that I use for roses is heavy loam from a rich pasture; four parts of this soil are mixed with one of fresh cow-dung. In the fall I procure soil and fertilizer, and let them lie all winter in a heap, keeping the fertilizer well on top of the soil, so that frost and snow may act upon it and the soil get the benefit of the wash from it. I have this heap turned over two or three times in the spring, mix a little bone-dust with it, and by planting-time it is in proper condition for the plants to feed upon.

To keep down the greenfly, fresh tobacco-stems are moistened and strewn on the hot-water pipes; and the evaporating-pans are filled with a liquid prepared by steeping tobacco-stems in water. My roses are seldom troubled with mildew, but in such cases I dust sulphur

wise to attempt the cultivation of roses. A gain, let it be understood that a few dozen plants do not pay; they require as much attention as so many hundreds. They do not take up so much space, of course, but it is the time spent in keeping up the proper temperature that counts, and where only a few dozen plants are grown the gardener is often asked to perform other duties around the place, on account of which he is obliged to neglect the temperature of the rose-house—a bad thing for the plants.

Unless my readers have houses suitable for the cultivation of roses, and are willing to engage a man skilled in rose-culture to care for the plants, they will find it cheaper to buy roses than to grow them.

Brooklyn, N. Y.

JOHN A. BOYLE.

THE SANTA BARBARA FLOWER-CARNIVAL.

A UNIQUE EVENT IN CALIFORNIA.



On April 19 the city of Santa Barbara, California, engaged in a magnificent Floral Festival, a "Battle of Flowers," which lasted four days. The affair was a success from first to last, and reflects great credit upon the inhabitants of the city, for everybody from mayor to common citizen seemed to have

a hand in the enterprise. The event was evidently based upon both sentiment and good sense; it was a grand holiday, adapted to the tastes of all, from gray-haired men and matrons down to little children. And much to the credit of the city be it said that those elements which during public holidays so frequently lead to excesses of various kinds were entirely wanting. This open-air flower-festival was as innocent and pure as it was gay and cheerful.

In our churches and Sabbath schools a day known as Floral Day has for some year been quite generally observed. The Santa Barbara festival was an enlargement of this—a city instead of a mere congregation participating. Such consistent methods of engaging in public festivals are commendable, and it is with pleasure that we devote space in this issue to some notice of the event.

Before the visit of President Harrison to the Pacific

Coast early in the current year, C. F. Eaton, of Monticello, suggested among ways of showing general appreciation of the presence of our chief magistrate a "Battle of Flowers," such as may be seen every year in the city of Nice, France. The idea was adopted and the result was so satisfactory that later on a score of the leading citi-

zens resolved to inaugurate an annual season of floral festivities. For this purpose the Santa Barbara Floral Festivities Association was formed. This year witnesses the first season of its usefulness. It is the intention of the association to incorporate, and thus to provide for such a festival yearly in Santa Barbara.

This season's festivities began with a display of horticultural products in the pavilion at the fair grounds. Owing to the lateness of the season and the remarkable weather of the past month, it had been feared that this would not be a very brilliant success. So much is always expected of Santa Barbara because of her celebrity as the home of the rose and many subtropical flowers, that more than one true friend of the city shook his head over the prospects of the horticultural exhibit. But it was a decided and pronounced success, as all who visited the pavilion testified.

But the great event of the carnival was the street procession which signaled the triumphal entry of the



A FLORAL PHAETON.

goddess Flora to this fair city. At an early hour of the day on which it took place, the people on the main street had begun to decorate their several places of business so that all might be in readiness for the pageant of floral cars and other vehicles passing. Much taste was shown in adorning the buildings, and garlands, cornu-

copias, vines, pampas-plumes, evergreens, flags and bunting were everywhere used in abundance. Many windows were converted into flower-gardens, filled with lilies, roses and other flowers.

The day itself was all that could be desired for making a success of the procession. All the forenoon State street was one surging mass of pedestrians and carriages. Hundreds of strangers were everywhere present, every street-car was filled, and the busses and hacks did a thriving business. All the people were bent on having a

painted and upholstered to resemble water upon which floated five shell-like boats. The four smaller boats were occupied by beautiful young girls. Each boat was supplied with golden oars and silken sails. In the larger and more beautiful boat sat the goddess Flora—Senorita Carmelita Dibblee. Behind the goddess and rising above her was a very handsome canopy of silk—outside yellow, inside pale azure-blue with delicate figures of small roses. This was draped with tassels and ropes of silk. The sails were of white satin. Ribbons of satin passed from each boat to the hands of the goddess.



FLORAL WHEELS OF THE BICYCLE CLUB.

thoroughly good time and on making the most of the day.

It was nearly two o'clock when the procession began to move. The first vehicle that followed the band of music and the marshal with his aids was a grand floral float twenty feet long and eight feet wide, drawn by four large gray horses ridden by boys and led by four men dressed in semi-oriental costumes. The float stood about five feet from the ground and from the top downward was draped with moss and calla-lilies. The top was

Of the many other vehicles which entered into the pageant, there is not space to give a description here. Some of them are shown in the annexed engravings, made from photographs. Suffice it to say that they represented the application of much taste and skill, while it was plain to see that flowers without stint were available for the occasion. One native flower of which all Californians are proud—the *eschscholtzia*, was used with lavish profusion, and roses loading the air with fragrance, lilies, callas, marguerites, smilax and wild brodiaeas were among other kinds freely employed.

During the four days of the festival a brilliant reception, a grand tournament, and a ball were given; also a competitive display of flowers and fruits, for which numerous cash prizes were given. No sooner was the floral fête-day over, than the participants began to consider the good reasons apparent for an annual perpetuation of the day in Santa Barbara. It is to be hoped the example here set forth may be widely heeded, and that such fête-days may be multiplied throughout our land.

FIELD NOTES

ABOUT PEAS, WEEDS AND RASPBERRIES.



I harrowed our early peas with a little one-horse harrow made A-shape, with nine teeth and a spread of about 20 inches. With this tool we can get close to the row, and by going over it twice thoroughly, can stir the ground and annihilate myriads of weeds. I picked up a little chunk of the crust broken by the harrow, and counted more than fifty weedlets about one-eighth of an inch high. Six days previous we went over the ground with Breed's weeder, the peas not being up.

The peas were drilled in furrows, and the weeder leveled the ground, scattering some loose dirt over the drills

without disturbing the seed. As it rained immediately, continuing for four days, the little weeds took new courage and seemed little injured by the proceeding, which on a hot day would have killed them. The day after the rain ceased there was a cold, brisk wind, which rapidly dried the ground, and we harrowed as mentioned. When the peas are about half an inch high we dare not use the weeder again.

We go through the peas twice with a harrow, and after that with the Planet Jr. cultivator and seldom apply hand-labor to the crop. The use of light, fine weed-killing tools before and just after a crop comes up not only scotches the weeds, but hurries the crop along considerably. Some gardeners of my acquaintance do not start any kind of a

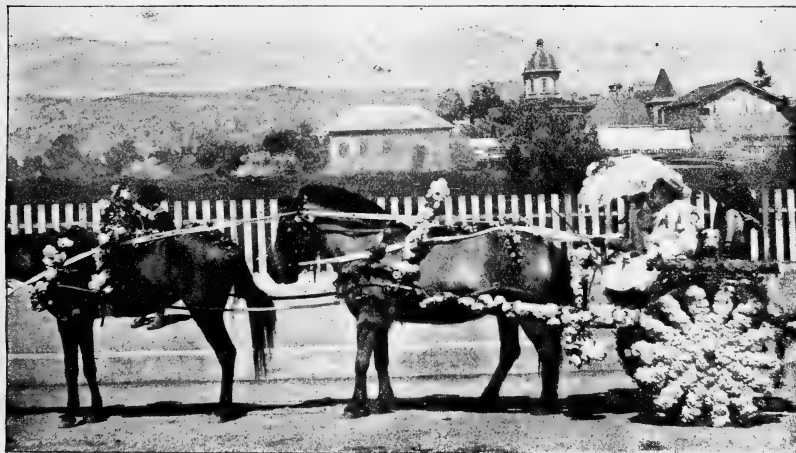
tool in their crops under two or three weeks after planting, and the result is a large amount of hand-labor and a stunted growth.

While one horse was harrowing, I took the other and marked some ground for raspberries. I have a common three-prong corn-marker with legs three and one-half feet apart. Across the legs, near the bottom, I nailed a piece of fence-board, and then spiked two short pieces up and down. These were tapered to three inches, and were seven inches longer than the original legs. They were five feet apart, and were used to mark for planting red raspberries. Then I nailed on another piece between these pieces, and used it to mark the black raspberry ground across the rows, making the plants thirty inches apart. After marking one way I knocked away the tem-

plan one that will be light and serviceable, and have legs that can be quickly adjusted to any width.

Wet weather is very favorable for planting berries, and we hurry planting along during spring rains. For the last few years I have not dug raspberry-tips until ready to use them; then they are dug and planted at once. They are then about two inches high, and can be planted about as rapidly as strawberries. I bought 500 plants of one variety to fill out rows, and it took fully three times as long to plant them as it did those just dug. They were several days in the package, and the sprouts had grown crooked, turned white, and were very tender. The greatest care was necessary to prevent breaking them, and fine dirt had to be sifted among the sprouts.

We dig raspberry-tips into half-bushel market-baskets



THE SANTA BARBARA FLORAL FÊTE: TANDEM FLORAL CART. (See page 396.)

porary attachment and marked the other way with the regular corn width. We planted every other row with berries, and when the weather grew a little warmer, a row of Cory sweet-corn in the alternate marks, and a hill between each two raspberry-plants. Last year I tried both early and late corn among raspberries, and I could not see that the berries were in the least checked in growth.

I find that when the ground is marked both ways planting can be done about twice as fast as if done by a line, the way I formerly did. In marking across the row it is not necessary to retrace the row, as absolute accuracy is not required either in width or in straightness. In marking the other way I try to get the first row exactly right, and then, by retracing, all the rest are made true and exact. I need an adjustable marker, and am trying to

and plant therefrom without dropping. In planting, the basket is set down between two plants, and when they are planted moved between the next two, and so on. A basket holds about 60 good plants. Last fall I got some excellent baskets for this kind of work. They are the ordinary diamond basket lined with a tight veneer lining, and have an extra band around the outside midway between the bottom and the top. The tight lining prevents drying from the wind, and by renailing the bands and putting an old leather strap around the bottom and up over the handle, a basket will last for several years. The ordinary cheap diamond basket without the above improvements will scarcely last a week if used in planting raspberry-tips. The best tools and conveniences are always cheapest.

Summit county, Ohio.

L. B. PIERCE.

WHAT SHALL THE HARVEST BE ?

SEED SALES THAT FORETELL COMING CROPS.



IT WOULD be hard to imagine a surer foundation for estimates of planting done in certain lines than the sale of the respective classes of seeds by our leading seedsmen. This planting-gauge is especially reliable in regard to the onion-crop. Every five or six pounds of onion-seed sold means just about an acre of onions planted. In a similar way the spring sales of tomato and cabbage-seed, seed-potatoes, strawberry-plants, etc., may serve as an indication of coming crops.

We asked the leading seedsmen how their spring sales of these seeds, etc., compared with those of previous years. Many of their replies are instructive in other respects also, and full of significance. Here they are :

SALES IN NEW YORK STATE.

We have sold 25 per cent. more onion-seed this year than we did last, and without any extra effort. On the whole the onion-seed trade was brisk and strong. There has been no special call for any but standard sorts of tomatoes, such as Acme, Dwarf Champion, Livingston Favorite, Livingston Beauty, Trophy and Essex Hybrid. In potatoes the trade with us has not been at all active; the low price of market sorts has checked the demand for seed-potatoes, and we have not been able to dispose of as many as in former years. We think the trade in seed-potatoes has been cut down 25 to 50 per cent. Early varieties are most in demand. We have had a large call for the New Queen, a variety introduced by Jerrard of Maine. This variety is well adapted to our locality, and we predict for it a general demand, as it seems suited to all localities. Orders for cabbage-seed the past season have been quite heavy.—JEROME B. RICE & Co., *Cambridge, N. Y.*

A failure or partial failure of the crop of any particular seed will naturally be followed by an increased demand. This was the case in regard to onion-seed the past season. The tomato-crop was average and the demand normal, making allowance for the increase which we expect from year to year. Potatoes being cheap, the demand for them for planting purposes was less than it was last season. The demand for cabbage-seed was about the same as usual.—J. M. THORBURN & Co., *New York City.*

Spring sales of onion-seed were about an average, the call for our special stock of Yellow Globe being especially heavy. Sales of tomato-seed were light, McCullom Hybrid, New Stone and Acme leading. Our potato sales were very heavy, especially for American Wonder, Per-

fection and Early Market. In cabbages we sold heavily of All Seasons, Wakefield, Winnigstadt, and Late Flat Dutch. Sale of strawberry-plants was light.—JAMES VICK, *Rochester, N. Y.*

Our sales for the vegetable seed inquired about were nearly the same as usual, with the exception of potatoes, which on account of low prices were very dull.—PRICE & REED, *Albany, N. Y.*

SALES IN PENNSYLVANIA.

This year's sales of onion-seed were particularly satisfactory, the demand for Prizetaker being unusually large; demand for Yellow Danvers double that of previous years, while we sold very nearly 10,000 pounds of Large Red Wethersfield. As for potatoes, outside of that for the new Freeman the demand was very poor indeed. The fact that we sold out our stock of Freeman potatoes at a price averaging more than \$15 per barrel, and that other varieties were a drug on the market, we think speaks well for this popular new sort. The demand for other varieties of seed, such as tomato, cabbage, etc., in fact the whole general line of vegetable seed, was not quite so satisfactory as in '91.—WM. HENRY MAULE, *Philadelphia, Pa.*

Our sales of nearly all the varieties of white and yellow onion-seed exceeded those in any former year. Our large supply of the leading kinds, such as Spanish King, or Prizetaker, and the American Extra Early Pearl, before the season was half over were entirely sold out. Tomatoes sold well in the south, but not so well north as in former years, as there are not so many grown for canning purposes. The potato trade was the worst we have had for many years; potatoes were so remarkably cheap all over the country that the farmers would not buy seed. Of cabbage-seed we think about the usual acreage will be sown both north and south.—JOHNSON & STOKES, *Philadelphia, Pa.*

The call for onion-seed, especially of the Italian varieties and Yellow Danvers, was larger than ever before. In tomato and potato-seed our trade was much lighter. Of cabbage-seed about the usual quantity was sold.—Z. DE FOREST ELY, *Philadelphia, Pa.*

Our sales of onion-seed this year, compared with those of previous years, show a considerable increase, particularly in yellow varieties. Sales of tomato-seed were about as usual. Leading varieties—Stone, Perfection and Trophy. For potatoes we had a fair demand, not equal to last year's. For cabbage-seed there was the usual demand. Strawberry-plants sold fairly well, with a run on Bubach and Sharpless.—HENRY A. DREER, *Philadelphia, Pa.*

The demand for onion-seed in our trade has this season been considerably above the average. The call for

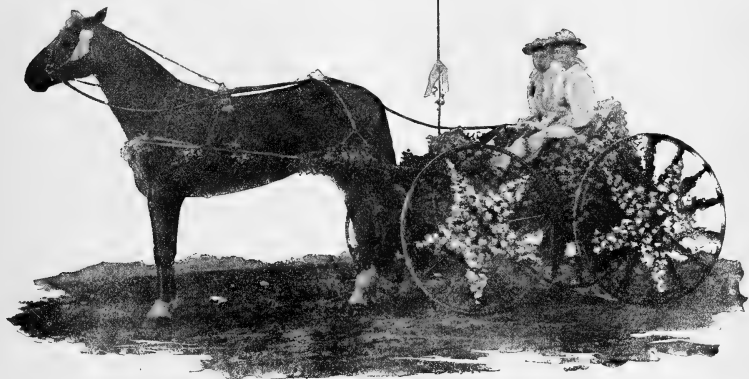
our "P. S. Yellow Globe" and "Yellow Danvers Globe" was particularly heavy; Red Wethersfield came next, while calls for white onions were less frequent than usual. In tomatoes the principal demand was for Livingston Perfection, Favorite and Beauty. Sales of tomato-seed were not up to the average this year. The calls for seed-potatoes, at prices above the ordinary market-rate, have been very light and confined almost entirely to a few of the most promising new early varieties. Cabbage-seed sales continue heavy; Early Jersey Wakefield, Fottler Brunswick, Premium Flat Dutch and Bridgeport Drumhead are more used by our customers than all others combined. Crescent, Warfield, Bubach, Haverland and Manchester strawberries sell better than others in this vicinity.—ISAAC F. TILINGHAST, *La Plume, Pa.*

The demand for onion-seed was much larger than usual; the varieties were Yellow Danvers, Red Wethers-

field was disastrous to the germination of the seed after sowing.—THE B. L. BRAGG CO., *Springfield, Mass.*

We had especially quick sales for Danvers Yellow Globe onion; fair sales for tomato-seed, Essex Hybrid being most in demand. Of potatoes there was a great surplus in all sections, and sales were light. The demand for cabbage-seed was large, mostly for Early Peerless and Werner Stone-Mason. Strawberry-plants sold poorly. Last season's low prices have been against the seed business in this vicinity.—AARON LOW, *Essex, Mass.*

Our sales of onion-seed were about 40 per cent. larger than those of last year; the greatest demand was for the Yellow Globe Danvers variety. Tomatoes sold better than they did last year; seed-potatoes sold about the same; cabbage-seed sold 20 per cent. better than last year; the same increase was



THE SANTA BARBARA FLORAL FÊTE: DECORATIONS OF DEVONIENSIS ROSES. (See page 397.)

field and White Silver-Skin; the heaviest demand was for the Danvers. There was about the usual demand for tomato-seed; the Matchless seems to be the favorite variety. With the exception of Burpee Extra-Early potatoes sold poorly. Cabbage-seed sales were only fair, the principal call being for Burpee All-Head Early, and Burpee Surehead. The sale of strawberry-plants was very good.—W. ATLEE BURPEE & Co., *Philadelphia, Pa.*

SALES IN MASSACHUSETTS.

Our sales of onion-seed this year were much larger than they were last year, and there was an especially heavy call for the Yellow Globe Danvers. Sales of tomatoes were smaller; of potatoes, very limited; of cabbage-seed, large; of strawberry-plants, better than ever. It was impossible to secure first-class onion-seed in sufficient quantities to meet the demand. Our trade closed with orders on our books for 200 pounds, which we could not fill. The cold, backward spring season

observed in the sale of strawberry-plants. The best cultivators are falling back upon standard varieties of vegetables, and buying fewer of the so-called novelties.—R. & J. FARQUHAR & Co., *Boston, Mass.*

Sales of onion-seed for '92 far exceeded those of previous years; Danvers Yellow Globe (native growth) was an especial favorite. We had fully as large a sale for the Dwarf Champion and Puritan tomato-seed this year as for other sorts. Potato sales were good. Beauty of Hebron and New Queen are the best-selling varieties. Cabbage-seed sales have been above the average, Early Summer, Improved Brunswick and Stone-Mason taking the lead. Our sale of strawberry-plants has not been so large this year as usual; Bubach No. 5 is the standard variety.—W. W. RAWSON & Co., *Boston, Mass.*

SALES IN OHIO AND CONNECTICUT.

Our sales of onion-seed for nearly all kinds, both American and foreign, were 50 per cent. larger than last

year. Yellow Globe Danvers sold best, next the Red Wethersfield, and Prizetaker for transplanting. In tomatoes we noticed an increased demand for all the Livingston varieties, especially for Beauty and Stone. Royal Red sold well in packets in a general way, and in quantity among canners. We had a good sale of Early Ohio potatoes for early shipping, and Seneca Beauty for main crop. There was the usual call for standard sorts of cabbage-seed. Dwarf Lima beans. Early Hackensack melon, Dixie watermelon and the New Columbus muskmelon sold well.—ROBERT LIVINGSTON, *Columbus, O.*

The call was especially heavy for Silver King, Red Wethersfield and Yellow Danvers onion-seed, Ignatum and Matchless tomato, and Surehead and Earliest cabbage. The demand for all plants was one-sixth larger than last season.—C. A. REESER, *Springfield, O.*

The demand was especially large for Yellow Globe Danvers and Red Wethersfield onions. We could have sold many hundred pounds more than we had in stock. May Favorite is a superb tomato, and we sold out our stock of it. The demand for seed-potatoes was light, except for Beauty of Elberon, which had a large sale; it is a very early and fine sort. Farmers here are not planting so many potatoes as last year. There are thousands of bushels of old potatoes on hand, and they are hard to sell at any price.—R. D. HAWLEY & CO., *Hartford, Ct.*

SALES IN VIRGINIA.

Our sales of onion-sets for last season have been greater than in any previous year; Yellow Danvers, Large Red Wethersfield, Mammoth Silver King and Copper King, being the varieties greatest in demand. Acme and Livingston Beauty are the favorite tomatoes for marketing, Livingston Perfection the favorite for canning; sales of these sorts have been about 100 per cent. greater than last. Potato sales were about 5 per cent. greater than last season, southern-grown second-crop Early Rose being the favorite. Northern-grown Rose and Beauty of Hebron are in great demand, but we think the southern-grown potato will supplant them to a certain extent, particularly in trucking sections. Our sales in cabbage-seeds were double those of last

year; favorite early varieties, Early Jersey, Wakefield and Early Flat Dutch; late ones, Flat Dutch and Drumhead. Our sales in strawberry-plants were larger than they have been in any previous year; Bubach is the favorite, while the old sorts hold their own.—T. W. WOOD & SONS, *Richmond, Va.*

SALES IN WISCONSIN.

Onion-seed sold 35 per cent. better than in previous years. Our sales of tomato-seed were about the same; of potatoes, 50 per cent. smaller. We noticed no marked difference in sales of cabbage-seed and strawberry-plants. Eclipse cabbage has taken the place of all other main crop varieties.—CURRIE BROTHERS, *Milwaukee, Wis.*

SALES IN MICHIGAN AND MINNESOTA.

Carefully going over our last season's sales of various varieties of onion, cabbage and tomato-seeds, we find that they compare quite closely with sales on these sorts for the past three years. There has been during last season an unusual demand for yellow onion-seed, but this we attribute largely to the scarcity of that article in all directions.—D. M. FERRY & CO., *Detroit, Mich.*

We have to report a strong demand for onion-seed, especially yellow sorts, and larger sales than in 1891. We also sold more tomato-seed; Acme is most popular with our customers. There was a decrease in the sales of seed-potatoes, but an increase in the sales of cabbage-seeds—Jersey Wakefield and Flat Dutch being the leading sorts.—NORTHROP, BRASLAN & GOODWIN, *Minneapolis, Minn.*

From the tenor of all these replies we may safely infer: (1.) That the area planted in onions is much larger than usual, and that, barring accidents, the crop will be one of the largest ever raised, and prices probably low. Yellow onions will be especially abundant, and white ones comparatively scarce. (2.) That tomatoes were not planted as extensively in the north this year as in some seasons, and a surplus in the crop should not be looked for. (3.) That fewer potatoes, especially of the early and fancy varieties, have been planted, and consequently that the crop will sell for higher prices than in 1891.

HORTICULTURE IN MISSOURI.

NOTES ON FRUITS AND VEGETABLES.



HE prospects for a fruit crop in Missouri, with the exception of peaches, is pretty fair. Peaches, with the exception of those from seedlings, will be very scarce in this section. In an orchard protected on the north, east and west my choice peach trees were well set with blossoms in spring, while on low ground, unprotected, none of the buds escaped frost.

Not a peach of the improved varieties was left except a Nix cling, the latest peach we have, which had a nice sprinkling of blossoms. This tree has a large Norway spruce at the eastern side of it, but whether this had any-

thing to do with the escape of the blossoms from frost I would not pretend to say. But the fact that healthy fruit-blossoms were on the trees in the orchard protected on three sides by forest on northern and western slope, about 150 feet above the bottom where the same varieties were frozen, may have a significance worth remembering.

The Susquehanna peach, one of our very finest, had but very few blossoms; it is less hardy than the others. Six varieties of the improved Russian apricots, large enough to bear, showed no blossoms in the same orchard where peaches were blooming and where two unnamed seedling apricots set fruit. These seedlings are of excellent quality, but too small to become popular.

One lesson in horticulture I learned better last year than ever before. In order to make a strawberry patch profitable, you must give it thorough cultivation the first season; if the season be a dry one, this will be all the more necessary. The pet plants that I nursed last summer are all right, while many small patches left to themselves are nearly a failure—dry weather, ground-moles and grubs, combined against them, prevailed.

The same principle will apply to a newly planted orchard. Some people plant an orchard in sod with the intention of digging around the trees afterward, but this is usually neglected and failure is inevitable.

As June comes on, the round-headed apple-tree borer will be laying her eggs at the base of young apple trees, and in a little while the worm commences to work on the trunk, near the ground. Clear away the earth an inch deep, wrap the stems of the trees with thick brown paper, or a doubled newspaper, for six or eight inches upward, and tie the papers on it. No borers will be found on trees so treated unless they were in the bark before the wrapping was put on. Tared paper I would not trust, and it will not be any better guard against the borer than ordinary paper. Old rags or cloth will answer the same purpose. Some orchardists say that the borer never attacks a real healthy, thrifty young tree, but, I know better. It sometimes gets into a tree the first summer from the graft. This apple-tree borer benefits but one class, namely, the nurserymen. If all the trees planted out here in the west that the borers have killed within the last ten years had lived and flourished, there would be lamentation among the tree-men, who grow them to sell.

A revolution in fruit-growing is upon us. The time when clean, perfect fruit grew without any extra care is past, and no one can expect to keep up with the times, and compete in market with his fruit, unless he uses the sprayer. The codling-moth, once hardly known here on my place, is now so abundant that sound apples and pears will soon be the exception. The cucurlio has had the field for the last season, and not only plums, but also peaches, apricots and nectarines were at its mercy. Two formidable sprayers stand on my porch; both have been tried and show that they will work well. Just as soon as the blossoms dropped from my Mariana plums, the artillery was opened on the trees of this and all other sorts as soon as they reached the right stage for spraying.

I shall use 200 gallons of water to a pound of Paris green or London purple, and believe it will protect the fruit from insects, while it will not be likely to injure the foliage. [Don't forget to mix in some lime.—E.D.]

Among vegetables I tried the Shoe-peg sweet-corn for the first time last season and found it to be an excellent variety. The ears are short, but the depth of the grains almost makes up the deficiency. The quality of the corn is, in my estimation, unsurpassed, if equaled. The stalks of this corn are small, and it can be planted much thicker than common corn. The Soja bean or pea, as I should call it, is well worth growing, I think, even if you do not use the stalks for food. Kaffir corn is nice for poultry, and one of the best crops we can raise for this purpose. Little chicks will eat it when they are but a week old, and seem to flourish on this food. The fodder of the corn is also valuable for stock.

Montgomery Co., Mo.

S. MILLER.

A LOOK AHEAD IN WINDOW-GARDENING.

THE SELECTION AND SUMMER CARE OF PLANTS.



SAY that window-gardening begins with autumn, but summer, or even the month of May, is none too soon to begin planning for our winter gardens if we wish to make sure of all the beauty and all the pleasure that may be derived from them.

One of the very first points requiring attention is to provide suitable plant-stock between this month and the time of frosts. Here let the inexperienced be on their guard;

not all pot-plants are alike suitable for cultivation in dwellings. Let the list be confined to such plants as are known beyond doubt to be well adapted to this purpose, and do not invite failure and disappointment by attempting to grow others. The list of good winter-flowering plants is so long and so varied that any taste may be satisfied with a choice of thoroughly tested sorts.

A list of fifty distinct kinds of plants specially adapted to window-culture is given below:

- | | |
|---|-------------------------------------|
| 4 <i>Abelia rupestris</i> . | 4 Lantana. |
| 5 Abutilon, bush and trailing. | 1 Madeira-vine. |
| 3 Achania. | 2 Maurandia. |
| 4 Agapanthus. | 5 Moneywort. |
| 1 Agave. | 4 Myrtle (myrtus). |
| 3 Aspidistras. | 3 Neprolepis (fern). |
| 4 Amaryllis. | 3 Orange. |
| 3 <i>Aralia Sieboldii</i> . | 5 <i>Othonna sedifolia</i> . |
| 3 Begonias. | 3 <i>Oxalis rosea</i> . |
| 4 Cactuses. | 2 Petunia. |
| 5 Calla. | 5 <i>Plumbago Capensis</i> . |
| 4 Chrysanthemums. | 2 Primulas. |
| 3 <i>Corypha australis</i> (palm). | 3 <i>Pteris tremuloides</i> (fern). |
| 1 Crocuses. | 3 <i>P. argyrea lanceolata</i> . |
| 3 <i>Cyclamen persicum</i> . | 5 Passiflora. |
| 3 <i>Cyperus alternifolius</i> . | 4 Roses, Monthly Bengal. |
| 1 Date-palm. | 3 Sago-palm. |
| 4 <i>Excoecyru japonica</i> . | 4 <i>Saxifraga sarmentosa</i> . |
| 4 <i>Farfugium grande</i> . | 4 <i>Senecio scandens</i> . |
| 3 <i>Ficus elastica</i> (India-rubber). | 1 Snowdrops. |
| 3 <i>Ficus elastica variegata</i> . | 4 Tradescantia, trailing. |
| 5 Geraniums. | 1 Tulips. |
| 5 Heliotrope. | 4 Vallota. |
| 1 Hyacinth. | 5 Vinca (periwinkle). |
| 4 <i>Hydrangea hortensis</i> . | 2 Wax-plant. |
| 5 Ivies. | |

To have a good stock of these plants by fall, the following course should be pursued: Order from the greenhouse ordinary sizes of all the plants wanted except those preceded by (1), which are bulbous, and (2), which

are to be seed-grown. Seeds of the latter should be sown early in summer. The bulbous sorts are to be sown in September, and started then in pots.

The kinds preceded by (3) should be grown in pots sunk to the rim in earth, in a spot shaded for about three hours at mid-day. If no other shade is convenient, let the plants stand together in some spot and place a canopy, made of lath nailed an inch apart on a frame and raised about four feet from the ground directly over them. A small empty pot should be set under the middle of each pot containing a plant, to prevent the roots from sticking through the drainage-hole into the soil beneath.

The figure 4 preceding names in the list indicates that such plants, while being grown in the open air in pots that are plunged, may be fully exposed to the sun. To set them in an angle where the sun-heat is excessive would not be good treatment; they should be in the line of morning breezes, but sheltered somewhat from fierce winds.

The plants preceded by 5 are comparatively rapid growers, and will summer well if knocked out of their pots and planted in the open soil, where they will grow until September. Such plants as are kept through the summer in pots should be carefully tended. They must never suffer for want of liberal watering. When water is given, saturate the soil thoroughly to the very center of the plants' ball of roots. In cases where root-growth is active the plants should be repotted into pots a size larger, whenever an examination of the ball of earth shows a

lacework of white roots surrounding it. To remove a ball of roots from its pot, invert the plant with the surface of the soil resting on the palm and outspread fingers of the left hand, and with the bottom of the pot grasped firmly in the right hand. Strike the rim of the pot sharply upon the edge of a table or bench, and the ball of earth and roots will be dislodged. Rapid-growing plants like chrysanthemums should be pinched back at intervals until August to make them branch freely. Such plants in particular must not be allowed to suffer even once for lack of water, as this will cause the lower leaves to turn yellow and drop.

To provide good soil for the window plants is an essential point in their successful cultivation. None is better for the average of plants in the list given than what florists call "fibrous loam." This is made by cutting sod about three inches thick from an upland pasture-lot, or from a country roadside, and stacking it up for some months before it is used. Broken up in rough pieces the size of marbles, such soil contains, with the addition of a sprinkling of fine old manure or bone-dust, all the elements really necessary for a plant's existence. It is a mistake common among window-gardeners to suppose that finely-sifted soil is most congenial to plant-growth; one that is somewhat rough and fibrous is much better.

The beauty of the winter garden is well insured by such a selection of plants, cared for in the manner indicated until autumn, when further directions will be in order.

GARDEN NOTES FROM ENGLAND.

CARNATIONS AND CHRYSANTHEMUMS.



GARDEN CARNATIONS are flowers that gain new friends every day, and are rapidly undergoing great changes. There is a revolt against the absolute use of the florists' varieties—the bizarras, flakes, rose, etc.—and much attention is being given to raising a set of hardy, free-blooming garden varieties that bear flowers of bright, distinct self-colors, or shades of one color. A good race of hardy, vigorous and sturdy plants, bearing flowers of the desired character, would be a distinct gain; and the most important point to be gained in the flower is a calyx that will not split. It is the split-calyx carnations that are too numerous, and in the garden they have a poor effect with their petals dangling about, ragged and unkempt. A good garden carnation should be strong in growth, the flowers decided in color—not splitting the calyx even in wet seasons—and borne profusely, as in that delightful flesh-colored variety, Comte de Paris. It is a commendable plan to plant out carnation-layers before autumn has far advanced, so that they may be well prepared to stand the trials of winter. In very cold districts it is wiser to pot the layers and plant them out in March; but I advise autumn plant-

ing if it can be done with a reasonable degree of safety. In the English parks great use is now made of these carnations, and last summer in Regent's Park several beds were planted with varieties of a few good colors, one color in each bed. The effect was as rich in its way, and infinitely more pleasing and artistic than a gaudy show of pelargoniums. The carnation stands second only to the rose as a flower for the garden and for cutting.

CHRYSANTHEMUMS.—Several new varieties of chrysanthemums stood out conspicuously during the season of 1891, and recently we saw in a stand of the Messrs. Pitcher & Manda, at Hextable, Swanley, a yellow "Mrs. Alpheus Hardy" named W. A. Manda. The flower is similar to that of Mrs. Hardy—rich yellow in color, and the petals are hairy. Louis Boehmer, the purple-colored "hairy" variety, has been largely exhibited, and is a bold (not coarse), effective variety. W. H. Lincoln is a glorious yellow Japanese flower; the color is very rich, and the plant is of quite dwarf growth, seldom growing more than 3 or 3½ feet in height; the leafage is vigorous and dark green. It will be grown largely for the market, and some plants I saw recently had 7 or 8 flowers each—a compact mass of growth and blossom. There is a great tendency among growers to acquire quite dwarf varieties

and to discard the tall, lank kinds that need a ladder to enable one to see the flowers perched on the top of their towering stems. The finest Japanese flower of the year is unquestionably Viviani Morel, an acquisition of last season, the flower being even larger than that of Etoile de Lyon, but different in character. It is fully 9 inches across when well grown; but, although so large, it is not in the least coarse. The petals are somewhat narrow, curling gracefully, and composing a bloom of remarkable solidity, fullness and dashing beauty. Its color is rich and telling—a lovely shade of rose. In almost every winning stand at the exhibitions it has had a place, in spite of its recent introduction. Three other beautiful novelties must be named; two of them Japanese varieties, and all are English-raised, save one. Mrs. Beckett and Edwin Beckett are very distinct, and delightful additions to our list. The first has a massive flower—white, full and striking. We are pleased to know that it partakes of the character of Avalanche in habit, being vigorous, dwarf and bushy. Edwin Beckett, named after the most successful grower of Japanese varieties in England, is a lovely rich yellow flower, even deeper in color than Avalanche. It was raised by Norman Davis, the

well-known cultivator at Camberwell, London, and bears blooms of large size, truly Japanese in character, and of graceful appearance. This also has the dwarf habit characteristic of Avalanche. Thus this year there have been added to the list of dwarf chrysanthemums two novelties of great value. During the last few years there have been several notable additions to the incurved section—John Lambert, John Doughty, Violet Tomlin, M. A. Haggis, for example. Quite as fine as any of these is the new R. Bahaunt, a French variety introduced in 1890; its flower is finely incurved, large, full, globular, and quite up to the strictest standard of beauty and excellence. The color is deep crimson, the outer surface of the fine florets a paler shade of the same rich hue. M. Darrier, which I saw recently, has a different style of flower—flatter, with petals like those of Princess of Wales. The color is nankeen-yellow, with a suffusion of purple. It will take a good place among the finest incurved chrysanthemums. More attention than hitherto is being given to the early and late-flowering varieties. We can scarcely have too many of the type of Princess Blanche, a white incurved flower most acceptable for cutting in the winter, when such flowers are most appreciated.



THE MISSOURI BOTANICAL GARDEN:

FOUNDED BY HENRY SHAW



IN THE YEAR 1851 Henry Shaw, a prosperous merchant of St. Louis, Missouri, spent some time visiting the World's Fair at London and other points of interest in England. While walking through the famous gardens of Chatsworth, where the chiefs of the great

house of Devonshire had for several hundred years lavished much wealth, Mr. Shaw first planned to have in his own country a garden of somewhat similar nature. It was here, according to his own statement, that he said to himself: "Why may I not have a garden, too? I have enough land and money for something of the same sort, in a smaller way." Out of these plans and questionings grew the famous Missouri Botanical Garden and Tower Grove Park, which stand as a monument of what Mr. Shaw has done for the cause of horticulture, for they were given by him to the people. The bequest will increase in worth and usefulness as time goes on, for it has a broad business-like basis.

Henry Shaw was borne in Sheffield, England, July 24, 1800. His father was a manufacturer of grates, fire-

irons, etc. The family removed to Canada in 1818, and the next year Henry, then of age, after spending some time in Louisiana, went to St. Louis, at that time a small trading-post. With the assistance of an uncle he bought a small stock of cutlery, and through habits of industry and self-denial and good business methods he acquired a large fortune by the time he had reached his fortieth year.

The finest garden in St. Louis at the time Shaw began business there belonged to Madame Rosalie Sangrain. Her daughter many years afterward recalled how young Shaw, while taking his daily afternoon horseback rides into the country, would stop at the garden fence, admire the flowers and exchange pleasant words with the owner.

The Missouri Botanical Garden, Mr. Shaw's first work in extensive public gardening, was begun in 1857. The area included in the garden, of which we give illustrations on pages 405 and 407, was 44.7 acres, divided as follows: garden proper, 9.4 acres; arboretum, 20.5 acres; fruticetum, 8 acres; vegetable garden, 3.5 acres; grove, 6 acres; lawn, 2.7 acres. The grounds about the garden include an equal or greater acreage of pastureland, which can be used for any extensions may from time to time be found desirable for the garden. Two large greenhouses and several smaller ones afford facili-

ties for the cultivation of exotics, and for the propagation of tender and half-hardy plants used for bedding during the summer.

In 1866, Tower Grove Park, adjoining the garden and comprising 276.76 acres, was given to the public by Mr. Shaw. The museum building was erected in the garden as early as 1858-9, partly at the suggestion of Sir William J. Hooker, the director of Kew Gardens, England, who wrote thus to Mr. Shaw: "Very few appendages to a garden of this kind are of more importance for instruction than a library and economic museum, and these gradually increase like a rolling snowball."

The selection of books for this library was wisely entrusted to Dr. Engelmann, in consultation with Hooker, Decaisne, Brown and other of his botanical friends. At this time Dr. Engelmann urged Mr. Shaw to purchase the large herbarium of the then recently deceased Prof. Bernhardt, of Erfurt, Germany, and this was at once done. The herbarium contains about 20,000 mounted specimens of flowering plants and some 4,000 of cryptogamous plants. It is impossible, according to a recent report of the garden, at present to state the exact

number of species cultivated in it, but the number is large and receives constant additions. From a descriptive list of the economic plants cultivated in the garden in 1886, it appears that it then contained 232 such species. The inventory made by the administrator of the estate shows 55 named species or varieties of agave and 106 species of named palms; and the collections of cactus and of several other plants that interested the late Dr. Engelmann is quite large. The educational features of the garden are also supplemented by the extensive variety of trees and shrubs growing in the adjacent Tower Grove Park, which was given to the city by Mr. Shaw; although the management of this park is entirely distinct from the Botanical Garden, and they were primarily intended for quite different purposes.

More than 20,000 trees have been planted in the park proper since 1866; and these trees were all raised in the arboretum of the garden. Mr. Shaw used to say when planting them, that he did not expect to see the trees reach maturity; but nearly all of the trees in the collection that he helped to plant and nurse, were fully grown when in August, 1889, his coffin was borne beneath their shade to his mausoleum in the garden. Mr. Shaw's trusted assistant, James Gurney, is still superintendent of the grounds.

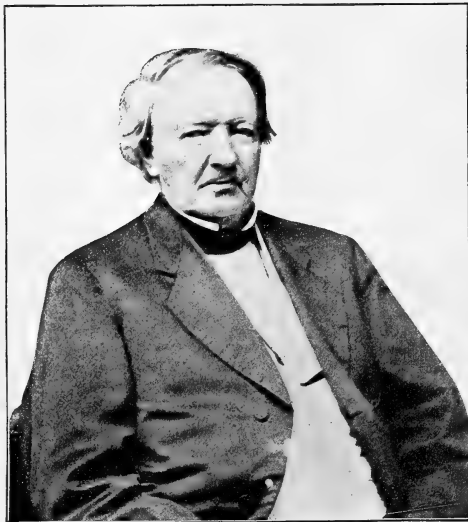
It was the aim of the liberal founder of these grounds to omit nothing that could make them the perfection

of a pleasure-ground. Throughout the large area of the garden there are abundant walks and drives. There is a pool devoted to aquatics, a labyrinth, an observatory, a summer-house and play-ground, and a music-stand and concourse, besides many other features designed to interest and amuse.

Mr. Shaw's purpose in establishing the Missouri Botanical Garden was clearly set forth in his will. The bequest to the public ran as follows: "To establish and endow a Botanical Garden, easily accessible, which should be forever kept up and maintained for

the cultivation and propagation of plants, flowers, fruit, forest-trees, and other productions of the vegetable kingdom; and a museum and library connected therewith and devoted to the same and to the science of botany, horticulture and allied objects, for the promotion of science and knowledge." To provide for its maintenance forever Mr. Shaw bequeathed additional real estate, the income from which affords an ample fund for prosecuting the work of the garden. Tower Grove Park, also given to the public by Mr. Shaw, and planted at his expense, depends for maintenance upon the city of St. Louis.

In its educational aspect the Missouri Botanical Garden occupies a unique place among institutions of its kind. Provision is made here for giving (free) adequate theoretical and practical instruction to young men



HENRY SHAW.

desirous of becoming gardeners. The course of instruction in this department does not duplicate that now offered by the numerous state Agricultural Colleges of the country, but is quite distinct, and limited to what is thought necessary training for practical gardeners. It is not intended that many pupils shall be trained at one time. Six scholarships for such pupils have been established, and admission thereto is based on the results of competitive examinations, with certain exceptions in favor of young men between the ages of 14 and 20. Vacancies, as they arise, are filled annually after public announcement.

Garden pupils, under the conditions of acceptance, are regarded as apprentices in the Botanical Garden, and as such are required to work in it, under the direction of

stry, botany and entomology, and they are granted free tuition in the School of Botany.

The Henry Shaw School of Botany was founded about the year 1883, with the assistance and advice of the late Dr. Asa Gray, of Harvard College. With the concurrence of a board of directors Mr. Shaw endowed the school as a department of Washington University, with real estate yielding a revenue of over \$5,000, and placed it in such relation with the largely endowed Missouri Botanical Garden and Arboretum as would practically secure their best use for scientific study and investigation, to the professor and students of the School of Botany. A professorship of botany was therein established, known as the Engelmann Professorship, which has been filled since September, 1885, by Professor



A VIEW IN LOWER GROVE PARK, ST. LOUIS.

the head gardener. They are advanced from simpler to more responsible tasks, and from one department of the garden to another, until they are thoroughly familiar with the work of all. Garden pupils are paid for their services in the garden, and the absence of pecuniary means need not deter any young man from obtaining horticultural training. Each regularly appointed garden pupil holding a scholarship is entitled to the following wages, payable fortnightly: For the first year, \$200; for the second year, \$250; and for each year after the second, \$300. Plain but comfortable lodgings, convenient to the garden, are also furnished. After the first year pupils are not required to do manual labor in the garden for more than five hours a day. The remainder of their time is devoted to the study of horticulture, for-

William Trelease, formerly of Wisconsin University. The working year for the School of Botany is divided into three terms. Classes for the study of particular groups of plants, and special work for advanced students, are planned as the demand for them appears. On the application of six persons, a class for day or night work, in any branch that can be taught with profit, will be formed whenever practicable. The elementary classes are so conducted as to require no previous knowledge of botany; but admission to advanced classes depends upon a sufficient familiarity with the subjects to render the work profitable.

Several other special bequests were made by Mr. Shaw in the interests of the Botanical Gardens, among them these:

"One thousand dollars annually for a banquet to the trustees of the garden, and to the guests they may invite—literary and scientific men, and friends and patrons of the natural sciences; \$409 annually for a banquet to the gardeners of the institution, and invited florists, nurserymen and market-gardeners of St. Louis and vicinity, said banquet to be presided over by the director of said Botanical Garden; \$500 annually for premiums or prizes for any flower-show or exhibition that may be established by amateurs and horticulturists of St. Louis; \$200 annually to the Bishop of the Episcopal Church of

this diocese, in consideration (if he approve of the same) that an annual sermon be preached in such church, and by such minister as he may select, on the wisdom and goodness of God as shown in the growth of flowers, fruits and other products of the vegetable kingdom—to be paid annually out of the funds of the said Botanical Garden."

Henry Shaw's great work and bequest—wise, generous and far-reaching in its effects—has made the memory of him dear to the hearts of all grateful Americans. His example stands as a noble one for rich men of our nation to follow.

DIFFICULTIES IN HOT-WEATHER GARDENING.

HOW PRACTICAL MEN OVERCOME THEM.



UNDER ORDINARY conditions of soil

and season, we have seldom found it difficult to make seeds germinate promptly, or newly set plants root freely, even in July and August. This is the secret: Always plant seeds or roots in freshly-stirred soil, and bring it in close contact with

them by thorough firming. Still, during prolonged drouths, such as we frequently have in midsummer, old methods seem to fail and we are grateful for any new ones suggested. A number of practical growers tell us, in this article, how they conduct their hot-weather gardening.

IRRIGATION IN WISCONSIN.

In this latitude ($44\frac{1}{2}$) we can calculate upon little growth of plants after November 1. We generally finish picking strawberries by July 10, and as we take but a single crop of berries from our beds, they are turned under immediately, heavily manured, and then set with cabbage-plants. Henderson Summer is usually set for a late crop until July 20. The soil must be rich and in first-rate order to insure a good crop of cabbage when it is set so late. From July 20 until August 10 we set celery for a late crop, as fast as the ground is cleared of other products. Flat Purple-top turnip-seed are sown from August 10 to 20, and winter radish-seed sown as late as September 5 will bring a good crop; this finishes our sowing and planting for the season.

It is sometimes very difficult to insure prompt germination of seed during warm dry weather. We begin plowing for spring planting as early as the ground is in good condition for working. The ground is usually wet at that time, and we get such seeds as onions, early peas, radishes, beets, carrots, turnips, parsnips, etc., in the ground before it becomes dry. If the soil is very dry at planting time, we wait a few days, keeping the ground in the best condition possible, and then sow the seeds immediately after a light shower. They must be sown a little deeper when the soil is dry and hot, than when it is damp and cool.

Last season was more unfavorable to seed-germination than any I have ever known. I had about four acres of ground that I wished to plant with Hubbard squashes early in June. The ground was so dry that we knew the seed would never germinate without help of some kind, so the following plan was adopted: I wished to manure the squashes in the hill, and had a lot of nice fine manure, but it was nearly or quite as dry as the earth in the field. After the fertilizer was loaded upon the wagon the hose was turned upon each load until it would hold no more water without draining. The squash-hills were dug out, and a large forkful of this wet manure was thrown into each one, and then thoroughly mixed with the soil. The seeds were dropped upon this damp mixture, and covered an inch deep with damp soil; upon this was thrown, as a mulch to keep the soil from drying out too quickly, half an inch of dust. The seeds came up very promptly, and we had as pretty a stand of squash-plants as I ever saw, although the weather continued dryer than we had ever known it to be. I believe that I owed my entire crop of squashes to that extra care in planting.

In midsummer we often set plants out in earth almost as dry as dust, and rely entirely upon watering to get them started. If we are setting out cabbage-plants in very dry weather, we pour from a pint to a quart of water about the roots of each plant. Unless it rains within a day or two afterward, we go over the rows a second time and give the ground about the plants a thorough wetting, often putting on a quart of water to a plant. Unless the drouth is very severe indeed, these two waterings carry the plants along nicely until rain comes to refresh them. Large tomato-plants, set out in dry weather, are given two quarts of water each. The usual trouble with plants set out by growers in dry weather is, that they are not given a sufficient amount of water at first.

I have a system of watering by which I can irrigate my entire garden. The water comes from an artesian well nearly 1,000 feet deep. It is carried in pipes laid below the frost-line through my garden, with laterals from it in all directions. These lateral pipes have

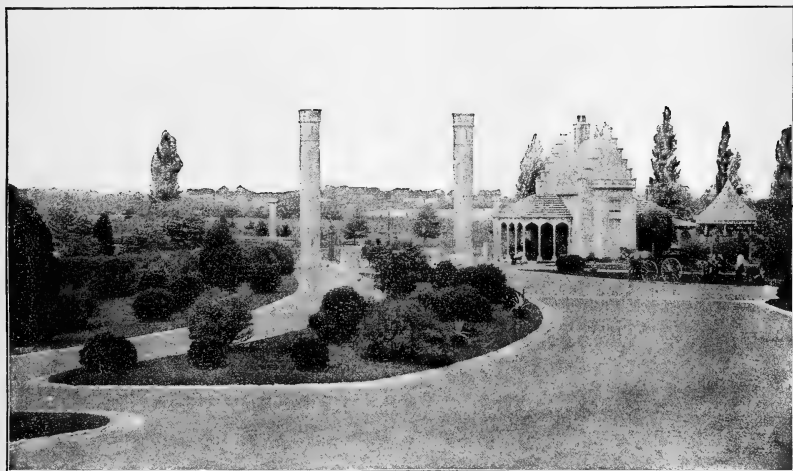
faucets to which we can attach hose or gas-pipes, as we see fit, and in this way reach any spot in the garden. A sprinkler is attached to the hose at the time for watering. Last season we had the most severe drouth ever known here, and we arranged to have the hose started about 4 o'clock A. M., and run until about 8:30 P. M. Each hose would distribute about 1,000 barrels of water during a 16 hours' run. It requires one man and a boy 12 or 14 years old to attend to each hose. This irrigating-plant costs about \$1,000, and it paid for itself twice over last season. During the season of 1890, we did not turn a faucet in any part of the garden, except to get water while setting out plants.

The crops most in demand in July and August are late strawberries and raspberries and currants. The demand

are to such points. If I am not already acquainted with some good and reliable firms in these localities I make such acquaintances speedily. By so doing I am almost invariably enabled to sell my produce in car-lots, for very much more than I could get at or near my own home. I have sold produce in New York city, Philadelphia, St. Louis, Kansas City, Leavenworth, and many other places.—J. M. SMITH, *Wisconsin*.

T. V. MUNSON'S METHODS.

Few vegetables are planted in Texas during July and August, as the dry, hot weather usually destroys young plants, even if seed can be induced to germinate. The Irish potato is an exception; it is often planted in July. When the first crop is dug, the unmarketable tubers are



WEST GATE OF TOWER GROVE PARK, ST. LOUIS. (See page 403.)

is good for early cabbage, peas, beans, cucumbers, bunch-onions, sweet-corn, early potatoes, etc. Cabbage generally sells better during these months than any other crop. Marketing is a business in itself, and often requires more care than the growing of produce. In the last 20 years there has not been a time when our crops, if thrown upon the home market, would not have brought prices down so low that the produce would not have paid for harvesting and hauling it. Hence, we sell most of our crops in distant markets. During the summer and early fall our best market is in the large lumber and iron districts of the north. During the fall (if I have larger crops than the market north of us cares for) I learn where there is a deficiency in any of the kinds of produce that I have to sell, and what the rates of freight

at once planted in good moist mellow soil, being covered deep with a plow. In two or three weeks they are up, and if the heat and drouth of August are not too severe will live, but grow little until the cool nights and moist weather of September and October arrive—then fine growth begins, and frequently a good crop of potatoes matures early in November. This crop will keep here all winter far better than the northern potatoes shipped in.

During midsummer, irrigation is necessary to insure prompt germination of seeds that require no freezing, and, with moisture, will sprout in a few days or weeks. They are planted in loamy soil, under screens, watered thoroughly from a fine rose nozzle every evening, or every other evening, according to dryness of the atmosphere. All such seeds as tomato, strawberry, blackberry,

gooseberry, currant, persimmon, etc., which are covered with pulp, germinate much easier if the fruits are crushed, and the pulp allowed to stand two or three days before washing. When the pulp rots free from the seeds they are either washed clean and planted at once, or carefully dried in the shade—never in the direct sun. They are then put up in packages, along with a few "moth-balls" (camphor-balls saturated in carbohc acid) to prevent insect depredations, and kept in a cool, dry place until needed for planting. Some seeds, such as grape, blackberry, strawberry, asparagus, etc., are very slow to germinate. These should be scalded for a moment in boiling water, but be careful not to cook their germs. Put the seeds into sacks, and then immerse them in the water for one or more seconds, according to size of seed. Roll and knead the mass, that the hot water may penetrate it thoroughly, then take it out and plunge it into cold water. Mix the seeds with dry sand so that they will separate readily in sowing, plant them at once in warm soil, covering very lightly, and see to it that they never dry out or get water-soaked.

To insure prompt growth of roots transplanted in dry weather the bed of earth in which they are set must be deeply and finely pulverized, sufficiently moist to sustain growth, and the moisture must reach down to permanent moisture. They will often require artificial watering. After setting, shade them with a broad shingle stuck slantingly over the plant on the south side; this can be removed when wilting ceases. We do not water artificially, except when transplanting or growing seedlings as above stated. Little good is accomplished in dry hot weather by watering unless you have enough of the element to irrigate fully.

Here, in July and August, melons, tomatoes, sweet-potatoes and sweet-corn are the chief marketable vegetables, as nearly all others have matured and been sold. The cantaloup and watermelon crops are then in most demand, and bring most money. This is a great melon country. My advice about melons and cantaloups would be to plant only one variety of each. The best strain of Nettle Gem cantaloup, and finest strain of Kolb Gem watermelon will bring money—if any will—in local markets or when shipped. Use an abundance of melon-seed, and plant them in only one kind of soil—well-drained sandy loam made rich with stable manure—at, or a little after, corn-planting time. Cover the seed not more than an inch deep. Market only prime melons. T. V. MUNSON, *Texas*.

GARDENING IN GEORGIA.

Rutabaga and English turnips, the last crops of snap-beans and bush butter-beans, tomatoes, cabbages, and corn, are sown and planted here during July and August; and in the latter month we sow kale.

To insure prompt germination of seeds, land is plowed and bedded. After a rainfall, as soon as we can go over the ground, seed is sown and rolled into the soil. In setting out plants we grout them and set them out as soon as a rain wets the soil, giving frequent cultivation

afterward. Artificial watering is rarely resorted to except when setting cabbage and sweet-potato plants.

Tomatoes, green corn, beans, egg-plant, salsify, and sometimes cabbage, sell best in our markets at this time of year.—S. A. COOK, *Georgia*.

PLANTING AND MARKETING IN NORTH CAROLINA.

We keep up our successive crops of sweet-corn, for table use, all through July in North Carolina. In fact, better crops of sweet-corn can be grown here from July plantings than from early plantings, for all our corn that gets fit for table use in June is seriously damaged by the boll-worm, which the later corn generally escapes. About July 1 we set tomato-plants, from seed sown in June, for use in late fall. This is our main crop for home canning, and is usually larger than the early crop. July 30 or August 1 we sow seed for winter cabbage that will head about Christmas. Salsify-seed sown here in July will give a better crop than if sown in spring, as the early plants are liable to have their growth checked and run to seed in hot weather.

Snap-beans, for succession, we sow until September. In this section (Raleigh) of North Carolina we try to defer planting sweet-potatoes for the late crop until August, but if the weather is damp, the seed may sprout so that it must be planted earlier. We take the potatoes of the early crop as soon as the first lot is dug for market, spread them out in a single layer, and cover them with an inch or more of sandy soil. Here they remain until their eyes are well started, usually in August. Then those that are started (and no others) are planted whole, in deep furrows, and covered only about an inch deep. As growth proceeds the soil is worked in about them, and the cultivation is flat. These potatoes are ready to dig late in November. This late crop is getting to be of great importance in the south, particularly for seed to plant the early crop the following year. Our growers find it to be much more productive than northern-grown seed, and it withstands the changes of our treacherous spring weather better. Southern truckers plant no other seed of sweet-potatoes in spring, unless they run short of the home-grown. For table use in winter these potatoes are also of superior quality, for if kept cool they do not start an eye until May, and are therefore of better quality than those long dug and sprouted. In dry soil they can be left over winter where they grew, and their rows covered with straw; here they remain until March, when they must be dug to prevent sprouting. A Florida grower informs me that he planted part of his crop this spring with home-grown and part with northern-grown seed. The freeze in March killed the northern potatoes outright, but only cut the tops of those home-grown, and they made a good crop. July, in northern localities, is the time for planting the main crop of celery, but here it is better to defer this until September, then use plants from seed sown in June.

Brussels sprouts sown early in July will give, in this climate, a great abundance of their little heads all winter. They are not so much grown in the south as they should

be. They are superior to the collards so generally grown here. Collards sown early in July are better than those carried all through summer. If the collard-plants are bent down where they grow, about Christmas, with the heads toward the north, and the soil banked over the stem and base of the head, leaving only the upper edges of the leaves of the lower heads exposed on the shady side, they will blanch perfectly. As grown here, the collard is no mean vegetable, but as commonly grown a green collard is not delicate eating.

We market tomatoes here from June 15 to July 31. Melons and "roasting-ears" come into market about this time. Spring-sown cabbage, like Fottler Brunswick or Succession, sometimes pays well late in the month, but is an uncertain crop here. Early sweet-potatoes begin to come in, and would make more of an item with our growers than they do, if sorts preferred at the north were grown. Among Irish potatoes the Early Rose is a favorite with our growers. Of salsify, the Sandwich Island has superseded older sorts. For the winter crop of cabbage we use American-grown seed of Premium Flat Dutch. Snap-beans are grown here in great variety. The Valentine still leads among green-podded sorts. The fungus which spots wax-beans is peculiarly troublesome in Green Wax. We hope to circumvent it this season.—W. F. MASSEY, *North Carolina*.

LITTLE PLANTING DONE SO LATE IN VERMONT.

Little planting can be done in July so far north as Vermont. Even late cabbage and celery are rarely delayed longer than about July 4. We are, in fact, about a month behind southern New England and New York in all outdoor plantings and work. As for sales, we get into market with the earliest peas rarely earlier than June 20, and you can judge from that the seasons for other crops, small fruits, etc.—T. H. HOSKINS, *Vermont*.

A CELERY SPECIALIST'S SUGGESTIONS.

Early in July we plant cabbage for fall and winter. Late in July and early in August we set the main crop of celery—varieties, White Plume, Silver Spray and Golden Heart. During August we sow seed of Grand Rapids lettuce for planting in frames to sell when wanted, and also plant winter onions.

To secure prompt germination of seed, we use a wheelbarrow-like contrivance. The wheel is a cast-off belt-wheel with four-inch face, obtained from some of the mines; it weighs about 50 pounds. This contrivance is wheeled over the track of seed-drill. This is our method of planting celery: Trenches are opened three feet apart and four inches deep, with a Planet Jr. cultivator and the potato-furrowing attachment. About two inches of manure is then thrown in the furrows from the wagon. The bottom of the furrows is about a foot wide. The smallest teeth are then put on the cultivator, one in front and two behind, and with a horse we go twice through a row. The ground is now too soft for planting; to overcome this we harness two horses to the roller and go across the rows. Then, if plants are taken from seed-bed two days before wanted, the roots well puddled, plants

stood loosely in boxes under an open shed till new root-fibers start (which they usually do in 48 hours), and then planted in the afternoon in suitable ground, there will be no need of watering them.

We usually begin marketing Wakefield cabbage July 4; White Plume celery a month later. These are our paying crops, and occupy our time during the remainder of the season. Our produce is sold at wholesale rates to storekeepers and hucksters. Much of it is sold on the grounds, which are on the main line of travel, and are passed daily by hundreds of business-wagons. In addition, we keep two wagons on the road most of the time. We aim to grow the best products, and sell them for what they are, making every lot as nearly uniform as possible.—M. GARRAHAN, *Pennsylvania*.

A BOSTON MARKET-GARDENER'S METHODS.

July is harvest-time for early cabbage, bunch beets, bunch onions and dry onions from sets, and the first stringbeans, and the latter part of the month, for early tomatoes. These are all paying crops, but cabbage is the most profitable. This is a busy month for the market-gardener. The early crops harvested, preparations for late ones must be made, and the dry weather incurs extra labor to supply moisture in seeding and transplanting. For cabbage, cauliflower and celery we frequently resort to hand-watering. Seeds for the late crops are sown, and the plants are set in rows left vacant among early crops. We sow cucumbers for pickles until July 4, beets until the 15th, flat white turnips and beans for pickling until the 20th, and lettuce until the 25th. Cabbage and cauliflower are transplanted not later than July 20. All these late crops are sown or planted on land that has produced early crops.

To make success more sure I plant or sow directly after the plow, rolling the land before transplanting and after the seeding. In sowing table-beets this after-rolling has insured a perfect crop, where my neighbors, sowing at the same time and not rolling, did not grow a crop worth harvesting. In rolling after sowing, use a hand lawn-roller drawn by two men, who walk between the newly-seeded rows. In rolling soil for transplanting I use a horse-roller before the plants are set.

General irrigation, to take the place of the natural rainfall, has not proved successful except with a very few kinds of vegetables. Our farms are usually piped, the water-supply coming from steam-pumps, driving-wells, etc., as we find water indispensable in greenhouse and hotbed culture. We irrigate early cabbage by allowing water to run along the rows. It is often the case that just as the heads commence to form dry weather overtakes the plants and checks their growth. In such case the high prices realized for good heads compensate for the labor in watering. Cauliflower and celery are other crops that pay for watering. A dry season is most desirable for our market-gardeners, for then high prices are realized. In gardens where stable-manure has been applied liberally year after year, the land is full of vegetable matter and holds water like a sponge, enabling the grower to produce good vegetables even in a dry season; while

gardeners who have been less liberal with manure can produce good crops only in favorable seasons when prices are low.

August is a month of comparative leisure. The marketing of early vegetables is over, the planting done, and the principal work restricted to the battle with weeds. Marketing corn, shell and string-beans, melons, squashes, tomatoes, onions, lettuce, etc., goes on, but the gardener is not so hurried with work in harvesting as he was earlier in the season. Melons that have been started under glass and then planted in the field are the best paying crop for August.

The marketing of fruit is, with many, a perplexing problem. For those located not more than 6 or 10 miles from Boston the employment of an intelligent market-man, selling from his own wagon in the open market, gives best results. For those further away, consigning to a commission-man is thought best. Returns in latter

case are not always satisfactory, especially when the market is over-supplied, or owing to warm weather the produce arrives in poor condition. Many of our gardeners are providing themselves with cold-storage houses, where produce is cooled before shipping. Cooling insures the arrival of vegetables in market in good condition. The returns from commission-men are very unsatisfactory when produce of second quality is sent them. They take little pains with it. But in selling from a farmer's wagon we find that there is a class of buyers who do not consider quality quite so closely, and prefer to buy produce at a price slightly below regular market figures.

Boston market laws are very strict. All truck is exposed for sale in bushel or barrel boxes of regulation shape. In another letter I will try to give more fully the manner of preparing the various vegetables for market.—EDW. P. KIRBY, *Massachusetts*.

TREES, FLOWERS AND VEGETABLES

GROWING ON THE EDITORS' GROUNDS.



THE HARDY *RANUNCULUSES*.—

Gray, in his Manual of Botany, numbers 18 distinct species of buttercups as belonging to the eastern and northern United States. The mere commonness of the wild species testifies to their great adaptability to our soil and climate, and prepares us to expect very rugged stocks from such northern species and varieties as show special ornamental value. Some forms of *ranunculus* growing at Woodbanks, which we have never seen outside of our own grounds, are described below.

The species shown in our engraving on opposite page, *Ranunculus amplexicaulis*, is in all respects one of the loveliest plants of our large collection of hardy perennials. It is a neat spreading plant, not above 7 inches in height, and its slender stems bear entire glaucous gray leaves, delicate and handsome. There is nothing weed-like in its appearance. To speak of its flowers as "buttercups" would be wrongly descriptive, for they are of the clearest white, about an inch across, and some of them are semi-double. The plants are not very free-blooming, but atone for this fault by their distinct form and beauty, and their lasting qualities. They bloom in early May. These plants are largely grown by London florists, who sell them when in bloom in clumps from their borders, as pansies and daisies are sold. Our own stock was imported two years ago from T. S. Ware, Tottenham, London, England. This *ranunculus* is not found in American catalogues. Our plant, in the latitude of Niagara Falls, has passed through two winters in the open border without any protection other than the customary forkful of manure given to all our hardy plants.

R. acutifolius flore-pleno, known as Fair Maids of France, has flowers double as roses, and pure snowy white. They are less than an inch across, and are produced in great profusion immediately after anthesis has passed out of bloom. The leaves, instead of being entire, are deeply divided and palmate in form. The plant, judging from our two-year specimens growing in moist sandy loam, will reach a height of 12 to 18 inches. These two forms of *ranunculus* are favorites with us. We find them perfectly hardy, and they have no weed-like tendency toward spreading.

R. acris fl.-pl., commonly called Yellow Bachelor's-buttons, is a useful border-plant, producing its double rosette-like blossoms very freely. In color, at least, it reminds us of the tall field buttercup. This species has a very acrid or even blistering juice, hence its name. *R. acris fl.-pl.* attains its greatest perfection when planted in a moist place.

R. bulbosus is a native species rarely found wild outside of the New England states. It is suitable for only the wild garden. It grows a foot high, and produces glossy deep yellow flowers more than an inch broad, with 6 or 7 petals. There is a double variety of this, *R. bulbosus fl.-pl.*, which produces numerous very double yellow blossoms in early summer. It grows well in any soil.

R. speciosus fl.-pl. is a showy buttercup with large double golden yellow flowers, which are produced more or less freely all through the summer.

JAPANESE MAPLES.—Are Japanese maples suited to general outdoor cultivation as far north as Niagara Falls? For a number of years we have been trying to decide this question. Half a dozen of the hardier varieties have been growing here in the open ground without protection, beyond a slight banking of earth over the roots, and they are yet in a very promising condition. We see no

reason why, when grown in dry soil to induce early ripening of the wood, and in any but the most exposed places, they may not be counted among our most ornamental small-sized trees. Although true trees in the sense of having a trunk, yet in stature they can be classed only among shrubs.

Of different species and varieties in our collection, the following are worthy of special note: The blood-red Japan maple (*Acer polymorphum sanguineum*), with deeply five-lobed leaves of a reddish crimson hue in June, has thus far stood our winters well, not even the ends of its branches being killed. The dark purple-leaved Japan maple (*A. polymorphum atropurpureum*), with deeply-cut, dark claret-red foliage, has suffered slightly; the ends of its twigs sometimes freeze. The cut-leaved purple Japan maple appears somewhat more delicate than the foregoing. The parent type of the Japan maples, *Acer polymorphum*, is of slow growth, the foliage being much smaller than that of any of the varieties here named. Although this, like the others of our collection, promises to be perfectly hardy when well established, it did not escape some injury from the freezing back of soft growth during the past winter. The leaves of this species are a dark green in the spring, but later they assume a somewhat crimson hue. The aconite-leaved Japan maple (*A. japonicum aconitifolium*) is distinct from the polymorphum type. The leaves are deeply and exquisitely cut, reminding one of lace. It has stood the winters well here.

STUARTIA PENTAGYNA.—This charming shrub has passed through two winters at Woodbanks in perfect condition. This is the more noteworthy because it is a member of the camellia family, indigenous to our southern coast states. The tree flowered last year for the first time.

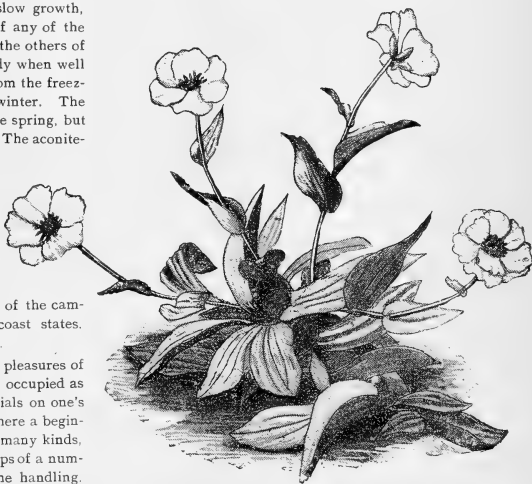
INCREASE OF PLANT-STOCK.—One of the pleasures of managing a garden like this one of 13 acres, occupied as the editorial home, is the increase of materials on one's hands from year to year. For example: where a beginning was made with a single plant each, of many kinds, three years ago, this spring we set large groups of a number of kinds at no increase of cost save the handling. Among plants which increased rapidly were eulalias and other grasses, sedums, echeverias, vincas, hemerocallis, phloxes (especially the procumbent class), aubrietias, campanulas, funkias, helianthus, etc. Different varieties of vincas, or periwinkles, set each in a small separate clump three years ago, were this year used in covering shaded mounds. Each clump furnished about 75 plants.

Evergreens and shrubs increase in the same way. Twenty-inch plants set 3 or 4 feet apart three years ago formed groups 5 or 6 feet tall. They were thinned this year and last, and the thinnings planted for new groups.

HARDENING PLANTS.—Too many of our gardeners neglect one most important point, namely, the proper hardening of plants before their transfer to open ground. Then the plants wilt, and require shading and nursing. Tomato and similar plants should not show the least

immediate effect of their removal to open ground, in their outward appearance.

We like to start the plants early, and in fairly good heat, in order to make them grow with reasonable thrift from the beginning; but we guard carefully against overdoing this. Excessive bottom-heat causes sappy, spindling growth; crowding makes cripples. A greenhouse is a good thing to have in order to begin in time; but for the later stages of plant-life, we prefer moderate hotbeds, or even coldframes. The greenhouse does not give us opportunity enough for hardening plants properly. The hotbed gradually loses its bottom-heat as the time for planting-out approaches, and, like an ordinary coldframe, permits one to give the plants, during the cold weather in May, all the exposure needed preparatory to outdoor life. Our plants, after setting-out in open ground, seldom flag. They bloom and develop



RANUNCULUS AMPLEXICAULIS.

fruit as if nothing had happened. But this is due to their slow, sturdy growth, thorough hardening off, and careful transplanting. People who grow tomatoes and similar plants in greenhouses should remove them to coldframes at least two weeks before setting them in the open ground.

We always like to have plants near the glass, but not touching it. Our coldframes are simple boxes, set upon level ground, and banked all around with soil or coal-ashes. The plants are near the glass even when first set in. As they grow and begin to touch the glass, we pry the frames up with a crowbar, and pack some soil under to hold them up. This operation is repeated as often as needed to keep the glass just an inch or so above the plant-tops.

THE NEW ONION CULTURE AGAIN.—Several readers ask for more information on this subject. We have this year planted only about one-quarter of an acre in the new way, mostly of Prize-taker and White Victoria onions. The heavy planting done in onions this season may prove that this was a wise move. Perhaps it might have been still wiser to plant for this season, only the quicker maturing White Victoria onions, or any other ordinary earlier sort, as for instance, the Yellow Dutch. With these sorts, the one advantage which the transplanting method gives over the old way, namely, that it enables the grower to market his onions in advance of the bulk of the ordinary crop, and receive an extra price, must appear especially desirable in a season of over-production. In this respect truly the early bird catches the worm. The only fault we have yet discovered in the Prize-taker onion is its lateness.

This season, with the exception of its lateness, has been extremely favorable for transplanting, as the soil and atmosphere have been cool and moist most of the time. The boys who transplant onions have learned that the plants stand up much better after being set out, and seem to recover from the check much more promptly, when a good share of their tips are twisted off. They also claim they can handle them much more conveniently, and plant them more quickly when topped about one-half.

Usually it will be safe, and even prudent, to sacrifice advantages in variety and yield, if need be, for the sake of securing an early-maturing onion-crop. A week's difference in time may make a material difference in the price obtained per bushel. The reader will see the urgency of sowing and transplanting onions as early as

practicable. For this section it is better to sow seed in February, than in March, and a greenhouse kept moderately warm is better than a hot-bed; cold frames will not answer. If hot-beds are used, they should have a moderate but lasting heat. In cold, unfavorable weather, many of the seeds, unless given sufficient bottom-heat, lie dormant for a long time, and the grower may fail to get a good stand until too late.

Last year we lost a good many of our young plants in the beds. The tips of all the plants turned yellow, and then dwindled down and died. Many of our readers have come to us with complaints of the same nature. We believe the trouble to be in improper preparation of the soil. This year we used a large proportion of river-sand in our hotbed soil, and the plants all grew vigorously and remained healthy.

A little patch of 25 varieties of onions, started from seed, now joins the one-quarter acre mentioned. This will give us a fair opportunity for comparisons. We also sowed quite a patch of Barletta onion for pickling purposes. They are so very early that we think it likely they could be used for late sowing, perhaps even up to July, and still come to maturity; at least we will make the trial. These onions always sell well.

As a further instance of the importance of earliness in marketing onions, we will mention that Professor Green of the Ohio Experiment Station starts Barletta onions under glass, and transplants them as we do Prizetaker and Victoria. He pulls the crop for green bunching-onions, and although quite small they sell exceedingly well, because there are no other bunch-onions in the market at that time to depreciate the prices paid for this small Italian variety.

CERTAIN INSECT AND FUNGOUS PESTS.

HOW TO DISTINGUISH AND DESTROY THEM.



IT IS chiefly in midsummer that insects and fungous diseases vex the soul of the gardener and tax his invention for methods of destroying them. Some of those found most troublesome among fruits and vegetables, and some new enemies lately discovered and named, are fully described below, with practical methods for treating them.

WEED-DESTRUCTION AN AID IN FIGHTING FUNGOUS DISEASES.

The complete exemption from fungous diseases which is said to be a characteristic feature of gardens in Japan, may possibly be the direct result of the thoroughness with which the Japanese are known to destroy all weed-growth on their cultivated lands. Undoubtedly there is a much more intimate relation between weed-growth and diseases of cultivated plants than the average soil-tiller imagines. Wild plants, including weeds, act in many cases as breeders of fungous parasites, and aid in spreading them. Prof. Byron D. Halstead, in *The Botanical Gazette*, mentions as follows a number of instances of

this baneful influence of weeds, wild plants and trees:

"The lettuce-mildew is found upon no less than forty-one species of plants belonging to the same family as lettuce. Many of these hosts of the mildew are common garden-weeds, and others inhabit uncultivated ground. The celery-rust, now so destructive among truckers, is common to the carrot and parsnip also, and as wild forms of these are abundant we need not wonder that the garden plants are partly destroyed by this pest. There is a mildew of the spinach, *Peronospora effusa*, Gr., that flourishes upon the pigweeds generally, there being no less than ten of these weeds to furnish a propagating place for the mildew of their patrician cousin. The bean-rust makes its home upon several species of wild beans. But of wider range than any species yet mentioned is the mildew of the pea, which renders it almost impossible to grow late peas. This fungus preys upon plants of at least six large and widely separated families. The mildew of the cabbage and turnip is not an unmixed evil however, for because of its wide range it attacks the shepherd's-purse, various mustards, and a number of other weeds.

"The strawberry-blight is met with upon wild vines of both our common species. The gooseberry-mildew is found upon several species of wild gooseberries. The anthracnose, which causes the premature dropping of foliage, is common to several species of currant. The blackberry-rust is an especially important illustration of the relationship of wild plants to those, close of kin, that are cultivated in the garden. This conspicuous rust grows upon the low blackberry, dwarf raspberry, thimbleberry, wild red raspberry, high blackberry, and sand-blackberry. Diseases of the grape, particularly the mildew, are common to all wild species of the vine. The Virginia creeper and Boston ivy are also victims.

"Plum-pockets appear as peculiar distortions of the fruit and stems of the cultivated plum, dwarf cherry, bird-cherry, choke-cherry, and some other species of the genus *prunus*. The peach-curl infests the dwarf almond, common garden plum, three kinds of cherries, and the peach. There is a rust, *Puccinia pruni*, Pers., which is very destructive in some parts of the country, particularly to the peach and apricot in California. No less than ten species of *prunus* are subject to it, and the list includes the peach, apricot, plum and cherry, several of the last two species being wild trees or shrubs. The black-knot attacks eight species of *prunus*.

"It has been fully shown that bitter-rot or ripe-rot of the apple-fruit is the same fungus that causes one of the dreaded decays of grapes; also that one of the worst enemies of the sweet-potato is identical with a serious disease of egg-plants. There seems little in common between the sweet-potato and the egg-plant, and yet in the face of a common enemy it may be helpful to suggest the importance of not following one crop by the other in localities where both are grown prominently and one or both are already diseased. A bacterial disease of the potato also affects the tomato, and vice versa, as might be expected since both hosts are closely related; but that one disastrous form of melon-blight is due to the same cause is unexpected, because of the lack of kinship between melons and potatoes.

"The apple-rust that yellows the foliage of the orchard in July shortens the crop at picking-time. In a second and very different form it infests cedar trees, there forming knots or galls that become conspicuous as gelatinous balls during the spring rains. These orange-colored balls furnish the spores, which falling upon the foliage and fruit of the apple tree, produce the fatal rust. Later in the season the spores from the apple-fungus are carried by the wind to cedars, and a new crop of galls is grown for next spring's campaign against the orchard. Destroy all cedar trees that are anywhere near the apple orchard.

"The evil influence of wild plants may act at long range. It is not necessary that their roots and those of cultivated plants should cross each other in the soil or that their branches should interlock and overshadow one another. Crowding of plants is bad, rank growth of weeds is worse, but the most fatal of all influences is that unseen group of fungi that steals away the health of plants

which lack nothing for room and enjoy high and thorough culture.

"Proper seeding, fertilizing and weeding will do much to assist in warding off from healthy plants the deleterious influences of fungous enemies. Let everything possible be done before using the fungicide and then it will have great effect and yield best returns. If so much

of the smut, rust, mildew, mold, rot and blight of our cultivated plants is propagated by the wild plants hard by, it may be wise for every crop-grower to pay attention to what is thriving outside his garden wall. He cannot build it high enough to shut out the spores, but he can do much to diminish the number of those spores. Having done this, he can take up the spraying-pump with a brighter hope of future success."

NOTES ON PEACH-DISEASES.

The subject of peach-yellows has been often and exhaustively treated in this magazine (see Vol. XI., pages 366, 379 and 397, and Vol. XII., page 20), but there is one phase of the disease that we think has not been sufficiently explained. Many peach-growers, especially in New Jersey, declare positively that the disease on their grounds, supposed by them to be the true yellows, yields to liberal applications of potash salts. We do not doubt this, as a number of instances have come under our own observation. Early in July, 1888, we gave to a peach tree, then three or four years old, and showing every symptom of the yellows in a fully developed stage, a dressing of one quart of muriate of potash scattered over the ground around the trunk in a circle of three or four feet. The tree, then apparently dying, made a new healthy growth the same season and gave a heavy yield of excellent fruit last year. This is a prominent instance, but not the only one that came under our notice.



PEACH SHOOT SLIGHTLY DISEASED WITH ROSETTE.

It has been suggested by good authority that much of the trouble called peach-yellows may be caused by root-lice. If this is true, and it appears to us very likely, we would here have the explanation of the effectiveness of potash applications. Plant-lice, root-lice, and many other insect pests cannot stand contact with solutions of potash salts. But whether the mischief is due to animal life or to any other cause, we evidently have in this supposed yellows a diseased condition which is curable by the simple application of potash salts. As this disease is easily confounded with the true yellows, it is of great importance that peach-growers become acquainted with the exact nature of both, and note especially what differences there may be between the external symptoms of each.

The curable, supposed yellows, so far as we found it, always appeared on soil of rather sandy character, and seemed to affect every part of the peach trees uniformly and at once. This is not generally the case with the true yellows. The fruit of trees also seems to be differently affected by the two diseases, but all their other symptoms are so nearly alike as to cause little wonder that the one is often mistaken for the other. Further investigation of this phase of the yellows question is needed.

Another disease of the peach resembling the yellows in many respects, yet probably distinct from it, is the peach-rosette. This disease runs its course in a much shorter time than does the true yellows; usually the whole tree is diseased from the start, and is often destroyed within six months from the time the disease first attacks it. The Department of Agriculture, Division of Vegetable Pathology, gives the following as the more noticeable symptoms of the rosette: "Commonly the disease appears first in the unfolding shoot-axes, *i. e.*, in early spring when the buds first open. In healthy trees only a small proportion of the winter-buds develop into branches. The rest die or remain dormant. In this disease a large number of the winter-buds grow into shoot-axes and also a very considerable number of dormant buds on the older and larger branches. The shoot-axes push only one to three inches and lose the

ability to develop and ripen wood, and to form dormant buds. The buds on such shoots grow as soon as they are formed, developing into diminutive soft branches, which frequently branch again but never attain any good degree of size, vigor, or maturity. The leaves on these dwarfed, branching shoot-axes are multiplied cor-



SEEDLING PEACH TREE DISEASED
WITH YELLOWS.

HEALTHY PEACH SHOOT.

respondingly, and the result is compact tufts or rosettes containing 200 to 400 diminutive leaves, and many additional green stipules which are frequently misshapen and abnormal. The older and larger leaves near the base of the shoot frequently reach a length of several inches and are characterized by a very pronounced in-

rolling of the margins of the leaf, and by a certain stiffness due to a peculiar straightening of the midrib. These leaves turn yellow in early summer, and fall very readily. The bunching of the leaves is conspicuous and makes the trees noticeable at a long distance. There is not enough foliage to give shade or to hide the branches."

Trees attacked by the rosette generally drop their fruit early, and while it is still green, but do not ripen it prematurely. Superficially their roots appear to be in normal condition, but the rootlets are dead and shriveled as in peach-yellows. The disease was first noticed in Georgia about ten years ago, and is now quite destructive in portions of that state, as also in Kansas.

In the accompanying illustrations taken from Bulletin 1, Division of Vegetable Pathology, the reader is given an opportunity for noting the differences between healthy and diseased wood, and between characteristic symptoms of the yellows and the rosette. Both diseases, however, must be regarded as violently contagious, and the only safe advice to be given at this stage of our knowledge concerning them, is to root out and destroy promptly all trees affected by them.

ENEMIES OF THE ORANGE.

Orange groves in Florida, like the apple-orchards of the north, were once comparatively so free from insects and fungus diseases that any one could raise sound fruit. But now citrus enemies are so numerous that in a few years the business of growing such fruits will probably be confined to those who study spraying methods intelligently and use the machine skillfully.

The "long scale" insect is by far the most injurious enemy in the Citrus county (Florida) groves that I have examined. It closely resembles the oyster-shell barklouse of our northern apple-orchards, to which it is similar in life, history and habits. In one large seven-year-old grove that I looked over recently, this insect had yellowed the foliage everywhere, and the owner estimated that he had lost 1,200 boxes of oranges in consequence of it; the fruit was falling off before maturity, and rotting on the ground. The trunks, branches and many leaves of the trees were covered with the insect-scales. Beneath each scale were numerous eggs which had not begun to hatch. When they do hatch those trees will be literally alive with young lice, and will require prompt attention if the orchard bears any fruit next year. I have no doubt that the kerosene emulsion will prove an effective remedy if promptly applied while the lice are hatching.

The fact that certain ladybird-beetles—notably a black species having two red spots on the back—feed upon these pests has led many growers to neglect the scales, with the idea that such enemies would keep them sufficiently in check; but this is a mistake, as many of the groves show.

The red-spider and the rust-mite are the two other insect enemies present in injurious numbers. The former is being quite generally destroyed by spraying, while the latter in the groves I have visited has done comparatively little harm as yet, but should be routed in some way.

The fungus enemies of citrus fruits in Florida have received comparatively little attention, although they are rapidly multiplying. Last year Professor L. M. Underwood, acting under the direction of the United States Department of Agriculture, made a short field study, and published in the *Journal of Mycology* an excellent account of his observations. Mr. Galloway, of the Division of Mycology, hopes soon to send an assistant into the field to make a more extended and careful study, and to conduct experiments with remedies. There is decided need of an investigation of this kind.

One of the commonest of these fungous diseases is the "scab," which "first makes its appearance in the form of whitish or cream-colored spots, usually on the under side of the leaf, but often on the upper side and occasionally on the young twigs and fruit. The spots on the leaf are often accompanied by a depression or pit on the opposite side. These parts grow larger and often coalesce; ultimately they turn dark, and if abundant the leaf becomes badly curled, twisted, or otherwise distorted.*" This scab I found abundant in the Citrus county groves, and have received it from other parts of the state. Professor Underwood found it widespread. I do not know that any successful preventive or remedy has been found.

The leaf-spot is a peculiar disease due to a parasitic fungus which grows within the tissues of the leaf. The spots are of a faded, grayish-brown color. They vary much in size, but are generally not over half an inch in diameter, and have on both surfaces many small black points. This disease does not seem to be considered at all serious by the growers.

The leaves of many trees which are affected by scale-insects are often covered with a black fungus called "sooty mould." This fungus lives upon the honeydew produced by the insects, and is not a true parasite of the tree. The mold is in a thin layer, which peels off easily. It was first noticed in the orange groves of California. The easiest way to get rid of it is to destroy the insects which produce the honeydew on which it lives.

"Leaf-glaze" is the very appropriate name which Professor Underwood has given to a peculiar disease caused by the growth of a lichen upon the orange-leaves. It appears in patches of a peculiar grayish color. It does not draw nourishment directly from the leaf, but, nevertheless, is likely to injure the vitality of the tree. I found it quite common in Citrus county.—CLARENCE M. WOOD, N. H. Agricultural College.

INSECT DISEASES OF CELERY.

The aggregate damage done to our celery crops by insects is hardly worth talking about, and plays an insignificant figure when compared with that done by insect foes to many other vegetables. The grower has little to fear from leaf-eaters. The plants are sometimes attacked by the cabbage-plusia or "green lettuce-worm," which is the caterpillar of a pretty moth (*Plusia brassicae*), and a ravenous eater. We also find occasional

*Underwood.

specimens of the "parsley-worm," which is the larva of the gay asterias butterfly (*Papilio asterias*), and feeds on the leaves of parsley, parsnip, carrot, dill, etc., as well as celery. This parsley-worm is a handsome green and yellowish fellow, but disagreeable, with a disgusting



FIG. 1.—PORTION OF LEAF AFFECTED WITH CELERY-BLIGHT (*Cercospora Apii*, Fr.).

odor. We have never seen either of these enemies numerous enough to require the use of spraying mixtures, such as buhach in water, or the kerosene emulsion, both of which would probably be effective in an emergency. The worms are easily discovered on the foliage, and in ordinary cases may be disposed of by hand-picking.

Hardly more serious, in ordinary cases, than the injury resulting from caterpillar attacks, is that done to the stalks underground by various grubs, larvæ, beetles and worms. Heavy applications of lime or kainit to the soil, either in solution or dry, are likely to give relief from these pests. Celery is not injured by such applications.

FUNGOUS DISEASES OF CELERY.

The celery-grower often sorely taxes his invention for methods of saving his crops from blight or rust. This is caused by a fungus known to scientists as *Cercospora apii* (Fries), and ordinarily called celery leaf-blight, or sun-scald. Hot, dry soil and seasons favor its development. About midsummer, usually, we notice the appearance of small yellowish spots upon the outer leaves. Later these turn yellow, then brown, and finally die. If the plants survive until the cooler, moister weather of autumn, they sometimes outgrow the disease; but usually the blight continues to spread, and often develops on the plants even after they are stored for winter.

The life-history of the celery-blight fungus is not yet fully known, and preventive treatment has by no means passed its experimental stage. Frequent sprayings with a solution of potassium sulphide, one-half ounce to the gallon of water, and with the Bordeaux mixture, have been tried with varying success. Sometimes it has seemed to us that the treatment in a measure prevented the disease or its spread; at other times the attacks continued in spite of all efforts. Further tests, perhaps with other fungicides, will be needed.

More promising for the present, as a preventive treatment, is the careful selection of moist, cool soil, and slight shading of the plants during hot, dry weather. For this purpose the grower might adopt the system of close planting, or planting in beds, as practiced at the south, and shading by means of slatted frames. All diseased leaves should be carefully gathered up and destroyed. Some interesting notes on celery diseases are quoted below from Professor Byron D. Halsted:

"The true celery-blight, or "rust" as it is sometimes called, is due to a fungus bearing the name *Cercospora apii*, Fr. It has long been known in this country and is prominent among our destructive fungi. The appearance of a leaflet of celery attacked by the blight is shown in figure 1. Experiments made at the station grounds demonstrate beyond question that the blight can be checked by spraying with the ammoniacal carbonate of copper, even after the fungus has become well established upon the plants, and that this treatment may make all the difference between a fair crop and one that is too poor to harvest for market.

"Treatment should begin early. Very likely the period of greatest susceptibility to the spores of the blight is while the seedling is quite small. At this time and before the plants are set in the field the spraying could be done quickly and effectively. It is even possible that there may be a gain in beginning with the seed itself and soaking it in a fungicide of proper strength before sowing. It is also possible that some other compound than the one used in these experiments will prove more effective, such as the sulphide of potassium:

"Another celery disease is the celery leaf-spot (*Phyllosticta Apii*, Hals.). There will be no trouble in distin-



FIG. 2.—PORTION OF LEAF AFFECTED WITH CELERY-BLIGHT (*Septoria Petroselinii* var. *Apii*, B. & C.).

guishing between the two diseases even when they grow upon the same leaf. The *phyllosticta* differs in the nature of the spot, which begins as a dull-brown patch, never becoming of the light ashy color so characteristic of the *cercospora* in one of its stages. In the *phyllosticta*

the leaflet may be attacked only in one spot, which, continuing to enlarge, causes the whole to become brown and lifeless, followed by a torn condition. Two or three of these large, dead, shredded places may be all that the leaf contains, while the balance is healthy and deep green.



FIG. 3.—PORTION OF LEAF AFFECTED WITH CELERY-RUST. (*Puccinia bullata*, Wint.)

While looking for specimens of the phyllosticta previously mentioned, a blight was found in considerable quantity that proved to be a septoria. The appearance of the blighted leaves is shown in figure 2. This disease differs from the others, to the naked eye, in the more complete killing of the leaf affected. It has been shown that the cercospora gives a spotted appearance, while the phyllosticta produces an occasional large patch that is dark brown and dead. The blight now under consideration often causes the whole leaf to become brown, with small black dots over the surface. In a plant at all affected the whole foliage is likely to be diseased.



FIG. 4.—PORTION OF LEAF AFFECTED WITH CELERY BACTERIA.

'The celery-rust proper (*Puccinia bullata* [Pers.], Wint.) has not yet appeared in this country, but is found abundantly throughout Europe and elsewhere. Figure 3 shows a leaflet with the rust-spots.

A peculiar blight was recently found in the celery fields near Greenville and Bayonne, France, particularly on the Golden Plume variety. The affected leaves were badly blotched with brown. It proved to be a bacterial disease. The appearance of a diseased leaf is shown in figure 4. All the dark portion abounds in germs. A central portion of a celery-plant with its heart infested and one of the outermost leaf-stalks decayed and fallen, is shown in figure 5.

"It was observed that the bacteria increases most rapidly when the celery is kept constantly moist but not submerged. Thus, stalks placed partly under water to which germs had been added decayed quickly near the surface, while the portion submerged was the last to spoil. The practical lesson from this is to keep the celery dry or else place it under pure water. That this disease is serious may be judged from the fact that a large grower has lost nearly his whole last crop, the heart of each plant melting away to a worthless mass of rotteness. The same trucker has lost a large per cent. of his carrots from bacterial decay, and this suggests the probable connection between the two. The spraying that has proved effective against the blight will doubtless check the bacteria if applied at the proper time.



FIG. 5.—CORE OF CELERY-PLANT DESTROYED BY BACTERIA.

"Weekly spraying with the ammoniacal carbonate of copper will probably prove effective for all the diseases of the celery, and wherever growers have had blight or "rust" they are encouraged to try the same remedy or some other good fungicide."

NEW POINTS ABOUT POTATO DISEASES.

Of the numerous fungi known to attack potato-vines, only one, the fungus which causes blight and rot, *Phytophthora infestans* (De Barry), appears to have been considered worthy of general attention. As it is often quite destructive growers have learned to fear it, without imagining, however, that there are other fungous enemies of the crop which have become almost as troublesome as the phytophthora.

Personally we are but slightly acquainted with the latter, and therefore have less fear of it than of another form of blight which has given us much trouble for a number of years, and which has eluded all efforts to identify it. Our first acquaintance with it dates from 1887 or 1888, when our crop (in New Jersey) was badly affected, and the yield cut down one-half in consequence of the attack. Since then our potatoes have suffered more or less from this same blight every year, and we

are confident that it is widespread and destructive. In many cases it may have been confounded with the phytophthora, although it differs from it in all essential points. Almost invariably the leaf begins to die at the tip, which curls under. The disease progresses slowly toward the stem, and finally the entire leaf curls up, dries, and wastes away, leaving the bare stalks, which then also die down. We have never found a sign of the white mildew, which accompanies the ordinary blight, and is seen on the under side of leaves affected by the phytophthora. This new blight has usually made its appearance quite early in the season, long before even the early potatoes had reached maturity. While it does not attack the tubers, it prevents their full development by killing the foliage prematurely. Undersized potatoes of poor quality, because immature, are the result.

The disease is giving us as much trouble on our grounds here in New York as it did in New Jersey. Professor Halsted finds that the same bacteria attacks the potato, tomato, cucumber and melon, and believes that spraying with Bordeaux mixture checks the spread of the disease. We are not confident of this, as repeated sprayings last season did not seem to have marked effect. Entire success with this treatment should not be expected, unless spraying is begun early, and repeated frequently. A great deal of experimenting in this line is yet needed.

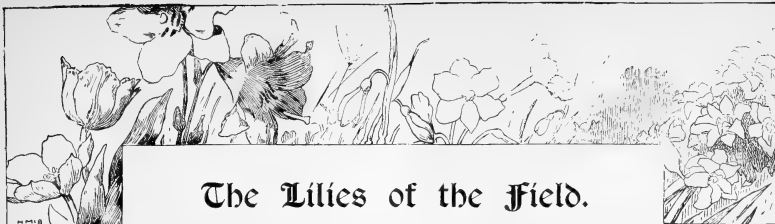
The new blight has recently been spreading in Vermont, and the Experiment Station of that state sum-

marizes the distinguishing features of the true blight and the new disease as follows :

"(1.) The true blight attacks the leaf at any point, and generally works rapidly. In the new disease the leaf begins dying at the tip and dies slowly backward, the leaf drying and curling meanwhile; and the whole progress of the disease is comparatively slow. (2.) In the true blight the black spots on the leaves are fringed on the under side by a delicate fungous growth. In the new disease this is never found. (3.) The true blight may be expected in the latter part of the summer, especially in August, and only during warm wet weather. The new disease may be expected earlier and develops in cooler and dryer weather. (4.) Following the blight the tubers may be expected to show more or less of rot, especially dry-rot, if soil is heavy or moist. No such rotting of the tubers occurred last year in Vermont as a consequence of the new disease."

We also suspect that there is a soft-rot of the tubers which is not accompanied by blight of the foliage. This rot did a great deal of damage to some crops of early potatoes in this state, while late potatoes in the same vicinity remained entirely free from disease. The early potatoes came to full maturity, their tubers appeared sound, and the foliage died down in a seemingly natural manner. Then the tubers began to rot, and continued to rot badly even after they were dug and stored. We shall watch for the reappearance of this same rot this year, and try to discover its true nature.





The Lilies of the Field.

THE MIDSUMMER DISPLAY.

The bulbs which bloomed in early springtime are only a memory now, but the present month and its successors give us the most noticeable display of the season in the lily-garden. Most of the very showy lilies are coming into blossom, the gladioluses give a complete show themselves, and there are many other plants in bloom which seem just made to grow with bulbs. For instance, tuberous-rooted begonias; in the opinion of this humble scribe they fit in so beautifully with the lilies that no bulb-garden should be without them. And their dwarf growth makes a desirable border for the taller plants; but of this more later.

In planting lilies, as everything else, white flowers must not be overlooked; as Ellwanger says, "White is the lens of the garden's eye," and in a class so generally conspicuous for its glowing colors we need the snowy purity of the Madonna lily (*L. candidum*) or the stately waxen blooms of the tall annunciation lily (*L. longiflorum*). Nor should we neglect *L. speciosum album*; the strong, boldly recurved flowers of the latter form a good contrast with those of other white varieties. Indeed, the speciosum group forms one of the most interesting classes among Japanese lilies, and they thrive well in our climate. *L. speciosum roseum* is handsomely marked with rose on a white ground. *L. speciosum rubrum* is similar, but the staining is a rich crimson rather than rose. *L. speciosum punctatum* is the most beautiful of the group. The flower is bluish-tinted and marked with crimson dots, raised like a stud on its surface. This variety is rather scarce and we rarely see it now, although every collection of lilies should include it. A rather stiff clayey loam seems to suit this group, though most of the Japanese lilies seem to like a sandy soil.

Here it may be remarked that when any lilies are to be transplanted the operation should not be delayed too long; they should be moved as soon as they have had a chance to ripen their bulbs after flowering.

Among Japanese lilies, *L. Krameri* is particularly handsome, the flower being large and in color a bright rose-pink. Its introduction a few years ago caused a marked sensation, and it has never become common. It does best in a sandy loam, and is very satisfactory when grown in pots.

If we were to begin talking about gladiolus the subject might be prolonged indefinitely. There are so many fine sorts and so many new sorts that it would take a prodigious wealth of adjectives even to begin discussing them. A

few suggestions only will be given. We don't believe in putting a single melancholy gladiolus, securely manacled to a tall stake, in solitary confinement in a bed all to itself—but this seems quite a common practice in some gardens. We can recall a lawn edged with a series of little round beds, like cells, each containing a single gladiolus; and how lonesome and melancholy those poor plants did look! To get the best effect, these plants should be planted in whole regiments, where the formality of the arrangement shows off their stiff green swords and tall banners of glowing color. Have one border a mass of red, another dainty pink fading gradually to white; the inharmony is positively painful when red and pink are mixed without any regard for the natural preferences of color. The gladiolus will develop best in a sandy loam. One may see these flowers making a grand show in the light lands of Long Island and New Jersey, where one might suspect that nothing but purslane and jimson-weed would flourish. A bulb that grows well under the same conditions as gladiolus is the tigridia, or shell-flower. This is extremely brilliant in color, and very easy of culture. It is not particularly common, either; indeed, it is entirely unfamiliar to many. The flowers are orange and red, handsomely marked. They may almost be likened to an immense tripetaled tulip. We can remember seeing them grown by the acre in New Jersey some time ago; they were suggestively tropical in their luxuriance.

Everyone that has a bulb-garden is pretty sure to want a few tuberose. Query: Why do so many people, educated and illiterate alike, insist on calling these flowers tube-roses? Their proper name is *Polygonum tuberosum*, the common term being in this case a contraction of the specific name, which refers to the root, not the flower; so that to call it a tube-rose is not only incorrect but absurd.

The double Pearl tuberose is the finest in every way, and is very desirable for those that like the flower; but the cloying sweetness of the odor is so offensive to many people that it is well to avoid putting them too near the house. It is only a few years since these flowers were highly popular for florists' use, but they are now entirely out of date in the New York market, and are hardly ever seen in a flower-store, though still sold by street-peddlers. There is no doubt that the overpowering fragrance of tuberose blossoms has had a good deal to do with this loss of favor, and it is wiser not to bring

the flowers into the house in any case. Planted in an open place, the tuberose will make good growth and free bloom, and if used sparingly will add to the attractions of the garden. To those that really admire the flower this will sound like very lukewarm praise; but the writer cannot sound its virtues very loudly, because of repugnance to its sickening odor.

One of the more recent bulbs, that will make a desirable edging for a lily-bed border, is the pink zephyr flower (*Zephyranthes rosea*). The plant forms neat little tufts about six inches high, and it blooms almost continuously during the summer. The flowers are quite large, clear rosy pink, and produced abundantly. This plant is the more desirable, as it blooms on through the summer—the majority of dwarf bulbs being spring-bloomers only.

The white zephyranthes or atamasco lily, is another good bulb for summer blooming; its white blossoms are faintly suffused with pink, and though the bulb cannot be called perfectly hardy, it will live through most winters outdoors in the latitude of New York. These little lilies are delightfully fragrant. There is also a yellow variety of zephyranthes; they are all natives of the

south or southwest. A fine plant for naturalizing in masses, either among shrubs or with other bulbs is *Hyacinthus candicans*—the summer-blooming hyacinth. It is a large, tall-growing plant, producing abundant spikes of large white flowers, suggestive in general appearance of a yucca. It is thoroughly hardy, forming large clumps when left undisturbed, and is particularly attractive when used to lighten a mass of dark shrubs. The use of tall-growing and showy bulbs is singularly effective in connection with shrubbery, the arrangement looks so delightfully natural, breaking as it does the monotony of similar sizes of shrubs or foliage. Certainly, the nearer we approach nature in arranging our gardens the nearer we are to actual harmony; it is rather hard to imagine how we ever could manage to reconcile our consciences to carpet-bedding. It should be a great comfort to the lily tribe to feel that they can never be tortured into an even mosaic, looking more like a few yards of linoleum than a flower-bed. But there are plenty of misguided people still living who admire this form of garden art (?), and until they wake to the error of their ways we shall continue to see bedding-plants misarranged after the model of carpets.



FLOWER-DE-LUCE.

*Beautiful lily, dwelling by still rivers
Or solitary mere,*

*Or where the sluggish meadow-brook delivers
Its waters to the weir!*

*Thou laughest at the mill, the whir and worry
Of spindle and of loom,
And the great wheel that toils amid the burry
And rusbing of the flume.*

*'Born in the purple, born to joy and pleassance,
Thou dost not toil nor spin,
'But makest glad and radiant with thy presence
The meadow and the lin.*

*The wind blows and uplifts thy drooping banner,
And round thee throng and run
The rushes, the green yeomen of thy manor,
The outlaws of the sun.*

*The burnished dragon-fly is thine attendant
And tilts against the field,
And down the listed sunbeam rides resplendant
With steel-blue mail and shield.*

*Thou art the Iris, fair among the fairest,
Who, armed with golden rod,
And winged with the celestial azure, bearest
The message of some god.*

*Thou art the Muse, who far from crowded cities
Haunst the sylvan streams,
'Playing on pipes of reed the artless ditties
That come to us in dreams.*

*O flower-de-luce, bloom on, and let the river
Linger to kiss thy feet!*

*O flower of song, bloom on, and make forever
The world more fair and sweet.*

—LONGFELLOW.



..As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc., the publishers make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this magazine will be given. The articles will be judged only by the practical and useful ideas or suggestions in them. Besides this premium, the gain accruing to readers should be a sufficient inducement to contribute such notes.

I. LITTLE TWIGS.

COLEUS-PLANTS will bloom and seed, but this does not add to their beauty.

WILLING BERRY-PICKERS may be secured by growing clean rows of large berries.

FOR RAPID GROWTH in tree and shrub-groups, keep the soil about them absolutely free from weeds.

DO BIRDS PREFER particular kinds of trees for their nests? European naturalists say that they do.

THE DAHLIA likes a moister atmosphere than we usually have. Syringing the plants at night will help to supply the need.

LARGE GRAPE-LEAVES are often cut from the vines to admit light and air to the fruit. We do not commend the custom.

THE ICELAND POPPY is reported variable by English gardeners. On the editors' grounds its form and color are permanent

TO NURSERYMEN: Please give with *Hydrangea paniculata grandiflora*, its common name of "plumed hydrangea" in your catalogues.

FOR A CHEAP HAND-WEEDER, an old case-knife, ground on both sides, heated and bent about two inches from the point, does splendidly.—R. N. MOODY, Ala.

BRIDE GLADIOLUS.—Spikes cut when their first flower begins to expand, and placed in water in a cool, dark place, will open whiter than if left upon the plant.

CARROTS DO WELL on sod ground, without much manure or excessive soil fertility. To have tender roots in late fall and winter, sow Chantenay or Short-Horn now.

THINNING FRUIT.—Try this plan with some of your trees, now while the fruit is half-grown, all you to whom the practice is new. Begin with pear trees and thin the fruit one-half if it is thickly set.

STRAP-LEAF TURNIPS are frequently mentioned as a crop to be grown for green manuring. Who can tell us whether they really have any value for such a purpose? In what way will they enrich the soil?

IT IS LESS WORK to keep a garden or border absolutely clean, than half clean. The secret lies in never permitting a weed to attain any size. It is a great gain, also, for the next season, not to let a weed-seed develop.

THE VEGETABLE CANNING INDUSTRY.—The figures representing the pack of corn and tomatoes for a number of years past, given in our May number, were gathered by the *American Grocer* of New York, and are trustworthy.

GOOD CABBAGES.—When we want best quality, we plant Savoys, but to be sure of good cabbage-heads under conditions none too good, we plant Winnigstadt. On Francis Brill's advice we try the new Nonesuch in a general way.

SHEEP MANURE FOR POT-PLANTS. A *Cycas revoluta* recently sent out a tier of 33 leaves, and some of them are now 56 inches long. I think this unusual growth is due to the liberal use of sheep manure.—GEO. G. BYRAM, New Jersey.

TEA-CULTURE IN FLORIDA.—A trial plantation was set near Lawtey some years ago. The editor of the *Florida Dispatch* says that this plantation has of late been neglected, but the bushes show that the soil and climate suits them well.

A PEAR TREE in a neighbor's yard is surrounded by a flower-bed six feet in diameter, kept well enriched and cultivated. The tree is making an annual growth of three or four feet, and bears abundantly. It is a striking contrast to some grass-bound trees near it.—W. E. BOWMAN.

THE WILD GARDEN AT WOODBANKS.—Three-fourths of an acre of uncultivated, partly wooded land, planted with many kinds of plants, shrubs, etc., gives us more enjoyment for the outlay than any other part of our grounds. It has no care and no cultivation, yet is full of beautiful wild-flowers, foliage and berries.

DON'T SOW WEEDS, and don't grow them. A barnful of hay at twelve dollars a ton is cheaper than the plentiful ten-dollar hay, because it is freer from weeds. I cannot afford to hoe or pay for weeds sown in manure from foul hay. I believe no farmer can be successful who sows and grows weeds.—E. P. POWELL.

WE ASK THIS FAVOR: AMERICAN GARDENING aims to be accurate and correct in all its teachings. If you, reader, see in our columns any statement needing modification or correction, by all means call our attention to it. We shall interpret the action as a proof of your good will and friendliness.

WEEDS IN THE LAWN.—Dandelions, thistles, dock and other troublesome weeds mar the appearance of lawns. As a remedy I would suggest that a reward of say one cent for two dozen weeds properly pulled or cut, be offered to your own or somebody else's children. They will enjoy the work and know what it means to earn money and you will be rid of the weeds.—W. E. BOWMAN.

WOOLY APHIS ON EVERGREENS.—In warm weather we sometimes see an aphid of woolly appearance on the branches of pines and other evergreens. To destroy them it is only necessary to drench well the affected parts with a solution of whale-oil soap, used in the proportion of 2 pounds to 15 gallons of water. Water a few degrees below the boiling-point, freely applied with a syringe, is also a complete specific.

EFFECT OF CROPS UPON SOIL.—Some crops leave baleful influences in the soil. Cabbage and cauliflower, for instance, leave in it a tendency to grow club-roots upon crops which follow them; celery and potatoes leave the tendency to produce blight. Not even the most delicate chemical analyses could find traces of these influences, but we recognize and overcome them by adopting a strict and fitting system of rotation.

A GOOD WAX for covering tree-wounds in summer (and spring also) is made as follows: To 1 pound of pure beeswax add 2 pounds of rosin, and melt them together. Then add 3 ounces of linseed-oil, stirring until well mixed. Pour the mixture into cold water, and when cool enough work it by pulling and rolling until thoroughly pliable. If too hard when cold, melt it again and add more oil; if too soft, add more rosin.

UNFERMENTED GRAPE-JUICE.—We use it both as a medicine and as a beverage, and find it gratifying and satisfactory in both respects. The juice of the Niagara grape is especially pleasing. C. J. Baldridge writes us that in his neighborhood in Seneca county there are 20 vineyards of Niagara grapes, comprising 982 acres. A good share of the crop is used for the manufacture of unfermented grape-juice. This is an industry which deserves encouragement.

II. THRIFTY SAPLINGS.

Prepare Potting-Soil Now.—Next fall you will need some nice potting-soil for your plants. Some time during this month, cut from a loamy pasture-lot or fence-row some sod about an inch thick and pile it compactly to decay. A few weeks later, chop the turf into fine bits with a spade and turn the pile over. Turn it again about September 1, and by the time you need to take up your outdoor plants, the soil will be ready for use. Any fertilizers that it may need can be added at that time.

Flower-Peddlers.—The old question as to how much the cut-flower peddlers on our streets serve to demoralize and injure the cut-flower business is likely to be brought into fresh prominence by the action of the Boston common council, in suppressing such business in certain localities of that city. The fakir's manner of carrying on his trade, as for instance, on Fourteenth street in New York City, is insolent and disgusting; but to suppress the flower-peddlers without suppressing all street peddlers will be a difficult problem for legislators.

A Home-made Vase.—The accompanying sketch represents a vase, built by a lady of this place from cement, and marble chippings such as may be obtained free at



A HOME-MADE VASE.

any marble-shop. The vase is five or six feet high, and the bowl about three feet across. The arches in the base were built around hoop-iron which was afterward removed, and the bowl was fashioned about a frame-work of wire. The edge of the bowl is filled in summer with handsome trailing vines, and the center with high-growing plants.

A tile leads from the surface of the soil to a reservoir within, which holds several gallons of water, and plants in the vase need watering only once a week. The vase is handsome enough for any not too conspicuous place on anyone's grounds.—W. E. BOWMAN, Ohio.

Snowdrops in the Window.—Snowdrops are among the earliest of plants to have bloom in the house in the winter, because they flower so quickly after being brought into a growing temperature. Mark the spot where they stand in your garden so that you can find them after the leaves die away. In September lift the bulbs and plant them an inch apart and one inch deep in pots or shallow boxes. Set the pots or boxes aside, in a coldframe or cool cellar, and cover them with earth or coal-ashes until they are wanted for the window.

The Flora of Missouri.—The editor took a delightful tramp of several miles through some of the woodlands of eastern Missouri, during the first week in May. It was a great treat to him to find that old garden favorite, the blue-flowered tradescantia, growing wild in great profusion, and blooming on the rolling lands traversed. Numerous wild phloxes, many pretty wood-oxalises, rose, white and yellow in color, wild larkspurs, etc., were also in bloom. These plants are unknown to the wild lands of his own locality in western New York.

Mold for Flowering Plants.—One autumn, when the petunias had started to grow again from the root, I lifted a plant and set it in a pot filled with soft black soil, taken from the hollow cherry tree. The plant grew all winter, and such beautiful green leaves I never saw before on a petunia. In spring it bloomed profusely, and in May I set it in the open ground. Apparently it had acquired a habit of growing. Stakes and brush were added as a trellis until the plant was about four feet high and three in diameter; then, as there was no more room for it to spread, the new growth wound about over the older part. All summer the petunia was covered with blossoms, from sixty to eighty being open at one time. Not wishing to have the whole garden swamped with petunias another year, I clipped off all the seeds every week. The plant grew in a sunny spot, and did not mind a little frost, but when the ground froze in November it had to succumb.—ADELE.

Cobæa scandens.—If given plenty of room for its roots, and a rich sandy loam, this vine will cover a wall or trellis for the distance of twenty or thirty feet in a single season. If you wish it to cover a broad space the points of its shoots should be pinched off repeatedly so that it will throw out plenty of laterals. The branches will cling to rough walls by means of tendrils. If the plant is cultivated in a pot, the latter must be large and well-drained. The cobæa may be cultivated as an annual, biennial, or perennial. If grown as a perennial, cuttings or layers may be taken in autumn and rooted in a hotbed, and the young plants kept through every winter in the house in pots. If as an annual, seed should be sown in a warm place during February or March, and the young plants transplanted into pots; in May transfer them to the open ground where they are to flower. When grown as a biennial, sow the seeds in pots as soon as they are ripe, and keep the young plants in the house over winter, shifting them two or three times as they grow. They should be planted out in the spring, or shifted into large pots, and they will bloom all summer.—GRETA BEVERLY.

Plant-Surgery.—In August, 1889, a *Scarfthia elegans*, nine or ten feet in height, and standing on an exposed terrace, was blown over by a heavy wind. The tub remained upright, but the plant was snapped off at the surface of the earth, only a shred as large as one's finger connecting it with the roots. It was too valuable to lose without an effort to save it; so two-thirds of each leaf was cut away, and the tub and plant carried into a corner of the conservatory. Four wedge-shaped sections, three inches long and half an inch wide and deep, were cut out of the bulbous stem, and the plant placed upright, firmly staked, and good fibrous loam was piled about the incisions, and tightly packed ten inches deep above the old roots. Thus the plant was held as rigidly as a plaster bandage holds a broken leg. Very little water was given to the patient, and for eight months there was no apparent growth, then small roots pushed out from the incisions and grew rapidly. More water was now given,

and sheep-manure in liquid form was applied later, twice each week. In twenty months after the accident the plant had eight new leaves. No bottom-heat was available, or the same result might have been brought about in half the time.—GEO. G. BYRAM, *New Jersey*.

Some Orchard Observations.—Last year I cultivated one row of peach-seedlings just one time more than I did three other rows, and the result was a marked difference in size and vigor; the former are large enough to bud, while the latter will have to grow for another year. I also manured some of my Oldmixon peach trees with barnyard manure, and their growth of fine healthy foliage since then is surprising. Late Crawford peach trees did equally well when manured with wood-ashes and hen-manure. In order to have fine fruit, we must secure well-developed fruit-buds by means of a good supply of nourishment. Since my apple trees were manured the fruit is much finer and less wormy, although no spraying has been done. I top-dressed my red raspberries with fertilizer from the poultry-yard and chip-dirt, and find the result very gratifying. Quince trees usually do quite as well when mulched with coarse manure as when cultivated, but if their growth should be too rapid, withhold the fertilizer for a season and keep the soil about them free from weeds.—H.

Cheap and Lasting Labels.—I take shingles (oak if I can get them) and split them into inch widths, leaving them as long as I desire them; some are perhaps eight inches, others the whole length of the shingle. Then I buy five cents worth of dry white lead. I mix as much of this as I can use immediately with linseed-oil and a little turpentine, until it has the consistency of paint. I paint the shingle-labels required for immediate use with the white lead, often fifty at a time. Two or three days afterward I mark them all with a lead-pencil, which sinks into the fresh paint and makes a lasting mark. I often use unpainted labels for a few weeks until I need quite a number; then I prepare them all at once.—CORA JEWELL, *Ind.*

The Marguerite.—The marguerite or Paris daisy is hardy in Louisiana. Of course everybody knows that the flowers are white with a yellow center and closely resemble the ox-eye daisy. They last a long while after being cut, and are useful for bouquets. This marguerite is excellent for window decoration. It can be grown outdoors during summer, potted in the fall, and if placed in the window of a warm room will produce flowers during the entire winter. When grown as a veranda plant, it must be liberally supplied with water, and should not be placed in an overshaded situation, else it will become spindling and unsightly. The soil in which it is planted should be of a good, solid nature, and contain a fair amount of fertilizing material. When the plants become pot-bound water once or twice a week with liquid manure. To cause the plants to grow nice and stocky, pinch out the ends of the shoots occasionally. During winter keep the plants, if grown in a greenhouse, near the glass. When grown continually outdoors in this

section, the plants become very large, almost shrubby, and will produce hundreds of blossoms. They must be supplied with abundance of water during hot, dry weather, and after soaking rains must be examined, so that any of them that may have been blown over can be straightened and secured to stakes. There are several varieties of marguerites; the small-flowered ones are hardiest, but the large-flowered kinds are most pleasing and desirable. There is also a yellow-flowered variety, but this is more difficult to manage. If grown outdoors, watered freely, and protected from cold winds and frosts it succeeds well.—H. W. SMITH, *Louisiana*.

Vine-Arch for Graves.—A wire arch, about three feet high and as broad, used for decorating graves, is shown in the illustration. It may be covered with English ivy, ampe-



lopsiis, clematis or any other climber moderate in growth. The original of the illustration stood about

one-fourth the length of the grave from the headstone, which was low, as all headstones should be in garden cemeteries. Such an arch is in much better taste than the tall and more pretentious ones often seen in graveyards. In the absence of a wire-worker it could be constructed by anyone using four rods, one-fourth or three-eighths of an inch in size, as a basis for corners.

Growing Seedling Strawberries.—Select good-sized and thoroughly ripened berries, perfect in shape. Remove the seeds and sow them thinly, about one-fourth of an inch deep in drills four inches apart. A soil half leaf-mold and half sand suits them best. They may be sown in a hotbed frame after the early plants are removed. Give the young plants a little shade, and plenty of water. Let them grow as they will the first season, and give a light mulching of cut-straw or leaves to protect them through the winter. The following spring they should be carefully transplanted, about six inches apart in the hotbed, and when large enough, set in the open field for trial about six feet apart in the row. If set closer they will run together and your varieties will mix. The third year there should be a fair crop of berries; but it takes several years to test thoroughly a new variety. There is room for better varieties than any we now have, but it never pays to send out a berry of doubtful merit. The best strawberries I have ever grown were picked from a trial row of seedlings—there was hardly a poor berry among them.—MAYFLOWER.

Some Simple Devices.—A clump of tall perennial plox in an out-of-the-way corner yields me double harvests every year. The blossoms are beloved by many a quaint winged creature, and I like to gather a great handful of the tall blooms for a large jar beside the parlor fireplace. When the stalks are dry and stiff in autumn, I break off quite a bundle of them, tie them with a stout

cord, and hang the sheaf away in the tool-shed. They are very useful about the flower-beds all summer to prop up a tulip, a poppy, or any gorgeous flower whose stalk is too weak to support its bunches. The little crotches at the top afford secure resting-places for the blossoms, and the slender prop is too inconspicuous to annoy the eye. If the painted stakes chance to be all in use, these substitutes do very well to support a bushy plant. Break them off to just the right height, and set taller ones as the plants grow. I like to keep trellises and all supports as inconspicuous as possible. Old hoopskirt-wires are useful among house-plants, being as nearly invisible as anything can be. When heliotropes, mahernias and plants of slender, bushy growth need a support, take a piece of the wire, strip off the covering, push one end down into the earth close to the side of the pot, bend the wire over, and insert the other end in the soil directly opposite. The top of the arch should be a trifle lower than the top of the plant, so that the wire will be concealed by the leaves. Other arches a few inches higher or lower may cross this at the top at right angles. Tie the branches loosely in place with green worsted and no injury will be done them. I keep, in a drawer near my plant-shelf, all the green cord that comes from the druggists, to use in tying up plants.—PRUDENCE PRIMROSE.

Supports for Raspberry-Bushes.—Stakes and twine are generally used for this purpose, but when the wind blows, the canes sway back and forth, and so wear away and break the twine, especially when they are covered with ice. Another, and a more complicated method is, to set posts along the rows at fixed distances, and stakes between, with a wire running the length of the rows, or two wires, one on each side. To the latter method there are more objections than to the former. It is more expensive and less efficient. In heavy soils posts and stakes are liable to get loose by heaving in winter, the wires to become slack, and the whole fixture entirely out of order. A simple, cheap and effective way to train the bushes is to encircle each clump with good strong twine—hemp or jute—running it just above a limb or two, to keep it in place. Each cane is strongest against the wind from a certain direction and weakest in the opposite direction. Tying the canes together makes each one a support for some other one.—J. HAYES, *Essex Co., Mass.*

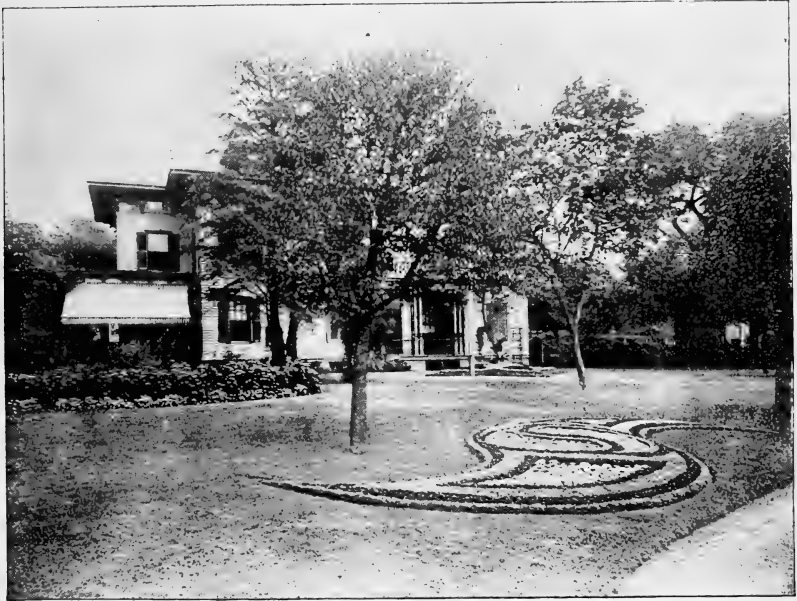
Hard Woods.—United States Consul Ginnel, of England, comments on various hard woods, used in the manufacture of weaving-shuttles and wood-engraving, etc., in a recent report. After speaking of the growing scarcity of boxwood, which is derived from *Buxus Balearica*, closely allied to the box-trees of our gardens, and which grows in Turkey, Asia Minor, he intimates that the woods from the United States which most closely compete with boxwood in the manufacture of shuttles, etc., are first, cornel (dogwood); and, second, persimmon. Where boxwood is worth, for small or inferior pieces, from \$29.20 to \$34.07 a ton, prime and very clear, \$87.60 to \$97.33 a ton, the cost of the Ameri-

can woods referred to is but \$17.02 to \$19.46 a ton. Owing to the constant and growing demand for hard woods for use in the arts, it is probable that the cultivation of the kinds named, especially the cornel, might be undertaken in some places with profit. The latter is a handsome native flowering tree, indigenous to a wide range of country.

The Orchid "Craze."—Why should not the grower of hardy flowers become as much interested in the cultivation of fascinating orchids as does the florist? Gray enumerates in his Flora of the Northern United States 57 distinct hardy species, 18 of which belong to the genus

we have had, but this year we enlarged our collection, and hope soon to make some encouraging reports, and to tell others all about how to handle these plants. We don't believe that the city florists should have all the glory and pleasure of orchid-growing.

Old Favorites.—The recent improvement in florist's pentstemons is something marvelous. Some of the flower-spikes are from 12 to 18 inches long, and covered with handsome, delicately-shaded, gloxinia-like blossoms of various colors. They are fine for vases or loose arrangements of flowers. This class is nearly hardy, only requiring the protection of a coldframe in winter. The



VIEW IN THE GROUNDS OF JAMES W. ELLWELL, BROOKLYN. From a Photograph Sent by John A. Boyle, Gardener.

habenaria, and 6 to the true cypripediums. Among the latter abounding from Maine to Illinois and southward among the Alleghenies is the Showy lady's-slipper, *Cypripedium spectabile*, of all known terrestrial orchids the finest. The much-inflated labellum of this species is rose-colored, the sepals and petals are white. Other species are equally interesting and almost as showy. Quite a number of them have immense spikes, lovely colors and beautiful bright green foliage. Some species of these hardy orchids have been grown at Woodbanks for several years, with much satisfaction. Some failures

self-colored antirrhinums are showy and useful for cutting. Crimson, white and yellow are the most popular colors, and although they will generally perpetuate themselves by seed, the surest way to save the best varieties is to make cuttings in the fall, and winter them in coldframes. Another old but very effective plant seldom seen nowadays is *Cerastium tomentosum* (mouse-eared chickweed). All through the last summer, which was exceedingly dry, this beautiful downy-white, chickweed-leaved plant completely carpeted the ground, and seemed proof against great heat and drouth.

It is perfectly hardy, and in spring is covered with myriads of white, star-shaped flowers. As an edging for herbaceous plants, or for carpet-bedding, where a low-growing white-leaved plant is desired, this cannot be excelled. *Iberis sempervirens* is a fine low-growing evergreen plant with pure white flowers. It is perfectly hardy, and fine for masses of color or for ribbon lines. It flowers very early and remains perfect a long while. This and the pink *Phlox subulata*, is unsurpassed for producing a combination of color grateful to the eye in early spring. The easy culture, hardiness and cheapness of these plants recommend them for general use.—
JOHN DALLAS.

Every Plant to Its Place.—Because such plants as the double calystegia, polygonums, wild asters, sedum, etc., are recommended for "naturalizing," or planting in wild gardens, many people seem to think them valuable for all purposes and situations, and plant them often in rich borders. Then after a year or two the cry is "weeds that run over everything," and perhaps the plantsman who furnished the stock is sorely blamed for selling such weedy things. Had these same plants been given a place in a rough spot among grass and other growths, with no manure, they would have given great delight. The same thing is true of *Spiraea sorbifolia* and the aralias among shrubs and the aiantus among trees. Rightly used in masses, in the wild garden, or at some distance from the dwelling, we have absolutely no finer hardy wooded growths than these. Although cheap to buy and of the easiest culture, they all will vie with the very expensive, tender palms for producing fine foliage effects. If one will turn to Robinson's "Parks and Gardens of Paris," he will find both the *Aralia Japonica* and the aiantus honored with handsome engravings showing their charming effect when properly used. And yet these plants are called perfect nuisances, by many who have not yet learned how to employ them in gardening. Other illustrations of this wrong use of plants are seen where moisture-loving plants are given place on dry hillsides. In all such cases the misguided planter seems to become disgusted with the plants instead of with his own work.

Trellises for Grapes and Raspberries.—Notwithstanding the warning given me six or seven years ago—that grapes could not be grown successfully on the

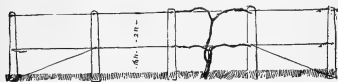


FIG. 1.—GRAPE-TRELLIS.

shores of Cayuga Lake—I made the experiment, and am satisfied that there is no better grape-land in the state than can be found on the west shore, in Seneca county. So far, my vineyard has escaped the late frosts in spring and early frosts in fall, and the grapes are of the very best quality.

Our soil is a sand and gravel loam with shale subsoil. The plants are set 9x9 feet, trained on the Kniffin system, and trimmed on the renewal plan. The first wire is 3½ feet from the ground, and the second 2 feet above the first. The lower arms are started first; then I start a cane as near 18 inches from the ground as I can get it and carry this to the second wire. By this plan I get a much more even distribution of fruit than by the old method. This is my new method of putting on the lower wire: First the wire is made fast to bottom of end posts, and staples are driven in all the other posts except the second from the end. Here we use a wire-spike, driving it at an angle of 45 degrees. When the wire has been tightened, we lift it over the head of spike. This brings the strain, or pull, on the bottom of the end posts, and does away with braces. When you wish to slacken the wires in the fall, lift them from the spikes and you have them as slack as you want them. This leaves a space without wire between the first and second posts at both ends. You can use short pieces to fill in these spaces—No. 9 wire should be used. I send herewith a rough sketch (fig. 1) of the wire when in position, holding a vine as I trim and train it. I find four or five buds to an arm are enough.

I have visited a great many vineyards in this and other states, and have tried several ways of trimming and training, but have adopted this one as the best for many reasons: It is the cheapest; the grapes are up from the ground; never have muddy fruit; have a free circulation of air under vines, and less mildew than by any other system; the fruit is more easily clipped from the vines; and I can grow more pounds per acre.

I also send you sketch of post and cross-piece (Fig. 2) I use for holding up red raspberries. I cut my posts 5 feet long, sharpen them and drive them 16 feet apart in the row. I nail a piece of lath 13 inches long just 3 feet from the ground and saw a notch, as shown, at each end of the cross-piece. When the wires are made fast and moderately tight, then I lift them into the notches. This trellis is simple, cheap, and will hold the canes without tying.—Mac.

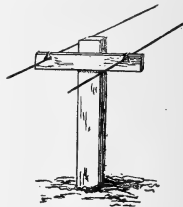


FIG. 2.—RASPBERRY-TRELLIS.

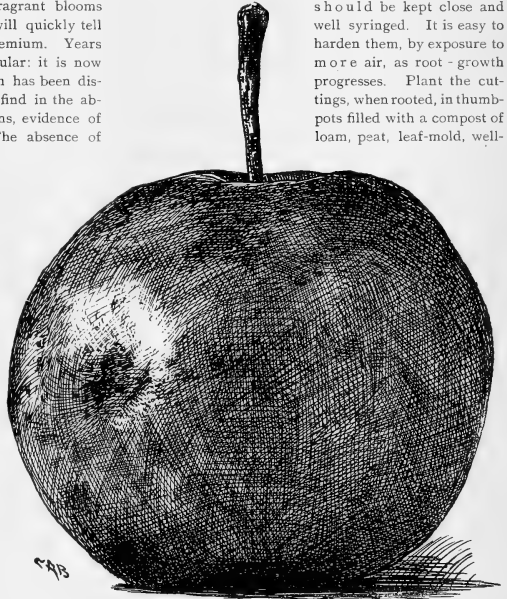
Flowers for Perfume.—An esteemed correspondent asks: "In flowers which is preferable to most people, brilliancy of color, or fragrance? The perfect garden must have both. We miss the fragrance of the sweet, old-time favorites which showier flowers are crowding out. The wallflower is one of the sweetest of blossoms and is easily cultivated, but for six years I have not seen one growing." While we can agree with this writer, that the good old-fashioned flowers have in some measure been crowded aside by the craze for brilliant bedding-

plants, we are satisfied that a decided reaction against this craze is now setting in, and that fragrant flowers are again finding favor. There never was a time when plants of such sweet flowers as roses, lilacs, honeysuckles, violets, pinks, lily-of-the-valley, mignonette, carnations, etc., were more in demand than they are now for garden-making. Ask the florist who sells cut-flowers, regarding the comparative demand for fragrant blooms and those that are only bright, and he will quickly tell you that the former are always at a premium. Years ago the odorless camellia was very popular: it is now absolutely out of demand, and its growth has been discontinued. Our correspondent seems to find in the absence of the wallflower from our gardens, evidence of a decline in taste for sweet flowers. The absence of this flower is due to other causes. The wallflower, so immensely popular in Europe, can never become equally so here, for the reason that our climate is not so congenial to its culture. It is native to the British Isles and hardy there; were it so here it would be more highly esteemed. If we grow it at all, it must be in moist sections of our country, and it must be preserved through the winter in a greenhouse or coldframe—care that the average American does not wish to take when he has so many other fragrant flowers that are perfectly hardy.

The Idaho Pear is good, no doubt. Unfortunately the tree has not yet been tested enough to give us a basis for an estimate of its hardiness and reliability. It is simply worth trying. The accompanying illustration was made from a specimen exhibited by H. S. Anderson, of Union Springs, N. Y., at a fruit-show of the Western New York Horticultural Society. Dr. F. M. Hexamer, chairman of committee upon native fruits, at the American Pomological Society, Ocala, Florida, in 1891, said: "The most noteworthy new fruit which has come to the notice of your committee is the Idaho pear. In size, general appearance and aroma, it resembles the crosses of the Chinese sand-pear, but its eating qualities are far superior to those of any of this class known in cultivation. The cavity of the fruit is very irregular, basin shallow and pointed; calyx very small and closed; core very small; skin golden yellow, with many russet spots; flesh melting and juicy, with a sprightly, vinous, delicious flavor; season September and October."

Genista-Culture in England.—One of the most beautiful varieties of genista is *G. racemosa elegans*. Good cultivation will give saleable plants from cuttings in one year, but the plants usually marketed are two years old. Old stock-plants are put in the propagating house to grow young shoots for cuttings some time before the latter are wanted. The young shoots are cut just

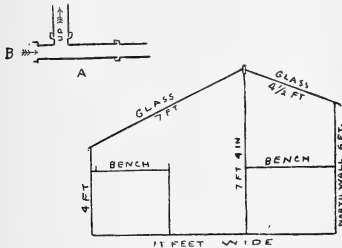
below a joint and set either in the propagating bench, or better, in five-inch pots. These pots should be well drained and have a few inches of good soil below the clean white sand on the surface, in which the cuttings are set. When the cuttings are calloused they can be taken out of the propagating-house and placed in a cooler one. While they are callousing and rooting the house should be kept close and well syringed. It is easy to harden them, by exposure to more air, as root-growth progresses. Plant the cuttings, when rooted, in thumb-pots filled with a compost of loam, peat, leaf-mold, well-



THE IDAHO PEAR.

decayed fertilizer and sand. Give them some bottom-heat, and in bright weather syringe them daily; but do not keep the roots of the genistas too wet, as this would kill the tenderer rootlets and retard the plants' growth. As soon as the thumb-pots are filled with roots, remove the plants to three-inch pots filled with the same kind of soil. Their next move will be into five-inch pots. During warm summer nights, take the glass from above the genistas to harden them, and when autumn comes they will be ready to set in the open air. Plants that are in five-inch pots should be kept in a coldhouse during winter, that they may be strong and hardy for the next season. In March such plants ought to begin blooming. Often at this time they bear twenty-five or thirty flowers each. Begin to pinch in the shoots of the plants when they are quite small, and keep it up until they are well-shaped and bushy.—A. K. ANDERSON, London, England...

A Mechanic's Greenhouse.—Being a mechanic with a very moderate income, but desiring more flowers than my slender means would allow me to buy, I determined to build a small greenhouse, believing that I could grow not only my own flowers but enough more to help pay for the expense of building such a house. The house is a three-quarter span, 24 feet long and 11 feet wide, extending east and west. It has a shed on the west end. The south wall is 4 feet high; the north wall 6 feet. The roof is made of sashes, the long span 7 feet, the short span $4\frac{1}{2}$ feet. I used 10-inch glass, and there are three rows of glass in the sashes, as I found that wide sash, 7 feet long, would be too heavy to handle. I am



A MECHANIC'S GREENHOUSE.

a renter, and the greenhouse must necessarily be a movable one. The house is heated with a common brick furnace built under the west end of the south bench, with the door opening in the shed. Five or six feet of the flue, next the furnace, is made of brick; the remainder is made of 6-inch sewer-pipe. The upward turn of the flue, at the eastern end of the greenhouse, is made with a T pipe (see A in illustration). By means of a swab thrust in at B, I can soon clean the flue. The south bench is built 2 inches back from the wall to allow the warm air to strike the glass at the lowest point and thus keep the frost off all the way down. I built most of the house myself, and do not think it cost more than \$25 or \$30. A bushel of coal will heat this house for 24 hours.

I can grow many kinds of plants, and every year I sell more than enough to pay for all the expense of running the house. On very warm days, while I am away at work, my wife ventilates the building. I try to do all the watering before I go to work, or after I come home. The work required to keep the house in order is but a pleasant way of spending some of my leisure moments, and the little greenhouse gives much pleasure to my family and friends.—A MECHANIC.

Seed-raising in Europe.—Erfurt is the center of the seed-growing business in Germany—almost, we might say, of the world. A writer in the *London Garden* says that most of the land near the city belongs to seedmen, and that Erfurt is truly a city of flowers. One of the largest industries is raising seed of the annual ten weeks

stock. "One firm grows something like 300,000 pots of them annually. They are kept on stages much like an ordinary greenhouse stage, and have a wooden or tiled roof to keep off the heavy rain and too direct rays of the sun, the sides and backs being left open. Most essential for good cultivation is the soil, which must be free from any vegetable matter. The plants, raised in pits on a slight hotbed, are generally planted seven to nine in a pot. Asters are grown by the acre, one firm alone devoting 100 acres to them. They are raised in pits and afterwards planted out, the distance apart depending on the variety, but it is seldom less than one foot each way. When they come into bloom all rogues and button-eyed ones must be removed. Petunias are grown in large quantities, somewhat after the manner of stocks. They require a great deal of attention, as each bloom must be fertilized by hand to insure its seeding. The pollen from the double blooms is very difficult to obtain, the flowers being so dense are removed from the plant, placed in wet sand and pulled open to allow the sun and air to ripen the pollen, which is carefully removed and placed on the finest single blooms. Cinerarias, begonias, gloxinias are also grown in large quantities; the two latter have to be carefully hybridized to insure a crop of seeds. Seed of mignonette, dianthus, etc., is saved by the ton. Pansies also come in for a large share of attention, and several hundredweight of their seed are often harvested by one firm. They require a great deal of attention during the seeding-season, and must be gathered at the right time; if not, the pods burst and the seed is scattered. Hardy perennials are grown in Erfurt in great variety, although not in such large quantities as annuals. Several collections I know of contained from 1,000 to 2,000 varieties, all kept for seed. Labor is cheap. The average wages of a good workman are about \$3 per week in these gardens, and he has to work from five in the morning till seven in the evening. Much of the lighter field work is done by women and girls, who earn from 20 to 25 cents a day.

Requisites of a Perfect Apple.—The special points at present in demand in apples, and those which give any variety value, are as follows: Richness and flavor; productiveness; long-keeping qualities; attractive color; fruit firmly adherent to tree; regularity in size and shape; even maturity; small core and few seeds; smooth, thin skin, yet sufficiently tough to permit easy bruising; together with health, vigor, hardiness and longevity of tree. The ideal apple for our time would probably conform to the following scale: Edible qualities, 20; productiveness 20; keeping qualities, 15; adherent fruit, 10; color, 10; even maturity, 10; regularity in size and shape, 5; small core and few seeds, 5; good skin, 5. The first two of the above-named requirements are the most important. It is difficult to say which stands first, for with productiveness goes health and hardiness of tree, while quality includes all that makes a fruit valuable as an article of diet. If an apple is not edible, or in other words, is zero quality, productiveness counts for nothing. On the other hand, if an apple has the finest quality, yet only one or two specimens are produced, the quality counts for practically

nothing. Whether we should choose a high grade of quality with a lower grade of productiveness, or a high grade of productiveness with a lower grade of quality, will depend entirely upon circumstances. For example, in some localities the Ben Davis apple would rank occasionally in the scale given above—15 in productiveness and only five in quality. In the same locality King of Tomp-

kins County would rank 15 in quality and only 5 in productiveness. On these two counts alone, the two varieties would average the score, but their commercial value might be quite different, as it might also depend upon their respective rank in other qualities, the demands of the market, etc.—WILLIAM R. LAZERBY, *Ohio State University*.

COMMENTS BY READERS.

[One idea often suggests another. Here is a space in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.]

Mulching Strawberries.—(Page 303.) We have a fine illustration of the value of a mulch on strawberries. Our mulched plants are a mass of fine fruit, while the fruit of the same varieties unmulched is hardly worth picking.—W. F. MASSEY, *N. C.*

The Stachys.—(Page 284.) We tried *Stachys Sicboldii* last year, and think it good. Eaten raw it is better than radishes to my taste, and will make delightful pickles. It is doubtless good in many ways, but our supply was too small for a full test.—W. F. M.

The Agapanthus.—(Page 292.) You do well to put in a good word for the agapanthus. I wish you could see the magnificent umbels on our plants now. They winter well in North Carolina with a mound of soil over their crowns. *Erythrina crista-galli* came through the winter outside under a mound of sawdust. The top of the plant was cut off within a foot of the ground, after frost had cut the foliage, and then sawdust was piled in a conical heap above it. The plant is now making a fine growth.—W. F. M.

The Fuchsia-Flowering Gooseberry.—(Page 104.) The fuchsia is not one of Washington's wild-flowers. It does not grow wild anywhere in United States territory on the Pacific Coast. The plant I referred to in "Some of Washington's Wild-Flowers" is the fuchsia-flowering gooseberry (*Ribes speciosum*) which has showy and beautiful flowers like fuchsias. This plant is worthy of a place in the ornamental shrubbery of California where they can grow almost everything.—T. H. CARTER, *Clallam Co., Wash.*

Fungicides and Insects.—More than a year ago AMERICAN GARDENING published a formula for a preparation of copper carbonate and ammonia made by compounding blue vitriol and carbonate of ammonia. I found this an admirable mixture, not only for a fungicide, but for an insecticide. Persistent colonies of aphides that had defied tobacco-water, whale-oil soap, and every other mixture, were destroyed by it at once. My honey-locust hedge was ravaged by a beetle much like the old-fashioned potato-bug. Arsenites burned the foliage, but this copper carbonate cleared them out at once and did no mischief.—W. WADE, *Pa.*

The Lucretia Dewberry.—(Page 274.) This is attracting a good deal of attention here and is very profitable. Its fruit ripens about May 30, and reaches the New York markets before strawberries, from some locali-

ties in that state, are sent in. The strawberry-crop was poor and late here this year, because of cold and dry weather. The first berries were sent off May 6, several weeks later than usual. We have some wild plants of the dewberry class which we are testing beside the Lucretia.—W. F. MASSEY.

Truck-Growing for Wealth.—(Page 296.) Down in the eastern part of North Carolina there is money in trucking, and a great deal invested in the business. We have, for instance, single growers who plant from 700 to 1,000 barrels of early Irish potatoes. You would imagine that the crops, shipped in May from mile after mile of fields planted in early cabbage, near New Berne, would be sufficient to supply the whole country. One of our New Berne truckers has used this spring on one farm \$23,000 worth of commercial fertilizers. The men get two, three, and sometimes four crops from the same land in one season.—W. F. M.

Propagation of Blackberries, Raspberries and Figs.—(Page 271.) My method is similar to Mr. Pierce's, only I start earlier and pot the plants under glass. My plants are now (May 16) four inches high in the pot, and would have been outdoors long ago, but for press of work. We propagate figs largely in a similar way from single eyes. The eyes are cut with a piece of wood two inches long below the eye. They are then buried outdoors until February, when they are placed singly in three-inch pots and set on the benches of the propagating house with bottom-heat. The air overhead being kept cool, they are well rooted before growth begins. These plants are now well established in the pots with five or six inches of new top, and are being distributed to growers in all parts of the state. Nearly 6,000 of these have been distributed in three years. Small fig-plants set out here last May were five feet high when frost came, and full of green figs. This year they will give a fair crop of fruit.—W. F. M.

The Rhaps Palm.—The interesting notes upon "The Rhaps Palm," in the May issue of this magazine (page 261) omitted what to me seems one of the charms of the plant, namely, the graceful filaments which hold the leafstalks to the main stem. Indeed, the main stem seems a real "*E. pluribus unum*," for its beautiful fingers clasp each other round and round. The illustration given certainly showed a very finely-grown plant, but all the suckers were left on and they hid the beauty of the

clinging stem-fibers. You did not say enough of the palm's hardness. My largest rhaps was apparently killed during a trip of 1,000 miles in a freight-car in severe weather. I cut off its leaves, and after several months a sucker appeared; in a few months more some badly crinkled leaves appeared at the top of the stem, then another set, also dwarfed, but not so much so as the first, and now there are seven perfect leaves upon the palm.—AGNES GREGOIRE, *Bartow Co., Ga.*

Bedding with Foliage-Plants.—The horticultural embroidery shown on page 271 is doubtless pretty in the same way that any other embroidery is pretty. But is "the game worth the candle"? A garden, of all places, ought to be restful; but then embroidered lawns are more suggestive of lavish expenditure and wasted labor than anything else. The very plants all seem to be in their Sunday-go-to-meeting clothes, and afraid to grow with any natural grace lest they get out of fix. These gardens always remind me of the old-fashioned canvas "sampler" that our grandmothers made with gay-colored silks in their school-girl days. The great space of glass required to propagate and keep such quantities of bedding stuff could be used for much better work, I think.—W. F. MASSEY.

The No-Fence Law.—(Page 295). Raleigh, N. C., is situated in the midst of a no-fence section, and I think that even the AMERICAN GARDENING folks, if they move here for a while, would agree with me that here, at least, the no-fence law has proved a great evil. Drive all around this country and you see only wide stretching cotton-fields—no grass, nothing but cotton, varied occasionally with corn. Years ago the cotton-planters kept a few cattle and turned them in the woods to graze; but the no-fence law stopped this, and now most of them keep no stock whatever, except work-mules. Talk about diversified farming, grass-growing and stock, and they agree with you, but to keep stock means fencing, and they give it up. It costs too much; and so they keep on in the same old weary way of growing cotton, cotton everywhere, and not a mouthful to eat. Just around Raleigh are some stock-farms with fine grass and fine stock, and orchards and vineyards; these of course are fenced. In driving out, when you get beyond them into the unfenced cotton-fields, it is like passing from an oasis into a desert. The no-fence law may be a good thing in some communities, but here it is only an excuse for keeping in the old ruts.—W. F. M.

Dating Seed-Packets.—(Page 277). You are right about the North Carolina seed-law. The trouble is that it is totally impracticable. The dealers in New York and elsewhere who sell to our merchants are not going to be pestered with dating the packages, so the merchants

complacently mark them all "Crop of 1891." But, as one of our leading seedsmen says, "Why all this fuss about the mere germinating character of the seed? The stocks from which they are grown are of equal importance to the purchaser"; and no laboratory-test of seeds can determine whether seed is of a good strain or a poor one, a suitable sort for the climate or otherwise. So also with the dating of seed-packages. If the retailers shift their seeds to new packets next spring, and mark 1892 on them instead of 1891, the figures would be just as correct as most of them are now, and how are you to prove they are not the crop of 1892? by next season the matter will be forgotten. The dating this year has not made the seeds any better than those sown last year, and no one ever hears much complaint from seeds sent out by the great seed-houses. Folks that buy the low-priced, job-lot seeds sometimes get cheated, just as the ladies do who hunt bargains among the Jews.—W. F. M.

The Hardy Orange.—In the spring of 1890 I received several plants of *Citrus trifoliata* from the Agricultural Department, Washington. They grew slowly until late in the summer, when they began to throw up vigorous shoots that did not mature before cold weather. The bark on the new growth split as the thermometer descended to zero or a little below, but the shoots retained their glossy green appearance until the following March, when they began to fade, and I then cut them back to living wood. These little plants began to push out new growth about as early as most of our native hardy trees, and, while the young leaves and shoots of the latter were in many instances killed by the very severe frosts of the spring of '91, the young growth of *C. trifoliata* escaped injury. The plants made but moderate growth during the following summer, and although we had here an unusually long and favorable fall, winter again found them with wood unripened. Their leaves did not fall, and the shoots retained their beautiful green color, but it became evident in March, and still more so in April, that the plants had been injured more the second winter than the first. Where the growth was unusually strong, the bark had not split, but it began to fade on the south side until it nearly died down to the older wood near the trunk. Very few branches escaped; these are again putting forth tender young buds. *C. trifoliata* evidently requires a longer warm season than the forty-second parallel affords, and while it possesses remarkable hardness for a member of the citrus family, I am reluctantly forced to the conclusion that it cannot be successfully grown so far north as this without protection. As plants are now being advertised as enduring the climate at Ann Arbor, Michigan, I give these facts for the benefit of planters.—H. PURFIELD, *Michigan.*



DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Abutilons.—Prune them into shapeliness, and repot those kept in pots for winter blooming.

Agapanthus.—Give plants in blossom plenty of water.

Ageratum.—Hold in check the plants intended for winter-flowering, to avoid exhausting them.

Annuals.—Do not let them become crowded. Plants having plenty of room will bloom much more satisfactorily.

Asters need plenty of food and water. Liquid manure, or a manure mulch will be gratefully received by them.

Balsams usually develop a great many young shoots. The removal of some of them will improve the plants' appearance and bloom. Plants wanted later for window decoration may now be taken up carefully and potted.

Bouvardias.—Keep plants designed for winter use cut back closely.

Cactuses.—Give plenty of water during their period of flowering and active growth.

Calceolarias.—Prick out the seedlings as soon as they can be handled, into pots or pans, placing them in frames under shaded glass. Water and air as needed.

Camellias require careful treatment in order to prevent the dropping of the buds already formed for next winter's bloom. Keep the room cool by shading, sprinkling and free airing. Water regularly, and syringe the plants at least three times a week.

Candytuft.—Sow seed in frames this month, to provide plenty of bloom for the time when frosts have cut the open-air crop.

Carpet-Beds.—Give a thorough watering at least once a week. Clip back too luxuriant growth. Remove promptly all useless flowers, unhealthy leaves, and all weeds.

Chrysanthemums.—Give plants in pots their final shift. Sprinkle often from overhead. Give water in proportion to the size and strength of the plants. If possible, plunge the pots in a bed of coal-ashes, which will prevent undue variations of temperature and lessen the danger of drying at the roots.

Cinerarias.—Treat as advised for calceolarias.

Climbing Plants.—Provide supports, and train as needed. Clip off excessively straggling growth.

Cyclamens.—Sow seed this month for plants to bloom next year.

Dahlias.—Trim some of the side shoots, and stake tall growers.

Euphorbias are all the better for being crowded in pots, if watered frequently and liberally with weak liquid stimulants. Concentrated manures may also be scattered over the surface of the soil. Keep the heads of the plants near the glass in a warm house.

Ferns.—Keep the tall-growing sorts in check that they may not crowd the smaller ones. You can encourage the latter by giving ample root-room. Tall kinds should have rather small pots or boxes, and a little liquid manure.

Fuchsias make good bedding-plants if set where sheltered from heavy winds and bright sunshine. Give the plants a light rich soil. Sprinkling or frequent spraying will keep down the red-spider.

General Greenhouse Management.—Shift all potted plants, such as heliotrope, sweet alyssum, begonias, etc., designed for winter-flowering, promptly as required. Provide moisture and reduce heat by frequently syringing the entire inside of the house.

Geraniums.—Grow the plants wanted for winter-flowering in pots during the summer, and keep the flower-buds nipped out.

House Plants.—Neglect will bring on insects. Aid plant-health by proper watering, cleansing the foliage, removing dead leaves and faded flowers, and repotting as needed. If a few insects appear, notwithstanding this treatment, pick them off by hand. Watering cannot be neglected without serious consequences. In summer the best time to water is towards night. Coolness and moisture will then surround the plants until morning. Winter-flowering plants, such as begonias, chrysanthemums, carnations, poinsettias, heliotropes, roses, etc., should now grow rapidly. Pinch them back every few weeks to promote stocky, shapely forms. Shift the potted plants into pots one size larger as soon as the roots begin to mat in their old quarters. Stake fuchsias, cobæas, and other plants promptly, as needed.

Hydrangeas.—Give plants in bloom an occasional dose of manure-water. Young, especially yearling, plants like partial shade during the summer.

Lantanas are easily grown as standards, with a stem three or more feet high, by keeping all side shoots down during their period of growth, and until the desired height is reached.

Lawn Management.—If the season be wet, use the lawn-mower often. Walks should be kept clean of weeds and litter and their edges tidy. Roll them after heavy rains. Sprinkling the lawn in hot weather will tend to keep the premises cool. Stir the soil frequently around all flowering plants in the border, and let no weeds grow. Mulching is a good practice. When you water flower-beds water thoroughly and stir the ground about the plants soon afterward, so that it may not bake.

Layering.—Most of the perennials in the flower-garden can easily be increased by layering, while many cannot be propagated in any other way. Make a depression in the earth at one side of the plant and bend a vigorous

shoot down into it. Cut a notch in the shoot on the upper side, one-third of the way through, to the lowest point of the bend. Cover firmly with mellow earth. Good roots ought to be formed in about eight weeks.

Mignonette.—Sow seeds for winter-flowering plants, in small pots, 3 or 4 seeds in each. Later thin the seedlings to one.

Orchids.—Free circulation of air is needed to ripen the spring growth. Give only partial shade, and keep the air moist by watering stages and paths late in the afternoon, just before shutting up for the night.

Oxalis.—Water sparingly after the flowering period.

Fansies.—Sow seed for forcing in early spring.

Perennials.—The hardy kinds, which ripen seed this month, may be increased by sowing seed as soon as it is ripe. Remove faded flowers from all other perennials.

Poinsettias.—Keep them close to the glass. Seven-inch pots, if they contain rich soil, will do for this year's plants.

Pomegranate.—Give to plants now approaching the blooming period a few doses of weak manure-water.

Frimroses.—Prick out the seedlings into pots or pans, and place in lightly shaded frames, giving air and water as needed. Old plants, of the double Chinese kind, should be kept in a cool, shady place. Water sparingly.

Rhododendrons.—Remove seed-pods and sprouts.

Roses.—Keep down strong shoots and cut off imperfect flowers. Plants for winter-blooming, that are bedded under glass, should now be at rest. Give only water enough to keep the roots from drying out entirely.

Spring-planted Trees.—Provide them with a mulch of coarse litter. This is better than excessive watering.

Staking and Tying.—This is indispensable for strong-growing, top-heavy plants, such as dahlias, gladioluses, salvias, etc. Large specimen plants, such as hydrangeas, geraniums, etc., may be staked in such a manner that the stakes will not show.

Sweet-Williams.—Sow seeds for next year's blooming.

Vallotas.—Keep the plants now beginning to bloom well provided with water.

Variegated Trees and Shrubs.—Sometimes leaves or whole branches of the ordinary type appear on these. Always cut them off promptly.

Violets.—Keep well cultivated and free from weeds. Water during hot, dry weather.

Window-Boxes.—These, and veranda-boxes, etc., now need much water, and neglect will be fatal. Water frequently and thoroughly. The earth must be moist to its very center. Be not deceived by the moist appearance of the surface.

II. GARDENING FOR TABLE AND MARKET.

Apples.—Continue to spray with the ammoniacal solution of carbonate of copper for scab.

Asparagus.—Let the shoots grow up, but keep the weeds down and the soil well stirred. The roots should now gather materials for next crop. The application of some quickly available fertilizer will assist in that direction.

Beans.—Sow the wax sorts for succession. Rich, well-prepared soil gives a quick crop and tender pods.

Beets.—Sow Eclipse or Early Egyptian to give young and tender beets in fall and winter.

Blackberries.—Head back the new canes and their laterals.

Cabbage and Cauliflower.—Sets plants for winter use.

Celery.—Plant the main and late crops this month. Be sure to try Giant Pascal. The early-set White Plume plants will be large enough for handling. Although self-bleaching, the stocks are improved in appearance and quality by some sort of formal bleaching process. We have good success with boards set up against the rows from each side.

Corn.—Plant the sweet varieties for succession and latest use.

Cucumbers may yet be planted for pickles if done without delay.

Currants.—Try spraying with fungicides as a preventive of mildew.

Egg-Plants.—Keep well cultivated and hoed. Watch for potato-bugs.

Endive.—Sow seed for succession. Make a good mellow seed-bed. Thin the plants to stand eight inches apart in the rows. When their leaves are six or eight inches long, gather up and tie lightly over the heart of the plants.

General Garden Management.—Practical men have much to say on this subject elsewhere in this issue. Study and heed their suggestions. Especial care and skill in sowing seed and setting plants are necessary in hot and dry weather.

Gooseberries.—Spray the English sorts once or twice more with the solution of sulphide of potassium half an ounce to a gallon of water. Now is the time for cutting out weak shoots and layering. (See Questions Asked and Answered, No. 2936, June issue).

Grapes.—By all means bag at least part of the clusters. Continue timely spraying with the reduced Bordeaux mixture. In rot-infested districts it will pay the grower to do this as often as once a week all through this month. Stir the ground to keep down weeds.

Grapes under Glass.—Vines need plenty of air when their fruit begins to color. Stop all laterals now. Give manure-water to late vines. Fruit that is to be left on the vines until Christmas should now have all imperfect berries clipped out with scissors. The vines must be thoroughly cleaned immediately after the fruit is removed, as the perfect development of next season's fruit-buds depends, to a great extent, on the clean and healthy foliage of this season.

Herbs.—Cut the plant-stalks just before they come into full bloom, tie in bundles and dry them in the shade.

Lettuce.—Sow for succession in a moist, half shaded spot.

Lima Beans may require some assistance to get a good hold on the poles or trellis. Hoe them frequently.

Kohlrabi.—Sow seed for late plants.

Melons.—Watch for bugs. Bone-meal and tobacco-dust are good preventives, if applied thickly all around the plants. Stir the ground frequently, drawing fresh soil up to the plants.

Onions.—Keep them free from weeds.

Orchard Management.—Continue to spray for scab and blights. Mulching newly-set trees often induces strong summer growth. All windfalls in apple orchards should be picked up and destroyed at once. This is done most conveniently by pasturing the orchard with swine or sheep. Destroy caterpillar-nests. Slugs on cherries, peas, etc., are easily destroyed by applications of dry lime or ashes. Pruning, especially important to young orchards, consists mostly of rubbing off superfluous shoots as soon as they start. Prune for fine fruit, not for a great quantity of it. Thin apples, peaches, pears and plums at your earliest convenience—it pays.

Peppers may still be planted.

Potatoes.—Begin spraying with the Bordeaux mixture to prevent blight and rot. Harvest the early potatoes, and if possible dispose of them while prices are yet high. Seed-potatoes of good early varieties will probably bring a good price next planting season. If you can get seed for planting now, plow up the old strawberry-patch and plant it in potatoes, selecting early varieties.

Radishes.—Sow the summer varieties for succession, and begin sowing the winter sorts.

Rhubarb.—An application of fine manure around the plants will help them to recover strength for next season's yield of stalks.

Seed-Saving.—Usually it is safest and best to depend upon specialists for one's supply of seeds. Indiscriminate use of home-grown seeds, owing to crossing and hybridization, often results in much loss and annoyance. Melons "mix" readily with cucumbers, and squashes with pumpkins, and varieties of tomatoes, peppers, peas, beans, etc., with other varieties of the same vegetable. Usually it is safe for gardeners to save and use their own seeds of lettuce, radish, salsify, herbs, peas, beans, and of any other vegetables that are planted one variety only in a mass, at some distance from other members of the same species or genus.

Sowing Seed.—In dry weather sow seed a little deeper than is usually recommended, and firm the soil well above them.

Squashes.—Keep the ground well cultivated around

the plants. Find and crush the large black squash-bugs. The yellow-striped beetle can be kept in check by inch-thick applications of bone-meal and tobacco-dust. To guard against the borer, apply the kerosene emulsion, and cover the joints of the vines with fresh soil. This causes them to throw out roots at those points and makes them independent of the main root.

Strawberries.—A new plantation that will bear a reasonably good crop next season, may be started from the first young runner-plants taken up with a large clod of soil, or allowed to root in pots sunk in the ground. Fall planting will seldom give good results north of New York City, and even in New Jersey we would prefer spring planting. But summer planting will sometimes prove successful.

Strawberry-Forcing.—Young plants may now be started in pots for next winter's crop. Fill three-inch pots with nice rich loam, and sink them, up to the rim, in the ground around the parent plants. This should be done just as soon as the runners begin to start. Direct the runners so that they shall strike root in the pots, and keep them well watered in dry weather. In about three weeks the plants will root and may be taken up in their pots. Place them close together in a somewhat shaded location, and when the pots are full of roots, shift the plants into six-inch pots, filled with rich fibrous loam, potting firmly. Stand them in an open airy place, and give all the water needed.

Tomatoes.—We always like to stake or trellis a few plants in the house-garden. They are ornamental if trimmed to a single stalk, and tied to a six-foot pole. Thus we can have the plants quite close together, and they usually give ripe fruit a trifle earlier than those planted outdoors.

Tomato-Forcing.—Plants from seed sown early this month will fruit in November. Start them in three-inch pots, one plant to the pot, and shift the plants into larger pots as they grow. The fruiting plants should stand in ten or twelve-inch pots. Use light fibrous loam for potting-soil, thoroughly mixing a teaspoonful of bone-meal with each potful of soil.

Turnips.—Sow the swedes early this month—the flat strap-leaf varieties later.

Weeds are easily killed in this hot weather if cultivators and hoes are used industriously. Prevent their seeding for a few years and you will have very little weeding to do afterwards.



CURRENT

GARDEN LORE

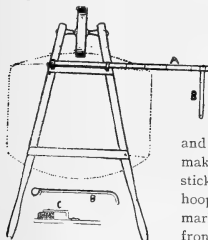
GATHERED WORLD-WIDE.

A handy little weeder can be made from the point of an old scythe. Break off about one foot, and remove enough of the blade back of the point to leave the scythe-back for the handle. Turn this at right angles to its former position. Now file smooth this handle and the weeder is ready, and usually very sharp.—*Farm and Home.*

Birds and Berries.—The only successful solution of the problem of birds and berries that I know of is to plant enough for both ourselves and them, unless we are to undertake the task of killing off the birds. I believe few of us in our sober moments would be willing to do this, and even if we were, the law steps in and says these feathered songsters shall not be destroyed.—*Orange County Farmer.*

The Native Hornbeam.—Our native carpinus, or hornbeam, is one of the most ornamental of our small trees. Its clean, birch-like foliage in summer, its furrowed bark in winter, and its trim appearance at all times bespeak for it more general use. In spring its catkins push suddenly forward before the leaves, covering the tree with a mist of soft green that is a special feature of the landscape on the borders of swamps and streams.—*Garden and Forest.*

Barrow-Marker.—A good marker to mark out small pieces of ground without a horse is made by securing a simple attachment to a wheelbarrow. Take a 2x2 inch



BARROW-MARKER.

stick, A, 4 feet long, or longer if desired, whittled down perfectly round to within one foot of the end to be attached to the barrow. Take a piece of strong hoop-iron and shape it as shown at B, making a ring to slip on the stick. Take two pieces of the hoop-iron, C, for holding the marker-stick in position in front of the first brace. Slip the iron on the marking-stick to the width desired for the row, and to keep it there bore a hole with a gimlet close to it on either side, in which insert an eight or ten-penny nail. The wheel will make a better mark than one would suppose, while the iron marks for the next row.—*Farm and Home.*

Trapping the Squash-Borer.—Summer squash can be planted to attract the borer, the parent of which usually selects the largest and finest vines for oviposition. The crookneck will mature fruit before succumbing to the borer, and by that time Hubbards and marrowfats, planted later, are comparatively safe from attack and can be given the ground. If the summer squash-vines be entirely removed and destroyed, the entire borer-crop will be destroyed as well.—*Bulletin New Jersey Experiment Station.*

Lima Beans in Winter.—There is no vegetable that compares with the Lima bean for richness and flavor, and none so valuable for winter use, or that can be had with so little trouble. The bean is in a proper condition for table use when the pod is full and shows a slight change of color. Pick and spread the pods thinly in the sun, and let them remain until they are thoroughly dry; then shell and put away as other dried beans. When wanted for use soak in cold water over night before cooking, and they will be nearly as good as if picked fresh from the vines.—*American Agriculturist.*

Transplanting Sweet-Corn.—Do you know that sweet-corn can be transplanted? It is practiced by a few growers who would anticipate the sweet-corn season. The seed is sown quite thickly the first week in May, under glass, in soil under which there is a small amount of fresh stable manure for heat. The plants are set in the field May 25. There is then no danger of frost, and there will be no blanks in your field. It is always well when planting seed in the field to make another plantation against the warm side of a fence for transplanting to the field to fill up any vacancies that may occur.—*N. E. Farmer.*

The Varnish Tree.—Some years ago Professor Rein planted in the Frankfurt Botanical Garden, Germany, some of the trees from which it is stated the Japanese obtain their lacquer or varnish. The tree is known to botanists as *Rhus vernicifera*, and it appears that there are now 34 healthy trees, some 30 feet high, in the garden. Professor Rein has taken sap from a few of the trees and sent it to Japan for trial by native artists. It is, however, almost useless for Europeans to attempt to compete with the Japanese in their line, but the lacquer, if it can be made from the trees grown in Europe, may be used for other purposes than varnishing wood. The varnish-tree grows in many parts of what may be termed the

Mediterranean district. Its juice is noted for deleterious or injurious properties, and, consequently, has been let alone. The Japanese, however, seem to understand handling it, and it is certain that they make a beautiful lacquer or varnish from the juice of their trees; but they keep the process a secret.—*Leisure Hour*.

Prolonging the Fruit Season.—A curious fact in fruit-culture is that, if the bulk of the crop is picked when ripening, and a portion of it—say a fourth or less—is left

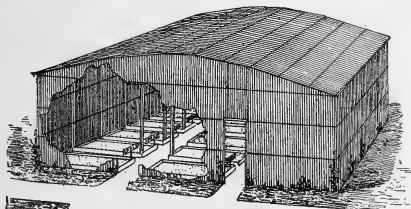


FIG. 1.—LATH PROPAGATING-HOUSE.

on the tree, the latter will cease to ripen, and will remain on the tree in good order for a month longer. I picked some fine old Buffum pears that were left on the tree a full month longer than the main crop, which was gathered September 20. The most perishable plums, such as Washington, will behave in the same way. Nature provides in some fruits for a long succession by loosening the ripe ones from the stem. This is peculiarly true of the Gravenstein and Summer Strawberry apples, but it is often worth our while to follow nature and secure a long season of some favorite fruit.—*Garden and Forest*.

A Parcel Post.—Why should we be behind other countries so far in this? The government, with equipments ready at hand for doing this great service to the people, leaves them to the conscienceless express companies, whose exactions are continually increasing. Farmers, everywhere, let your representatives hear from you about this. Put in your just claims. Everybody, whether living in town or country, will be the better for the readiest and earliest dissemination of all means for making farms more productive of the very best articles for food or for clothing.—*N. Y. Tribune*.

Sprouting Tree-Seeds.—For the germination of apple, pear, orange and other seeds, there is nothing better than a lath-house like the one shown in the illustration, fig. 1. The laths are one-half inch apart, giving the plants enough light and air, and at the same time preventing the ingress of birds, etc., which scratch up the seeds while sprouting. The houses can be made of any size, and the sand-beds (fig. 2) are used for growing seedlings and for starting cuttings of different kinds. To prepare sand-beds for sprouting peach, apricot and plum-pits, nuts, etc., frames of any size desired are made of 12-inch boards set on edge and resting on the ground. The frames are partly filled with sand, upon which a deep layer of pits or nuts is placed,

and covered with sand. The sand is kept continually moist, yet not too wet. The seed is examined from time to time, and as soon as it begins to sprout is taken out of the sprouting-beds and planted in the nursery.—*From Report of California Horticultural Society*.

Setting Onion-Plants.—Few things in market-gardening have pleased me as much as this onion-plant business. We have pushed the plants pretty freely with guano; and if the tops get so tall as to begin to lop over, we shear them off. The onions are so tenacious of life that I have seen every one grow in a long row through a large field, when the planting was done by schoolboys so small that I feared they would not be able to do it successfully. The ground was fine and mellow; and as it was just after a rain, all that the boys did was to push the onions down into the ground with their forefingers, and then press a little earth on top of them. No matter how crookedly they stuck them into the ground, they all stood up straight in a few days. The ground was marked out for onion-plants with a wheat-drill, running a good dressing of fertilizer into the ground at the same time that it was marked. We plant the onions in every other drill-mark.—*Root's Cleanings*.

Shippers' Trade-Marks.—As to colored baskets, boxes or crates, I have no fancy for them. My taste inclines to clean, unpainted baskets and packages, and I use no others. I have too much respect for myself, my customers and my berries to offer them in old, moldy, stained and weather-beaten boxes or crates. Were I a purchaser, such packages would repel me. If unreturnable packages, etc., of this sort were consigned to the crematory, it would be a blessing for the community. I know of no better trade-mark than the grower's name, with well-grown, carefully assorted fruit, honestly put up in neat, clean packages, of full capacity, to back it up.—*E. Williams, in Rural New Yorker*.

What Good Roads Would Mean.—They would make it possible for the farmers to take prompt advantage of the highest market at any season of the year. They would save him days and weeks of time wasted every year in wallowing through the disgusting mire of dirt roads. They would reduce to a minimum the wear and tear on wagons and carriages. They would lessen the expense of keeping horses in working order, and fewer horses would be required to perform the farmer's work. They would require less expense to keep them in repair than do the dirt roads. They would afford ready communi-



FIG. 2.—SAND-BEDS FOR SPROUTING TREE-SEEDS.

cation with the outside world at all times of the year, and spare the farmer many vexations and nervous strains. They would practically shorten the distance to the local market and increase the demand for country and suburban property. They would be free from dust in summer and

mud and ruts in fall, winter and spring. They would bring every farming community into closer social relations, and make an evening's drive a pleasure instead of a vexation, as it is now. They would do away with the absurd poll-tax and supervisor-system. They would be, in short, the best possible investment to the taxpayer if built and cared for by the national government and paid for by a national tax.—*Colman's Rural World*.

The Alder-Leaved Oak.—The accompanying engraving represents a branch of *Quercus alnifolia*, a native of the mountains of Cypria. It varies in foliage to such an extent that seven or more sub-species might be determined. The camellia form is most common; the alder form is rarely found. The name, *alnifolia*, seems to be given by accident. The under side of the older leaves is almost always ornamented with a hairy coat of a beautiful golden color. The tree is ever-green, and seems to be quite hardy.—*From Catalogue "Neuheiten des National Arboretums," Germany*.

Clean Culture vs.

Insects.—Many insects remain during the winter in whatever rubbish or shelter they can find in the fields, and many live on plants for some time after the crop is gathered. It is a safe rule to clear off the aftermath and destroy it. Melon, citron, squash, cucumber and other similar vines are usually left in the fields after the crop is gathered, and there many a borer and striped beetle comes to maturity long after the farmer is done with the plants. The rule should be to gather and burn, either by fire or in the manure-pit with lime. In orchards, this is of especial importance. In dead wood, on the tree or on the ground, many species of insects hide or complete their development during the winter. Every dead branch and twig should be cut, and, with the other rubbish, hauled out and burnt. The ashes will make a good fertilizer. Loose bark does not help a tree much, while it does afford shelter to many hibernating species. Never leave an old wood-pile in or near an orchard, especially if the wood is of the same kind as the orchard trees. Many insects breed preferably in dead

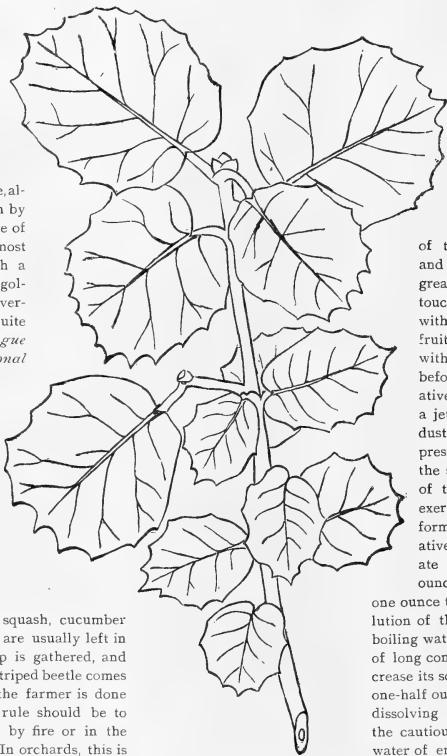
wood; but when it becomes too dry or too rotten, they have a sharp instinct that enables them to discover a weak or sickly tree, and they attack this at once and ruin it, where otherwise it might recover. Fallen fruit should always be destroyed. Were this systematically done, there would soon be no further complaint of curculio, and less of codling-moth. The fruit should be fed to hogs, buried deeply, burnt with quick-lime, or disposed of in some other way that will prevent the insects it contains. Field and orchard should

contain, as nearly as possible, nothing save the crop.—*Bulletin of N. Y. Exp. Station*.

Preparing Fruit for Exhibition.

—Fruit that is to be exhibited at the World's Fair should be picked as unripe as is consistent with a proper exhibition of the size, surface, texture and color, handled with the greatest care, and not be touched by the hand. Cut off with shears and receive the fruit in a piece of tissue paper without jar or pressure. Just before placing in the preservative fluid, rinse the fruit with a jet of clear water, removing dust and fungous germs. The preservative fluid should have the same density as the juice of the fruit. Salicylic acid exerts no bleaching action and forms a very energetic preservative fluid, even at the moderate rate of one-fifth of an ounce to a gallon of water, or one ounce to five gallons; the dissolution of the acid is best effected in boiling water. But for the purpose of long conservation, it is best to increase its solubility by using one and one-half ounces to every five gallons, dissolving the extra half-ounce by the cautious addition to the (boiling) water of enough sal soda to make it clear, and to make it remain so after cooling. It is of great importance that

not a particle more sal soda be used than is just sufficient to dissolve the last flake of the acid; the least excess of soda will tend to soften the fruit and spoil its color. The density of this solution must be increased to that of the fruit-juice by the addition of glycerine or pure white sugar made into syrup as follows; If the spindle in the fruit-juice shows four degrees, six ounces of white sugar or good commercial glycerine must be added for each



BRANCH OF QUERCUS ALNIFOLIA

gallon of the preservative fluid wanted, the rule being to add $1\frac{1}{2}$ ounces of sugar or glycerine to the preservative fluid for each degree shown by the spindle in the fruit-juice.—From *Circular* by Prof. Hilgard of the California State University.

Pyrus malus floribunda.—This is also known as *Malus microcarpa floribunda*. It is highly ornamental during May. Besides its use in the shrubbery or pleasure-ground, it also submits readily to forcing, and appears as floriferous then as in the open ground, and the flowers are almost as highly colored. When forced it will flower about April 1, but the heat necessary to flower it earlier would probably cause the flowers to be short-lived and poor in color. It is a shrub rather than a tree, with a mass of slender, twiggy shoots, which give it an imposing appearance when in bloom, because of their profusion of flower-buds. It comes from Japan. The leaves are small, oblong-lanceolate, bluntly toothed and thickly set in tufts on numerous, short, spur-like branches. The flowers are relatively large when fully expanded, and heavily tinted with rosy red outside. They appear almost crimson while yet in the bud, and the shrub is very conspicuous from the time the buds swell until the petals drop. (See illustration.)—*Gardening World*.

Terrace-Gardens.—In the formation of gardens on rising ground, terraces are sometimes necessary, and where there is plenty of length and breadth, especially the latter, a great deal may be done, in the laying out and planting, to hide much of the stiffness and formality inseparable from such artificial surroundings. In the accompanying engraving (next page) this appears to have been the aim, for at one side of the terrace raised beds of simple form break the monotony of the flatness without destroying the breadth, as a set of beds of more formal pattern running through the center or on each side would have done. Stone edges are used for raising the beds shown, and where natural undressed stone is to be had no better dead edging can be found, as if properly formed it retains the soil and forms a happy hunting-ground for many plants, which succeed better in such a position

than they do on the flat or with a freer root-run. Amongst these the sedums (stonecrops), mossy saxifrages and sempervivums hold pride of place, and with these alone an excellent effect, agreeable alike in winter or in summer, can be produced. In edging the beds the stonecrops are largely used. Some of the neater kinds of ivy are also very suitable for this purpose. Many of the mossy and other neat-growing saxifrages, if fair spaces



TWIG OF PYRUS MALUS FLORIBUNDA.

be left for them and a little suitable soil given to start them, will soon grow dense enough to keep the soil from dribbling through the edge, and for some of the delicate varieties the well-drained position would be the best that could be chosen, especially in a climate naturally humid. In these beds are also used the sandworts, aubrietias, the smaller campanulas, the moneyworts, and best of all, for very mild climates, the beauti-

ful mesembryanthemums, which present on a sunny day a never-to-be-forgotten sight. There is one lesson to be learned from the illustration given of these gardens. In all cases where terracing is desirable or desired, care should be taken to allow breadth for some informal

or eight "shoves" to send a 16-inch spade "home." The best way to get this motion is to watch a real expert and get him to teach you. I almost never use a pick or mattock. A good ditching-spade well handled will dig almost anything but the stoniest clayey gravel, faster alone than with the help of the pick.—*Gleanings in Bee-Culture.*



TERRACE-GARDEN AT CORK, IRELAND. (Flower-beds edged with stone.)

Planting. In the view presented breadth is a strong point. If this cannot be given it would be infinitely better and wiser to expend the money and labor which it would cost to make the terrace, in forming good walks winding sufficiently to make the ascent or descent quite easy. By the side of such walks, at irregular intervals, suitable spots would present themselves for growing plants in a natural way without making the walk or its surroundings too prominent in the landscape.—*Garden-ing Illustrated.*

Spading Hard Ground.—The first point in rapid, easy digging, is to keep one side-edge of the spade always out of the earth, in sight. Fig. 1 shows how a non-expert will bury both edges of the spade at *gh, ij, kl, mn*, and have harder work thereby, both in sinking the spade and in breaking off the slice of earth. Fig. 2 shows how an expert will sink his spade; *ab, cd, ef*, being the curves cut by the spade, the edge *a* being "out" the first cut, the edge *c* being out the second cut, etc. Thus held, the spade sinks more easily, and the one edge breaks off true



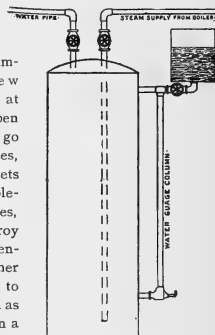
FIG. 2. SPADING HARD GROUND. FIG. 1.

and easily. Sink the spade by a succession of quick "shoves" or thrusts with the foot, throwing one's whole weight with a quick impulse upon it, and working the handle slightly back and forth in sympathy with the efforts of the foot. It will take from two or three to six

quantity desired by an X L valve connected with the same close to the cylinder. With further experience we find that a small quantity of fluid, say one gallon, is all that is necessary at a time, and no addition of water is needed, as the steam continually passing from boiler into fluid is all that is required. We have also two other X L valves connected close to the head of the cylinder, to control, one the supply of steam, the other the evaporized juice. So, having let one gallon of the liquid flow from supply-tank to cylinder, shut valve and open steam-supply valve. In a few moments the juice is at boiling point. Now open water-pipe valve; then go into the house or houses, open any of the faucets where the aphid is troublesome, and in 30 minutes, at the most, it will destroy the most venerable green-fly, although as with other systems it is far better to use lightly now and then as a preventive rather than a cure. We find the system has the following advantages: There is no possible danger to the most delicate flower; fumigation is applied instantly; there is no hindrance from other work; no necessity of being in the fumes; no space taken up with large tobacco-bales; it is cleanly and effective. We get the tobacco-juice from a

Fumigating with Tobacco-Juice.

—In the stoke-hole or boiler-pit we have in one corner, a cylinder which holds about 50 gallons. Connected with our steam-boiler is a $\frac{3}{4}$ -inch pipe, which passes through the head and descends to within six inches of the bottom of the cylinder, as shown in the drawing; this is a supply steam-pipe to boil the fluid and raise it to any pressure required. Connected with the top or head of the cylinder, is the water-pipe, the same that supplies the houses. Connected also with the top of the cylinder is a small tobacco-tank capable of holding five or six gallons of the extract, of which we can supply to the cylinder any



GREENHOUSE FUMIGATOR.

Louisville tobacco-firm. They claim that it is absolutely pure tobacco-extract.—*C. Rayner, in American Florist.*

Wall for Rock-Plants.—A shelter-wall is often necessary to conceal from the public gaze what is really a sort

of thoroughly decayed manure, a good sprinkling of soot, and by digging them deep. With this sound preparation and plenty of water at command during dry weather, these now popular flowers will go through this long campaign and prove themselves to be both friends to gardeners and a source of great pleasure to their employers. Our beds were so arranged that those occupied by early spring-flowering plants were planted with calceolarias; others in which silenes, myosotis and wallflowers made a good show were filled with zonal and ivy-leaved pelargoniums, verbenas, ageratum, *Phlox Drummondii* and begonias. These plants were placed in sheltered positions, and kept growing steadily till wanted, when they were planted thickly to produce an early display.—*Journal of Horticulture.*

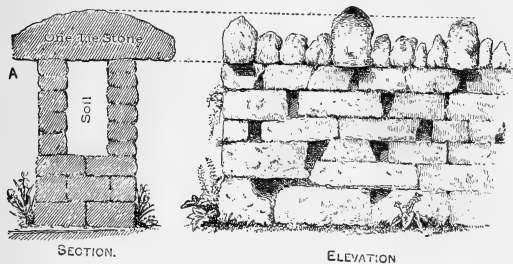


FIG. 1.—WALL FOR ROCK-PLANTS.

of laboratory, indispensable in every garden. I resolved to make my wall not only a shelter, but also an object pleasant to the eye of the wayfarer. This has been accomplished by building a hollow wall topped with tie or binding-stones, and pocketed for the reception of soil and plants, as shown in the accompanying sketches (Figs. 1 and 2). In such a plant-wall the principle is everything; the proportions may be varied to suit any special circumstances or surroundings. The wall is a little over 4 feet high, over 2 feet through, and is 30 or 40 yards in length, and after having filled up the hollow center of the wall with suitable soil I shall plant the top with iris of the *I. Germanica* and the *I. pumila* sections, cloves, carnations and pinks, or with linarias, aubrietias, and stonecrops, edelweiss and sempervivums, but I am especially anxious to see established on its face a group of the Californian *Zauschneria*, which does not flower

well with us on the ground-level, except during very hot, dry summers. A wall of the above size may be made by any man handy at stonework, and at no great cost.—*F. W. Burbidge, in Gardening World.*

Bedding-Out.—When spring and summer bedding are dovetailed into each other, the plans for both displays ought to be arranged at the same time, so that whenever any particular bed requires refilling the work can be done without any misgiving as to whether or not the right color will be in the right place by the time the summer bedding is completed. To prepare pansies to go through this long season of flowering, the beds must be liberally treated in the autumn by giving them plenty

of thoroughly decayed manure, a good sprinkling of soot, and by digging them deep. With this sound preparation and plenty of water at command during dry weather, these now popular flowers will go through this long campaign and prove themselves to be both friends to gardeners and a source of great pleasure to their employers. Our beds were so arranged that those occupied by early spring-flowering plants were planted with calceolarias; others in which silenes, myosotis and wallflowers made a good show were filled with zonal and ivy-leaved pelargoniums, verbenas, ageratum, *Phlox Drummondii* and begonias. These plants were placed in sheltered positions, and kept growing steadily till wanted, when they were planted thickly to produce an early display.—*Journal of Horticulture.*

The Grimston Plant-Protector.—

In the Grimston plant-protector we have a simple, inexpensive form, equally adapted to cover rows of peas, beans, lettuce, strawberries, violets, primulas, tulips, and many other plants which we may want to preserve from injury by frost or rain, or to hasten in growth. W. Denning, of Grimston Park, says that they forward crops about five weeks in the spring and early summer, and preserve them for a like period in the autumn. By their use he is enabled to supply good, firm, well-blanching Cos lettuce by February 28. He also finds them useful for potatoes, carrots, French beans, turnips, radishes, parsley, mint, early celery, etc. These appliances are made usually in 8-foot lengths, costing about 10 shillings each when complete. They require no putty nor glazing in the ordinary sense of the term, and are readily ventilated in accordance with the weather. They may be made to use

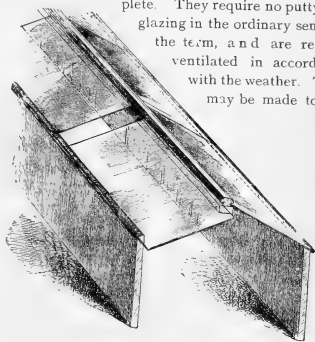
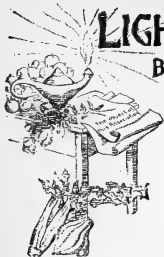


FIG. 2.—PLAN OF A, B, IN FIG. 1.

singly, or several placed end to end. The ends, whether of a single protector or several together, are closed with pieces of board, over which the glass is made to slide. Plants under these protectors require plenty of water in April, May, and later; this is readily afforded by tilting the protector.—*Gardener's Chronicle.*

GRIMSTON PLANT-PROTECTOR.

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LIGHT FROM THE SOCIETIES BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

A Small but Handsome Palm.

Cocos Weddelliana is the handsomest of all the small palms, being very graceful and pretty in its small forms. It lasts well in the house and is just the thing for a fernery, table or mantel. It stands abuse better than many of the coarser varieties, and is cheap enough to be used in quantity.—*Phila. Florists' Club.*

Let the Young Wood Mature.—The success of many of our trees depends on their having well-ripened wood. This ripening occurs in the latter part of the season and is necessary to help the tree stand the cold of winter. A second growth of the tree in the fall is injurious, as this new growth does not have time to ripen before cold weather sets in.—*Central Ills. Horti. Society.*

Rolling in Times of Drouth.—The rolling of loose soil tends to increase the loss of water from the surface by evaporation. This increased loss results from the tendency of firming the ground to bring water to the surface from depths as great as four or five feet at least, causing the surface soil to be wetter than it would otherwise be, and as evaporation from a wet surface is more rapid than from a dry one, the ground, taking the upper four feet into consideration, is rendered dryer in consequence. When a drouth occurs at seeding-time, rolling is of very material service in increasing the amount of the germinating seed, and if rolling is immediately followed by a light harrowing, to develop a surface-mulch over the seed-bed, all the advantages of firming the ground will be realized, and the excessive loss of water from the surface, which rolling tends to produce, avoided.—*Prof. King, Wisconsin State Hort. Society.*

Pasturing the Orchard.—This question was fully discussed at the last meeting of the Central Illinois Horticultural Society. One member spoke of turning goats into orchards, but others warned orchardists against them. Mr. Winn says he once turned Angora goats into his orchard but they began to feed upon the trees' foliage at once. Hogs are the only animals that can be pastured in orchards. They will pick up the apples and eat the worms. But perhaps it would be preferable to cultivate rather than to pasture the orchards. The only proper method of pasturing is to drive in the hogs, let them stay in the orchard long enough to pick up the apples, and then turn them out again. "Pig-power" cultivation for orchards was not universally approved. Professor Morrow said that whatever harm the hog may do to the orchard, the orchard certainly will do much good to the hog.

Public Pleasure-Grounds for Towns.—In an address read before the Wisconsin Horticultural Society, Prof.

E. S. Goff urges the young towns and villages of the west to set apart public pleasure-grounds before it is too late. He suggests that every village have its park, which shall be regarded from the beginning as an adjunct of the school, and be located sufficiently near the school-house to make it easy of access by the boys and girls. If the trees and shrubs are labeled with their common and botanical names, the park will have a better educational value, and if the planting is done with ceremonies in which the young people can play a conspicuous part, they will take more interest in it, and there will be less trouble in securing from their parents the money needed to maintain it.

The Irrigation Problem.—There are several ways of obtaining a partial water-supply in case of a failure of the ditch. They will cost some money and labor, but when water gets to be worth as much as it is in parts of California, we will not think it very expensive. With the amount of wind we have in this country and an inexhaustible water-supply beneath us, there are few who could not build a reservoir, get a pump and windmill, and irrigate from 5 to 20 acres of orchard and "truck." You say it will cost too much. What do you think of an inch of water supplying five acres of land and costing \$1,000, or \$200 per acre? Such is the case around San Bernardino, Cal. There water is gold, and it is conveyed in pipes to where it is wanted, and not allowed to waste or evaporate. I could irrigate Western Kansas with windmills cheaper than that.—*L. L. Doty, before a Kansas Farmers' Institute.*

Horticultural Exhibit in London.—Among the interesting things shown at the International Horticultural Exhibition at Earl's Court in May was the reproduction of a Japanese garden, with temple and tea-houses, and the Indian tea-garden, in which the visitor, after seeing the tea-leaves growing on the living plant, may, in an adjoining house, witness the manner in which the leaves are made marketable, and then finish up by drinking the beverage itself. An insectivorous house, as it is called, was a standing attraction, since in it were shown the plants which prey upon insects. A Tudor garden was also represented, with a clever fac-simile of a house of the period. There was also a reproduction of Pliny's Roman villa, with its myrtles, box-trees and pomegranates. Then follows an Egyptian garden, with scenic portrayal of temples, sphinxes, fountain with lotus-flowers, date-palms, papyrus, and the Nile in the distance.

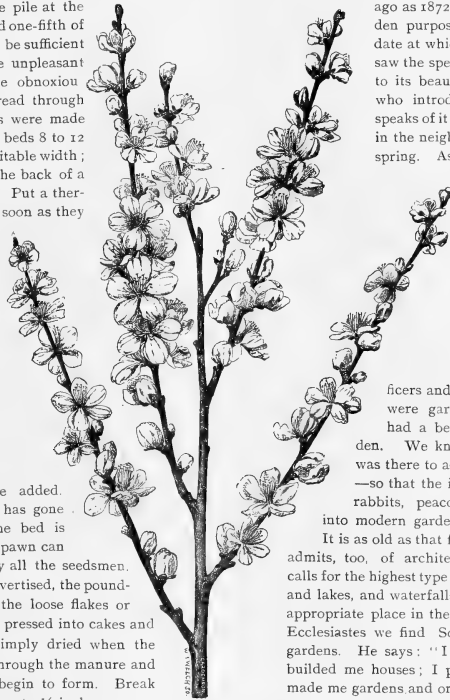
The Italian garden had among its flowers and shrubs characteristic statuettes and vases, while in the Jacobean garden we were taken back to a period when it was the funny fashion to have hedges, shrubs and trees clipped into outlandish shapes. There is a fine panorama of the rock of Gibraltar, which is made a background for showing off such feathery and graceful plants as flourish upon the Mediterranean shore.

Hints on Mushroom-Growing.—Care should be exercised in selecting fresh manure that is not fire-fanged nor too much bleached. If it has begun to ferment, so much the better. If gathered too dry and fresh, time must be given to start the fermentation. Care should

be taken to pick out all foreign stuff, such as pieces of wire, tin cans, old boots and cloth, as the spawn or mycelium does not seem to take kindly to such things. After the manure has been conically piled, it will heat rapidly; turn the pile at least every two days, so as to secure even heating. If it is quite moist shelter the pile from heavy rains; water if too dry. The manure is too wet if water can be squeezed from it, and it is too dry if it will not pack well. The pile should be turned at least twice before packing into mushroom-beds. Some loose soil may be added to the pile at the last turning, not to exceed one-fifth of its bulk, and a tenth will be sufficient to absorb nearly all the unpleasant odor that might become obnoxious in a close room, or spread through the building if the beds were made in a cellar. Make the beds 8 to 12 inches deep, and of a suitable width; pack them firmly with the back of a shovel as you proceed. Put a thermometer in the beds as soon as they are finished, placing the bulb down three or four inches from the surface. Within three or four days the temperature should go up to 100°, or 120° if the manure is in prime condition. If the heat should reach over 130° the bed will have to be turned over to cool it; if it does not heat 10° or 15° above outside temperature, liquid manure must be added. When the thermometer has gone down to 75° or 80° the bed is ready for spawning. Spawn can be purchased of nearly all the seedsmen. Usually two kinds are advertised, the pound-cakes or English, and the loose flakes or French. The former is pressed into cakes and dried, the latter are simply dried when the mycelium has grown through the manure and before the mushrooms begin to form. Break the cakes into pieces about 1½ inches square, make a hole in the bed about 3 inches deep and 10 to 15 inches apart; place the spawn in these and pack the manure firmly over it with your hand. If the thermometer stands as low as 65° or 70°, cover the bed at once with about two inches of fine loamy soil; if the temperature is 80° or 85°, do not cover for 8 or 10 days, as the heat is nearly always increased by covering, and there may be danger of killing the spawn. Eight or twelve weeks after spawning, you may look for mushrooms. If the bed gets too dry, it may be watered lightly with a fine spray; warm water at

a temperature not to exceed 85° or 90° is preferred.—*W. S. Turner, Columbus (Ohio) Hort. Society.*

David's Almond.—Among the most striking plants exhibited in the early spring months before the Royal Horticultural Society was *Prunus amygdalus Davidiana*, both in its pink and in its white form. The latter is here illustrated. An illustration of the shrub and a brief notice of it were also given in the May issue of this magazine, page 312. "The plant," says Gardener's Chronicle, "was first described by M. Carrière so long ago as 1872. Its great value for garden purposes consists in the early date at which it flowers. Those who saw the specimens can warmly testify to its beauty, and the Abbé David, who introduced it into Europe, speaks of it as lighting up the country in the neighborhood of Peking in the spring. As a fruit-tree it is of no importance, unless, as there is good reason to suppose, this may be the prototype of our cultivated peaches."



SPRIG OF PRUNUS
DAVIDIANA.
Reduced one-half.

The Garden in History.—It is not claimed that Adam and Eve were members of a regular horticultural society, with efficient officers and a full treasury—but they were gardeners, nevertheless, and had a beautiful site for their garden. We know, too, that animal life was there to add to the beauty of Eden—so that the introduction of squirrels, rabbits, peacocks, robins and doves, into modern gardens, is not a new thought. It is as old as that first garden. The garden admits, too, of architecture and statuary, and calls for the highest type of landscape. Fountains and lakes, and waterfalls, and lawns, all have an appropriate place in the garden. In the book of Ecclesiastes we find Solomon's account of his gardens. He says: "I made me great works, I builded me houses; I planted me vineyards. I made me gardens and orchards, and planted trees in them of all kinds of fruits. I made me pools of water to water therewith the wood that bringeth forth trees." That there were gardens of beauty and plenty in the age succeeding Solomon's we may be sure from poetic descriptions of them, given by Homer, Virgil and other old writers.

In modern times the garden has had a somewhat gradual development. The Berlin botanical garden was once the hop-garden for the Electoral brewery. Fredrick William changed it to a fruit and vegetable-garden in 1679. What a happy thing for our country, if many more such transformations could be made on this side of

the Atlantic. Great Britain has done much for the evolution of the garden. Public grounds and the houses of royalty have been subjected to a high standard of landscape and architecture. The walks and drives are superb, the ornamental trees most happily chosen, the fruit-trees and vines made fruitful, and the lawns made velvety and regular. France has probably led in the culture of the vine, in variety and richness of flowers, and possibly in architecture. While Germany, too, has done much for garden beauty, the economic has usually overbalanced the ornamental there. Their cabbage-plants have often held the place which we would give to the lawn. In our own country there has been a like gradual development. We have excellent soil and climate, and they are, in different latitudes and altitudes, well adapted to a wide variety of vegetables, fruits and flowers. Cities, states and the general government have done a great deal to advance the standard of the garden. Public parks, country-seats, school grounds and public cemeteries have embodied much of landscape-art. Many of our schools and colleges are devoting liberal sums of money to the improvement of ornamental and fruit-bearing trees, small-fruits, grasses and grains. Our government botanical garden has been of great service in introducing new fruits and flowers, while our experiment stations have given us new and better ideas of the kitchen-garden. But not connected with the palaces of the rich or the grounds of public parks do we find the best examples of the garden. These are represented near villages and cities, or even in the country. Large farms are being broken up into small ones, and these in turn into gardens of from 3 to 12 acres. The best examples of the possibilities of our climate and soil are shown in these gardens. More money is made from them than was made from the large farms, and there is far more attention given to scientific investigation and methods. Our ideas have expanded as to what our gardens may contain. The bad dirt roads of the farm are replaced by the good, smooth, well-drained drives of the garden. The long grass of the old-time front yard, on which we used to wipe the mud off our shoes, is now the smooth, close-cut lawn, while good and beautiful walks preclude the necessity of having muddy shoes. Vegetables, fruits and flowers occupy the greater part of the garden, but it need not be limited to these forms. It is the proper place for the bee-house, the fish-pond, the fountain, and the houses for ice and cold-storage. Doubtless the garden is to reach its completed development in this country. Our taste is improving, our population rapidly increasing, and its knowledge of nature grows apace, but the number of our acres is not increasing. This means that farms will be constantly broken into sections. These smaller tracts will of necessity become more fertile, fruitful and beautiful. Such tracts under such conditions are gardens.—*Pres. W. T. Stott, before the Indiana Hort. Society.*

Notes From the Florida Horticultural Society.—The fifth annual meeting was held at Ormond May 2, 3 and 4. The president in his address said the chief work of

the society is to learn (1) how to grow fruit; (2) how to transport fruit; (3) how to sell fruit. The unnatural conditions with which we surround our fruit-trees, and unnatural method in pruning, etc., are the first cause of our trouble with insects and diseases. As advanced horticulturalists, we should direct more of our study to prevent disease instead of causing it, to prevent the propagation of insects and fungus as more effectual and cheaper than killing them. After we have grown our fruit, it must be sold in the market. The production of fruit is a legitimate industry and should have a fair reward. The transportation of fruit to market is also a legitimate industry and should have a fair reward. That one of these should take more than a fair proportion of the proceeds of a crop of fruit is a clear injustice. At present a grower does not get a fair proportion of the money his fruit sells for.

Von Luttichan gave his method of trimming the foreign grape-vine: "Any manner of trimming which involves canes or lateral canes of more than two eyes will result in a barren piece of wood, the terminal eye alone sprouting. All fruiting wood should be close to the main cane, allowing only for space, and new wood should be raised from time to time. Too much wood, or too much fruit, will prove injurious. The vine, trimmed to two good eyes and its roots to about six inches, is set out with the roots two inches below the surface of the ground and covered with some light mulch. So planted, an early growth is prevented and the young shoots have a better chance to escape late freezes in March. When all danger of a killing freeze is over I remove mulch and some little soil, and permit but one eye to grow. When of sufficient size this young shoot is fastened by means of a one-inch copper staple to a stake; I used to have wire for all my vines, but I now prefer stakes for all foreign varieties. The first summer will establish the vine, and is perhaps the most important. Good culture, such as is given to Delaware, is essential. Now the young vine may grow satisfactorily, but it may happen, after a time of promise, that a change from health to a most sickly appearance is apparent. At first anthracnose seems to be the destructive agent, but such is not the case. Close examination will reveal the presence of a small yellow insect of lively disposition, provided with the best of locomotion in the shape of plenty of legs, a good pair of wings, and a sharp pick. This insect, which belongs to the thrips family, does much more harm to every kind of plant than it receives credit for. An old vine will recover from its attack, but a young vine of but one shoot is so hurt that, in the majority of cases, if left alone it will die. A solution of whale-oil soap should be applied and followed by a dusting of air-slacked lime, and in a few days the vine will look as thrifty as before. The vine should grow up on the stake unchecked; I practice no pinching whatever. In December I prune the vine to a length of about one foot, if it be strong enough, and fasten it to a stake in a somewhat twisted position, the better to insure the start of two eyes, as two canes are grown the second summer. December next, one cane is

cut to two eyes, the other to about 12 inches, and fastened, also twisted and slanting. This third summer there may appear two shoots on the spur, perhaps one in the soil, and the two uppermost eyes on the 12-inch arm will sprout. The amount of shoots or canes allowed to grow and to fruit now and in the future will depend on the strength and vigor of the vine. If four canes have grown and fruited this third summer, more can easily be left at the next trimming, and many more will appear as required. The health and future of the vine depend on the judgment of the grower, who should rub off all superfluous shoots, when fruit can plainly be seen; those that appear later should remain. After the third year a new cane should be encouraged to grow near to the ground, and the process of trimming be repeated, with the exception that no fruit should be removed from this new cane. When this new cane has its two eyes growing and fruiting, part of the old cane is removed, and whenever the new cane has attained size and age, the old one is entirely cut away. I do this as soon as fruit is off, not waiting for next trimming-time. Should an old cane appear exhausted and the new one grow tardily, I remove the old cane as soon as the first flow of sap is over.

Vegetable molds and muck were favorably mentioned as fertilizers for Florida orange-growers. "Hauling muck into our groves or gardens," said J. M. Hawks, "is not only a 'harmless amusement,' as it has been styled, but it is profitable as well. Look at those onions, five inches in diameter, on exhibition at the entrance of this hall, grown without any fertilizer but muck. It would pay to haul such muck several miles. Time and money

may often have been wasted in moving a poor quality of muck. Leaf-mold, or scrapings from the surface of the ground in the woods, may be hauled directly into the grove, and spread over the ground and allowed to rot on the surface, or be lightly turned under with a plow, or mixed with the soil by the cultivator. Fresh stable manures should be spread on the surface only, or very lightly covered in. But it is not every orange-grower who has a bed of rich muck, a forest with the ground covered with leaf-mold, a stable, or a barnyard. Some form of the commercial fertilizers must then be used—blood and bone, cotton-seed or linseed-meal for growing young trees, and ground-bone and potash for the bearing grove, or some of the many complete orange-tree fertilizers in the market."

C. A. Bacon gave a list of valuable native fruits of Florida. The wild orange may be utilized for making wine and marmalade, and its numerous seeds for growing the hardiest stocks upon which to bud any of the citrus fruits. The wild persimmon is an excellent fruit when ripened by frost, and the tree a good stock for improved varieties of persimmons. Then there are a number of wild plums, good for certain uses, Wild Goose, May-haw, hog-plum, etc. The huckleberry and blueberry fruit abundantly in certain places. Dewberries grow wild, and could be cultivated with profit. The wild gooseberry grows on bushes six feet high, fruit blue, and the size of a small cranberry. The wild cherry's bark is good for bitters. The prickly pear makes delicious jam and jelly. Wild grapes, elderberries and the scrub-palmetto berry were also included in this list, which seems to promise some good fruits.



HE THAT QUESTIONETH

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following. Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2950. **Elm Tree for Shade.**—I have an elm tree six feet tall; how should it be trimmed and trained for ornament and shade?—O. H., Ohio.

2951. **Elm Tree in a Low Spot.**—A fine old elm on my lawn stands in a low spot which I wish to fill up with earth to the depth of 3 or 4 feet. Would this injure or kill it?—W. L. T., Ohio.

2952. **Dahlias Injured by Worms.**—Large worms or grubs enter the flowering-stalks of some of my dahlias near the root, and destroy the entire heart of the stem. Is there a remedy for this?—H. C. TOWNSEND, N. Y.

2953. **Narcissus Blasting.**—Why do my double narcissus-buds blast? Their seed is large but their blooms are few; some years there are none.

2954. **Ruellia macrantha.**—Would you put them into the ground in summer.

2955. **Summer Treatment of Pelargoniums.**—Plant two years old, having hundreds of flowers; should it be put into the ground during the summer, or kept in pots? When and how should it be trimmed?

2956. **Cineraria-Seed.**—We had many fine plants last season, but only a few of the later ones produced seed. Are bees necessary to fertilize the flowers?

2957. **Primroses not Seeding.**—How can I manage to get seed?—S. L.

2958. **Growing Snowdrops.**—How should I manage my *Galanthus nivalis*?—G. E. D., Mo.

2959. **Treating Lily-of-the-Valley for Bloom.**—I have had a large bed between two large trees for 15 years. Plants grow thrifflily but do not bloom well. What can be done? Should I take them to a new place?—S. T. P., Mass.

2960. **Treatment of Easter Lilies.**—How should they be managed after blooming? Mine die down, and never spring up. In the attempt to repot I never find a bulb.—F. G. W.—Iowa.

2961. **Color Combinations in Flowers.**—I have seen it stated in some of the horticultural journals that all the primary colors are never found in the same species of plants. I am unable to apply this law to the pansy. Will some expert favor me with an explanation?—B. D. E., Kansas.

2962. **Black-Knot on Cherries.**—Are the sweet varieties subject to the disease equally with sour ones? Can affected trees be saved?—S. R., Mich.

2963. **Small-Fruits for N. W. Missouri.**—What varieties of strawberries and black raspberries would you recommend?—MISSOURIAN.

2964. **Tree-fruit for Drying.**—What are the best apples and plums for the purpose?—W. C. B., New Zealand.

2965. **Carman Grape.**—What is its history?—T. H. B., Penn.

2966. **Winter Protection for Strawberries.**—Can any kind of plant be sown on strawberry-beds, say in August or September, to grow a mulch that would die down with freezing weather and thus make a natural protection for them, in same manner as wild ones are protected?—Wm. H. A.

2967. **Strawberry Queries.**—What are the three finest varieties known, early, medium and late, all to be large, productive and showy? When should they be planted and what fertilizer is best? How early can pot-grown strawberry-plants be had from northern growers? Are they superior to layers?—G. D. H., Georgia.

2968. **Pear-tree Blight.**—What will prevent blight on apple-trees? In some localities here the blight kills the trees before they are eight years old.—J. E.

2969. **Pear-Culture.**—Is it profitable, under ordinary conditions, if properly managed? Please give information about the LeConte, Kieffer, Idaho, Lawson and Easter. Can pears be evaporated profitably?—R. W. C., La.

2970. **Young Tree Killed by Mole.**—A vigorous young apple tree has been cut entirely off from the roots underground by some small animal. I am overrun with ground-moles. What animal could have done this, and how can I exterminate the pest? Wm. A., Philadelphia.

2971. **Spraying Mixture for Home Fruit-Patch.**—It would not be prudent to make a barrelful at one time for so few trees and vines. Give formula for making a few gallons, so that I can use it up at one spraying.—Toledo, Ohio.

2972. **Whole Roots vs. Pieces in Root-Grafting.**—What advantage is there in planting apple trees grafted on whole roots?—J. E.

2973. **Fay Currant.**—Our Fay currants are growing on a heavy muck soil, and have a tendency to grow the limbs mostly downward; they look as though they were nearly broken at the joints. What is the cause and remedy?—J. V. L.

2974. **Weaver Plum.**—Is it productive and good to can or preserve?

2975. **More Plum Queries.**—Will the Botan and Weaver do well top-grafted on Lombard? These varieties are the only ones free from leaf-blight with me. How should I treat the others for this disease? How should I manage Mariana cuttings?—C. A. M.

2976. **Richland and Shipper's Pride Plums.**—How do they compare with the Lombard for Ohio as to quality and productiveness?—PLUM CRANK.

2977. **Stocks for Plum Trees.**—What kinds are best?—F. S. W., Mich.

2978. **Underground Fruit-Storage House.**—How should it be constructed?—C. A. M.

2979. **How to Build a Small Greenhouse.**—How should I construct a pit or small greenhouse for keeping plants during winter? I do not feel able to build one requiring a furnace, but would like to use an oil-stove.—Mrs. M. B. McD., Kansas.

2980. **Heating a Lettuce-House.**—If steam or hot-water pipes are used will the lettuce suffer from dampness during the many sunless days? I grow Grand Rapids lettuce exclusively, and have never had any trouble with fire heat? Please give instructions for putting in the pipes, and tell me what to guard against in the general management of such a house.—M. G. Pennsylvania.

2981. **Fungicides and Insecticides on Small Scale.**—What quantities of Paris green and Bordeaux mixture are required for a pallful of water?—W. W. R.

2982. **Snails on Mushrooms.**—Small snails destroy my mushrooms as soon as they appear above ground. How can I exterminate the pest without injury to the crop?—P. G., Conn.

2983. **Making Kerosene Emulsion.**—Will crude petroleum answer for emulsion to kill scale-insects, etc.?—W. C. B., New Zealand.

2984. **Leached and Unleached Ashes.**—Do you call ashes which were dumped outdoors and left in the open air exposed to rains, leached or unleached? Canada ashes are gathered from farm to farm, as rags are.—W. C. E.

2985. **Lime and Wood-Ashes for Potatoes.**—Are they good fertilizers for Irish potatoes?—R. S.

2986. **Culture of Bush Lima Beans.**—Please give directions.

2987. **Growing Onion-Sets.**—How is it done on a small scale?—S. M. McG.

2989. **The New Onion-Culture.**—Give us more information about it.—B. C. R., New York.

2990. **Deep or Shallow Planting of Asparagus.**—What is gained by setting the roots so deep as is generally recommended? Is there any advantage except in the greater ease of cultivation in spring? Do the markets demand bleached asparagus?—C. G. A., Maine.

2991. **Asparagus Growing Crooked.**—What causes the shoots of asparagus to be nearly double or very crooked, so much so that a good share of it is not fit for bunching? The trouble is worst on the side of a sandy hill facing east. The soil does not bake, and has been well supplied with barnyard manure.—J. V. L.

2992. **Wintering Cabbage in Quantity.**—How can I store them for winter so that they can be taken out at any time un-frozen?—A. P. M.

2993. **Weed-Seeds in Fermenting Manure.**—Will they germinate and then die, or will they retain their vitality?—W. O. E., Ontario.

REPLIES.

2620. **Raising Lily-Bulbs.**—Increase the bulb by removing the scales and plant them carefully. Take off 5 or 6 scales every time you lift a bulb. This will not in any way injure the bulb. Also use the bulblets near the stem, which can be taken up without lifting the bulb. The Easter lily has very loose bulbs, and increases rapidly. It is fine and surer to bloom than the Bermuda lily.—Mrs. H. E. SPREE, Texas.

2765. **Cianthus from Seed.**—A. S. Fuller, in *Propagation of Plants*, says: "*Cianthus Dampieri* or glory-pea is a remarkably showy plant from Australia, and thrives only in a high temperature. Seeds should be sown singly in small pots, and the plants carefully shifted into larger ones as they increase in growth, great care being required in the operation to prevent disturbing them or allowing the soil to fall away from their roots. Plants set out in the garden late in spring will usually bloom the same season."

2860. **Spinage-House.**—Near Boston, and near other large Eastern markets, houses are built for the special purpose of wintering spinage. According to the *Massachusetts Ploughman* the usual width of these buildings is 12 or 14 feet, with an alley 2 feet wide through the middle, and shelves 5 or 6 feet wide at each side. They are usually about 6 feet wide at the plates, and 8 or 10 feet at the ridge. The length can be suited to quantity to be stored. The walls should be made tight by placing sheathing-paper under the shingles or clapboards; the inside is plastered or sheathed tightly. If the building is partly under ground, such parts should consist of

stone walls. No windows are needed, as lanterns give all the light required for storing or taking out the crop. The shelves are 16 inches apart, and made of 6-inch fencing-boards, laid loosely upon their supports, with air-spaces of an inch or two between the boards. The spinage is piled loosely upon the shelves ten inches deep, beginning with the lowest shelf; when this is full, place the boards for the next shelf and fill it, and so on to the top. The house should be provided with two ventilators 12 inches square, for every 30 feet in the length of the house. These ventilators are built of pine boards, one of them opening into the upper part of the house near the ridge, the other being carried down nearly to the floor; they are provided with valves which can be opened wide in cool weather or closed when it is warm, the object being to keep an even temperature near 32° to 40°. In a long period of warm weather the spinage is pretty sure to spoil. It should not be put into the house for storage till late in the fall, being left out usually till there is danger of freezing the ground, about November 10.

2864. **Drying Figs for Market.**—Figs for drying should be first dipped in strong lye, made from hickory or oak ashes, to correct the acidity of the skins. Then rinse them in clean water, and dry them in any of the various evaporating machines. When dry pack them tightly in boxes. We are satisfied that there is a great field for profit in the south in preserving the figs in syrup in the good old-fashioned way (after treatment with lye as above), and putting them up in attractive glass jars with neat labels. We are still enjoying almost daily the figs put up in this way last summer, when they could be had here for 75 cents a bushel. If such preserves were only known in the northern market, they would sell well, and a rich source of income be opened for southern ladies of taste, skill and pluck—WM. F. MASSEY, N. C.

2869. **Hardy Roses.**—Hardy roses, including hybrid perpetual, June and yellow roses, do best in deep, cool, rich soil, in beds exposed to light and air but not to sweeping winds. The soil should be made fine and mellow to a depth of 20 inches before planting them. The rose-beds should be dressed annually with some good compost—half decayed grass-sods and half well-decayed fertilizers, or bone-meal with sods, is good. Autumn is the best time for applying the compost. Hybrid perpetual roses should be pruned every year, either in autumn or spring. Remove weak and dead wood and cut back last year's shoots to 3 or 4 eyes. Tobacco-stems scattered under the plants is a good remedy for thrips, and fir-tree oil is sometimes used. Mix one-fourth of a pint of oil with 2½ gallons of water, stir it well and syringe the plants with it.

2875. **Amaryllis vittata not Blooming.**—Plunge the pot with the amaryllis in it outdoors in full sunshine and let it take its chances until fall. Then place it in the greenhouse under a bench, and keep it dry until it pushes new growth. Then set it close to the glass, and

give it weak liquid manure once a week, after watering with clear water. Keep it rather pot-bound.—W. F. MASSEY.

2882. **Root-Grafting Wier's Cut-Leaved Maple.**—If done on seedling roots in winter under glass just as roses are grafted, there will be no difficulty. But budding at standard height is usually better.—W. F. M.

2896. **Grasses for Orchard and Forest.**—Use orchard-grass, tall meadow-fescue (*Festuca elatior*), and Kentucky blue-grass. Keep grass in an orchard mown like a lawn, and let it lie to mulch the trees' roots. A correspondent recently asked how soon after spraying an orchard it would be safe to allow stock to eat the grass? We say, never. An orchard should be kept in grass for the benefit of the trees and not for hay or pasture. Give the whole surface an occasional dressing of bone and ashes. Keep stock out, and run a mower at frequent intervals. Don't expect anything from an orchard except fine fruit and you will not be disappointed. Proper culture in grass is the best thing for an orchard; making a hay-field or a pasture the worst.—W. F. M.

2911. **Work on Botany.**—Among the best standard works are Gray's and Wood's manuals.

2912. **Aucuba Japonica.**—This is a free-growing evergreen shrub from Japan, and hardy in the New England states, the variegated form only being somewhat tender. They endure better than most other shrubs the smoky atmosphere of large cities, and grow in ordinary well-drained garden soil, requiring no special culture. If planted in pots, they should be given plenty of drainage and potted firmly in rather sandy loam. They like an abundance of water during the growing season, but need much less after they are fully developed. If cultivated in greenhouse or conservatory they should be plunged outdoors during the summer. To insure a supply of the very ornamental berries, some special pains to provide pollen or fertilize the female flowers is necessary, as the male and female flowers are borne on different plants, and the pollen does not always mature at the same time that the pistils are receptive.

2947. **Cytisus laburnum in Shade.**—This cytisus is ordinarily a free-blooming plant, hence its indisposition to bloom in your case may reasonably be laid to the presence of too much shade.

2948. **Grapes Under Glass.**—For a cold graperly I have had excellent returns from the following list of varieties: Black Hamburg, Black St. Peters, Black Prince, Mrs. Prince Seedling, White Nice and White Syrian. The Hamburg constitutes about one-third of the whole number of vines in the house. The St. Peters and Black Prince have no superior qualities over the Hamburg save that they are sometimes of better color. From lack of proper ventilation above and below when ripening, or from over-crossing, the Hamburg is very apt to color badly. This list will give a good succession of fruit. The Hamburgs come in first, followed in about two weeks by St. Peters, Black Prince and Mrs. Prince Seedling—the white sorts and St. Peters hang late. For

a forcing-house the following will be found an excellent list: One-half Black Hamburg, remainder made up of Duchess of Buccleugh (white), Muscat of Alexandria (amber), and Golden Hamburg. I have now a house filled with vines from this list, and would ask no better. I have been cutting Hamburgs since May 1 from house closed December 1, with later varieties to follow in excellent condition.—R. G. MILFORD, N. C.

2950. **Elm Tree for Shade.**—We do not believe in trimming an elm or any other tree out of its natural style of growth. Keep the trunk clear from brush to a height of 8 or 10 feet—higher if on the street, lower if on the lawn. Do not touch the top of the tree with knife or saw except to remove branches that are dead, too close together, or such as would cause the tree to be evenly two-forked, which is objectionable.

2953. **Narcissus Blasting.**—The fault must be at the root. Perhaps the soil is too wet, or is sour; or possibly the plants should be divided and reset; or they may be encroached upon by other growths.

2854. **Ruellia macrantha.**—The pot in which the plant is grown may be plunged in the open ground to the rim in some spot not too much exposed to the sun. Angleworms entering the pots may be guarded against by setting a smaller empty pot directly beneath the one containing the plant, the latter resting on the upper rim of the empty one.

2955. **Summer Treatment of Pelargoniums.**—It is better to keep the plants in a cool part of the greenhouse than to take them from their pots and set them in the garden. Shade the glass above them and water them but little for several months after they have bloomed. Then cut them back, shake the soil from their roots and repot with a fresh, fertile compost.

2956. **Cineraria-Seed.**—Without doubt the bees entering the greenhouse were helpful in carrying the pollen from flower to flower. Many plants under glass will not self-fertilize.

2957. **Primroses Not Seeding.**—The trouble undoubtedly lies in imperfect fertilization of the flowers. Try distributing the pollen with a camel's-hair brush when the bloom is at its best.

2958. **Growing Snowdrops.**—The bulbs must be set in the fall, say in September. They may be bought very cheap at the seed-stores. Plant them in any ordinary garden soil that is drained, and cover them about two inches deep. Set about three inches apart.

2960. **Treatment of Easter Lilies.**—After bloom ripen the growth thoroughly by standing the pots outdoors after the hardest frosts are past. Later on plant the balls of earth from the pots in the garden. The same bulbs are not good for forcing a second time. After several years the young bulbs around the parent bulb will, in good sort, have developed sufficiently to answer for forcing.

2961. **Color Combinations in Flowers.**—It is an old notion that the red and blue series (the cyanic) and the

yellow and orange (the xanthic series) never occur in the same species, or even in the same genus. Although this idea is now known to be erroneous, it is nevertheless true that the two series are not often seen in combination. When they do occur together, the colors usually lack the purity of typical representatives of the series.—L. H. BAILEY.

2962. **Black-Knot on Cherries.**—Sweet varieties are less subject to the attacks of the disease than our sour kinds. The trees can usually be saved by the prompt removal and destruction by fire of all limbs showing signs of knots.

2963. **Small Fruits for Northwest Missouri.**—I find after several years' trial the following varieties of strawberries do the best in this section: Bubach, Capt. Jack, Warfield, Haverland. The Huntsman is the best berry for canning I ever grew, and good in all other respects. Among black raspberries, the Tyler for early, Ohio and Hopkins for medium, Nemaha for late. All are sure cropers when properly cared for.—W. A. HUNTSMAN.

2964. **Tree-Fruits for Drying.**—Hard, solid winter apples, such as Greenings, Baldwins, Ben Davis, etc., are best suited for drying purposes. The flavor of the dried article of course depends on the flavor of the fresh apples. The various prunes are best for drying.

2966. **Winter Protection for Strawberries.**—The Crimson Clover might answer very well, but for the purpose of a much we would prefer oats, which makes a heavier, quicker growth in the fall.—E. S. CARMAN.

2967. **Strawberry Queries.**—The varieties which are "best" for you, are the ones best suited to your soil and location. Find out what are the sorts with which your neighbors are most successful. Try also Parker Earle and Bubach. Fall planting will probably be preferable for Georgia. Start your plantation as soon as you can get plants, which will probably not be until August, and even then you may have to pay an extra price to get them, as growers do not like to take up plants so early. Wood-ashes and old compost are good fertilizers, but any high-grade complete manure can be used to good advantage. Ordinary layer-plants will probably answer your purpose just as well as the high-priced "potted" plants, which in some instances are nothing more than layers taken up with a ball of earth squeezed together to give the appearance of coming out of a pot. If you pot off the layer-plants as soon as received, and nurse them for a while in a somewhat sheltered position until they have taken good root, you will have "potted" plants far superior to many that you could buy.

2868. **Pear-Tree Blight.**—The blight which you mention is undoubtedly the pear-tree blight, which is often very bad on apple-trees, particularly in the northwest. There is no remedy known except to cut off and burn the blighted portions as soon as they appear. Cut a foot or so below the lowest visible injury.—L. H. BAILEY.

2969. **Pear-Culture.**—The LeConte, although of little value for the north, will probably be most profitable for

you. Idaho has not yet been sufficiently tested, but is promising. Some people make pear-growing very profitable, while others make a failure of it. It depends on the man, and on judicious selection of location, soil, varieties, etc.

2971. **Fungicides and Insecticides on Small Scale.**—Spraying the few trees and plants in the home-garden is usually somewhat inconvenient on account of the small quantities of the mixtures required. People dislike to "fuss." Sooner or later we shall have professionals who will do such work by the job, relieving the home-grower, for a small consideration, of all anxiety in this direction. But until some enterprising person in each town or neighborhood provides himself with all the necessary apparatus and offers his services as a bug and fungus-fighter to the townspeople, every man will have to do his own spraying. The preparation of the ammoniacal solution of carbonate of copper is simplest, if you get a quart can of coppertine. This is enough to make 28 gallons of spraying solution. So if you need a "bucketful" at a time, or say three gallons, measure about one-ninth of a quart of coppertine and mix it with the three gallons of water, not forgetting to screw on the top of the can again closely. If you want three gallons of Bordeaux mixture, dissolve six ounces of sulphate of copper in one gallon of hot water and four ounces of fresh lime in two gallons of cold water. Afterwards pour one solution into the other; and if you wish to use this as an insecticide also, add one-sixth of an ounce of Paris green.

2972. **Whole Roots vs. Pieces in Root-Grafting.**—The question of the relative merits of whole and piece-roots is not yet settled. It is supposed that whole roots give a stronger and more symmetrical root-system. But for the northwest, piece-roots are usually preferred because they allow of the use of a long scion which can be set deep and finally become own-rooted.—L. H. BAILEY.

2973. **Fay Currant.**—The downward or sprawling propensity of the Fay currant is natural to the variety, and a decided objection to it.—E. S. CARMAN.

2977. **Stocks for Plum Trees.**—We heard S. D. Willard, one of the best authorities on plum-growing, state that his first choice is the horse-plum. Seedlings of this are, however, difficult to obtain and grow. The myrobalan makes a good stock. Mariana, which can be increased from cuttings, is now being much used, especially by southern nurserymen.

2980. **Heating a Lettuce-House.**—Lettuce forcing-houses are now generally heated by hot-water pipes, and growers have no fear of the dampness. In reality there is not so much difference in this respect between hot-water or steam pipes and flues. The dampness is inside the pipes, and the drier heat of the flue comes chiefly from its greater degree of heat. Any man of ordinary mechanical ingenuity will have no trouble to put in the pipes, etc., after they are cut of proper length and otherwise properly prepared.

2981. **Fungicides and Insecticides on Small Scale.**—See 2971.

2982. **Snails on Mushrooms.**—Try sifting fine lime or unleached wood-ashes over the beds. This will probably give relief.

2983. **Making Kerosene Emulsion.**—We always use the ordinary refined kerosene, which here is so cheap that there is no inducement to use the crude article. We know no reason, however, why crude petroleum should not answer.

2984. **Leached and Unleached Ashes.**—Unleached ashes do not improve by being left outdoors. Even contact with the bare, moist ground, without rains, will draw out some of the potash. If exposed to heavy rains ashes will part with a good share of their potash, and in the end be nothing better than leached ashes. All depends on time of exposure and amount of rainfall. The prevailing method of gathering Canada ashes, namely, "from farm to farm, just as rags are gathered," accounts much for the great variation found in the strength of those ashes, and for the undeniable fact that some of them have a low percentage of potash. In other words, Canada "unleached" ashes frequently are partly leached.

2986. **Culture of Bush Lima Beans.**—The Henderson is grown almost as easily as any ordinary bush-bean. Use the richest and warmest soil you have available for the purpose, and plant in rows three feet apart, afterwards thinning the plants to stand 6 or 8 inches apart in the row. Give clean and frequent cultivation. This bean is much earlier than Burpee Bush Lima. The latter must be planted as soon as the ground becomes warm, or, better, started in pots or on inverted sods under glass or in the house, and planted out when the ground is warm enough. The ground should be *very* rich; otherwise don't look for much success with the Burpee Bush Lima or the Kumerle or Dreer either. Burpee Lima makes a stout but top-heavy bush, and is subject to breakage by heavy winds. Our practice is to set a small stake to each plant. Hoe frequently.

2987. **Growing Onion-Sets.**—Seed should be sown early, in fairly rich but clean sandy soil. Use plenty of seed, say one ounce to each 50 feet of row. Cultivate and weed as you would ordinary onions. Take up when ripe, and clean from dirt, etc., by sifting. Use Round Red for red, Silverskin for white, and Yellow Dutch for yellow.

2989. **The New Onion-Culture.**—We give some additional information in our Notes from the Editors' Grounds. As new points develop, they will be reported.

2990. **Deep and Shallow Planting of Asparagus.**—We like to have our plants reasonably deep. The tendency of the crown is to come nearer the surface of the soil from year to year, and we want it deep enough to be safe from injury by hoe and cultivator. Personally we prefer bleached "grass," if grown as it should be. Some buyers also prefer it, and are willing to pay an extra price for it. Others condemn the bleached grass and claim that the stalks above ground are tenderest. There is, however, little mystery about this. Every stalk is tough for 2 or 3 inches next to the crown. This part is not fit for use, and should be left or thrown away. The very choicest asparagus is the young, tender head, when only a little above ground.

2991. **Asparagus Growing Crooked.**—The buds or shoots of asparagus-rootstocks, like those of some other liliaceous plants, are often close together, and grow together—become grafted as it were, forming a double stem. We do not know that this can be avoided. The crooked stems are owing to obstructions which the shoots meet in the soil. These obstructions are often—generally, indeed—the old stems left from the previous season's cutting. The remedy is to remove these stems by cultivation before the shoots begin their growth in the spring.—E. S. CARMAN.

2993. **Weed- Seeds in Fermenting Manure.**—The popular idea is that weed-seeds are killed by the heat. You think that the heat merely causes the seeds to germinate, as barley in malting, and thus are deprived of their vitality; while the editor of the *Weekly Times* proclaims that seeds will not start to grow in the manure of a hotbed because they need air. Probably you all are wrong. Seeds in that part of the manure which is in active fermentation (hot), are killed outright, and will soon rot. It is not the heat that destroys their vitality, but the ammonia. We have not yet found the small seed that will stand exposure to as much ammonia as is found in heating manure, and live, although we have tried seeds of a number of cultivated crops, and also of weeds.

2985. **Lime and Wood-Ashes for Potatoes.**—Wood-ashes, used in moderate quantities, are a fine manure for potatoes, especially if some superphosphate is added to them. But why use lime? The bulk of the ashes is nothing else but lime, and we can see no necessity for adding more of it.





ON THE BRONX RIVER, IN THE NEW BRONX PARK, NEW YORK.

American Gardening

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THE REVELATION OF A BIT OF ROAD.

A TRANSIENT AWAKENING.



ONE of the numerous phenomena of mutation are more surprising than the striking contrasts in the changing moods of one's own mind. It is indeed a strange omniscience which decrees that the same external conditions shall yield us at one time gloom or grief, at another time blessing and happiness. The same

sun on the same water or fields, will one day wear a smile and another day cast a look of deepest sadness. But let us chronicle one of the fortunate experiences.

There is a bit of road that leads from the railway-station, for a distance of some two miles, up to the house where I now stop for awhile—the mundane fortress which is crowned with the name of home. This road is not strikingly broad nor of pretentious appearance, but it sets off determinedly for the hills, climbs a ridge and winds along upward and northward.

It is a good, promising road where it passes my house, and, though I have not explored it for many miles beyond, I should not wonder if it would eventually lead as near to the North Pole as one could travel by land on this continent, before it "ends in a squirrel's track and runs up a tree."

It happened that I was walking homeward the other day with a heart unusually light, and I soon noted that the familiar old road had suddenly become voiceful, con-

fiding and intimate. Memory had put on her winged sandals and ran on before to awaken every commonplace object, make it show its best face, and tell its choicest story. It was not merely that the sun shone good-naturedly, and that the greening sod exhaled its grateful scent—that birds were waging a pretty contest of sweet sounds, and that the cows looked happy and sanguine in the fresh pastures. There were, indeed, knowing looks in the blossoms by the way, as if the violets and dandelions, occasional blood-root and hepatica, knew the secret of the day but would not give me the countersign. No, it was merely, as I believe, that

the dust-clouds of contending, earthy strife had separated temporarily and allowed to fall through the rift a beam of the light that never was on land or sea. It was one of the occasional harvest-days of life when we come into our heritage and gather in the crop of experience.

All at once everything was significant. The world was fashioned just as it should be, and not a blade of grass ought to be changed, not a stone should be turned. The brook,

coming down the rocky gorge, and fringing the swale of the meadow, was as charming a stream as ever met the eye of Chaucer. It was worthy to listen to the footfall of Izaak Walton; it was even as potent of mythologic fancy, as suggestive of glistening visions of fleeing loveliness, as if it were flowing to the blue Ægean instead of to the Sound. As for the plying vessels, whose white pinions kept low flight against the dark blue of Long



"THIS ROAD SETS OFF DETERMINEDLY FOR THE HILLS."

Island, they brought no suggestion but that of holiday and carelessness. Each carried a happy thought for freight, a crew of Arcadians, and a helmsman who was

Can it not be imagined that this dusky skirmish-line of humanity in this western land may appreciate in its "happy hunting-grounds" the grim heroism of being exterminated that civilization may advance over their bodies?

Ah, here was the house where the little mischiefs once used to fling stones at my horse from behind the wall as I drove by. How could I ever have been vexed at such natural exuberance of youth? It probably taught me a good lesson! Here comes a man who is almost continually sour-faced. I drop him an easy salutation, and he smiles, and, to my surprise, replies pleasantly. There must be a reserve of good humor in everybody.

There was crape on the door at the next house. Still it seems natural and proper enough that

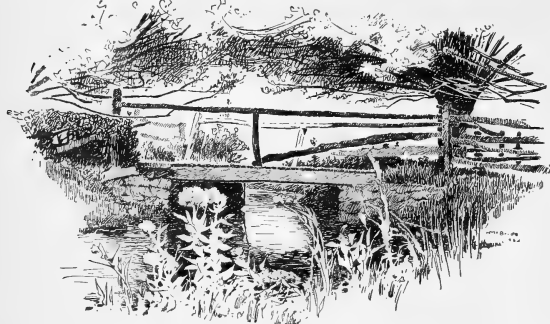
choosing his favorite path out of the whole universe. But, in short, the spell was on everything. The cows were posing for Rosa Bonheur, the horses had arranged a study for Schreyer, the brook had hung out an invitation for Richards, the woman in the bright shawl by the well was waiting impatiently for Meyer von Bremen, and one only wanted a frame and the signature of Millet to feel complete ownership of the men and oxen drawing stone to build the wall in the neighboring field.

So, as I swung along, I found a new interest in the houses. The chances of the brown-eyed daughter of the professor in the village being married to the blue-eyed son of the farmer up the road offered a most interesting field of speculation, compared with which new oil-wells or gold-fields were not to be considered. In this little wood-colored cottage I knew a young married couple had lately settled. What possible reason could there be why they should not be as happy as Adam and Eve on Paradise's first holiday? Was Eden blessed with a sweeter air? And how could they help loving each other? Absurd to doubt it! How they would laugh at me!

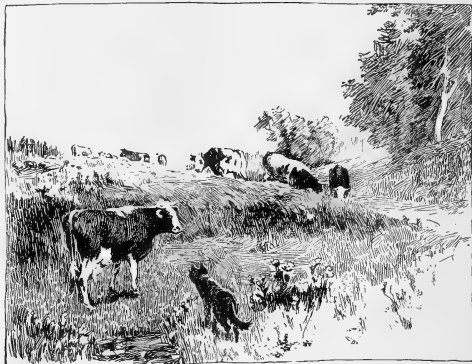
The horses hereabout all stop to drink from a roadside spring at the foot of the hill on the left. This hill was a rallying-place for the tribe of Indians who lived in this region and who gave the name to our road. Their flint arrow-heads and tomahawks lie under the sod now; but how they would disturb one's reflections if they should come whistling down from that cone-shaped hill! Will the Indian question be a vexed one in the land where the good Indians go? Will they be cheated out of their reservations? Or are the aboriginal chiefs satisfied with being annihilated?

people should die—a kind of promotion. They have earned their rest and must now be enjoying this same rare weather, whether their spirits wander carelessly over the earth or their bodies thrill where they lie with the passive joy of the awakening soil. The little neglected graveyards here and there have their full share in the holiday scene.

The sun dies in the west, and the light in the little alcove reaches out down the road to me and shortens the last half-mile of the road home. A long road will grow somewhat tiresome even when it is enchanted, and it is right pleasant to receive an unexpected lift. Such a one



"THE BROOK FRINGING THE SWALE OF THE MEADOW."



"THE COWS WERE POSING FOR ROSA BONHEUR."

I will always remember gratefully. A man gets a new good opinion of the world when he at last tires out by the way, and staggers, sick, to the roadside, if a stranger

overtakes him, procures horse, wagon and willing driver at the nearest house, and lands him safely at his destination. There is a pleasant luxury in being cared for when we cannot longer care for ourselves.

Meanwhile the world plods on along its familiar roads and finds duty a sufficient lure, necessity often a prime motive for action. The enchanted days do not come often, and it is on an average, after all, a kind of humdrum world. The poets may scurry around across lots and talk of birds and flowers, but the main army must for the most part, particularly on week days, keep to the

dusty highway. But to each one, sooner or later, comes the magic weather! While others are plodding in sand or mud he walks on clouds and is made prince of a world of beauty. Soon he finds that his own prosaic mill-round is a homeward-path. The stones turn their soft faces toward him. The pesky trials are transfigured into blessings. The little, neglected flowers wear an "I-told-you-so" smile. The light reaches out from the roof-tree as the sun sinks; and the homeward road finds its own pleasant ending.

Conn.

C. H. CRANDALL.



CHARACTERISTICS OF SOME COMMON PLANTS.

PARASITES AND ODDITIES.



CURIOUS forms of plant-life, familiar, yet unknown to the careless passer-by, wait all along the way for that first out-reaching tendrill of interest which once attached is sure to be followed by study and recognition. Strange how much of beauty we find in these common plants when once our interest is awakened. In this paper are noted some not at all rare but specially interesting ones found

in a single season's work, and, with one exception, within a few square rods on a single piece of waste ground.

Notwithstanding the common prejudice against parasites, even among plants, it cannot be denied that they are more interesting than ordinary normal growths. Possibly the best known of all, by name, is the Indian-pipe, or *Monotropa uniflora*. This is a parasitic herb, quite common in woods in both Canada and the United States yet, coming as it does, at mid-summer and later, it is often unobserved by many who have a real interest in our wildings. Many woods furnish little of general interest after the early months. Though thronged with childish seekers after arbutus and liver-leaf, blood-root and trillium, they are deserted after these flowers have had their season. The season of the true Indian-pipe is given as from June to September, it being most plentiful in this latitude early in the latter month. I have found it in good condition, however, in close woods, well into October, and after somewhat heavy frosts. It seems to like best those hollows where the dry leaves lie thickest, and its pipes may often be seen pushing up a heavy blanket of them. The name *uniflora* refers to the fact that but one flower appears upon a single stalk, but the flowers are nevertheless very sociable, and often rise in clumps, sometimes 30 or 40, in neighborly grouping.

The tender succulence of the stem and scale-like leaves renders the plant very susceptible to bruising, which causes it at once to turn black. It also turns tawny, and blackens on the margins as it ages or matures. Probably this accounts for the description which some botanists give it, of being "a dirty white in all its parts." This is hardly fair to so beautiful a plant; it lasts for some time in the perfection of waxy white transparency. When plucked it loses its beauty almost before you lose sight of its wild home, but it can be lifted in clumps with the roots (exceeding care being taken not to bruise it), and if placed in a glass vessel with a little water or some well-dampened moss, it will form a unique and delightful mantel ornament, lasting for several days. It combines beautifully with the "squaw-berry," both in fitness of idea and in fact; and an arrangement of the two may well be designated a "peace-offering." The pipe-like form is entirely lost as the plant matures, for its rounded pods full of innumerable fine seeds stand erect.

At about the same season that the Indian-pipe throws up its first scattered blooms, presaging the wealth of later effort—that is, in June or July, sometimes even in May—may be found in drier situations a plant which is oddly like the *monotropa* in many respects, and which has the same specific name of *uniflora*, yet which belongs to an entirely different order. This is *Aphyllon uniflora*, also called naked broom-rape. Although the broom-rape family contains something like 120 species, all said to be parasitic, our standard botanies describe but five, two of which are aphyllons; this genus, like *monotropa*, having both a single-flowered (sometimes twin-flowered) and a clustered-blooming species. Unlike *monotropa*, however, the aphyllons have no leaves. *A. uniflora* grows in dense clumps, sometimes aggregating hundreds of flowers, rising from a base of scales, and the whole plant is downy, and of an odd, pale purplish pink color. The flower is nodding, like that of the *monotropa*, but the

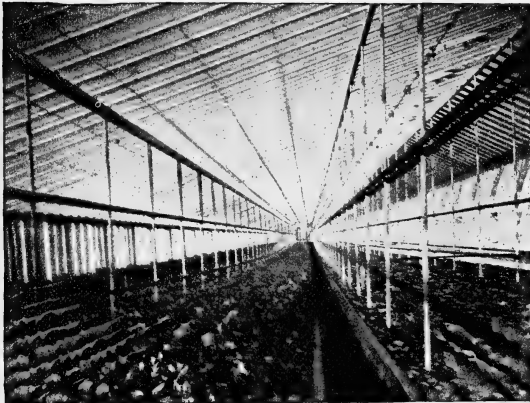
blossom has a curved tube with a slightly irregular border, and might remind one of some members of the mint family so far as form is concerned.

In beech woods in season with the later Indian-pipes, and sometimes occupying the same ground with them, is found another curious form of plant-growth, popularly known in some parts of the country as "beech-drops." Reference is often made to the uncertainty of popular names as a means of identification of plants; here we have an example of it. The plant in question differs from the "Carolina beech-drops," from the "Albany beech-drops," from the "false beech-drops," and from the "beech-drops" of the writer's childish desire, which last were merely the young beeches in the seed-leaf stage. The beech-drops, *Epiphegus Virginiana*, derive their name from the fact that they are parasitic on the roots of

ward and westward. The stem is angular and furrowed; the veins on the under side of the heart-shaped leaves become ribs, and the "tail" consists of a densely flowered spike, weak and bent, or drooping near the top. The white flowers having neither calyx nor corolla, are made up of the ovaries, fringed with the stigmas and stamens, and surround the stalk closely. *Saururus cernuus*, as it is formally known, occupies, as given in our botanies, an order by itself.

Few plants please the popular taste for something a little out of the common order better than those which show a sensitive disposition, and the mimosa, or sensitive-plant of the catalogues, is somewhat frequent in collections. This is a native of tropical climates, but the pea family furnishes several other species of sensitive growths, wild in the United States, which are of delicate appearance, having leaflets in pairs.

One of these, *Cassia nictitans*, known as the wild sensitive-plant (in distinction from another of the same genus known as the sensitive-pea), is common in dry sandy places throughout the coast states from Massachusetts to Louisiana, especially south. The small, pale yellow flowers are almost sessile, and set in bunches of two or three. The leaflets are thickly set along the common petiole. They close at night and when touched, although not irritably sensitive. The sensitive-pea is found in similar situations, in Massachusetts and the middle, western and southern states. It is called a really handsome plant, with bright yellow flowers sometimes reaching a breadth of one and one-half inches, and why should it not aspire to a place among "elegant" wild plants? The two upper petals show a purple



A FIELD UNDER GLASS. (See page 453.)

the beech, although they have the appearance of growing independently from the ground. The peculiar flowers of two kinds, one of which opens but is fertilized in the bud, are borne all along the stem, which is often a foot high and much branched. The whole plant is of a dull, reddish brown color, smooth and shining. It is usually more or less stiff and has little grace. As the plants dry and remain where they bloom, they are often a source of wonder to uninitiated wood-rangers. The rigid bunch of brittle rootlets is also an odd formation. The *epiphegus* is related to the *aphyllons*, before noticed, belonging with them in the broom-rape family, and to the order *orobanchacææ*.

A plant, not a parasite, yet one which children are apt to notice, and which appeals to them because they so readily grasp the application of its popular name, lizard-tail, is common in marshes and wet places along the edges of ponds and sluggish streams from New York north-

ward to the season of bloom is August.

The convolvulus family, best known, doubtless, through its common representatives, the morning-glory and the sweet-potato, includes a curious, wide-spread genus which is leafless, parasitic and twining, yet which germinates in the ground. Although in many parts the plants of this genus are well known, its odd characteristics may be seldom noted. The genus is *cuscuta*, called familiarly dodder, of which something like a dozen species engage the attention of our botanists, although there are perhaps 50 in all. Should we closely observe, in its season, a single species, the one most common both east and west, and the only one in the northwest, we should find that while the soil nourishes it at first, it soon seeks and embraces some coarse herb near at hand, and severs its connection with the ground by withering at the root. Its bright orange stems bind with choking tenacity, and have been compared to fine, wet catgut. The white

flowers bunch and pile themselves, often into heaps and sometimes into spirals, along the line of the stem, investing a tall golden-rod, perhaps, with clusters of white berries, and twined white and orange stems throughout its whole length. It delights in damp or shaded places, and belated specimens may sometimes be found there as late as October. Some species of dodder are partial as to the kind of plant which they woo, one so much so as to be very injurious to flax, but the common species takes what nature provides nearest at hand. The finest specimen I have ever found was twined upon the stout, juicy stalk of a tall jewel-weed, and thrrove famously thereon. The blossoms were about twice the ordinary size, and some of the great bunches of crowded bloom and fruiting ovaries were several inches in breadth and from one to two inches in depth.

Still another odd plant-form, with little beauty, has its place in the goosefoot order. This is *Salsola Kali*, or saltwort, so called because the plants contain much

alkali, their habitat being near the salt water from Canada to Georgia. The first glance at the awl-shaped, spiny leaves and branching habit of the plant gives the impression that it is a relative of the thistle; but a closer look shows that the plants are of a brighter color, stiffer, and that instead of composite heads of bloom like the thistle, they have a peculiar flat, green, scale-like, axillary formation that does duty as a flower, and develops into a pinkish, wing-like border to the fruiting calyx. The seed, if examined with a small glass, shows an embryo coiled like a snail-shell—a perfect ivy spiral. In the notes on plants and flowers of the Bible given in the Oxford editions, this plant is mentioned in connection with the word translated "sope." The soap of Palestine was made, from time immemorial, of olive-oil and potash; the potash was produced from the alkaline plants along the salt sea-marshes. The botanical name of the "sope-plant" is given as *Salsola Kali*.

New Jersey.

C. S. VALENTINE.

FIELDS UNDER GLASS.

LETTUCE GROWN BY ENERGY AND ELECTRIC LIGHT.



SOME of the largest forcing-houses in existence are to be seen at W. W. Rawson's, at Arlington, near Boston. Mr. Rawson is an energetic market-gardener and he prides himself upon taking advantage of every improvement which can in any way advance the pleasure and profit of his business. He has an enormous area devoted to the growing of winter crops, chiefly lettuce. Thirteen houses are devoted to this crop, and one of them covers nearly one-third of an acre.

This great house was built last year at an expense of \$5,000. It is so large that the ground inside is plowed with steam. It is 33x370 feet in outside dimensions, 15 feet to the ridge, 3½ feet high on the south or lower side, and 12 feet on the north side. The illustrations (pp. 452, 453, 454) show the interior and both sides of this glass-covered field. The size of the glass panes is in keeping with the proportions of the house, being 20x30 inches. This glass is double-thick, No. 2 quality. In such houses as this Mr. Rawson finds that crops can be more easily grown than outdoors. The dimensions allow of easy movements on the part of the workmen, and the body of air is so large that it remains in a comparatively uniform condition, there being few drafts. Such a house is simply an enclosed field. The plants grow in the nat-

ural soil, three to four inches being removed every year or two as it becomes somewhat worn or infested with germs of fungi. One does not feel that he is in a greenhouse as he enters this lettuce garden on a December day, but rather that he is suddenly transported to June.

From this great house Mr. Rawson takes at one crop 2,000 dozen heads of lettuce, and the heads are twice the size of those which we ordinarily see on the market. This crop returns from \$1,000 to \$2,500, according to the time of the year when it is ready. All the houses are



THE NORTH ELEVATION AND THE ELECTRIC LIGHTS.

supposed to grow three crops of lettuce and one of cucumbers during the year. The first lettuce crop is taken off just before Christmas, the second from February 14 to March 1, and the third about April 1. Then the cucumbers—White Spine—are started, and another crop is off

by September or October, in time to give room for the winter-lettuce. In all the houses steam heat is used. Hot water is not applicable to such large plants, and it is not sufficiently manageable for lettuce.

Mr. Rawson was probably the first to use the electric



THE SOUTH ELEVATION, AND THE VENTILATORS.

light for the commercial growing of plants. His attention was called to the subject by observing the beneficial effects of street-lamps which hung near his houses. These observations by Mr. Rawson were largely instrumental

in provoking the serious study of the subject at Cornell University. He now runs three 2,000 candle-power arc-lights all night throughout the winter for the sole purpose of hastening the growth of lettuce. These lamps are shown in one of the illustrations. Mr. Rawson declares that these lights hasten the maturity of lettuce by 20 per cent., and says that the gain produced upon one crop pays for running the lamps for the entire winter. He calculates that there is an average gain of five days for each crop, or a total saving of fifteen days during the winter. He also says that the plants head up better under the light, and that the quality is superior. The effect of the light is marked at a distance of 100 feet from the lamp. One need only to visit

these houses in order to convince himself that here is the acme of winter lettuce-cultivation in which the electric light plays no small part. It will probably become a prime factor in vegetable-forcing. L. H. B.

ORCHID-BASKETS.

HOW TO USE THEM.

In *THE AMERICAN GARDEN* for 1890 (page 99) a number of very fine and convenient orchid-baskets were described and figured. I inquired of different firms for these baskets, but could obtain only the common square form. The price was also too high to recommend them for general use. At last I succeeded in inducing John Moninger, Hawthorne avenue, Chicago, to manufacture these baskets in all the forms figured in *THE AMERICAN GARDEN* and here republished, in large quantities and for a reasonable price. Instead of manufacturing them of pitch-pine, Mr. Moninger uses cypress, which is almost as durable as red or white cedar. I have these baskets now in use, and the plants grow admirably in them. In ordering them it is only necessary to give the number and size, according to the above-mentioned article in *THE AMERICAN GARDEN*.

The square basket (fig. 1) is the best and cheapest for general use. It is very strong, durable, and of neat appearance. Instead of using pots for epiphytal orchids,

baskets ought to be used invariably, as the plants look much more natural and beautiful in them than in the unsuitable pots, which are, on the outside, usually covered with ugly green algae. These square baskets are admirably adapted for cattleyas, lœlias, dendrobiums, oncidioms and odontoglossums, and most of the epiphytal orchids. A similar basket, but of twice the height, should be used for the East Indian orchids, such as aërides, angræcums, vandas, phalænopsis and saccolabiums.

Fig. 2 is of cylindrical form, and particularly adapted to phalænopsis. Fig. 3 is of double octagonal form, and, although somewhat expensive, is very suitable for epiphytal orchids, but is especially used for strong plants known as specimens. Fig. 4 is a round basket with copper wire bottom, through which the subterranean flower-spikes of the stanhopeas, and acinetas can easily find their way.

The hamper and log forms (figs. 5 and 6) are excellent substitutes for the heavy and unsightly pieces of wood



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.



FIG. 6.

and bark on which orchids are so frequently grown. Cattleyas, lælias, dendrobiums and other orchids of spreading growth do well in the log form. Fig. 7 shows the hopper, fig. 8 the manger form. These can be hung to the walls and filled with orchids or other epiphytal plants, such as *æschynanthus*, ferns, etc. The pot forms

specimen plants (10x15 inches and 12x18 inches), which is especially adapted for large cattleyas and lælias.

Besides orchids, I grow other epiphytal plants in these baskets. My *æschynanthus*, several ferns, bromeliads (*Tillandsia splendens*, *T. Lindenii*, some billbergias, *caraguatas*, etc.), *Anthurium Scherzerianum* and



FIG. 7.

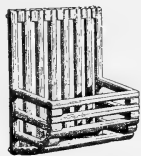


FIG. 8.



FIG. 9.



FIG. 10.



FIG. 11.

(figs. 9 and 10) render the cultivation of plants just as difficult as when they are grown in earthen pots. Especially desirable for specimens of large size is the cubiform (fig. 11). These baskets can stand on the benches, only requiring to be raised on their short legs. They can be procured in large and small sizes, just as one may fancy.

Mr. Moninger constructs another basket for large

others, grow exceedingly well in these cypress baskets, converting the greenhouse, in company with orchids, into a very charming apartment. These baskets should be suspended from the roof, forming thus a pleasing addition to the greenhouse, the upper part of which is too often bare of vegetation.

Milwaukee, Wisconsin.

H. N.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XXII.

TWO PLANS FOR A TEN-ACRE PARK.



FROM ONE of the farther western states a subscriber sends us the diagram, fig. 1 on next page, of a ten-acre town lot, accompanied by the following letter:

"Being desirous of receiving criticism by a competent judge on the enclosed design for a ten-acre park, I mail the same to you, respectfully requesting that you give me your candid opinion of the same, and any suggestions with a view to its improvement that seem desirable. I take a deep interest in all horticultural

matters, especially ornamental gardening. The instructions in AMERICAN GARDENING relating to landscape gardening are very valuable and entertaining. Beautiful homes, as a rule, make happy homes."

The diagram presented by our correspondent contains many good qualities, and affords a great relief from the plans of town squares so often laid out in a formal, geometrical fashion, with straight tree-rows and regular curves abounding. Much good taste and skill is evinced by the designer in the formation of graceful curves, and in the irregular grouping of trees and shrubs throughout the area. The plan, if carried out, should prove quite satisfactory in the main; yet, in some respects it is susceptible to improvement. The suggestions requested by our correspondent we hope may prove helpful to many public-spirited persons who are interested in the impor-

tant subject of village and town improvement by means of squares and parks.

The chief fault apparent in the diagram of fig. 1 is a certain air of sameness in the size and general appearance of the sections of the park, and in the grouping of the trees and shrubs. If a visitor enters the park at the lower right hand gate, turns to the left and makes a circuit of the walk defining the lower central section, leaving the grounds again at the place entered, he may be said to have, in a large measure, seen the park. Such a stroll would, without question, be very pleasant; but would this arrangement yield the greatest degree of satisfaction for the size of area and the outlay involved, as compared with some other plan? The very best plan, suited in all respects to the grounds, should be the only one considered worthy of use for permanently laying out choice bits of public land as pleasure-gardens in the heart of our towns and villages. Let us therefore consider certain modifications of the present plan that would render this little park of ten acres somewhat handsomer.

As setting forth the changes suggested, the diagram of fig. 2, page 457, is given. It will be seen that in general there has been little variation made in the shape of the sections at the outside of the park next to the boundary, although the style of planting here is considerably altered. The changes in the interior sections, walks and plantings are more important. A marked characteristic of the new

plan is the extreme variety effected in the size of the sections, the motive for which, as relating to principles, will next be explained.

In arranging grounds of almost any size or character, if we study for guidance pleasing natural landscapes of a somewhat similar order as far as may be practicable, we need not be afraid of making mistakes so far as principles are concerned. The natural landscape now in mind as a model contains an area of considerable extent more or less open through its center, and this is skirted with a great variety of isolated trees and shrubs, groves of deciduous and evergreen trees, masses of shrubby growth with wild flowering plants interspersed, and in places the latter standing by themselves. In this natural landscape, from

secure in a large measure for the made landscape, by proper attention to the necessary methods.

Let us take a short imaginary stroll in a park laid out after the plan of fig. 2, and note how it differs from fig. 1. Approaching by the lower left-hand corner we notice a change in the entrance, the improved plan showing the corner of the park (each of the four corners, in fact) to be cut off somewhat, on the principle that an approach looks more inviting and has more character thus than when it enters from the extreme corner, as in fig. 1.

Proceeding along the path we see that the width between the diverging walks and the streets is sufficient to support liberal masses of trees and large shrubs, besides having considerable lawn between these and the walks.

These lawn-areas serve to convey the impression of breadth and restfulness, and prepare the visitor to realize at a first glance that the garden is not only beautiful but of considerable extent. In these small open spaces near the entrance, some attractive specimen shrubs and trees are planted, and from here a perspective view of the near irregular groups shows them with much better effect than if they were brought closely up against the walk.

Further in, a small triangular section of lawn formed by the walks is planted with three masses of flowering shrubs—weigalias, forsythias or privets, handsome in leaf and in bloom. The first clear view of the broad open lawn extending through the center of the park, and which is one of its most distinctive features, is revealed as you advance along the left walk at the end of the triangular plot. A long vista intervenes between this point and the opposite corner, and in all directions there is open space enough to give an

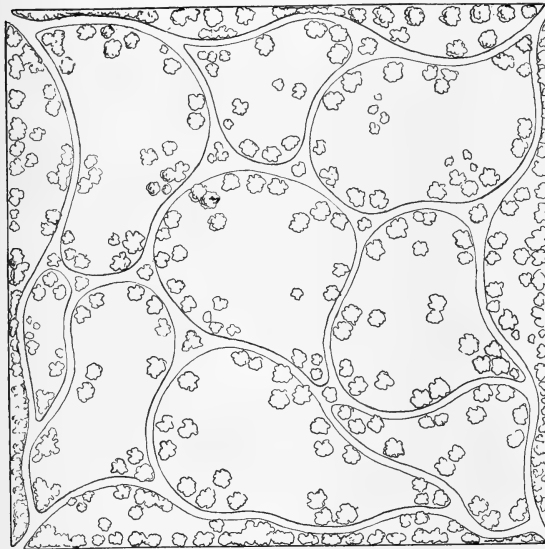


FIG. 1.—PLAN FOR A TEN-ACRE TOWN PARK.

beginning to end, there is no repetition. To make our public gardens accessible to multitudes of people at all seasons, it becomes necessary to introduce walks and drives not found in natural landscapes. If these be a defect in gardens from a landscape point of view—a matter we are not ready to admit—we have a corresponding gain in the made landscape over the natural one in the use of the nurserymen's large collections of hardy trees, shrubs, etc., brought from temperate regions all over the earth, from which to choose for planting a rich and varied selection, beside which the indigenous growth of any region seems poor. The breadth and repose, so marked in our finest natural landscapes, we may also

impression of broad landscape.

Where the left-hand walk divides there is a fine clump of trees, distinct from those through which we have just passed, and near the walks are some isolated clumps of shrubs. The two walks diverging here extend by a systematic but differing course almost around the entire park, meeting again, as shown on the lower side of the plan. Our object in calling attention to this feature is to emphasize the gain for effect that is obtained by unity in the walk-systems of parks. In all gardens abounding in details, the mind craves some such comprehensive plan involving the whole while you survey different sections. The inner walk from here leads through scattered shrubs

and small trees. After meeting the walk from the upper left-hand gate, it crosses an open lawn edged with handsome isolated trees and shrubs, and enters the most heavily wooded part of the little park. This wood should be planted thickly with forest-trees for dense shade, even though the grass be discouraged thereby. Its character should be strongly, and distinctively that of a wildwood. The idea of this plan throughout is to embody unity of design as a whole, yet to give individual strength to every feature, thus wholly avoiding the tedious repetitions in fig. 1.

Returning to the division of the walk at the extreme left side, and proceeding along the outer course, we reach the coniferous or evergreen section of the park. Here are planted heavy masses of evergreens along the street (at top of engraving), with single specimens and clumps here and there on the lawn away from the heavier groups, and some near the walks. For any part of the town reasonably free from smoke, there would be no difficulty in selecting coniferous trees, dwarf and tall, from the flat, creeping junipers and spruces to tall spiral forms; from golden arbor-vitae to blue spruce and glaucous cedars there is room for wide and beautiful contrasts. Where the two walks cross in the upper left-hand part would be an excellent place for a large arbor, spanning their junction and covered with a variety of strong climbing vines, including the Chinese and other wisterias, Dutchman's-pipe, honeysuckles, actinidias, clematises, etc. The outer walk, which we have traversed through the arbor and the evergreens, passes through the grove and near the upper right-hand place of exit and entrance. Here the approach to the park is, for the sake of variety, made to differ in character from the other three entrances. There are two gateways, and directly back from them is an oval bed amid the grass, and filled with bright plants and flowers.

From this small oval bed in the upper right-hand corner of the park two walks, one to the right, the other to the left, lead into the heavily wooded spots, and uniting with other walks form a large section, which may be called "The Oval." It is somewhat open across its center lengthwise, but at the sides grow numerous forest-trees.

Beyond, (or, in the figure, just below) the oval section is "The Shrubbery"—some large beds, irregular in outline,

cut into the grass as shown, and planted with a fine assortment of hardy flowering and evergreen shrubs, besides some of the more desirable hardy flowering plants. Besides the beauty and variety that could thus be secured in flowers, there should be another kind of attraction in the greatly diverse forms of growth, and of forms and color of foliage in the hardy shrubs and plants. In the margins of the same beds might be grown annuals and bulbs in varied assortment. Should it be deemed prudent to surround such a section by a guard against the intrusion of unruly persons and quadrupeds, we would suggest the use of heavy wire netting, which would be at once effective and cheap, while if it were painted a dull green it would not detract materially from appearances.

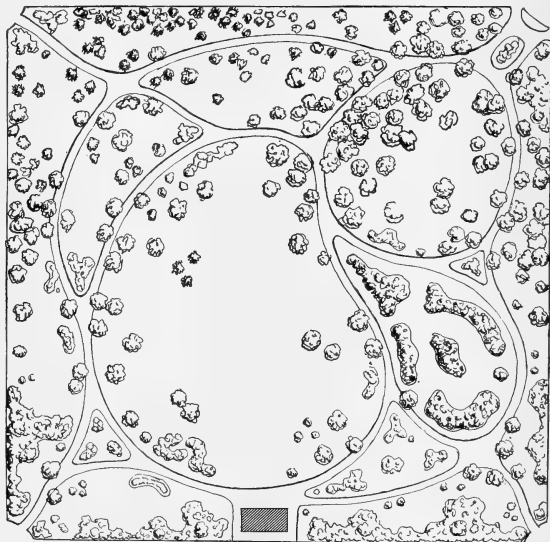


FIG. 2.—THE PLAN OF FIG. 1 CONSIDERABLY MODIFIED.

Such a collection of choice hardy flowers, the stock of which is gathered from all quarters of the globe, and with the name and habitat of each kind indicated on a label, should prove quite as interesting, much less costly, and far more in keeping with the purposes of a park than collections of animals in cages—a feature which many park managers seem prone to adopt, not to say overdo.

Beyond the shrubbery proper, after crossing a walk, we find a continuation of the shrubbery section. This we would like to see devoted to a rose-garden, cutting the beds into the lawn, as were those of the larger section just considered. Good selection and proper methods of cultivation should secure bloom here from June until

rosts. The central bed might be devoted to climbing roses with fine effect. The marginal section of the park to the outside of the shrubbery and rose-garden, in their general aspect are similar to the like parts near the lower left-hand entrance, alluded to early in this article.

Leaving the rose-garden where the two walks defining it join at its sharpest point, we approach a building near the outside of the walk. This is designed to be a shelter and resting-place for visitors—a structure that is certain to be appreciated if it be tasteful in construction, and will give protection from sun and rain, even though it be little more than a roof. Fine open views all over the park stretch away from this point. Looking down over the largest section of the park, and beyond, the eye reaches

as far as the plantations of evergreens at the further side of the area. Leaving the vicinity of the shelter we proceed to the place of first entrance, observing as we pass along several beds at the sides of the walk. These might be planted with tender summer flowers and plants, adding still more to the variety of vegetation.

Thus have we made a circuit of the ten-acre town park on the new plan. It is a garden abounding in handsome lawns, delightful shade, restful vistas, graceful walks, a profusion of bright sweet flowers and foliage, beautiful evergreens, trees, shrubs and plants, picturesque climbing vines and deep forest. Every feature is bold and distinctive, there are attractions for all visitors, and these effects are largely the result of skillful arrangement.



AFTER-TRENCHING AROUND TREES AND SHRUBS.

A REMEDY FOR CARELESS PLANTING.



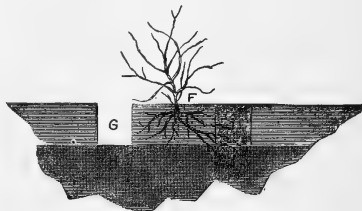
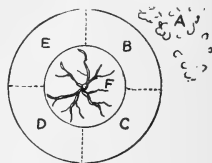
EEP tillage provides to trees and shrubs safeguard against injury from drouths, and all roots grow much faster and further if the soil be deeply broken up and well supplied with organic plant-food before they are set. An amateur

who had planted a large number of trees and shrubs upon high, dry ground last spring without deeply tilling or enriching the soil, discussed this subject with the editor not long ago, and became quite uneasy about the result of his planting. What could he now do to correct former inadequate work? Must he let the young trees run their chances of injury the present season, and next fall or spring take them up, properly prepare the bed and reset the stock again—or could something yet be done?

These are questions that may interest many tree-planters. Inadequate preparation of the soil is one of the most common faults in planting. Planters are often ignorant of the great advantage of suitable soil-preparation, and sometimes even when its importance is known, the spring season advances rapidly and work crowds so much that what would be likely to receive ample attention at other times, is neglected because of the pressure of other work. This article is designed to show that in cases of this kind it never is too late, during the current season, to make amends. The work of correction will not in effect fully equal that of the most thorough trench-

ing of the soil before any planting was done, but it will so nearly approximate this that it is worth doing even now. The earlier it can be done in the season following planting, the better, otherwise injurious mutilation of the young roots may occur.

The drawings given show two views of the roots of a bush



AFTER-TRENCHING AROUND TREES AND SHRUBS.

planted last spring. The upper one gives a horizontal view of the spreading roots; the lower by different depths of shading shows the strata of surface-soil and

sterile subsoil. The bush was planted without breaking up this subsoil. In after-trenching we first roughly describe a circle having a radius of from 9 to 12 inches, according to the size of the bush, about the bush as a center. From a space a foot or more wide just outside this circle (G or I in lower drawing, B in upper one), the surface-soil (A in upper drawing), down to the sterile subsoil (H or J in lower drawing) is then thrown out. The subsoil is then turned over the full depth of the spade, and enriched with decayed sods or manure. It may be necessary to use a pick-ax in working up this soil, if it is hard clay, shale, or gravel. Next throw the surface-soil, C, upon the subsoil, B, then treat the new subsoil exposed the same as B, and so on around the circle, filling soil, A, into the last space at E.

In the lower drawing it is seen at I and J how the roots will naturally seek benefit from this extension of their foraging-ground. It will also be possible during the operation to thrust the spade into the subsoil of ball, F, and thus break it up somewhat without disturbing the roots above. No harm will come if some new roots show beyond the circle during the progress of the work—they can at once be covered again.

The operation described might be called limited after-trenching. The trench opened is spoken of as being a foot wide. If it were extended to two or three times this width, or to the next tree or shrub in like style in case of a group, benefits would be increased in proportion. Any labor that benefits fine trees and shrubs is well expended and should be cheerfully put forth.

NOTES ON NATIVE PLUMS.

FRUITS VALUABLE IN THE NORTHWEST.



THAT section of Illinois where I was born, and where for 53 years I lived, is noted for its severe and changeable climate. There my father, brother and myself, 20 years ago, had about 400 acres in orchards, chiefly in apples, but embracing all the species of fruits that could be grown there under the climatic difficulties mentioned.

The woods were full of wild plums. They were our most plentiful and useful wild fruit. I well remember finding, while yet a small boy, one plum as large and handsome as any seen since. It was an oblong, bright golden fruit. When first discovered the tree was loaded with great, beautiful plums. Boy-like, I determined to have such a treasure all to myself, so I marked it and transplanted it carefully into the garden, where it lived and grew finely, but never matured a fruit. This was my first lesson in native plum-culture. It bloomed freely every year, the fruit grew to the size of a pea or a little larger, then all dropped off. This was long before the time of the plum-curculio, which appeared in that region about 1845, and destroyed almost all the European plums, cherries, peaches and apricots, year after year. Still some wild plums, *Prunus Americana* and *P. Chicasa*, with numerous hybrids between, which grew in the woods, were left free from worms.

In 1862 I procured the Miner plum, which I believe was the first of the natives to be propagated under a name. It is a cross or hybrid between the northern red or yellow plum, and the southern or Chickasaw plum, but is most likely the northern type. With me, when not growing near other plums it fruited only occasionally and sparingly. In 1864 I procured scions of the Wild Goose plums from Kentucky and whip-grafted them into my oldest Miner trees. The grafts grew, matured a few fine plums the next season, and fruited abundantly in seasons following. The Miner trees, into which they were grafted, and those all around them, also fruited

finely, while there was scarcely a plum on the 500 other Miners. I was so well pleased with the Wild Goose that I planted 1,200 trees of it in the orchard. These grew finely and bloomed, yet matured only a very few fruits on trees growing near morello cherry trees.

About 1874 I accidentally learned that the secret of this strange behavior was lack of suitable pollen to fertilize the bloom. I then planted on my place nearly every variety that had been named, and every good one I could hear of, besides growing and fruiting many seedlings, so that in 1887 I had probably the largest collection of native plums ever brought together. Notwithstanding the presence of curculios in plenty, this conglomeration of plum varieties, under the advantage of the very best chances for cross-pollination, has fruited abundantly and without a failure for 24 years.

My experience in this respect is not exceptional. From B. O. Curtis, whose father was the pioneer nurseryman and orchardist of Central Illinois, and who himself has been engaged in growing orchard-fruits all his long life, I have the following letter:

"For 30 years I worked hard on the European plums, testing all the leading varieties, but only a few of them survived cold winters or reached the bearing age. If they chanced to produce any fruit, the curculio was sure to harvest the crop. Then I grew the Wild Goose for 14 years, and found it hardy, but got no fruit, so I resolved to abandon the plum as unworthy of further attention.

"About that time I saw a flattering account of the Robinson plum, then being introduced, and concluded to try again. March, 1883, being anxious to see fruit of the Robinson, I grafted five scions of it into the top of a Wild Goose plum tree. Two of these made a growth four feet in length, and the next season one graft ripened 58 and another 72 Robinson plums. The smaller grafts were just as full of fruit in proportion to their growth, and the Wild Goose stock also gave a fair crop. The next season the fertilization was so complete, that the stock produced four bushels, and two trees ten feet away

two bushels each. Two trees in the same row twenty feet away gave no fruit.

"This was conclusive evidence that the Wild Goose is enormously productive when its blossoms are fertilized by the Robinson. The latter has since proven as productive when alone as when clustered with other varieties. With these facts before me, I knew that I had two varieties on which I could depend for fruit. I have collected all the best-known plums, and now have 75 native varieties growing in my orchard. Forty of these have been bearing for two years. Many of them have borne fruit four seasons. The Robinson has produced eight crops without a failure.

"The 24 varieties that you sent me in the spring of 1886, all lived and nearly all have fruited. It would surprise you to see the growth they have made, and the amount of fruit they have borne in the last four years. A tree of the Newman, two years old when set in 1886, is now five inches in diameter and 15 feet in height, and produced last season three bushels of nice large plums, which ripened late in September." I append some notes on varieties:

Wier Large Red.—Fruit spherical in form, color dark red. It is larger than Wild Goose, better in quality, and the strongest grower of the northern type.

Wolf.—This is one of the hardiest and most productive of trees. The fruit is freestone and superior in quality. It has been greatly admired and relished by all who have seen and tasted it, as grown here.

Wyant.—One of the best of all our natives of the northern type. It is a freestone, and is scarcely surpassed in quality. Trees bear profusely two years after setting.

Purple Yosemite.—For the last two years has borne full crops of large, beautiful fruit of fine quality. It ripens a few days later than De Soto.

Yellow Yosemite.—Is of a deep yellow color. It ripens with the purple variety or a few days later, and is equal to it in every particular.

Mariana.—Is the best plum for July; it is four days earlier than Wild Goose, lasts a week later, is as large, and better in quality. The first lot of grafts made of this plum I took up at one year old, and sixteen of them had sent out strong roots from the scion. I cut the stalks off and planted the young trees with their natural roots in my orchard. So far they have not suckered, and the Mariana you sent me, now of six years standing, is also free from suckers. These plums grow freely from cuttings of the wood, and are valuable stocks on which to graft other varieties.

Maquoketa.—Is a very large oblong freestone plum with a fine, peculiar flavor. It ripens the last of August.

Rollingstone.—Is large, round, and dark red in color. Ripens before the Maquoketa. I have found no "Golden Drop" better than the luscious Rollingstone, Wolf, Wyant and Maquoketa.

One of the native plums will produce more fruit the third year from planting than an English variety will the tenth year. There is nothing in the fruit kingdom that can stand more frost and freezing unharmed than these improved native American plums. Last May when my trees were in full bloom, the ground froze one-fourth of an inch in depth. The trees were covered with frost, and I felt sure the fruit was all ruined. Yet the Robinson, Wolf, Newman, Wyant, Maquoketa, Rollingstone, Wier Large Red, and the Yosemite, gave an immense crop of fruit. Last season I sold 70 bushels of these native plums—smooth and nice. Not more than one specimen in 500 was damaged by the curculio, while the Lombards, Richlands and Damsons were stung and all rotted.

California.

D. B. WIER.

PALMS FOR HOUSE-CULTURE.

GENERAL PRINCIPLES OF TREATMENT.



PALMS as house-plants have been frequently commented on by the various horticultural journals during the last five or six years. This is doubtless largely due to a better understanding of the many good qualities of these plants for house-decoration, chief among which are their elegance of form, their lasting qualities, and also the fact that a number of species may be readily procured that are not specially difficult to manage.

For general excellence as a window-plant there is nothing superior in the palm family to the Chinese fan-palm (*Latania Borbonica* or *Livistonia Chinensis*), for it combines graceful habit and comparative hardness with reasonable rapidity of growth. This is probably the most widely known palm in cultivation, and like many others in this family goes through some changes in characteristics between its first growth and that of maturity. Young plants of the *latania* make only simple

leaves, that is, with unbroken outline, but after forming four or five such leaves the growth gradually assumes different characteristics, the frond becoming fan-shaped and being subdivided into a number of segments. About the same time a row of sharp, recurved spines will be noticed on each side of the leaf-stem. The habit of the plant is rather spreading, while the leaves range in size from about one foot in diameter when the plant is in a six-inch pot, to perhaps five or six feet across when full size has been attained. They are dark green and have a glossy surface. This plant also succeeds admirably for outdoor decoration during the summer; but in common with most palms with which we have to deal it keeps in better condition when placed in a partly shaded location.

The next genus to which attention is invited is *kentia*. Two notably handsome varieties of this palm are well adapted for house-culture—*K. Belmoreana* and *K. Forsteriana*. The *kentias* are somewhat peculiar from

the fact that they are found growing wild in only one locality, that is, on Lord Howe's Island, in the South Pacific ocean; but as they have been in cultivation for many years, there are now fruiting specimens in other countries, and seeds are now obtainable in quite large quantities in addition to those from the original habitat of these plants. *Kentia Belmoreana*, sometimes called the curly palm, is the more graceful of the two, and throws up long, arching pinnate fronds that in large specimens become seven or eight feet in length, and are furnished with closely set, long, narrow leaflets of dark green color. The leaf-stems of the curly palm are frequently shaded with brown, or sometimes with olive-green, but as this does not seem to be a fixed characteristic of the plant it is not well to depend on it for identification. *Kentia Forsteriana*, also known as the thatch-palm, on account of the leaves being used for roofing purposes in its native country, is somewhat similar to the preceding in general appearance, but is a stronger grower, has longer leaf-stems and usually broader leaflets. Possibly the kentias may not stand as low a temperature as the *latania* will endure without injury, but unless the temperature of the room where they are grown is allowed to get below 50°, there is little danger of their suffering from this cause. Their leaves are of such stout texture that they withstand the dry air and dust of a dwelling remarkably well, and it seems to make but little difference whether they get any sunshine or not. While small, however, the kentias grow rather slowly, and naturally this tends to keep the price of good specimens somewhat higher than that of some rapid-growing species.

Areca lutescens, or *Chrysalidocarpus lutescens*, has been termed by some enthusiastic growers, "the palm for the million." It is unquestionably one of the most useful in cultivation at the present time, and is used by thousands each season for decorative purposes, in the large floral centers of our country. Being of rapid growth, of graceful outline, and not very easily bruised, it has naturally become a very popular palm for florists' use as well as for window-culture, and makes an attractive plant in any size from one foot to fifteen feet in height. It has dark green pinnate leaves on long foot-stalks, the latter being yellow and more or less spotted with black. The stems are slender and the whole plant is of elegant appearance. The *areca* differs very decidedly from those species previously mentioned, from the fact that as it attains age it throws out additional stems from the bottom of the original one, thus becoming in some instances quite bushy, as one or more side-stems frequently appear by the time the plant is about six-inch-pot size, say from 2½ to 3 feet high. This palm may also be used outdoors in summer, provided it be given a shaded position; but I do not advise planting it out in the ground, as the roots will be preserved in better condition if the plant is kept in a pot and the latter simply plunged in the ground.

Though an old palm, *Rhapis flabelliformis* is not nearly so well known as those already alluded to, yet it

deserves a prominent place among house-palms. It is an attractive plant with very tough foliage, and is sufficiently hardy to withstand a temperature slightly below freezing. As its name indicates, the leaves of this species are fan-shaped and are divided into a number of segments, the tips of the latter being blunt, as though they had been cut off. In habit the *rhapsis* is slender but bushy, as it throws up a number of stems that are but little thicker than a rattan, and clothed nearly to the base with slender-stemmed leaves, the latter being sheathed with a net-work of coarse brown fiber at the point where the leaves are attached to the stem. This admirable palm is a native of China and Japan, and unfortunately does not appear to produce much seed. None is offered for sale in this country, and consequently propagation depends on division of roots, thus making it a much slower operation than is the case with those species of which seeds can be procured.

The dwarf cocoanut, *Cocos Weddelliana*, must certainly be included among the palms for house-culture, this being the most beautiful and also the most satisfactory dwarf-growing palm for such use. *Cocos Weddelliana* produces but a single stem, this being quite slender and covered with a net-work of dark fiber. The leaves are long, and finely divided into narrow pinnules, the whole forming a feathery-looking frond of extreme elegance, in color a dark green on the upper side and silvery beneath. Though so delicate in appearance, *Cocos Weddelliana* will endure much rough treatment. Another point in its favor is that it does not soon outgrow its quarters, as it requires a number of years to reach a height of five feet, this being about the average size for a mature specimen.

The date-palms, also, should not be forgotten, most of the members of this genus being strong-growing subjects of comparative hardness. Two species are worthy of special mention in this connection, namely, *Phoenix rupicola* and *P. reclinata*. Of these the first is by far the more elegant, though possibly somewhat more tender than *P. reclinata*. Both are sturdy palms of somewhat spreading habit, with long pinnate fronds, the latter having narrow segments that are usually grouped in pairs along the midrib, while the pinnæ of *P. rupicola* are extended in regular rotation along the midrib and hang down in a more graceful manner than those of the other species.

Seaforthia elegans or *Ptychosperma Cunninghamii* and *Ptychosperma Alexandra* are also handsome palms with long pinnate leaves, and may be used with good effect for house-decoration. They bear considerable resemblance to each other, though one distinguishing mark is found in the fact that the leaves of the *seaforthia* are green on both sides, while those of *ptychosperma* are covered with a whitish pubescence beneath. Both are rapid-growing plants, and require an abundance of water to keep them in good condition.

Chamærops excelsa or *Trachycarpus excelsus* and *Corypha Australis* will conclude our list for the present, and in them we find two more representatives of the

fan-leaved type of palms. These two very distinct species are hardy in southern Europe and also in some of our southern states. Though rather slow in growth and stiffer in appearance than most of those above referred to, yet they are well worthy of a place among the useful palms for house-culture. Of these the first-named is rather the best, and has nearly erect leaves of dark green, the stems of which are slightly armed with short spines, and at the base are sheathed in fiber.

The leaves of *Corypha Australis* are produced on stout stems, are almost circular in outline, and divided into narrow segments, the stems also being profusely armed with strong spines. In habit both these plants are compact, and the leaves are very tough and strong.

In conclusion, a few words on treatment may prove useful to some beginners with this class of plants. The first point to demand attention is that of watering, this being usually of more importance than even the soil. When watering, always give enough to soak through the ball of earth, but do not allow any to remain in the

saucer or jardiniere in which the plant is standing, else the roots will be sure to suffer. Sprinkle overhead whenever possible in order to keep the pores of the leaves free from dust; or, better still, dip the foliage in a pail or tub of water every other day. Do not repeat too often, for these plants can be more easily controlled in the house if they are somewhat potbound. When the operation is necessary, pot firmly in a clean pot, first placing some drainage material in the bottom. For compost some well-rotted sod in which some old manure has been mixed is all that is necessary, though if the soil be very heavy some sand may be added, and the addition of a small quantity of good bone-dust will also prove beneficial.

Such general principles of treatment as are here noted will be sufficient for the welfare of most of the species of palms mentioned, though for *Cocos Weddeliana* a somewhat less quantity of water is required than for the other species.

Philadelphia.

W. H. TAPLIN.



CORNERS IN AN OLD-FASHIONED GARDEN.

HOW THEY ARE MADE AND KEPT BEAUTIFUL.



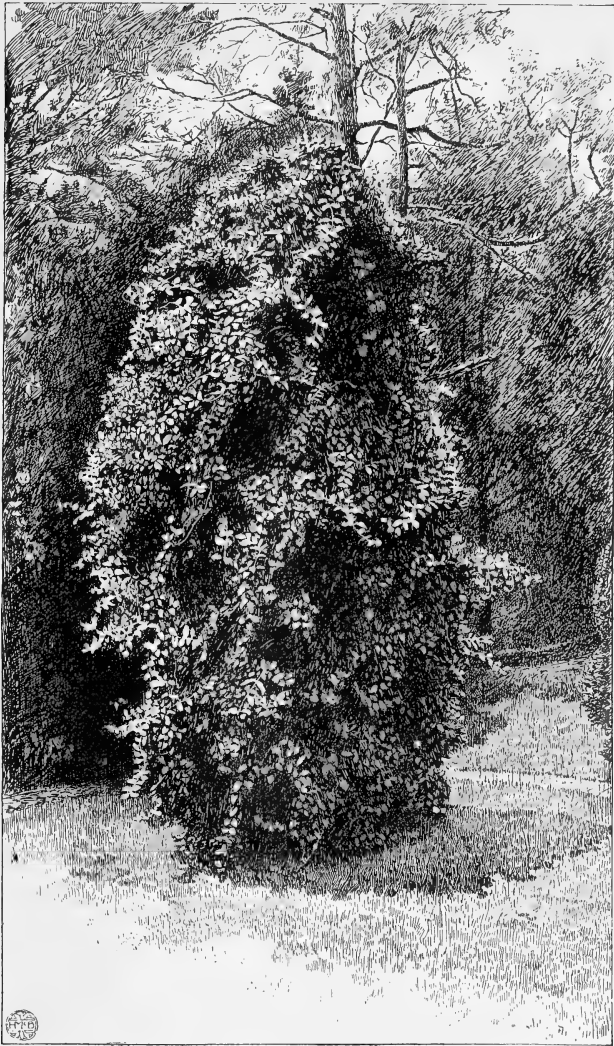
THIS pillar of honeysuckle, now a sheet of bloom, was once the trunk of a fine old silver pine in the center of a round grass-plot. This old pine was a thing of beauty for many years; but one winter a very heavy sleet proved too much for it and the whole top cracked off. Early as possible in the spring the trunk was sawed off evenly, about twelve feet of it being left standing. Then a piece of the pine wood with the bark on was nailed on the top, and a couple of healthy honeysuckle-plants set at the base. In a few years the old trunk was a solid pillar of green, with nearly always some flowers on it. A little painted bird's-box set in one side was nearly hidden by the foliage. It stands at the foot of a terrace which divides the vegetable garden from the shrubbery. Not far away another small tree had fallen, and the trunk was sawed off to five feet. A wooden butter-bowl was nailed on, painted a bright red, and filled with nasturtium-vines, and some were set at its base. And so another empty space was filled and beautified.

Where there is much shade some plants are very apt to be killed by it, leaving unsightly spaces and corners. It frequently happens so in our arbor-vitæ hedge, and

this year I am using some large clumps of dahlias in those corners very successfully. We use the old evergreen honeysuckle very freely, and find it can be kept in good shape by frequent clipping with the large garden shears.

In the center of the flower-garden in an oval of grass there is a flower-bed in the shape of a basket. Many years ago, when this was first placed there, the basket and handle were made of wood and painted green. As this gave out we tried various substitutes, finally hitting upon one that gave great satisfaction—galvanized iron wire cut in lengths, and bent to form an edge, keeping the shape. A strong hoop made for a wagon-top was set firmly in for the handle, and plenty of honeysuckle-plants were set around and twined in and out as they grew. As soon as old enough they were sheared often and quite closely, so that now the basket, handle and all, is formed of solid, living green nearly a foot wide. Some vines need help in their first attempts at climbing. I have found that gummed labels cut into strips are good to hold vines of *Ampelopsis Veitchii* in place until their rootlets take hold upon the wall. Once started they clamber nimbly over it without further assistance.

E. L. L.



A CORNER IN AN OLD GARDEN : LONICERA HALLEANA ON THE STUMP OF A TREE. (See next page.)
[Reprinted from THE AMERICAN GARDEN for November, 1891.]

HOW THE AVERAGE MAN PLANTS TREES.

A WOMAN'S CRITICISM.



INETEEN - TWENTIETHS of the tree-planting of our home premises is done by the authority of the "gude mon" of the household, while the wife controls the flower-garden, and to my mind the average flower-garden is a quarter of century in advance of its arboreous surroundings. The littery locusts and sprouting poplars so commonly set as shade-trees harmonized well enough with the single hollyhocks and ragged bachelor's-buttons of 25 years ago, but seem incongruous with the tea-roses, gladiolus and geraniums of modern borders.

The flower-growing woman of to-day reads floral magazines, plans her beds and their contents carefully, discards all but the choicest and best in planting, and gives her plants steady care and culture. How is it with her husband? Does he ever "read up" on the subject of his trees, their likings as to soil, climate, etc.? Does he ever plan out his groups, rows, and single specimens, so as to attain naturalness and avoid stiffness and formality? Does he take catalogues in hand, carefully note each particularly fine tree, and from these make his selections? Does he ever cut down a poor specimen or thin out those too thickly planted?

As an instance of the average man, let me cite Mr. Conifer, who complacently owns to a weakness for fine evergreens. When the family moved to its present home 25 years ago, he planted his place with a great variety of spruces, pines, cedars, firs, junipers and hemlocks. He planted them thick, that they might the sooner make a good show. He could "thin them out, if necessary," he said, but the trouble was, he never saw the necessity; and even now, when thick masses of hemlock and spruce hide all but the roof of his house, and far-reaching arms of cedar and birch brush passers-by on the main front walk, he sees no need of cutting down any of his trees. He calls his home "The Evergreens," and imagines that every stranger envies him his beautiful yard and cool, shady rooms. To me, nothing could look more sombre. Mrs. Conifer tells me with sorrow that she has had to give up all her flowers, for nothing except myrtle will grow in the deep shade of the grounds. Some of the family are always sick, and the doctor's gig stands often at the front gate—small wonder, for the air of the house is musty and close, as it must be when not a sunbeam or breath of fresh air can reach it. Even grass refuses to grow under the trees, and in midsummer the ground is as bare and brown as in autumn.

Mr. Conifer's nearest neighbor is Mr. Prim, who lives in a big square house that stands in the exact center of an ample yard. The straight walks from the gates to the house cross each other at right angles, and on the north-

west and south sides of his house are parallel rows of sugar-maples, the rows exactly 12 feet apart, and each tree in the row exactly 12 feet from its nearest neighbor. Anything more angular or precise could not be imagined, and the older the trees the more monotonous their effect, for as maples grow they become as much alike in form, shade and size as peas in a pod.

Quite in contrast with this prim home are the grounds of my friend, Mr. Golucky. He planted his place a dozen years ago, and went in for diversity. He planted a couple of cedars on his side lawn and forgot to trim them afterwards; to-day the sprawling branches touch the sitting-room bay-window, and quite shut out the view of the street. He planted a silver-leaf poplar in one corner of the front yard, with an ailantus as a companion-Boon companions they proved to be, indeed; and as Mr. Golucky was more expert in planting than in cutting down, a perfect wilderness of young poplar and ailantus trees are growing up in that corner, and the "perfume" of the ailantus scents the whole yard. "Smells bad, but drives the flies away," says Mr. Golucky, sententiously. I should think it would! He planted a row of locusts along the lower half of his front fence for their fragrance and flowers. His wife insists that they are ugly, with their coarse bark and rough branches, and a nuisance from their endless sprouting and leaf littering. Mr. Golucky says it is all a notion; that his wife likes the blossoms as well as anyone; and as to the sprouts, he always cuts them down by the time they are as high as his head, for they are so thorny he has to! Tucked here and there, on the lawn or in the back yard, as he can find room for them, he has a catalpa, box-elder, a lop-sided Austrian pine, a weeping-willow that has ceased to weep, a solitary chestnut that never bears, a broken-down maple and a half-dead Lombardy poplar. Surely he has the diversity he longs for!

My neighbor Mr. Highart built a pretty Queen Anne cottage in a beautiful natural grove. He "improved" his premises by sawing out the tops and cutting off the branches of his trees, leaving only the tall mutilated stumps. In time, ugly tufts of whip-like branches grew out above each scarred stump of a limb, spreading themselves like a grotesque umbrella; and Mr. Highart was so delighted with their ugliness that he condescendingly told us that our own grove "would be a fine one if the trees were only pollarded."

Then, there is Mr. Utility, who is always saying that he would rather have a plum tree in his yard than a maple, and plants according to his theory. As he really has but little room, one could excuse him for his choice, did he but combine beauty with usefulness. But instead of choosing for the front yard the bigarreau and heart cher-

ries and standard pears, with tall habit and ornamental leaves, fruit and blossoms, and relegating the low-growing, dull-leaved apples and quinces to the side or back yard, he plants the yard full of low-trunked, heavy-topped trees, and an uglier, more commonplace yard you need not wish to see.

Mr. Parkwood's large and well-kept estate is the pride of the county. He has spared neither money nor labor in planting and arranging his large private park, comprising many acres. His grounds are considered a model of good planting, and are pointed out to every stranger as one of the sights of the town. How doubly unfortunate it is, then, for both himself and his neighbors, that he is afflicted with a curious obtuseness that deadens his perception of any beauty in his own native trees, shrubs and vines. He has Japanese cypress, Chinese magnolias, Irish junipers, English holly, Norway maple and Austrian pine, but not an American chestnut, oak, elm or linden. He has variegated maple, cut-leaved birch, blood-leaved beech and weeping hemlock, but one looks in vain for the feathery American larch, the beautiful liquidambar, or the curious tulip-tree, with its shining, oddly cut leaves unlike anything else in nature. There is not a purely native rhododendron or azalea, although their Asiatic and European congeners are well represented; not a cornus, cercis or laurel, celastrus or bignonia; nothing, in fact, that his poorer neighbor might admire and procure for himself in wood or valley at the cost of his labor alone. We all dislike the stamp of poverty. If our wealthy landowners do not make use of our native trees, be assured that the mechanic and the blacksmith will not.

Judge Broadacre has made himself a charming country home in what was once a tangled thicket of trees, underbrush and matted vines. The Judge frankly says that he came to the country to rest, not to work, and beyond an orchard and a hedge of cedars he has not planted so much as a bush or root on his place. However, he has a keen eye for the picturesque in nature, and his grounds were cleared off in a highly artistic manner, under his own supervision. Here and there, as suits his roomy grounds, broad belts of forest-timber are left that make the setting for a perfect picture of rural tranquility. Some trees

are left about the home grounds—fine, nobly-developed specimens, every one. There is a natural arbor of three young ironwoods, overgrown and knit together by a giant grape-vine that hides their clustered tops under a thick canopy of richest green. Grand tree-like specimens of dogwood, redwood and service-berry are left standing, and some of the tall forest-trees are wreathed from trunk to top with native ampelopsis and bignonia that change in autumn from bright green to scarlet and gold. The mountain-clematis and woodbine clamber over the rocky bluff that skirts the river-banks, and the giant cedars left standing at its base are so tall that the children can reach their blue berries from the rocks above. Everything is nature's own handiwork, but nothing could be more artistic or delightful.

One of Judge Broadacre's neighbors is Mr. Wiseman. His grounds are less extensive than the Judge's, but are even more attractive, for here art goes hand in hand with nature. Some people think Mr. Wiseman eccentric. He reads his wife's floral catalogues, and he asks her to read his catalogues of trees. He marks with a horizontal dash such flowers, shrubs and trees as strike his fancy; she marks with a cross such as she likes. Then he puts by the catalogues for a week or two, as one does a half-ripe apple to mellow, and when he again takes them out it is easy for the matured judgments of the two to skim the cream from their original selection. With as great a liking for evergreens as Mr. Conifer, and as much admiration for rare trees as Mr. Parkwood, Mr. Wiseman never forgets the size of his grounds, which are roomy without being extensive, and plants nothing unless he has a place for it. You will see him and his wife carefully viewing, computing and planning just where this tree can go, and how much space it will occupy at maturity, where this bush will look the best or where that vine can find support, before they make an order for florist or nurseryman. This lawn is not cluttered with a jumble of sprawling bushes called shrubbery, a mass of shapeless flower-beds and sorry "specimen" plants. Every stranger stops to admire his beautiful and well-kept grounds, which in summer or winter always present something attractive in leaf, bloom or fruit.

LORA S. LA MANCE.

GARDEN NOTES FROM ENGLAND.

TWO REMARKABLE HYBRID ORCHIDS.



ONE of the prettiest hybrid orchids is *Cyripedium Niobe*. I recently saw a fine form of it named *superbum*, having flowers larger and deeper in color than those of the type. *C. Niobe*, for delicate beauty, dainty expression and warm coloring stands unique. It was raised by the Messrs. J. Veitch & Sons' hybridist, John Seden, who crossed the Assam variety, *C. Fairieanum*, with *C. Spicerianum*, a species that has not been much used in the hybridization of cyripediums. In *C. Niobe* we have fortunately much of the character of *C. Fairieanum*,

while it derives a robust constitution and freedom of bloom from the other parent. Its strongest likeness to *C. Fairieanum* is in the petals, which curl like horns, and are deep green suffused with dull brown; the lip of the flower is lighter, shining as if polished; the dorsal sepal is white in the upper portion, striped with purple in the center, and the base is deep green. This fine sepal measures about $2\frac{1}{2}$ inches in diameter; the several seedlings vary very slightly in general character. The habit of the plant is neat, and to show its free-blooming habit I may mention that I saw three finely developed flowers on a small seedling plant. We are delighted with this cyripedium,

and hope that further use will be made of *C. Fairieanum* as a parent plant. A fine orchid of surpassing beauty is in bloom in the famous collection of Baron Schroeder, The Dell, Eghan. It is named *C. insigne Sandersæ*, and is the loveliest form of this favorite species I have seen. The description in the present instance can convey only a poor conception of its character. In its flowers the green color is delightfully used; in truth, they are almost entirely green, but of such a transparent and exceedingly

delicate tone that we hope more hybrids will be raised in which this lovely blending of green shades is a feature. The dorsal sepal of the flower is white in the upper part, the middle to the base is light green, with deeper colored longitudinal stripes; the petals also are of a green shade, and the lip has just a suspicion of yellow, very distinct and charming; the staminode is yellow. The plant has a strong habit, like its parents.

Chiswick, England.

ERNEST T. COOK.

OUR NATIVE ORCHIDS.

"LADY'S-TRESSES."



MANY a lover of wild-flowers, wandering over our hilly New England pastures and white-birch barrens in the mid-months of summer, has observed a prim little plant, bearing a peculiar spiral of small white blossoms on a stiffly upright stalk, and possessing, apparently, no vestige of

a leaf; a common plant, and curious enough, on close inspection, to puzzle the unbotanical admirer. "What is it?" has been often asked of me, but I have never met with any person not a botanist who was even acquainted with its common name, "lady's-tresses."

This name refers to the apparent spiral arrangement of the flowers, which have the effect of being coiled around the stalk, though in reality it is the stalk which is twisted. The scientific name, *spiranthes*, has a similar but prettier significance, being derived from two Greek words meaning a coil or curl of flowers. This unpretending little flower, obscure and hardly noticed, inhabiting worn-out fields and sterile woods, belongs, nevertheless, to the aristocracy; it is as much an orchid as the splendid *lælia* or *Cattleya labiata* of the tropics.

The foregoing remarks are applied especially to *Spiranthes gracilis*, the common summer-blooming species. In June, when the flower-buds are growing, it has a cluster of small oblong, dark green leaves, lying close to the ground, the flower-scape rising from the center; but you may look in vain for leaves when you find the plant in bloom; they have all withered away before the flowers appear, as do also those of *S. simplex*.



FIG. 2.—SPIRANTHES SIMPLEX.

This species—usually ten or twelve inches high, and very slender—blooms before the middle of July, and may often be found as late as the middle, or even the last of September. It has a larger sister, *Spiranthes graminea* (*S. tortilis* of some botanists), which also flowers in July, but its blooming season lasts only into August. This plant frequently grows to the height of 20 inches or two feet, with a stout stalk and a dense flower-spike, much twisted. Its long, narrow leaves, borne at the base and on the lower part of the stem, do not wither like those of *S. gracilis*, but remain on the flowering plant. *S. graminea* may be found in old grass-fields and low meadows; it is not common, however, at the north.

There is a rarer species, *Spiranthes simplex* (fig. 2)—so named by its discoverer, Asa Gray—which comes into bloom late in August and continues through September. It looks like a diminutive form of *S. gracilis*, only six or eight inches in height, with a fairy-like twist of minute flowers, and commonly no leaves at the blooming-time, though I have occasionally found specimens retaining two or three. Its root, however, is a solitary tuber, resembling a little parsnip, not over an inch in length, while the roots of *S. gracilis*, though somewhat of the same tuberous form, are more elongated and several in a cluster. Under a magnifying-glass the tiny, wax-white blossoms of this orchid are delicately beautiful; the crisped and fluted edges of the "lip" suggesting a near likeness to its exotic relatives. Its flower-spikes are narrow, sometimes one-sided.



FIG. 1.—SPIRANTHES GRACILIS.

The prettiest of the genus, however, is the autumn-blooming species, *Spiranthes cernua*, fig. 3. It does not grow tall, but its pure white flowers are more conspicuous in size and beauty than those of either sister species, the spikes of bloom being quite large and showy, and possessing the charm of perfume, which is lacking in the others. It grows on moist banks in the woods, or in low, grassy places, or sometimes in dry ground, if well

shaded. This plant has not the distinctive character of the genus *Spiranthes*, and hardly seems in keeping with its name; its flower-spike is not twisted, and does not suggest a "curl." It begins to bloom in early September, and remains with us until nearly all our floral favorites have surrendered to the frost, often outlasting even the golden-rods and asters. I have found it blooming well into November.

FRANCES WILSON.

BOUNCING-BET AND HER FRIENDS.

A CHAPTER ON GARDEN EXILES.



HERE is a group of vagrant plants that have always appealed to my heart. They have, for the most part, long been exiled from the society of really cultivated garden favorites, although now and then some loving soul, who knows no fashion in her floriculture, still harbors in her garden borders some of these flower-

tramps. With quiet, unpretentious persistence they manage to find root-room and to pick up a living in odd nooks and waste spots of earth not claimed by other vegetation. Some of them you find growing and blooming, without the least protestation, outside the garden fence, where they've fallen after being uprooted from the home of years. "Escaped from cultivation" the botany says of most of the individual species of this group of homely flowers, but they are still domestic enough to follow in the wake of man's steps.

In driving over the beautiful old road that leads from Cambridge to Concord, the very road which the British soldiers trod on that famous nineteenth of April, one finds growing by the wayside several of these old friends. Indeed, it has occurred to me that, were all other marks of the road swept away save these old garden flowers and herbs, one might still trace out its course. Tansy grows luxuriantly in many places, both inside and outside the stone walls, and toad-flax, the "butter-and-eggs" of our childhood, not infrequently is seen. Here and there are stray beds of the old yellow lilies (*Homocallis fulva*), and solitary tiger-lilies that, of late years, are becoming wanderers.

Scattered along this road almost as abundantly as the tansy is that homely member of the pink family popularly known as bouncing-bet. I wonder who gave name to this outcast, once a cherished inmate of the garden, and why. There is nothing rollicking about her air. Perhaps in better days, when she had a real place of her own in the flower-bed, she was wont to stray beyond her limits and trespass on her neighbors' allotted space, or step out into the path and there try to plant her roots and seeds. "Bouncing Betty," I've now and then heard her called by gentle old ladies, who abhorred nicknames, even for plants, and in Salem, Massachusetts' old-maids'

pink" is the popular name for the well-known blossoms. Looking up the history of bouncing-bet, we find from

the botany only that it is adventive from Europe and common along roadsides. Imagination must fill up the long blank between the tender transplanting to early colonial gardens of many hardy perennials brought across the Atlantic, and their gradual removal from neat borders to any poor bit of earth that would support plant life.

The bouncing-bet is still kept in some old-fashioned gardens, particularly in the western states, where, as yet, it has not taken to Bohemian life so much as in New England. My grandmother used to gather bunches of the loose corymbs of pale flowers and with them fill her gaily painted old China vases, but I have never elsewhere seen it given such household honor, though it is cousin to our sweet garden pink and to the various wild and cultivated silenes. The flowers of the sapon-



FIG. 3.—SPIRANTHES CERNUA.
See "Our Native Orchids."

aria are variable in color. One botany will say that they are white and another that they are pink, but in reality their hues range from opalescent white to rose pink. The latter color characterizes the flower near Chatham, Cape Cod, where the plant grows abundantly near the coast, making a marvelous display of color in the landscape. People there say that it is the influence of the salt air which enriches the color of the flower. Whatever the reason, it here is of so much brighter a hue than elsewhere, that at a little distance those familiar with it farther inland would not recognize it in the masses of brilliant pink bloom which, during early August, contrast so well with the various greens of the surrounding under-shrubs, and the stretches of warm-tinted beach sands.

When I was a child, the tawny orange ephemeral lilies, in company with the daffodils, sweet-williams, clove-pinks, periwinkle, China-asters, phlox, crown-imperials, tulips and the red peony, still kept a place in our own and our neighbors' garden-beds. The last-named flower was highly prized a generation ago, and a farm or village matron whose garden could not boast of the flaunting "piny" esteemed it a great favor if a more fortunate neighbor gave her a "toe"—toes being the provincial name for the tubers. And if one of the ugly little round peony-buds was struck off before blooming by some investigating rooster it was counted a greater misfortune than if a whole bush of the sweet old-fashioned double roses had been despoiled. Many of its friends of earlier days yet find garden homes, but the poor old lily was driven forth long ago, and few now care for it, save the children, who like to braid its long, sword-shaped leaves into "cat-ladders" and to play with the slender stems and quickly fading blossoms whose petals bring their gaudy colors all the way from the warm skies of the Levant. A friend calls these day-lilies graveyard-lilies, because churchyards are among their favorite haunts. Not far from the statue that commemorates the first battle of the American revolution, just below the spot marked by stone posts and an inscription telling that some British soldiers are buried here, a bed of these same old lilies has spread itself, as if piously to mark the uncared-for stranger-graves.

The tiger-lily has as yet only taken to the highways and fields in certain localities. On the outskirts of one of the very early settled towns, beside a slow-flowing tidal river of the Chesapeake Bay, it has quite run wild and the splendid flowers grow abundantly among the beautiful mallows, graceful sedges and grasses that help to make up the remarkably interesting and varied flora of that region. The strong likeness between this oriental lily, brought all the way from China, and our beautiful wild American Turk's-cap suggests their common ancestry. The shapes of leaves and flowers and the markings of the latter are much alike. What an interesting chapter in heredity would that be which could, in truthful detail, outline the long ancestry of even one or two of our most highly developed flowering plants!

In the days of our grandmothers, the tansy was very

generally cultivated as an herb in the kitchen-garden, and even now in country places, it finds room there. It has never been prized as a flowering plant, but the exquisitely-cut frond-like leaves, of rich green, and the prim



BOUNCING-BET.
(*Saponaria officinalis*.)

little gold buttons that make up the flower-clusters are really very beautiful. This clean, healthy-smelling herb now grows in dense miniature thickets along many a New England by-road, and finds lodgment in fence-corners and in pasture-lands. In eastern Massachusetts herb-gatherers cut it with the reaping-hook and carry it off by the wagon-load.

A friend gifted in flower-painting once told me that she thought flowers should always be painted outdoors as they lost much by being brought away from all their own familiar surroundings. Doubtless this rule would hold good with the toad-flax, if the artist wished to give

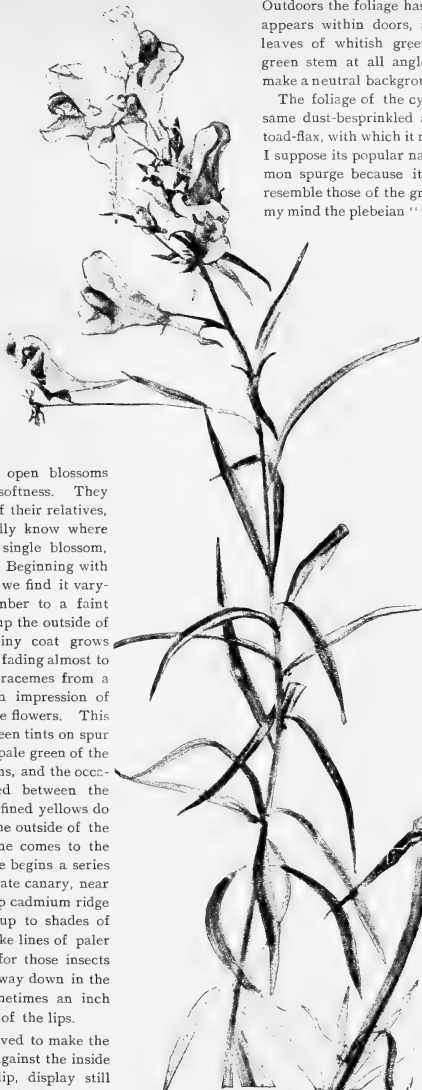
the impression left on the mind as one passes by patches of this too little observed wayfarer. But the real grace and beauty of the plant is best seen on plucking some stalks in full bloom and studying them leisurely indoors. There is more grace and softness about the common *linaria* in early autumn, particularly if August has been wet, than earlier in the season, when the stalks are stiffer and the racemes less crowded and curved. I was surprised enough one September day, upon putting a few tall slender stems, ending in full flower-clusters, into a brown stone jug to see the effect which they gave. But few buds were left and the short crowded racemes of wide open blossoms had an exquisite downy softness. They have little of the stiffness of their relatives, the snapdragons. I hardly know where else one could find, in a single blossom, such a study in yellows. Beginning with the fragile elongated spur, we find it varying from a translucent amber to a faint greenish yellow. Coming up the outside of the corolla-tube, the satiny coat grows lighter in color, sometimes fading almost to white. On looking at the racemes from a little distance, one gets an impression of pale green, down among the flowers. This is caused by shimmering green tints on spur and tube as well as by the pale green of the calyx, the short flower-stems, and the occasional tiny bracts scattered between the flowers. The pure well-defined yellows do not show themselves on the outside of the blossom-tube, but when one comes to the turned-back lower lip there begins a series of hues varying from delicate canary, near the margin, to the rich deep cadmium ridge that changes inside the cup to shades of orange. Two soft plush-like lines of paler cadmium are pathfinders for those insects which seek the nectary, away down in the extremity of the spur, sometimes an inch and more from the closure of the lips.

The stamens, always curved to make the same precise little pattern against the inside of the pale thin upper lip, display still another tint in their four buff anthers.

Outdoors the foliage has a dusty look, but this disappears within doors, and the numerous linear leaves of whitish green, falling from the light green stem at all angles, are so interlaced as to make a neutral background for the flower-clusters.

The foliage of the cypress-spurge presents the same dust-besprinkled appearance as that of the toad-flax, with which it not infrequently associates. I suppose its popular name was given to this common spurge because its leaves were thought to resemble those of the graceful cypress-tree, but to my mind the plebeian "tree-moss," by which name as a child I knew it, does not even suggest the beautiful dark drapery of the "poets' gloomy cypress." This spurge is, however, like the cypress, a frequenter of graveyards, and its round clumps faithfully mark out many a long-neglected mound. For its hardiness and persistence it deserves praise, otherwise I have never been able to care for it, though assuredly it belongs with my little band of garden exiles.

One of the best-known members of this hardy tribe of plant-wanderers, on the border-land between weeds and cultivated species, is the common purple-flowered live-forever (*Sedum telephium*): "frog-plant" it is often called by children who play with its leaves, loosening the epidermis, on the lower side of the leaf, from the parenchyma, by gently pinching it between thumb and finger until it can be blown up into a little bladder which somewhat resembles a small green frog. For some reason, this *sedum* has acquired a habit of flowering but infrequently and irregularly—perhaps on account of the change from the rocks or sandy soil which the stonecrops naturally affect in their European home to the rich loam of



TOAD-FLAX (*Linaria vulgaris*).

gardens and their outskirts. "It flowers only once in seven years," some old lady will solemnly tell you, as she gives you a slip of it.

Two other plants of less frequent occurrence should be mentioned with these humble old friends. A small mallow (*Malva sylvestris*) with much crimped leaves and bright crimson blossoms is found in out-of-the-way spots about country homes in parts of the western states. The rich purple veining of both petals and leaves, and the dark splashes of the same hue on stems and petioles, afford a beautiful illustration of an interesting theory propounded by certain artists who believe that whenever decided but opposing colors meet, either in a plant or an animal, some unifying color is present to harmonize them. I have seen this little mallow growing sturdily

on the borders of heaps of ashes and charred coals that had been raked out and allowed to accumulate about the large outdoor brick ovens. Here the brave little plants opened their cheerful flowers and ripened their dainty "cheeses," as the children call the fruits, with which they stock the larders of their play-houses.

The sweet old cinnamon-rose is scarcely less hardy than its sister, the sweetbrier. One who has ever been greeted upon awakening on a summer morning in some country chamber by fragrance blown through the open window from one of these rose-bushes beneath can never pass by a ruined chimney or the brink of a fallen-in cellar where these roses bloom neglected, without pausing to smell their breath and to break off a few buds and blossoms.

FANNY D. BERGEN.

SECOND-CROP IRISH POTATOES.

A SOUTHERN SPECIALTY.



AFTER the war the great development of vegetable-culture in the south, particularly of early Irish potatoes from seed brought from the north, led to the discovery that the second crop could be better grown from tubers of the same season.

At first the only object in growing the second crop was to obtain good potatoes for table use in winter, the early crop in the south being useless for this purpose. Who first began to use the second crop for planting the early crop of the following year, I cannot ascertain, but the use of these potatoes for early planting is now so general in all the market-gardening sections of the south that comparatively few northern potatoes are now brought south for planting, and these are mainly used to grow seed for the late planting, since it is the opinion of many growers that it is necessary to raise seed-stocks from northern seed to prevent degeneration. There is strong evidence, however, that no such course is necessary, and that with proper care the potato can be kept up to its standard quality and productiveness better in the south than in the north.

We take potatoes of the early crop and spread them in the shade of some outdoor screen until they are well greened by the light. They are then bedded in a single layer, as sweet-potatoes are bedded, but without manure or hotbed, and covered with about two inches of sandy soil. Here they remain until August. Any time from August 1 to August 20 will do well in this latitude for planting the crop. We then use for planting only those tubers that have started to sprout, and always plant them whole. Many failures in getting a stand are due to cutting the potatoes at this season.

But the most important matter is the preparation of the ground and the mode of planting. I prefer for the late crop a piece of ground upon which a crop of field-peas has been grown and mown for hay. This can usu-

ally be had, even when we use the same land upon which the early crop grew, for if we sow peas at once upon the land as soon as the early crop is off, they can be mown by the second week in August, and the stubble can be at once turned over for the second crop.

We practice an entirely different mode of planting and culture for the late and early crops. Early Irish potatoes in this latitude make the greater part of their growth in a cool season, and comparatively shallow planting and high bedding are best, because a ridge of earth warms through more rapidly than the flat surface. But with the late crop the conditions are different. The soil is apt to be dry and the weather hot, and the land should be cultivated perfectly flat, so as to retain moisture. But in order to secure a uniform stand and growth it is necessary to cover the potatoes very shallow. Then, if flat culture is practiced, the potatoes will form too near the surface, and will be apt to be injured by both sun and frost before digging-time. I therefore hit upon the following plan, identical with what has since been published by the editor of *The Rural New-Yorker*, I believe, as his own trench system, which he recommends for early planting at the north.

No matter how thoroughly the land was manured for the early crop, it will be best to use a liberal supply of fertilizer for the late one. If put upon pea-stubble there will be no need for further purchase of nitrogen, as was essential with the early crop; but it will always pay to use 600 pounds of acid phosphate and 200 pounds of kainit broadcast for this crop.

In planting, lay off the furrows three feet apart, run twice or three times in a furrow and clean it out with a shovel if it is not uniformly deep and regular. Prepare, plant and cover one row at a time while the soil is fresh. Plant at the bottom of the deep furrow, but cover very lightly. The covering we do with a hoe, and let the man who covers tramp over the row after covering, so as to press the soil tightly to the seed. When planting on a large scale a machine similar to one used in some sections

for covering corn may be used. This consists of an ordinary plow-beam and handles, with a cross-bar in front, to which are attached two spike-teeth a foot apart, and behind these a narrow roller. The two spikes will pull in plenty of soil from the sides of the trench, and the roller will compact it. Such a coverer can easily be made at home. Potatoes properly sprouted, if planted in this way will all be certain to grow, and it is easy to get a good stand. As the potatoes grow the soil is pulled in around them by running the cultivator through until the trench is level. Cultivate only with the ordinary one-horse cultivator, and do not hill up. The potatoes will then form in the deep bed of mellow soil, the deep furrow will tend to retain moisture, and the crop will be larger than if grown in hills or ridges.

The important points to observe are:

- (1) Bed the seed in the soil until planting time.
- (2) Plant the second week in August, and use only potatoes that are sprouted.
- (3) Plant in a deep furrow, but cover very shallow, and pack the soil to the seed.
- (4) Never cut the potatoes for the late crop, whether they are large or small.
- (5) Gradually fill in the soil to the plants as they grow, and cultivate the crop perfectly flat.

When grown on a small scale and in dry land, after the tops are dead, clean them off and throw a ridge of soil over the row by throwing a furrow on each side. Cover the ridges with pine-straw, and the potatoes will keep there during the winter as well as anywhere, can be dug as wanted for the table in winter, and will be found in better condition for planting at the usual time than if dug in the fall. This plan cannot be well practiced except on well-drained ground, and not further north than central eastern North Carolina. There is a story told of a North Carolina man who treated his crop in this way, dug them in winter, shipped them to New York and sold them for "new Bermudas" at a fancy price. If the crop is dug when mature, care should be

used to put them in a dark and cool place as soon as possible. The only difficulty about keeping these potatoes in this latitude and southward is the liability to get them too warm. A tight room, made totally dark, is best. In this climate in such a room, with the potatoes in barrels, there is no danger from freezing, for it will take a drop considerably below 32° in temperature to freeze a

potato fully exposed, and if the room could be kept between 30° and 35° at all times, so much the better.

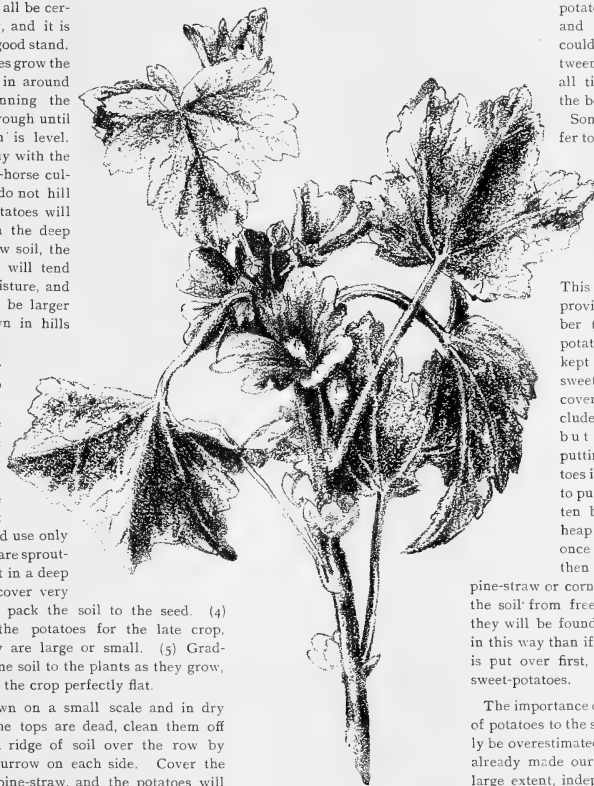
Some planters prefer to keep the potatoes in outdoor heaps, covered with pine-straw and earth, as sweet-potatoes are kept.

This is a good plan, provided we remember that the Irish potato needs to be kept cool, while the sweet-potato wants cover enough to exclude not only cold but moisture. In putting Irish potatoes in hills, I prefer to put not more than ten bushels in a heap; cover them at once with soil, and then cover with pine-straw or corn-stalks to keep the soil from freezing. I think they will be found to keep better in this way than if the pine-straw is put over first, as we do with sweet-potatoes.

The importance of this late crop of potatoes to the south can hardly be overestimated. Its use has already made our growers, to a large extent, independent of the purchase of northern potatoes for

planting the early crop; for it is found that these late potatoes, being so short a time out of the ground, are unsprouted at our planting time, and grow with greater vigor than the northern seed.

The potato, it must be remembered, is only an underground stem, or, rather, a collection of stems, around which the plant has stored large quantities of starch for food to sustain future growth. The eyes of the potato are the terminal buds of the branches which traverse this



MALVA SYLVESTRIS (Page 476).

store of starchy matter. When the potato sprouts, this store of starch is changed by a peculiar unorganized ferment into a kind of sugar, which the plant can use as food. This change in a sprouting potato is shown at once when it is cooked for the table. It is no longer dry and starchy, but clammy and sweetish. Now, when potatoes sprout in the cellar before planting time, these sprouts are rubbed off and the future growth is to some extent weakened, for these first sprouts are the growth of the strong terminal bud of the shoot, and all subsequent growth must come from the lateral and weaker buds on

the shoots. The northern potatoes sent south for planting have nearly always been injured in this way while the late home-grown crops have not started an eye. Therefore when the home-grown ones are planted the growth comes from the full strength of the terminal bud, with all the stored-up food in the potato, and is much more vigorous and able to withstand the fickle weather of our early spring. This matter of extra robustness and ability to withstand sudden changes is one of the most important items.—*W. F. Massey, in Bulletin of N. C. Agricultural Experiment Station.*

THE NEW CELERY-CULTURE.*

HOW TO GROW FINE CROPS WITHOUT BANKING.



STARTING THE PLANTS.—For early celery, seed of White Plume or Golden Self-blanching is sown in February in flats two and one-half inches deep, containing about two inches of loam. The surface of the latter is packed down, the seed is sown, pressed into the soil, and covered with about an eighth of an inch of loam. It is then watered, and the flats are piled on top of each other to keep the soil moist. In about six days they are taken down, watered, and piled up again, to remain until the seed begins to sprout, which one may expect in from ten days to two weeks. The flats are then spread out so that the sprouting seed can get sun and air. At this time great care is necessary to keep the sprouting seed from drying up. Two hours under glass in the hot sun may destroy the plants, and yet sun and air are just what they need to make them stocky and vigorous.

When the plants are about one or one and one-half inches high prick them out into flats filled with good, rich loam two to three inches deep, or set in the garden if the weather is suitable, from two and one-half to three inches apart. Great care must be taken at all times to give the plants water enough to prevent them from wilting. When they are from two to three inches high I scatter about two tablespoonfuls of Stockbridge celery-fertilizer on every 75 or 100 plants. Scatter the fertilizer on the plants when the foliage is dry; then brush it off with a broom or the hand.

PREPARING THE GROUND.

Soil should be well enriched for celery-growing. A crop of celery cannot be injured by too much manure, provided it gets plenty of water also. Plow the manure under, or, in a garden, spade the ground, carefully turning all the manure under. Then scatter about 1,500 pounds of celery-fertilizer to every acre, harrow and rake the ground level. If the soil is a light loam, roll it with a heavy roller. A board will serve for firming a small patch. Raking the ground smooth saves much

labor. If the ground is level and well pulverized, you can run the knives of the wheel-hoe very near the plants, save much hand-weeding, and the hoe can be run much faster.

For all kinds of vegetables—beets, carrots, onions, etc.—a thorough raking, which pulverizes and levels the ground, not only saves labor but also increases the product. A wheel-hoe cannot be advantageously used if the ground is lumpy, stony or uneven. In the farming of the future the wheel-hoe is destined to become a very important implement.

SETTING THE PLANTS.

Mark off the ground in rows seven inches apart, and with a dibble or trowel set out the plants—from three to six inches high—seven inches apart, straight in the rows. If they are half an inch from a straight line, either to the right or left, they are in danger of being cut off by the knives of the wheel-hoe. Press the ground firmly about the roots. If the weather is warm and dry, water well after the plants have been set out, giving the ground a good soaking to keep them from wilting.

When the weeds begin to appear, run the wheel-hoe through the rows. The knives are too long for rows seven inches apart; cut them off about five inches from the center of the hoe. There will then be two inches between the ends of the knives and the next row. After you have gone through one way, let the crop stand a day or two before going through the other way. Four to six days afterward go through again. Use the wheel-hoe frequently and you will be agreeably surprised at the large amount of hand-weeding that is avoided.

When the plants are about half-grown, scatter broadcast about 1,200 pounds of fertilizer to the acre. Do not do this when the foliage is wet. I have never discovered any injury from using fertilizer, even on tender plants, when the foliage was dry.

The plants are now so large that the hoe cannot be run through them. They cover the ground, preventing the weeds from growing, except a few that started before the celery. Now, as you look over the field, you can readily realize that the crop is very large—126,000 plants on an acre. The soil is full of working roots that

* Condensed from pamphlet "The New Celery Culture," published by The Rural Publishing Company, New York city. Price, 20 cts.

require a large amount of food, and it must be given in a liquid form, hence the necessity of giving the plants plenty of water. Vegetables drink the food, while animals eat it; hence the great importance of giving celery an abundance of water to dissolve its food. The more fertilizer used, the larger the growth and the more water required to make the food in the fertilizer available. There are 100,000 good plants upon an acre, allowing 26,000 for small plants and "misses."

The illustration shown here is taken from a photograph of my field, displaying a crop from which I sold celery at the rate of \$10,000 per acre. The plants from this crop were set seven inches apart each way. The celery was very nicely blanched and much cleaner and brighter

up, thereby checking the growth. No rheumatic pains are caused by getting down on one's knees to press the earth about the plants. No worms eat the glossy surface of the stalks, making them rusty and unsalable. The growth is very rapid, consequently the crop is tender, solid and brittle. There are but very few spongy plants. Watering or irrigating is the all-important work, and about all that is necessary at this stage of growth. The natural rainfall cannot be depended on to give sufficient moisture to grow such a large crop.

Celery to be "good" must be pleasing to the eye as well as pleasing to the taste. The bunches ought to be uniform in size, the plants washed clean and well trimmed. By adopting the new method of growing



A CELERY-CROP GROWN BY THE NEW METHOD. (From a Photograph.)

than any celery banked with earth. It was pronounced the best celery ever seen at that season of the year. One plant made a satisfactory bunch which readily sold for \$1.25 per dozen, or over ten cents a plant. Last season the yield on one-twelfth of an acre was at the rate of \$4,000 an acre. It was sold to commission merchants in Providence, R. I., for \$1 a dozen; a few dozens were sold in the market for \$1.25 each.

BLANCHING CELERY.

Three or four weeks after the 1,200 pounds of celery-manure before mentioned had been applied, about 1,300 pounds more were used. The celery at this time was growing and blanching rapidly. In the new celery-culture there is no back-breaking labor in banking-up. The working roots are not cut off to secure earth to bank it

celery—that is, planting it seven inches apart—the foliage is so thick that beneath it the air is moist and the shade dark, causing the celery to blanch well, especially the easily blanching varieties. All celery not blanched before it is time to secure it from frost is packed in pits. These are dug from eighteen inches to two feet deep (according to the size of the plants) and about six feet wide. The earth thrown out is banked on each side, forming a wall one foot deep and making the pit from two and one-half to three feet deep. The celery is dug up with a little dirt adhering to the roots, carried to the pits and closely packed. Posts are placed where needed to stretch stringers upon, to support the covering of boards. Be sure the covering is strong enough to hold up from three to eight inches of soil. Leave a board loose every fifteen

feet so that it can be taken off to give air or to reach the celery when wanted. Cover this board with coarse manure so that it may be removed, and the celery taken out when the ground is frozen.

This pit answers very well for keeping celery up to Thanksgiving or Christmas. One acre of celery well grown by this new method will require about one-tenth of an acre of storage-room. Very few farmers have this in their cellars or root-houses. Make the pits a foot higher on one side, so that the water may run off. Do not store your celery in pits or cellars when wet. I have stored celery in pits as green as it could be and taken it out in February and March well-blanching. The pits are dug in the field near the celery, so that the latter can be easily stored when dug. My soil is a sandy loam, so there is no danger of water getting into the pits. This high, dry, sandy soil is considered poor soil for celery, but my experience has taught me that nearly all ground can be made good by a judicious use of water and plant-food. Let me advise all those who contemplate growing celery on an extensive scale not to do it by this new method without experience, but to try a small piece first.

COST OF AN ACRE.

The expenses of growing and marketing one acre of celery by the new method are as follows:

1 pound seed	\$2 50
10 cords manure	50 00
Spreading	2 50
Plowing	2 00
Raking and rolling	5 00
126,000 plants	126 00
Planting	41 50
Hoing and weeding	27 00
2 tons fertilizer	80 00
Sowing fertilizer	3 00
Cleaning and marketing	250 00
Storing a portion of the crop	50 00
Cost of water and labor in watering	50 00
Total	\$689 50

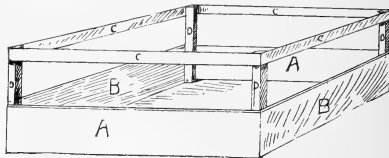
With experience some of these expenses can be reduced. Barn-yard manure in this vicinity is worth from \$3 to \$4 per cord. The cost of growing 126,000 plants, in hotbeds or greenhouses, for early celery, would amount to more than \$1 per thousand; but part of the plants were grown in the field at a cost of 50 cents per thousand. The cleaning and marketing would cost about \$120 if the celery is sold to commission-merchants and marketed from the field before it is stored. The water used was from the city supply, running through a half-inch meter, conducted through pipes in and through the field, to which was attached a hose at frequent intervals. The water-supply was very unsatisfactory and insufficient, especially in dry, warm weather when the celery was large.

MARKETING THE CROP.

The question, "How did you market such a large crop of celery?" has been often asked, and it is a very important question, judging from the large number of inquiries received. In places where the crop had grown rankly and rapidly it was ready for market in August. Two large tubs, made by sawing a hoghead into halves, were taken to the field to hold water for washing the celery. A man went along the rows digging up the plants with a spading-fork in his right hand, pulling

them out with his left, and shaking the dirt from the roots by striking them against the handle of the fork. The plants were then stripped of wilted stalks and carried to the washing-tubs.

No knife was used on the Golden Self-blanching variety. The roots were left on and the plants were washed with a brush-broom in one tub and rinsed in the other, then placed on a table, where they were bunched and packed in water-tight boxes or crates, enough water being poured into the boxes to cover the roots. Celery



CRATE FOR MARKETING CELERY.

A, 26x4 inches; B, 14½x4. Top pieces—C, 1½-inch wide, ½-inch thick. Posts—D, 12 inches long, one inch square. The box is made of ¾-inch stuff. The joints are mitered and painted before nailing together. The posts are nailed inside the corners. The crate is painted inside and out with any color—white preferred.

marketed in this way will keep good one week in warm summer weather. Commission-merchants can then ship to hotels and stores throughout the country.

This is the greatest improvement ever made in marketing early celery. A description of the box or crate is given below the illustration.

These crates are highly praised by all who use them. They are made to hold 2 or 2½ dozen roots each. If the market is dull and part of the load is unsold, it can be left at some place or brought home and offered for sale the next day with a clear conscience, for it will be as good as the celery taken up 24 hours later.

The increase in the consumption of celery during the last few years has been so great that growers have not kept up with the demand. Last month (February) celery was selling in Boston for \$4 per dozen. Three or four years ago but small quantities were sold before Thanksgiving. Now large quantities are sold in August, September and October. To keep celery brittle, solid and salable, these water-tight crates are indispensable during the warm summer weather. On Thursdays I have sold 60 or 90 dozen celery-roots to commission-merchants, they selling them on Fridays and Saturdays to markets and stores. The markets kept some of the celery till Tuesday and Wednesday of the next week, and this in summer with the thermometer up to 60 and 80 degrees. Early celery cannot be marketed successfully without these crates. A few buyers will object at first to having the roots left on, but after they see the advantages of the system they will not buy celery in any other form. They find they can deliver it to consumers fresh and solid with the roots on. When celery is grown and marketed in this way, three men can take up and prepare about 100 dozen in a day.

ROBERT NIVEN.

FRUIT AND GARDEN NOTES

BY PRACTICAL HORTICULTURISTS



HE apparently light fruit-crop here and in many other sections, the trouble we still have with diseases and insects, and especially the poor quality of a great deal of the fruit produced and put on the market, are convincing proofs that we cannot yet dispense with further thought, study and effort, or the help and advice of all practical men that are willing to give such help and advice to their less skilled brethren. The hints found in the following contributions will be helpful, because of their highly practical nature.

STRAWBERRY-NOTES BY THE ORIGINATOR OF
PARKER EARLE.

Our strawberry-season, which has been the most unfavorable ever known here, will practically be over in another week. It opened on April 20, with Michel Early variety, and will close by May 31, with Parker Earle. These are the only two varieties on my grounds that have been worth picking this season. It has rained almost continually during the whole season—no ordinary rains, but regular torrents, with occasional wind and hail-storms.

Michel Early, though not productive enough to be very profitable, is certainly the best extra-early berry I have yet found. When Parker Earle is better known, it will become one of the most popular varieties in existence. It must be grown on light, warm, well-drained soil to do its best. The growing plants alone attract admiration, but when blooming and fruiting they become simply wonderful. Those who see them for the first time, never seem to tire of admiring and praising them. Shipments made from Denison, Texas, to Chicago, Illinois, over 1,000 miles, and requiring more than 50 hours time, arrived in fine condition, so that there can no longer be any question about Parker Earle's keeping and carrying qualities.—JAMES NIMON, *Texas*.

WHY NOT IMPROVE THE QUINCE?

Quince-culture has never received the special attention that it should, but some experiments have been made toward an improvement of the fruit in different directions. I am confident we obtain from it a table-fruit as good as any we now have for cooking. Last fall I found on a young bush some extraordinary samples, two of which were water-cored. These were rich, delicious and tender eaten from the hand. They were not entirely free from



A PLANTATION OF PARKER EARLE STRAWBERRIES ON THE GROUNDS OF THE ORIGINATOR.

Growers here will market less than one-fourth of a crop. Under these conditions it is impossible to make anything like a fair comparison of the merits of the different varieties. Many that have usually made fine crops under ordinary conditions, have this season been entire failures.

the fibrous quality of the quince, but suggested great possibilities in the fruit.

The ordinary method of propagating the quince is by suckers and by cuttings. I suggest that there be a general move in the way of seedlings. We need now above

all things an association to encourage the propagation of new and choice fruits. If by great labor a man secures some fine new fruit, it is nearly impossible for him to place it before the public so as to make it profitable. Many of the choicest of our strawberries, grapes and vegetables have been stolen from the originators. The quince is but a single example of fruits that we have in the crude condition, and which with some encouragement to workers might be developed into delicious fruits. The papaw and the persimmon are other examples. We go abroad, to obtain the results of the labor of the Chinese and Japanese, and neglect what we have at home.—E. P. POWELL, *Oneida Co., N. Y.*

A PROFITABLE KENTUCKY APPLE

The Winesap is one of the most profitable and popular winter apples in this section of country, if, indeed, it is not the very best. It is an early and prolific bearer; and owing to late blooming, and the timely ripening of its fruit, the latter is seldom killed by late frosts in spring, or injured by early freezing in the fall. The apple is of medium size, and dark red in color. Its flesh is rich, juicy, subacid, crisp, and deliciously flavored. Although inclined to drop off at maturing, it is a firm, healthy apple, and one that keeps well.

The tree is hardy, and withstands well those enemies so destructive to orchards. It does not grow to a very large size, and is inclined to spread rather than grow tall. Its branches extend far out on every side, and when laden with fruit they bend quite to the ground. Owing to this, little injury is done to the fruit dropping off. This apple being hardy and firm, may be easily and safely transported, and is quite profitable.

I do not know the limits north or south in which this apple could be grown successfully, but believe it would be profitable further north than Kentucky.

The trees bear up well even under neglectful treatment, and none respond with more bountiful crops when given proper care. On this proper care hinges the well-doing of any tree or orchard. If well nurtured at the start, trees seldom fail to grow up thriftily; it is after the bearing period is reached that the trouble sets in. This comes chiefly from neglecting to sustain the fertility of the soil. Before the bearing period, the tree alone is to be built up, and a fairly good soil is sufficient. But after this period, besides building up the tree, the fruit is to be matured, which doubly taxes the resources of the soil. Hence it is apparent how great is the necessity of liberally supplying the soil with proper fertilizers. A good supply of manure, leam and ashes, or a compost of these, should be given the orchard at least every alternate year.—JAMES I. BAIRD, *Kentucky*.

THE FUTURE OF THE PEACH.

Strange as it may appear, the growth of a peach tree seems to have much to do with its longevity. Early maturity means early decay. Growth and decay are the two prominent characteristics of all vegetation. It is only a question of time when growth will cease and decay begin. The peach tree comes to maturity and be-

gins to decay in less than 25 years after planting, frequently in much less than this. To secure a long-lived tree, great care must be given to its growth, both in the nursery and the orchard. Too much growth in one year is always liable to prove injurious to longevity sooner or later. In order to be productive and profitable, the newly-formed fiber must be matured and ripened by autumn rather than by the zero days of winter. If the soil has not been previously exhausted by cropping, no fertilizer is necessary until the trees begin to bear. Thorough cultivation will secure growth enough unless the soil is very poor. If it is naturally productive, the growth may be too much. By careful observation you will find that the shortest-lived peach-orchards are those that were hurried forward most by manure and extra cultivation while they were young. That peach trees should grow and bear fruit for a long time without having their productive powers stimulated by fertilization could not be expected. After trees begin to bear luscious fruit for us, we must return a suitable compensation to the soil, for the growth of more fiber and more fruit. It is necessary to remove all diseased trees from our orchards as soon as discovered and to fill their places with better trees, grown under better methods of cultivation. When peach trees are planted and cultivated with more reference to longevity than to a heavy crop of fruit the fourth or fifth year after planting, we may hope to see orchards most fruitful at 25 rather than at 10 years of age.—C. P., *Michigan*.

FRUITS AND FLOWERS IN NORTH CAROLINA.

It is curious to notice that while our people imagine California to be a frostless country, at least the southern part of it, the director of the Experiment Station reports as low temperature as we have here, and says that even at Pomona figs are hurt worse than ours are here. We had no figs killed here last winter out of a list of 30 odd sorts from the south of Europe and Asia Minor. Some figs lost the early crop of fruit, but sorts like Osborna, Prolific, Brown Turkey and Black Ischia have fruit now half-grown, and will all of them make a finer late crop. A letter from San Diego county, California, says, "Our orange trees were frozen to the ground." Only the other day I saw an ordinary Mediterranean Sweet orange tree in a village yard down on our southern North Carolina coast, which had come through the winter with only a little yellowing of its leaves. In the same neighborhood palmettos towered above the thickets in which they were growing with naked stems 35 feet high to the crown of foliage, and I brought home with me leaves measuring five feet by seven feet with petioles six feet long. So I concluded that California has not much advantage over the Old North State in climate.

Two months ago I bought two pounds of choice dried figs at a grocery-store. From them I washed out the seeds and sowed them in boxes in the greenhouse. They germinated as readily as cabbage-seed, and now I have an embarrassment of riches in the way of seedling figs. Whether any of them will be better than those we have, of course I cannot say, but I have long been trying to

get the true Smyrna fig (if there is any such sort, for I always get Angelique or White Genoa for it) and now I will see what these seeds will give me.

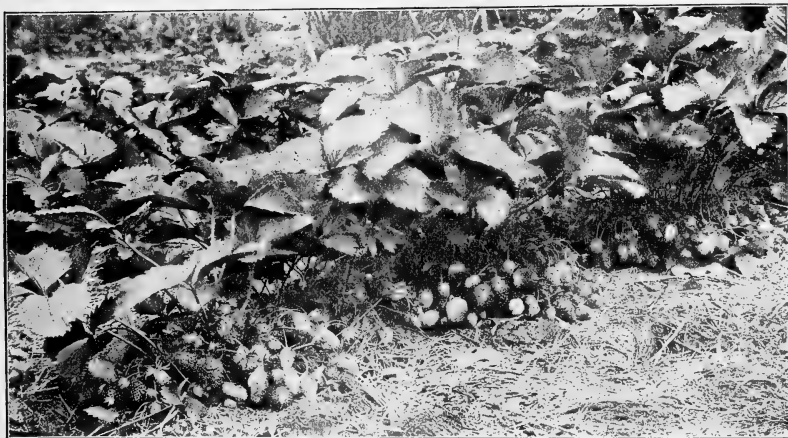
One of my black students from British Honduras supplied me with a quantity of unrecognizable seeds with negro names, which are now giving us lots of fun in watching, and wondering what they will turn out to be. One of the recognizable things was the fruit of the henquin or Sisal hemp. This was a pleasantly acid fruit to eat, and its seeds are now growing finely. The other seeds, with outlandish names, we will doubtless identify as the plants grow and bloom.

The winter has been too severe for Satsuma oranges on their exposed hill-top, and they are badly killed back. With a fair amount of shelter such as we give gardenias here, they would have been unhurt, but full

slight yellowing of the leaves. Down on the coast-plain this gardenia grows almost tree-like in stature, entirely unprotected, but here we are 400 feet above tide, and colder.—W. F. MASSEY, *N. C. Experiment Station*.

ESSENTIAL POINTS IN TRANSPLANTING.

To insure life and secure prompt and vigorous growth in the new home, the tree, shrub, or plant must be removed with care and skill. If we take a plant up with all its roots, including the numerous small fibers with all their minute root-hairs, and place it compactly in the soil in its new position, its transfer causes no check in growth. The life of the plant is dependent largely upon the food that it derives through its roots. This food is taken up from the soil by the minute root-hairs, situated near the ends of the root-fibers. From these root-hairs the food, in solution, passes up to the leaves of the plant



A PEEP THROUGH THE CAMERA AT PARKER EARLE. (See page 475.)

exposure to the wind and sun was too much for them. We have planted a number of trees in our coast region, and are planting others in sheltered places here. Some experiments in protecting tender trees and shrubs outdoors were very successful. *Caladium esculentum* and Crozy cannas came through finely with a cover of coarse manure. *Agave Americana* came through alive without protection, but it is a most unhappy-looking affair with all its outer leaves gone. With a waterproof cover over it, it would have been all right. *Nerium oleander* with pine boughs around it is all right; and one clump with two or three dozen stems from an old stump brought its center through unharmed by the protection of the outer stems. *Gardenia florida*, close under the east front of the college, but sheltered from the morning sun by a projection of the building, wintered with only

through the trunk, and is made ready for the plant to build up into new, growing tissue. Any injury to the root-hairs by which their power of absorption is checked endangers the well-being of the plant.

The most favorable time for transplanting is when the plant is dormant, because, during this period, the processes of growth are least active. As the plant is without leaves at this time, evaporation is at its minimum, and little nourishment is needed. The injured parts of the roots will then have time to heal and to form new rootlets ready for active growth when the time comes.

The soil to receive the roots should be freshly stirred and made moist, neither too dry nor too wet. It should also contain the elements necessary to nourish the plants. In taking up the plant, retain as much of the finer part of the roots as possible. Do not dig too close to the

stem for fear of destroying the greater part of the fibers lying well out from the crown of the root. It will pay to do a little extra work by digging some distance from the stem.

The hole to receive the plant should be shaped according to the position the roots occupied before they were taken up, and a trifle deeper. Examine all roots before planting, and if any are bruised pare them off neatly with a sharp knife. If on any occasion the roots happen to become dried before you are ready to replant them, immerse them in water for a few hours before planting.

Everything being ready, place the roots in a position favorable to the absorption of water, and so that the supply of oxygen shall not be cut off. Place moist and porous soil in contact with the roots, so that their full absorbing surface may be called into action. Many advocate packing the soil by tramping. This should be done with some caution, as the root-fibers may be broken off during this harsh operation, and thus hinder absorption in some degree. Work the soil among the roots with the hands; tapping it lightly after a considerable amount has been placed on the roots will be no objection, but the top soil should be loose.

The top of the plant should be reduced in proportion to the finer roots in order to lessen the amount of evaporating surface. If a full-grown plant is to be transplanted, great care should be exercised in this direction. Cut back the top so that when growth does take place a well-shaped head will be formed. If the growth does not seem to be free afterwards, it is evidence that the roots are not taking in a sufficient supply of nourishment, and the top should be reduced still more.

Plants with foliage should be shaded for a few days after they are transplanted, to lessen the amount of evaporation, and that the roots may have time to resume absorption. Mulching the soil about newly-set plants is of benefit, as it holds the moisture and keeps down the weeds. Frequent cultivations are beneficial in keeping the soil loose to admit oxygen.—J. L. HERBST, *Wisconsin*.

IMPROVED METHODS OF TRANSPLANTING.

My help and I have been setting plants by the hundreds of thousands. These plants are Prizetaker onion-plants, grown according to the "new system" as expounded by

T. Greiner. But my method of setting differs somewhat from his. We set the plants along a line stretched across the field. I found that cross-marks were of no value, as they became obliterated before being of any use. We began last year by using pointed sticks for dibbers, but progress followed experience, and now we use neat spring-steel instruments with knobbed or chisel-shaped handles, the latter being preferred. The blades are about seven inches long, $1\frac{3}{4}$ inches wide, and as thin as is consistent with strength. The blades are ground smooth, and become highly polished on being used in the soil.

The operator kneels close to the line facing the direction toward which he is to work, grasps his instrument in the hand toward the open field, and inserts it on his side of the line and beneath it at an angle of 45 degrees. He forces it in at right angles to the line nearly the full length, then draws it toward him till a sufficient opening for the insertion of the plant has been made. It is then withdrawn, and the plant is inserted with the other hand on the opposite side of the line. The blade is immediately inserted about $1\frac{1}{2}$ inches in advance of the plant just set, and drawn back as before, the soil being thus crowded firmly about the plant. Again the instrument is withdrawn and inserted an inch or two in advance in the same way as before. In this way the previous opening is closed and a new one made for the next plant, which has meanwhile been picked up near the top by the thumb and forefinger of the other hand, and is now dropped into the opening just made, to be closed in by the next move of the dibber.

The plants when pulled from the bed are laid all even and parallel in piles, after which they are transferred to buckets or boxes containing water in the bottom to keep the plants from wilting. And here let me say that a wilted plant is harder to transplant, although it may live as well. The plant-receptacles are moved along in front of the workman by the hand which handles the plants, he himself following along upon his knees. A skilled workman, if supplied with good plants, can set from six to eight thousand plants in ten hours. But it is hard work, and we sorely need a machine to do this work for us. We need it, and we must have it. Who among AMERICAN GARDENING'S numerous friends will be the first to invent one?—CARL H. POTTER, *Wisconsin*.

THE BLACK-KNOT OF THE PLUM AND CHERRY.

AN OLD ENEMY FOUGHT IN A NEW WAY.



THE black-knot has become a serious obstacle to successful plum and cherry culture in many localities. Trees covered with the ugly knots are not an uncommon sight. They disgrace many an otherwise fine place, and remain a standing reproach to the shiftlessness of the owner, an eyesore to the public, and a nuisance generally. Unlike the peach-yellows, there is neither doubt nor mystery about the black-knot. It is a fungous

disease which is violently contagious, perennial and rapid in development.

Descriptions of the disease, with illustrations of diseased wood, were given in our June number. The illustrations on pages 479 and 481, taken from a bulletin of the New York Agricultural Experiment Station, give some further idea of the disease. The old remedy recommended time and time again for many years is to cut off all diseased parts of the trees some distance below the knots. This, however, is only part of the treatment. If

a branch containing the knot be cut from the tree and left on the ground, the spores will ripen in due season just the same. Therefore it is of the greatest importance that all knots be carefully collected and destroyed by fire.

A disease which advertises itself so freely and openly, and the treatment of which is too simple to be a matter of dispute among fruit-growers, it seems could soon be stamped out. But while ten growers may fight it in this way with might and main, the eleventh will allow it to spread over his trees, and from them back to those of his neighbors. The work cannot be pushed to completion, simply because here and there a shiftless person refuses to cooperate. The Western New York Horticultural Society has recently succeeded in getting a plum-knot law enacted, the provisions of which we outline as follows:

Section 1 makes it unlawful for any person knowingly to keep on his place any plum and cherry trees affected with black-knot, and makes it allowable for any one to enter upon his premises and destroy the affected part or parts of any tree.

Section 2 provides that the supervisor or mayor of any town or city where such disease exists may appoint three competent freeholders as commissioners.

Section 4 makes it the duty of such commissioners, or any one of them, with or without complaint, as soon as it comes to notice that black-knot exists, or is supposed to exist, within the limits of any town or city, to examine without delay the trees supposed to be affected, and, if the disease is found to exist, to place distinguishing marks upon the affected parts, or, in case the commissioner or commissioners judge that any tree should be entirely removed, to girdle such tree and give a written notice to the owner containing a statement of the facts, with the order to remove effectually and destroy by fire the part or parts of trees so marked, and to destroy entirely every tree that has been girdled within ten days from the date of the notice above required, such order to be signed by the three commissioners, or by any two of them.

Section 5 provides that whenever any person refuses to comply with the order, the commissioners are to carry out the directions of the order and remove and destroy by fire every tree or part of a tree so girdled or marked, the expense to be charged to the town or city.

Section 6 specifies the penalty for not carrying out the

order. The person neglecting or refusing to carry out the order shall be adjudged guilty of misdemeanor, and be punished by a fine not exceeding \$50, or by imprisonment in the county jail not exceeding fifteen days, or both, in the discretion of the court. Any justice of the peace of the town or city in which the offense shall be committed shall have jurisdiction thereof, and all fines shall be turned over to the mayor of such town or city, to be placed by him in the contingent fund of said town or city.



PART OF YOUNG TREE BADLY INFESTED WITH BLACK-KNOT. (From a photograph.)

Section 7 allows the commissioners \$2 a day for their services, in addition to all other reasonable charges or disbursements.

This law is a new weapon against the disease, and it seems to us can be made an effective one. The objection to the peach-yellows law, namely, that the peach-yellows is a disease yet subject to doubt and dispute and is not easily recognizable, and that there is some difficulty in enforcing

the law, does not hold good in case of the black-knot law. The provisions of the latter are simple, and its enforcement seems to be easy and practicable.

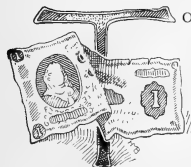
S. D. Willard, who drafted this law, wrote us June 20: "The new law should be enforced in every town; and it can be if good men who will discharge their duty honestly are appointed commissioners. That is the only hope of

the plum-grower; and if done for two or three seasons less complaint will be heard regarding black-knot."

Fruit-growers in New York state should insist upon the enforcement of this good law, and growers in other states should prevail upon their law-makers to give them relief in a similar manner. The longer the pest is allowed to spread, the more costly will be its extermination.

HANDLING GARDEN-CROPS FOR PROFIT.

HOW TO HARVEST AND MARKET THEM.



O BE successful in fruit and vegetable gardening we must not only grow crops well, but sell them at a good price. Often the sale of the crop is the more difficult part of the business. At any rate it is worth study and pains. Far too much poor-looking stuff is

put on the market, and, as a result, willing buyers are disgusted and prices depressed. Some practical growers who are successful in marketing have this month given us their ideas on this subject:

DR. T. H. HOSKINS' METHODS.

In my youthful days, "before the war," I was engaged for some years in market-gardening near Louisville, Kentucky. Most of the gardeners there were either German or English; and of the two, the first were decidedly the more successful. The Englishmen found that the old-country way of hilling or mounding up everything was fatal to success in that hot, dry valley. Some learned better and did better; but others went back to the old country. The Germans plodded along and mastered their difficulties, but rarely went further than to minister to the needs of their own countrymen in the way of *kraut*, *kartoffeln*, etc.

I believe I was the only Yankee in the trade, and, Yankee-like, I went in for improvements. I was the first to market my truck in neat bushel-boxes, with openings in the sides for handling, and made to fit my wagon. I was also the first to select and wipe my tomatoes, wash my potatoes, bunch my beets, onions, radishes and carrots, and attend to other niceties of that sort. The result was, that I was watched for by the stewards of the best hotels, and usually got home with my wagon empty by eight o'clock in the morning, while most of my competitors stayed until market was over, and brought back a part of their loads.

Three years covered my experience in this work in the Ohio valley. Some years afterward I settled on a ten-acre farm, close to Newport, Vermont, six miles from the Canada line. Here, everything in the horticultural way was in its infancy; and as the place became a popular summer resort, it has always afforded a good home market for fruit and vegetables. To the growing of these I have added the growing of nursery stock and seeds, and

have now upwards of thirty acres under cultivation. In all this time I have driven my own market team, and have endeavored to keep abreast with the gardeners of southern New England.

My chief rule is not to try to market any trash, but to have everything as good in quality and as nice in looks as I can. I try the novelties, and out of all find one or two per cent. better than the old varieties. All roots are washed and bunched, six in a bunch, neatly trimmed and packed. Usually these bunches are retailed at five cents. Parsnips in spring and celery in fall are exceptions in bunching. Green peas go in bushel-boxes, with strict care that all pods are well filled and not over-ripe. Peas and snap and shell beans are sold by measure. Potatoes (washed), cucumbers, summer squashes, tomatoes, dry onions, etc., are also marketed in bushel-boxes. As yet, I have no forcing-houses, as our trade begins late and the local demand is small for forced stuff. I use hotbeds for stock requiring an early start. There is a large sale here for onions, winter squashes and cabbages for shipment; but I am giving increased attention to fruit-culture, and have been gradually curtailing the vegetable business. I have also dropped seed-growing, except on orders. I have originated some successful varieties, but have introduced none under my own name.

Small-fruits have occupied much of my attention from the start; and I ship berries to points within 100 miles. With these, even more than with vegetables, I find it to my profit to market them in the neatest possible way, in clean crates and baskets, and to give a little more than full measure. Currants, gooseberries, strawberries and black raspberries are all profitable, but red raspberries and blackberries require very careful winter protection. After a twenty-five years' struggle with grapes I had nearly given up when I chanced upon the "Green Mountain" grape, which is so early and so good that I think it will be a great success.

I have now something over twelve acres in orchard, of trees all ages under twenty years. Only the Russian tree-fruits, aside from a few native ironclads, succeed in this cold north. Our first apple is Yellow Transparent, which ripens during August and sells quickly. Succeeding this comes Oldenburg and Peach of Montreal, equally popular during September—the first for cooking and the second for dessert. These are retailed from the wagon, and sold in packages of various sizes to dealers. Great

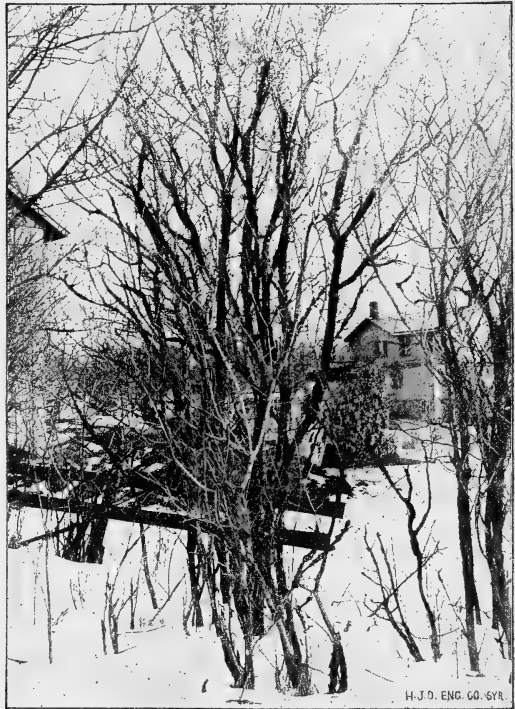
care is taken to have all fruit carefully handled and sorted, and only the best is shipped. For later sales we have chiefly the Wealthy and Fameuse for early winter, though Shiassee is taking the place of Fameuse. A superior late fall apple is Switzer. Our long-keepers are Scott Winter and Bethel. The excess of our tree-fruits over local demand goes either to lower New England or Montreal. Packages for apples must be neat and clean. For less than a barrel, half-bushel gift-baskets suit our trade best. We have now about 12 acres devoted to tree-fruits.

With pears, plums and cherries we had had nothing but failure until we received the new Russians about ten years ago. The earlier plantings of these are now coming into full bearing, and promise very successful results. The Bessemianka pear suits us very well as a medium-sized fall fruit; but I am looking now for something even better in the Polish pear, Ludovka, which I received nine years ago from the lamented Charles Gibb, of Canada, who went with Prof. Budd to Russia. It seems to be an ironclad Flemish Beauty. It is yet too soon to speak with much exactness of these lately imported tree-fruits of northern Europe, though they are much harder than any before known.—T. H. HOSKINS, *Vt.*

PROF. W. F. MASSEY ON PACKING FRUITS AND VEGETABLES.

One of the most difficult things to get a beginner in packing fruits and vegetables to understand is the necessity for filling packages tightly, so as to prevent jostling in transit. In the north the apple-growers understand this well, but from our superb apple-country of western North Carolina, where the finest apples in the world can be grown, the growers bring their fine apples to Raleigh in such bad order that they do not command half the price of well-culled and packed northern fruit of really more inferior quality. In a series of Farmers' Institutes, held in the mountain country, I tried hard to impress upon the farmers the necessity for tight packing, but it was hard to make them believe that the fruit would not be mashed by the process. They seem to think that apples are apples, and so they dump large ones and small ones, yellow ones and red ones indiscriminately, into all sorts of packages, and so loosely that they are jostled over and over each other and arrive here with cider running out of the packages. Another matter which has been insisted upon for many

years in all the farm papers, is the necessity for honest packing of fruit and vegetables. Growers seem to suppose that city buyers and dealers look only at the big specimens put on top, when in fact, the only one deceived in the transaction is the shipper, who always loses in cash and reputation. Years ago I grew tomatoes largely for shipping north. My neighbors, who witnessed my packing, ridiculed me for throwing to the hogs so many bushels of cracked and distorted speci-



PART OF AN OLD FENCE-ROW: SHOWING PLUM TREES BADLY INFESTED WITH BLACK-KNOT. (See page 478.) (From a photograph.)

men, and told me that I was throwing away all my profit. One particularly rainy season, when I had a crop of 30 acres of early tomatoes, and the splitting was especially bad, it took a great deal of nerve to throw the imperfect ones all out, but I did it and the result was that my crop started in at \$3.50 a crate, while my neighbors got \$1 or less. As the season advanced and good toma-

atoes became more plentiful and were retailing in the market at 25 and 30 cents a peck, I still got \$1.75 a crate, simply because the dealers had confidence in my brand, and knew they could deliver the crates to large buyers at a price above the market value, solely because every tomato counted. At the end of the season my tomatoes, though all that ripened after August 1 were closed out to a canning-house at 30 cents a crate, had brought a great deal more per plant than any of my neighbors', and I had a smaller freight-bill. At the same time inferior tomatoes, like those which had cut down their prices and reputation, had fed my hogs.

Growers are fast coming to the conclusion that it pays best to ship vegetables in crates of moderate size that can be easily handled. Even the crop of early potatoes, still largely shipped in barrels, will pay better sent in crates, and growers who have tested the matter are using crates for this crop. Plenty of city consumers will buy a whole crate, who cannot handle a barrel of potatoes, and potatoes in crates go off at better prices.

Neat and attractive packages are a great help in selling anything. A set of square baskets fitted into a crate as strawberries are packed, and each holding a peck or a half peck of peaches, plums or summer apples, with a few green leaves among them, will bring a great deal better prices than the same fruit would if dumped into one of the old rough crates holding nearly a bushel, and cut and bruised by contact with the rough slats. Neat gift-packages, honestly packed and honestly culled, with the honest grower's name plainly marked upon them, will always pay and pay well.—W. F. MASSEY, *North Carolina*.

WHAT ELLWANGER & BARRY SAY.

At present the pear-crop looks as if it would be smaller than usual; the fruit is dropping badly. Our choice pears are put up in bushel-kegs, and the plums in 15-pound baskets. As we do not grow peaches in quantity, we cannot tell you what package is best for that fruit.

Our practice is to assort our fruit carefully and to grade it judiciously. The best fruit we get high prices for, and that of poorer quality we sell for what we can get.—ELLWANGER & BARRY, *Rochester, N. Y.*

CATERING TO THE BOSTON MARKET.

Our vegetables are sent to the exacting Boston market either in bushel or barrel-boxes. The bushel-boxes are nine inches deep, and square 19x19 inches. The barrel-boxes are 38x18 inches in length and width, and 10½ inches deep. By considering the number of bunches or individual varieties contained in the standard boxes, the buyer knows whether the size of the bunches is right for his retail trade. Overgrown monstrosities and uneven grading find little favor with dealers.

Bunches of vegetables should be of a size convenient and desirable for single sales. In the case of long radishes, nine roots constitute a bunch, and each root should be of a size that when bunched, 100 bunches will fill a barrel-box. There is a knack in bunching radishes;

the tops should be tied with bass-grass not less than three inches from the point where the top leaves the root; by so doing the bunch lies flat in the box and on the retailer's counter. If tied much nearer the roots, these, when exposed for sale, will stand erect like the quills on a porcupine.

Beets are tied four in a bunch, the bulbs or roots, however, differ in size as the time of their season is earlier or later. The trade pays a much higher price for beets early in the season when they are no larger in diameter than a silver dollar, than later, when they should be twice as large. The bunching season continues only about three weeks, after which, the tops are wrenched off and the roots exposed for sale in the bushel-box. The trade will hardly touch a bunch of beets when they can be purchased in the bushel form, simply because the tops of bunched beets decay so rapidly. It is a singular whim that the size of the beets when busheled should not be so large as when they are bunched. Another peculiarity about this crop is, that as soon as the time comes for busheling, blood-red varieties like Dewing and Edmands are wanted. During the bunching season, the Bastian, or half-red variety, is sold because it is earlier.

Peas are exposed for sale in bushel-boxes. The most salable varieties are, for a first early, the many modifications of Daniel O'Rourke, all of which are strains that have been bred for earliness by judicious selection of seed. Clipper, Maud S. and First and Best, are among the earliest yellow-seeded strains. These varieties hold the market about ten days until displaced by the second early variety, McLean Advancer. The first earlies are then totally ignored by buyers. The variety after once appearing can be said to hold the market the remainder of the season. Stratagem is obtaining a strong hold upon the market for a later variety, and it is a truly fine pea, the pod somewhat resembling that of the Lima bean. All of these varieties are of dwarf growth; the bush varieties have no favor with the commercial market-gardener on account of the labor involved in bushing.

The leading variety of green or snap-beans is Dwarf Yellow-eyed Cranberry. Its pod is thick, succulent, and free from strings. Among wax-beans, the Golden Pod Yellow-eyed Wax is the leading sort. Bushel-boxes are used for packing them. Both string and wax-beans should be washed before sending them to market.

Tomatoes are exposed for sale in bushel-boxes, the top layer being nicely faced. There is quite an art in facing a box of tomatoes nicely. I have, however, made it possible for inexperienced help to do this by knocking off the bottom, setting the box upon some level surface like a shutter, and laying the fruit within the box smooth side down. After placing two layers, the remainder of the box is filled promiscuously, and the bottom again nailed on. Two men can overturn the box and the package will be found to be nicely faced. The varieties of red tomatoes are most salable. We think the Boston Market tomato can be produced some ten days earlier than any other. This is not what can be termed a smooth sort,

therefore it receives no favor after the Emery, Livingston Perfection and Dwarf Champion, all of which are smooth varieties, come to market.

The demand of the market for celery varieties has undergone quite a change in the last two years. It was thought at one time that no variety would satisfy the trade like the Boston Market, and in fact even now it brings the highest price, for it is a very superior eating variety, but the blight of late years has compelled producers to experiment with other varieties, and they have now about settled upon the Paris Golden for an early variety, leaving the late market to be still supplied with Boston Market. The latter variety is less liable to blight when allowed to perfect its growth in the late or cool parts of the season. Celery is offered for sale in long, or what are called barrel-boxes. A box holds three dozen bunches. If individual plants are not large enough to count as bunches, additional plants are added, the roots being joined by driving a nail through the thick part. Paris Golden celery can be marketed so early that it has driven the Kalamazoo celery from our market.

The variety of sweet melon which has for many years been most popular is the Arlington Nutmeg, a green-fleshed variety. This sort has of late years spotted so badly that many of our leading gardeners have ceased to grow it. Only on new soils can it be grown with any degree of profit. The Emerald Gem, a new variety less liable to spot, is now being grown in limited quantities. It is a luscious variety with salmon-colored flesh, but is not yet well known to the trade. It will some time be a leading variety in this market. Melons are exposed for sale in both bushel and barrel-boxes, the former being most popular, as they contain a quantity best suited for a retailer's single purchase. "Eighteen to the bushel-box" gives some idea of the popular size for melons in this market.

Asparagus is done up in bunches of one pound each, and exposed for sale in bushel-boxes. The less white found in a bunch, and the larger the individual sprouts, the better is the price that can be obtained for them. Many find it profitable to make two sorts of bunches, putting the smaller and whiter stalks in separate bundles, thereby obtaining enough more for the best to return a better price for the gross lot.

The leading variety of lettuce is the White-seeded Tennisball grown under glass, and Black-seeded Tennisball from the open ground. Lettuce is exposed for sale in both bushel and barrel-boxes, 1½ dozen heads filling the former and 4 dozen the latter. If this number does not completely fill the box, the trade knows that the lettuce is "light weight" and will not pay the top price. This rule applies when the supply is ample for the trade; when the article is short they do not question the size or weight so much, taking quite inferior stock at even better prices than in times of plenty. At certain seasons lettuce is shipped to the New York market in large quantities. But for this outlet, lettuce-growing houses would not have multiplied so extensively in this vicinity during the last five years.

The only variety of cucumber recognized, whether in glass or field-culture, is the White Spine. It is sold in bushel-boxes, and should be of such size that go will evenly fill the box. Cucumbers are sold by count, and if the number is short, the trade knows that there are overgrown, seedy ones in the bottom. If the number is more than 90, they are too small to please retail customers. Therefore, a box containing 90 cucumbers brings the top price if they are straight and true in shape.

The first native cabbage in market is Jersey Wakefield. Within a week it is superseded by Henderson, which is the leading sort for about three weeks, it then being crowded out by Fottler Brunswick, which, with Stonemason, has the call for a late and winter sort. It is surprising to see the amount of outside leaves the trade will take when the first summer varieties come to market. They would not be tolerated six weeks later, at which time cabbage is sold by the barrel, and brought to market in bulk in hay-riggings.

Dandelion is sold in bushel-boxes, and is crowded into them until they contain 18 pounds. The variety most popular is the French Thick-leaved. This, however, has been Americanized until the leaves are fimbriated quite deeply. Seed of many good strains is now privately produced by judicious selection, and disposed of to neighbors at a high price—five to eight dollars a pound.

Danvers Yellow Onion is the only dry onion that meets with any favor whatever. The White Portugal is the popular bunch-onion. The bunches are exposed for sale in barrel-boxes, and, of course, the larger the bulbs and the brighter green the tops, the higher the price. There is, however, a yellow sort raised in the vicinity of Philadelphia that produces, when full-grown and dry, a cracker-shaped onion. This is now being used to a large extent for producing early dry onions. When these come to market the white bunch-onion is seen no more until another year. Onion-plants are this year being raised under glass and transplanted to the field to get early dried onions; but for earliness this would not equal the planting of sets.—E. P. KIRBY, *Arlington, Mass*

HOW AN EXPERT HANDLES PEARS AND PLUMS.

Too little care is exercised by the mass of fruit-growers in picking, handling and packing fruits for market, in which points the question of profit or loss upon the crop is often involved. A very large percentage of pear and plum-crops is sold on our city markets at very unsatisfactory prices, because of total neglect of proper care in these three points. Much has been written on this subject, yet every year the mistake is repeated.

A few years since, an acquaintance had an especially fine lot of Bartlett pears, which were allowed to remain upon the trees for ten days after I had shipped my crop, which sold at from \$4 to \$5 per keg, because the fruit was firm and in fine condition when received. The same commission-house had both consignments and my neighbors' sold for little more than enough to pay the freight. The shipper was dissatisfied and denounced the commission-house, though the fault was simply his own neglect.

We say, then, pick all summer pears while yet pretty hard. They will ripen rapidly when once packed, much more so than is generally supposed. Many fruit-growers pick and handle them roughly, with as little care as they would potatoes. Each specimen should be handled individually in the picking-basket, conveyed in a spring-wagon to the packing-house or shed, with as little exposure to the sun as possible, and there allowed to cool before it is placed in the shipping package—this we regard as very important. When in condition for packing, fruit should be sorted by hand directly into kegs or barrels. Carefully place the pears in layers, observing uniformity of size and quality in all packages. All fruit of under-size and second quality should, when packed, bear a mark to correspond, so that no party purchasing may complain of deception. When fruit is scarce use a small or bushel keg; when abundant, a keg that holds $1\frac{1}{2}$ bushels is best, but a full-sized barrel should not be used for a choice quality of pears, especially in hot weather.

In handling plums, a still greater degree of care should be exercised. Many varieties ripen unevenly, and trees of such varieties should be picked over several times, so as to have the fruit well colored and ripened. The plums should be picked into baskets provided for this purpose, with such care as not to disturb the bloom, which is attractive and often adds much to their market-value on the fruit-stands in cities. When picked,

they, like pears, should go into the shade of the packing-house and be so carefully layered into baskets or packages in which they are to be shipped, that when the cover is attached, they shall be air-tight and shall stay in place. They should be carefully assorted and any fruit inferior in quality should be placed in packages marked No. 2.

It will often be found economical to use baskets of different sizes, holding 5, 10 or 15 pounds each. In assorting, specimens will often be found quite too ripe to be shipped with safety to a distant market. Such fruit can be handled and marketed best in five-pound baskets—this is often true with large, fine, fancy fruit of all sorts. The 10-pound basket is growing in favor annually, yet for second grades or cheap and common varieties the 15-pound basket is used to best advantage. We have known large crops of plums to be picked directly from the trees into the shipping-basket, and shipping without assorting directly to the place of sale. Such lack of care should meet with wholesale condemnation upon the part of all honest men who have any regard for their good name or pecuniary interests.

Much might be learned by an examination of the methods practiced by the Pacific coast fruit-shippers, and unless eastern fruit-growers at once begin to practice more care and neatness in handling their products for market, they may have occasion to regret their folly and repent at leisure.—W.

IN THE GARDENS AT WOODBANKS.

NOTES FROM THE EDITORS' GROUNDS.



THE TULIP-TREE.—No tree on these grounds is more highly prized than a specimen of *Liriodendron tulipifera*, the tulip-tree, about 40 feet high and of the same width. There is a beauty in the smooth, rich green leaves, which grow in a singular square

or "fiddle-shaped" form, and in the handsome light yellow and orange flowers, that charms every beholder. These, reduced to about two-thirds their natural size, are faithfully shown in the engraving, page 485. The foliage is perfect in texture and color, and in autumn turns to a mellow golden color almost as fine as its summer green. The tulip-like flowers appearing in June at the north, are of a light, dull, sulphury yellow color, orange-red within. This tint shows somewhat, through the petals on the outside. The three sepals, long and reflexed in form, are greenish yellow. A bunch of the flowers, cut with long stems and foliage, makes an exquisite bouquet for a table-vase. The tulip-tree is without question the handsomest bloomer among our large-growing American forest-trees. In winter the light, graceful spray of the tree is flecked with conical, persistent brown seed-vessels.

If the tulip-tree could be transplanted easily, it might grace many more lawns than it does now. It has but few roots, and they are of a soft, spongy nature, quite susceptible to injury from handling, and do not readily grow after removal. The safe course to pursue in transplanting it is to order small, nursery-grown trees not more than three or four feet high. Tulip-trees six feet high, obtained from the woods and set in the open ground as maples and elms are, would certainly die. This tree likes a richer soil than do most of our native trees. We advise every man who has a garden of considerable extent to plant at least one specimen of this fine native flowering tree. It reaches in time a height of more than a hundred feet.

OUR EVERGREENS.—One day in June an intelligent visitor went all over our grounds, noting carefully the many distinct species of trees, shrubs and flowering plants. She ended her walk at the evergreen section and remarked, "This, is, after all, the handsomest part of your grounds." Now had such a statement been heard in winter when the evergreens alone were clothed in verdure, or in early spring or late autumn when few flowers were open, the remark would not have seemed surprising; but coming at the time of early roses and lilies, irises and pyrethrums, pansies and campanulas,

weigelas and snowballs, and a multitude of other June blooms, the remark, to say the least, was rather unusual. By us it was accepted as a sincere compliment to the pains we have taken in effectually growing the kinds of evergreens hardy as far north as Niagara Falls.

In the spring of 1889, we began planting coniferous trees on these grounds in the face of a widely popular notion that few kinds of evergreens outside of the old stand-bys, like Norway spruce, black and white pines and a few junipers, were suitable for cultivation so far north. Our order to the nurserymen was confined to the hardier genera, such as pines, spruces, arbor-vites, junipers, etc.

that of the finer ferns to their outline. But with delicacy of outline there is evident an average stateliness, dignity, and neatness of form that is without equal among trees.

Look at the staid and symmetrical white spruce, the column-like Irish juniper, the erect yew, and the charming white pine, alongside of which many choice deciduous growths look coarse and flabby. Then we have remarkable variety in the habits of this class; for while the tapering form prevails among certain spruces, and the firs, arbor-vites and pines, yet in strong contrast with these there is the pyramidal form, of which the Irish juniper is



LEAVES AND BLOSSOM OF TULIP-TREE (*Liriodendron tulipifera*). See page 484.

From among these were selected 250 trees in upwards of 50 distinct species and varieties. They were planted carefully in tasteful groups or as isolated specimens, in well-drained, loamy soil. From the results, we are more firmly convinced than ever that hardy conifers are entitled to a place in all gardens. Sufficient variety is afforded by the genera named to give remarkable diversity of effect in a collection of some extent.

Glancing, as we write, over our collection of 58 distinct sorts of coniferous evergreens, we are impressed by the delicacy of appearance caused by the fineness of their foliage, which imparts an effect of softness like

a type, the distinctly conical form represented by the conical spruce, the globular form, as seen in the arbor-vite; the low, rounded forms of some spruces, the prostrate or spreading forms of Alpine and other junipers that are not above a foot high, yet spread over eight square feet. To these must be added the distinctly pendulous form as found in the pendent spruce and some types of the hemlock. Exquisite tints and contrasts are shown in the foliage of our different evergreens—bluish tints in Veitch's spruce, the blue-lined foliage of Alcock's, and the Colorado blue spruce are brightly contrasted with the golden green of Nordmann's fir, the golden arbor-

vitas, junipers and retinosporas. Pale, light green tints in the white spruces and *Abies concolor*, and the lively green of the Norway spruce, are offset by the dark foliage of numerous pines. The contrast between the light tender green young growth of many evergreens, and their dark, shaded, somber mass of inner foliage is very fine, particularly in the blue spruces and white pines.

LILIES AMONG HARDY SHRUBS.—Of the 26 species and varieties of hardy lilies on these grounds, about one-half are scattered throughout a border of medium-sized hardy shrubs, standing about five feet apart. The other half are in a bed by themselves. We prefer the former way of planting them. The stems of lilies are not furnished with leaves near the ground in a way to make the plants look complete when growing alone in a bed. After the bloom has passed, many kinds of lilies take on an appearance of age that is unsightly, when they are grown by themselves. When they stand among shrubs, a sort of balance is secured between the foliage of the latter and the lilies which is very favorable to the appearance of the lilies, with no disadvantage that we have been able to discern.

It is well known that many who are generally very successful in lily-culture do not succeed with the golden-banded Japan lily (*L. auratum*) year after year. It does very well, perhaps, for the first season after planting, but gradually deteriorates and finally dies. Three years ago this spring we planted an auratum among the shrubs as above noted. It flowered well the first season, did better in 1890, still better in 1891, and looks vigorous and promising now. Whether it would have done equally well, in this soil away from the shrubs, we do not know. It is certain that this lily, in common with many others, objects to undue moisture at the roots; and that the shrubs help to drain the soil, as well as to give some shade to the bottom of the plant-stalks.

THE PYRETHRUMS.—It is now about a score of years since we began growing hardy pyrethrums, of which *P. roseum* is the type. *P. roseum* is an Asiatic plant, and is important from an economic point of view, as it enters largely into the manufacture of insect-powder. The double and single improved kinds of our gardens have sprung from the Asiatic species, and are noted for the attractive colors and fine forms of their flowers, borne throughout the month of June. Three years ago this spring we sowed a packet of the seed of *P. roseum*. The seed was started in a hotbed, and the plants were set in the borders about June 1. They bloomed the first season, pleasing us greatly with their bright, single, rose-colored, daisy-like flowers. Since the first year they have bloomed with great profusion each June, and proved to be one of the special attractions of our grounds. It takes a better judge than the writer to discover any marked difference between some of these seedlings and the best named varieties.

The insect-powder is made by grinding up pyrethrum-flowers. It is interesting to note that our experiments in the direction of making powder show that flowers

raised here will not yield as effective an insecticide as they do in California and Asia.

SLUGS OR SNAILS.—Slugs have been unusually plentiful this spring. They seemed to come in myriads, and were eating the lower leaves of our peas, Lima beans, etc., at such a fearful rate that we began to be afraid of losing the crop. Salt is a sure remedy for the pest, even if applied in minute quantities. Discretion, however, is always necessary in its use, as it is liable to kill or injure plants to which it is applied at all freely. We find ordinary air-slaked lime just as sure to kill slugs as salt, and probably much safer. Slugs are night-feeders, leaving their hiding-places and feasting on the leaves first reached (usually the lower ones) shortly after sundown. To destroy the pest, dust the lower parts of the foliage of affected crops lightly with the air-slaked lime. The effect is immediate. Next morning you will find the remnants of the dissolved slugs.

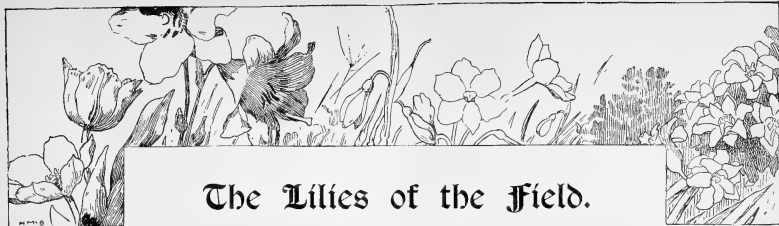
THE EARLY PEAS.—Nott Excelsior is a wrinkled sort of last year's introduction. It is several days earlier than McLean Little Gem, and only a day or two later than any of the first smooth peas, which it surpasses in sweetness and richness, in size of pod and pea, but probably not in productiveness.

Heretofore we have usually grown our early peas without support. Brushing in the ordinary way will do very well on a small scale, but for larger patches it takes a considerable quantity of brush, and more labor than we have ordinarily been willing to bestow. On heavily manured ground, however, the early smooth peas grow 2 to 2½ feet high and, being loaded with pods, are rather top-heavy. Poultry-netting, one foot in width, costing us \$1.15 a roll (150 feet), makes a serviceable and ornamental support. If fastened to little stakes about six inches from the ground, it holds up the pea-vines well, makes the picking more convenient, and probably lengthens the bearing period.

THE STRAWBERRIES.—This year Wilson is a disappointment. It is largely burnt up with leaf-blight, and the fruit does not seem to amount to much. Among our 40 or 50 varieties it is almost the only one at all affected with the disease. Long John, which in former seasons impressed us so favorably, also disappoints us. A large number of plants are affected by a peculiar disease which thus far we have seen only in this variety. The trouble seems to be in the root-crown. The late Mr. Burdett used to call it "the yellows." The foliage appears yellowish, dwarfed, crinkled, and the plant dies. This usually happens in early spring.

By far the largest part of our patch consists of Haverland and Bubach. Wilson and Long John were planted to furnish the needed pollen. This seems a good combination. Haverland beats Wilson in size, and in productiveness equals any berry we ever grow. Its berries are regular and uniform, and appear well in the baskets.

The same we can well say of the Bubach. It is mammoth both in plant and berry. Indeed we think the berries are almost too large, except for home use and near market. Large berries are most liable to bruises.



The Lilies of the Field.

FALL PLANTING CONSIDERED.

Many flower-lovers confine their gardening operations to those summer months when bedding plants are in order. They long for the delicate floral beauties of early spring, but forget that autumn is the time for making spring preparations. For early flowering, bulbs may be planted any time from the latter part of September until hard frosts. The bulb-border should receive a good deep spading, a little well-rotted stable manure being mixed with the soil.

THE HYACINTH is one of the most attractive of all spring bulbs, and the most unlucky of mortals can persuade it to bloom. In planting outdoors, put the bulbs three or four inches deep, and about eight inches apart. A little sand should be placed under and around them. During the winter they should be covered with leaves. After flowering, the bulbs may be left in the ground until the leaves decay; they are then taken up and stored away until planting time comes again. For use in beds and borders, it is well to buy the unnamed mixed bulbs, as they are cheaper than the named sorts and sure to be satisfactory if purchased from a trustworthy dealer.

Indoors, the hyacinth may be grown in water, sand or moss. We all have a weakness for hyacinths in glasses, grown in the good old-fashioned way. Perhaps they stood in the tall English hyacinth-glasses, a lively green or blue in color; or perhaps they were supported by plebeian bottles, but in either case they would flourish like a green bay tree, and certainly this is the easiest way to grow the bulbs indoors. One may begin to grow hyacinths indoors as soon as the bulbs are received in September. An installment may be kept back until a month or more later, thus giving a succession of bloom. To grow them in water, the glasses should be filled so that the water just touches the base of the bulb and no more; partly covering the bulb is liable to cause its decay. Whenever the water becomes foul, it should be changed, the roots being rinsed also. Dark-colored glasses are preferable, and hyacinth-roots should be kept from the light until they are fully grown. The water should not be allowed to evaporate so as to sink below the base of the bulb. A hot dry room is death to bulbs, and they will stand plenty of fresh air. A gas-lighted, furnace-heated room is ruinous to all plants, and our sturdy smiling Dutch bulbs are no exception. When they are in bloom it is a good idea to sprinkle the flowers occasionally. For pot-hyacinths, a good, sandy soil

is desirable; it must not be too stiff. The top of the bulbs should be left uncovered, the soil being pressed firmly around them. They should be put in a rather dark place until they begin to grow. The single varieties do best in water. Many double ones are satisfactory in pots.

The Roman hyacinth is a small single variety, remarkable for the ease with which it may be forced. It is essentially the florists' hyacinth, being used by the trade to an enormous extent. Although it may be obtained in three colors (white, blue and pink), the white one alone is the trade "Roman." It throws up two or three spikes from each bulb, and is surely the daintiest of all hyacinths, lending its grace to every sort of decorative work.

THE TULIP shares the popularity of the hyacinth, though we no longer hear of a fortune being bartered for a single bulb. A bed of tulips is a glorious sight, if the planting is managed with consideration for color-effect. Tulips can also be readily forced. Although hardy, they become weak when left out year after year, as they gradually work down too deep into the soil, the new bulb being formed each year below the old one. After flowering, the bulbs should be taken up and stored in a dry place until it is time to plant them again. They should be planted about 3½ inches deep and six inches apart. It is a good plan to put a little sand below the bulbs for drainage, to prevent injury during damp weather.

One of the best early single tulips is the Duc Van Thol. The flower is not extra-large, but it is always to be depended upon. This variety may be obtained in different colors—white, yellow, rose, scarlet and crimson. It is good for early forcing, and is largely used in the trade for this purpose. A bed entirely filled with Van Thol tulips makes a gorgeous display, as they will all bloom at once, and the neat dwarf habit is extremely pretty. Another bed might be planted with later varieties, which should come into bloom about two weeks after the Van Thols. Among these later tulips the double sorts are especially desirable, as they last so long when in flower and are far more showy than the single sorts. La Candeur has a beautiful white flower, and Yellow Rose is one of the finest of the late yellow sorts. Duke of York is also an extremely fine late flower, deep rose bordered with white. The Parrot tulips succeed the early flowering sorts, and are interesting in their eccentricity. The

flowers are fringed, often strangely twisted, and their mingled colors are very brilliant. The bizarres form an interesting class, blooming in May, after the blooming season for other sorts is over.

A number of distinct tulip species, which bloom later than the single early varieties will be found desirable, as they are thoroughly distinct and fine in color. One of the earliest of these is *Tulipa Greigi*, which has large orange-scarlet flowers with black and yellow centers. The foliage is handsomely marked with chestnut-brown. Persica is an attractive yellow tulip with a delightful fragrance. *Oculus-solis* is crimson with black center.

THE CROWN-IMPERIAL is another spring-blooming bulb now so old that we begin to forget it. *Fritillaria imperialis* is its imposing title in full, though I have heard it called "Cromperal" by an old lady whose love for flowers was greater than her knowledge of plant nomenclature. It was introduced into England nearly three centuries ago, its native home being Persia. Crown-imperials are very stately lily-like plants, having a pendent crown of bell or cup-shaped flowers. The colors are various shades of yellow and red, some being striped or splashed. The bulbs require a rich soil, and should be planted about four inches deep. They are perfectly hardy, but it is advisable to take them up and replant them about every four years. Another variety is *Fritillaria Meleagris*, the ordinary fritillaria or guinea-hen flower. It is dwarf in growth, having large flowers marked in harlequin fashion, suggestive of the fowl named and quite oddly attractive.

THE BRIGHT-FACED LITTLE CROCUS is one of the earliest of spring flowers. When planted thickly, the bulbs make a mass of bloom—white, red and yellow—and they are especially pretty in a window-box. They should be planted three inches deep, in sandy soil, and not more than three inches apart. Unlike the tulip and hyacinth, they should not be disturbed after blooming,

but left for several years. For the house, they should be planted in a similar soil; and as they are readily injured by damp at the roots, the drainage should be well looked after.

One of the great advantages in the use of tulips or hyacinths is the fact that they may be removed after flowering to make room for summer bedding-plants, and planted again when these, in turn, are removed in autumn. This plan keeps the beds gay the greater part of the year, while the change in plants adds greatly to the charm of a small garden.

In some localities tulips cannot be planted in lawn-beds, because ground-mice consider the bulbs a great delicacy. They run along mole-tunnels and hollow out all the center of the bulbs with their sharp white teeth, leaving only the stiff, less toothsome envelopes. When tulip, tuberose and tigridia bulbs are at a premium the mice will sometimes nibble at hyacinths, but these are not relished by the cunning epicures when other food is obtainable. Some gardeners sink tile sections about clumps of tulip-bulbs for the confusion of mice, but unless the sections are deep this plan "gangs aft agley," for moles will burrow and mice will run beneath them. Traps and poisoned grains of corn are often used to exterminate the mice.



THE CROWN-IMPERIAL (*Fritillaria imperialis*).



INVITATION TO READERS.—We want short, practical notes on cultural methods and devices, and sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc. Therefore, for any available article occupying a half-column or so of space, or for any sketch or photograph from which an acceptable engraving can be made, a year's subscription to this magazine will be given. Please always so specify when contributions are sent in under this offer.

I. LITTLE TWIGGS.

TREE-FRUITS are scarce in our fruit-belt this season.

KEEP THE SPRAYER GOING; this seems to be a fungous year.

REPORTS ABOUT TREE-FRUITS in the adjoining states are most unfavorable.

VIOLET-SCENTED CYCLAMENS are promised the public by an English plantsman.

SPROUTS FROM FRUIT AND LAWN-TREES deserve the same attention you would give to weeds

GROWERS WHOSE ROSES are starved and choked with weeds complain most about insects.

DAPHNE MEZEREUM grows wild in profusion in the Queen Victoria Park at Niagara Falls.

ELECTRIFIED EARTH is the latest device for attempting to hasten germination and growth from seeds.

PLANT SOMETHING.—Keep the garden busy growing useful crops, else it will busily produce useless weeds.

WE HAVE TRIED bagging grapes and tomatoes, and recommend the process as worthy of trial by everyone.

GARDEN PINKS have glaucous green foliage much like that of evergreens, and give a fine effect when planted among them.

TO START HARD SEEDS like those of the dracæna, scratch a tiny hole in each one with a sharp knife. When they are so treated they sprout in less than two weeks.—AGNES GREGOIRE, Ga.

A HEAVY MULCH of coarse manure is a good substitute for cultivation with quince trees. But if the wood-growth is too rapid omit the mulch for a season, and keep the ground clean.—H

THE COMMON DANDELION appears so beautiful to a New Jersey florist that he devotes one lawn-bed to its culture. The bed is beautiful when in bloom, for care and culture improve the flowers; but how about the seeds?

CABBAGE PREMIUMS.—The managers of the Hillsdale (Michigan) fair announce probably the largest premiums ever offered for best cabbages. First premium, \$100; second premium, \$50. The fair is to be held October 3.

THE MIDDLE BENCH of one of Eugene Davis's 100-foot houses was race-track for a monster Newfoundland dog and a cat the other day. Mr. Davis is the veteran lettuce-grower of Grand Rapids, Michigan. He says the diversion cost him \$75, but was well worth it.—THOMAS L. BROWN.

SMALL POTS FOR BLOOM.—Storm King and Perle von Brunn fuchsias kept growing through the winter in small pots in a sunny window never bloomed so freely before. They had rich soil, plenty of liquid manure and only 5-inch pots. We had a similar experience with ivy-geraniums.—MIRA HERSHEY.

CRANDALL BLACK CURRANT.—It seems from conflicting reports of this fruit, that more than one variety is abroad under this name. Mine, procured from a reputable nurseryman, cannot be distinguished in leaf, flower, fruit and habit of growth from the ordinary ornamental flowering currant. It is not productive.—E. F. M.

DIFFERENCES IN EXPOSURE make differences in the flowering season of plants. A *Prunus Pissardii* growing in an exposed position on the trial grounds of D. M. Ferry & Co., in Detroit, this year began flowering April 27. An equally good shrub of this variety surrounded by houses and only a mile away was two weeks later in blooming.—W. BROTHERTON, Mich.

A SHOWY GARDEN PLANT.—The fire-pink, *Silene Virginica*, begins to bloom on our grounds about June 1, and it continues to flower profusely throughout the month, with a scattering of blossoms later. The star-like flowers are a clear scarlet color and 1½ inches across. A hundred flowers are often out at one time on a single plant, so that a group of this perennial silene is very brilliant. It is easily grown from seed.

TREE-PLANTING NORTH OF US.—In 1891, in Canada, 175,000 Rocky Mountain and European conifers were raised from seed and nursery-grown for distribution to branch farms and private experimenters. The Government also distributed 100,000 forest-tree seedlings, with instructions for planting and subsequent treatment, among 1,000 applicants in the northwest. Twenty-five fine gardens along the line of the Canadian Pacific Railroad have also been supplied from the experiment-farms.

KEROSENE EMULSION ON A SMALL SCALE.—Cut up and put into a quart-bottle half filled with water a piece of common brown soap about an inch square. When it is dissolved add a large spoonful of kerosene, and shake well. This mixture applied with a feather will be death to any insect, and will be found handy for growers who only have a small place or a few plants. Cork well, and it will keep until used up. An addition of water will in time be necessary. This is the best remedy ever tried for aphids.—JULIUS SCHNADELBACH, *Ala.*

CALIFORNIA AT THE WORLD'S FAIR.—So far as is practicable, growing specimens of all California's useful flowers and plants will be shown at the fair, besides paintings of 600 wild-flowers and grasses. This will be only one of the many features of California's horticultural department. But such fine displays cannot make less odious that state's discrimination against eastern nursery-stock. The American nurserymen, in a recent convention, retaliated to this effect: If California will not receive our trees we will not receive her fruits.

WELL BURIALS.—Suprintendent Troop of the Forest Lawn cemetery, Buffalo, N. Y., is much puzzled by a new ordinance of the Board of Health: "Every grave must be at least 6 feet deep and 4 feet below the level or grade of any adjoining road." The worthy members of the Board surely have never been to beautiful Forest Lawn or they would have noticed that some rolling, interior portions of the cemetery have an elevation of 50 feet above "any adjoining road." Obviously burials here will have to be made, as in deep wells, by means of a windlass and pulleys.

SOW PANSIES IN AUGUST.—W. O. E., of Whitby, Ontario, says that he has seen no recommendation to sow pansy-seed in the open ground early in the fall, about the time the plants naturally shed their seeds. In his own grounds he has observed for the past two seasons that hundreds of self-sown plants have come up and safely passed the winter, coming into flower in the spring. August is the time preferred for sowing pansy-seed by many who grow plants for spring marketing here in western New York. We sow our pansy-seed from August 1 to 20, for outdoor blooming in spring.

CARPET PLANTS.—The *London Garden* calls attention to *Phlox subulata* as a pleasing plant for covering the ground in borders under shrubs and trees. Some of the varieties are as brilliant in color as they are varied in tint. A mass of this old species as a carpet to a bed of *Daphne Mezereum* is very effective. The mass of pale-green foliage above intensified the brilliancy of the phlox and made a very charming picture. Another good subject for this purpose is *Asperula tinctoria*, a creeping plant a few inches in height, forming a carpet of the brightest green, relieved in summer by pure white flowers

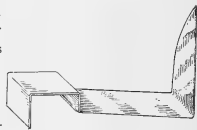
II. THRIFTY SAPPLINGS.

Natural Propagation of Clematis.—The young growth of clematis should be used for propagation. Last summer some branches of a clematis trailed upon a mass

of damp, loose earth near the gutter. Toward the close of the summer we moved the tangled mass and found that a number of the branches had taken root near their tips—the youngest growth. At another time, while transplanting a clematis, I found that it naturally divided into many separate plants, showing that it needed separation and transplanting. We have known valuable varieties to die out, apparently for no other cause than the need of separation. It is well known that forget-me-nots will die from the same cause.—A. G.

Promoting Interest in Gardens.—The editor has frequently noticed in walking through a garden or park with others, that to say, "This tree is a native of China," or "That plant is from Arctic America," etc., at once elicits an interest in the subject pointed out. He has therefore not only made it a point in his own grounds to indicate on labels the natural homes of trees, but he has also advocated for years the grouping of shrubs and trees somewhat according to their original homes. Why not have a Japanese and Chinese lawn-plot? This would be a particularly easy undertaking in view of the many curious and beautiful trees, shrubs and plants brought from these sunrise lands. Then there could be a Siberian garden, prominent in which should be the *Dicentra spectabilis*, *Pinus Cembra*, the Siberian barberry, and others. Alpine conifers and plants would form another interesting collection; so would plants and trees from the Rocky Mountains and Pacific coast. The Colorado blue spruce, the lovely silver-fir (*Abies amabilis*), the California lilies and the eschscholtzia would form a nucleus for the latter. Our nurserymen could do much to promote such ends, with gains to themselves, by publishing the native countries of all trees, shrubs and plants they offer.

Hoe Attachment for Cultivator.—The blade herewith illustrated can be adjusted to an ordinary wooden cultivator, and is useful in cutting up red-raspberry sprouts, troublesome weeds and thistles. The cutters are steel $\frac{1}{4} \times 2\frac{1}{4}$ inches, 6 or 8 inches below the beam.



ATTACHMENT TO HOE.

The horizontal cutting-blade is 6 inches. The groove is fitted to the beam, to which it is secured by the bolt, the cutting edge sharpened and receding at the point. In the absence of a cultivator to which to attach them, a frame can be improvised with some 2x3 scantling and with an ordinary regulating-wheel at the point.

—E. F. M.

New Rose-Seedlings.—R. N. Little, who raised the set of roses distributed last year as the Stanley set, will distribute this year several seedlings of merit: Winnie Davis, a seedling from *Devoniensis*, fertilized with *Madame de Watteville*, is a very full rose and a profuse bloomer. It is white, tinged on the outer petals with pink. Mr. Little showed me a hybrid tea (as yet unnamed), a cross between *Souv. d'un Ami* and *American Beauty*. It has a fine, long bud, and the delicate pink

color of La France, and will doubtless prove a valuable acquisition. Mr. Little has also a rose-freak—a seedling from Reve d'Or crossed naturally with the Cherokee. It is a double, light yellow rose, and very hardy, but resembles the Cherokee in bush, and in blooming at stated intervals. Among other roses originated by Mr. Little I may mention Souvenir de Beauvoir House, a violet-purple tea, very distinct; Mildred Lee, silvery rose, striped with carmine, and Flo Fields, pearly white, tinted with violet. Mr. Little's gardens are in the garden district of New Orleans. Some notes on his methods will be given next spring.—LAWRENCE H. PUGH.

Treating Lily-of-the-Valley.—Beds of this plant often become so crowded as to produce inferior flowers. A simple and consistent method of treating such a bed is shown by the illustration given. Half the plants are taken up, roots, soil and all, checker-board fashion, in 15-inch squares. The pockets thus formed are filled with fresh soil, moderately firmed after it is in place. Into



TREATING A LILY-OF-THE-VALLEY BED.

the new soil the plants from the remaining blocks will spread rapidly, soon covering them with a strong growth that will yield fine large flowers. After the new blocks are well set with plants, resulting later on in a generally crowded condition of the bed, then the blocks of old plants may in turn be taken out. In this way a lily-of-the-valley bed may be kept in prime condition indefinitely.

Success with Roses, Trees, etc.—We feel like repeating almost to weariness, that success in growing any kind of plants, shrubs or trees depends upon the feeding they receive. It would be as unreasonable for a man to invest in costly Jersey cattle or in premium grades of poultry and then pay no regard to their food, as to disregard the soil in which his trees grow. Plants of every kind require food for growth; nothing from nothing comes. Midsummer is the time to provide for successful planting next spring by laying in a stock of plant-food. We know of no better fertilizer for use in connection with planting than decayed sods from a pasture-lot, and old rotten manure. If procured now and piled up in thin layers in a heap, using about three parts of sod to one part of manure, turned over once or twice and left until spring, the material will then be a prime article of plant-food. It should neither be a difficult nor expensive task to get together a liberal supply of such a compost. The man who does general teaming in your neighborhood should be the man for the job—he ought to know where both the sod and the manure can be obtained if it is not now on the place, and he could make the heap. The sod

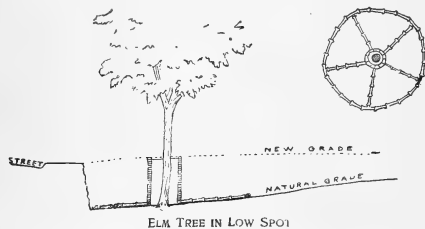
should not be cut more than three inches thick—two inches would be preferable. It can best be loosened with a plow. The best form of compost-pile is one that is square, with even layers of material. Then the top should be convex and filled with water repeatedly until the pile is thoroughly soaked. After several weeks the compost should be chopped with a sharp spade and thrown into a fresh heap of any shape, where it may lie until wanted for use in spring. If you desire to make an easy and perfect success of hardy rose-culture, scatter 4 inches of this compost upon the bed, working the soil fully 20 inches deep, but keeping the subsoil part mainly at the bottom, mixing some of the compost with it also. Every fall spread an inch coat of such a compost over the rose-bed, working it in somewhat the following spring. As the bed tends to get too high from this treatment, dig out patches a spade square and a foot or more deep here and there, and fill them from the surface of the bed.

Plants For a Busy Woman.—"How do you manage to keep your back yard looking so nice?" I asked one of my neighbors, a widow with five children and seven boarders, and often without help in the kitchen. "By having plants for busy women," she answered. "Do they come on purpose?" I asked. "Perhaps," she replied, "for it was meant that all should have something in their gardens." Some flowers which she said cheered her immensely when she was tired and discouraged were white and purple lilacs. She was always glad to give an armful of these to a church near, for the font. Such days, she said, were her lilac-Sundays. Next came bleeding-heart, one of the most graceful of garden plants, and blooming in May. But the "iris" is the busy woman's proudest plant. Curious, free-flowering and of most lovely colors, and having long stems, the irises are splendid for table decoration and for vases anywhere. Of course there are peonies in this garden. They like better to be let alone than to be fussed with. "But don't you do anything to your garden?" I asked. "Sometimes; I can spare an afternoon once or twice a season, and it is a relief to get out, pull up the weeds that crowd my dear old 'stand-bys,' or loosen the soil around the roots. To keep up interest, I get a new plant every spring. This year it was a *Hydrangea grandiflora*, and they tell me it is a grand shrub, with the flowers in bunches as large as a dinner-plate, and growing seven feet high." Yes, there are plants for busy women, and they should have them.—SISTER GRACIOUS.

Some Water-Plants in Streams and in Culture.—Water-lilies grow abundantly in the clear waters of our streams in this locality. At planting-time scatter two or three shovelfuls over the hole made for planting and over the soil thrown out, thus providing for its being well mixed with the soil as it is returned to the hole in planting. It is as important to mix this compost well with the soil as it is to supply it. To have them where I can enjoy them daily in all their glorious beauty, I grow them in large tubs, two on each side of the front walk,

where they will get the full benefit of the sun—for they will not thrive in the shade. So many inquire how I grow them that I will give my method. First, I place in my tubs about five inches of good, rich garden soil, well mixed with one-third of well-rotted manure. I plant my lily-tubers well down into the soil, in a slanting position, but make sure that the crowns or growing-ends can just be seen. I plant three tubers in each tub, also five or six bulbs of *Sagittaria gracilis*, for they grow nicely together. Then I fill in slowly, *very* slowly at first, so as not to disturb the newly-planted roots, water enough thoroughly to soak the soil and stand an inch or so above the surface. Keep about the same depth until the plants start into active growth, then gradually add more water day after day until the tubs are full. They do best when the sun keeps the water comfortably warm. My water-plants give me great satisfaction treated in this way. They grow and grow until they fairly run over the tubs and become completely covered with beautiful double pure white blossoms, looking like rifts of snow above the dense green leaves. The lovely spikes of sagittarias tower above the lilies, and as they constantly throw up new spikes and continue in blossom the whole summer long, I would not willingly do without them. In the north the tubs should be set in the cellar through the winter to secure the bulbs from frost. Keep the soil just covered with water during this cold, dormant period.—Mrs. S. A. B., *Minn.*

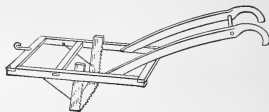
Elm Tree in Low Spot.—Frequently it happens that a natural grade on which a fine tree is growing requires filling over some feet deep to bring it to the street grade. Our advice for dealing with such cases is this: Favor the tree by providing a device such as is shown in the illustration, for conveying air to the trunk and roots. This should consist of a simple circular wall of brick about six inches away from the tree and extending from a little below the natural grade to the new grade. It would be quite lasting if it were laid up without mortar. The top might have a perforated cover of metal or plank, to prevent leaves and other litter gathering within the wall. Besides the circular wall, it would be an easy matter to lay drain-tiles over the roots as shown in the engraving.



ELM TREE IN LOW SPOT

letting them open into the space within the circular wall. All this is done with a view to admitting air to the roots on the old level.

Home-Made Sod-Cutter.—The accompanying out represents a sod-cutter devised by one of the GARDENING readers. The device is simple, and made sufficiently plain by the illustration. The cutting part consists of an old saw-blade, the back of which should be kept sharp.



SOD-CUTTER.

Sods cut with this tool are of even thickness and width, and perfectly square at the sides, so that they fit closely and tightly together.

Irrigation in Colorado.—Here, where all irrigate, no one has an advantage over another in this respect, but the gardener in sections where irrigation is not generally practiced may often make use of it to out-manuever his competitors in a dry season. Indeed, an irrigating plant in the garden is better than fire-insurance on the house, as loss by drouth is more apt to occur than loss by fire. With irrigating-water you can grow side by side crops requiring different degrees of moisture for their perfection. Give each what its nature demands, and your advantage will be in quality as well as in quantity. If you transplant celery in a hot, dry time, follow the row with a stream of water, as soon as transplanted, and see how nicely the plants will grow. But the irrigator must be a good farmer. Intensive farming and irrigation go together.—E. BRAYTON, *Col.*

Watering Evergreens.—The following is my way of raising evergreens successfully where, as is the case here, drouths are prevalent, and there are no facilities for lawn-sprinkling, and all the water furnished artificially must be carried in pails. I take for a 12 or 18-inch tree a box about 6 inches wide, the same depth and 10 or 12 inches long. I nail on the cover and remove one end. Nine holes, $\frac{3}{8}$ -inch in diameter, are bored in one side of the box, two being about two inches above the closed end, three near the middle, and four about two inches higher. The box is sunken as near the tree as can be without injuring it—the holes next the roots. The open end of the box stands upward and is fitted with a cover which should be even with the surface of the ground. The advantages of this tree-watering device are obvious. All the moisture is delivered where it is wanted. There are no unsightly water-holes or mulches on my lawn, nor any baked soil. Experience shows that three pailfuls of water poured in the box at one time answers for a week in dry weather. With this arrangement I am successfully raising the moisture-loving hemlock spruces.—B. S. ESTES, *Neb.*

Pecan-Planting.—We think it important to procure and plant the largest nuts, no matter at what price. Plant in fall, or stratify the nuts until spring; then sow them thickly in deep sandy soil and keep them moist until they have sprouted. When the

sprouts appear, plant the nuts in permanent rows, 40x40 feet apart. Some nut-growers prefer to raise the trees in nursery-rows and transplant them when one year old. Our experience is that such trees neither live so long, nor grow so quickly, as those planted as we have advised. Previous to planting, the land should be well plowed and subsoiled 18 or more inches deep. This will cause the trees to grow much faster from the beginning. Cultivate the soil around the young trees well for a number of years until they shall shade a good part of the ground, when cultivation may cease, and the land be sown to some kind of grass. Pecan trees not only stand severe pruning, but like it. They make fine shade-trees for the lawn or garden, and supply choice nuts besides. —LOUIS BIEDIGER, *Texas*.

California Novelties. — *Chrysanthemum Chula Vista* is one of the novelties shown to have merit at the last exhibition of the Southern California Horticultural Society, in Los Angeles. It originated with Miss K. O. Sessions, at San Diego. The petals are reflexed, broad, flat and pointed; of a deep rose color, with a prominent golden center. An excellent bloomer and a fine, showy sort for decorative purposes.

Nellie Alechin is another very free bloomer, with full-quilled petals, usually of a clear rose-purple or "lavender to white." The blooms are very pretty and soft for wearing. It was exhibited with the last.

Canna Ventura, of recent California origin, is of graceful habit, a most persistent bloomer, and the largest-flowering canna yet recorded. Its immense petals, in color an exquisite mingling of scarlet and carmine, curve outward. The plant is from three to four feet high, with broad, handsome, dark green leaves edged with rich brown. It originated with Mrs. T. B. Shepherd.

Abutilon aurantiacum is a native Californian species of great promise; dwarf in habit, not more than a foot high, forming an oval, symmetrical bush completely covered with large, velvety, pea-green foliage. It bears, the year round, large flowers of a most delicate and rich shade of orange-yellow. No *abutilon* known to the writer equals this in grace and native loveliness. What may not be expected from it after careful culture!

Lathyrus splendens has proved a great favorite wherever it has been tried, but unfortunately it is reported as not hardy in some parts of the east. It is truly one of the grandest vines in America, and in southern California clambers in wild abandon over whatever support may offer, covering the side of a house, a porch or a tree with festoons of its rich crimson clusters of bloom.

Lathyrus Californicus, with smaller magenta flowers, is, when compared with previously known sorts, very satisfactory, but in no way equals *L. splendens*.

Emmenanthe penduliflora is another novelty of decided merit, destined to hold a permanent place among annuals in the flower-gardens of the world.

Papaver Californica, to be popular, must prove more tractable in cultivation than at home.

Viola pedunculata, the California peach-scented

violet, is popular with all that have seen it in its native fields, and we are likely to hear good news from it away from home as soon as it has had opportunity to prove its adaptability. —C. R. ORCUTT, *California*.

Wood Sugar-Pea.—The accompanying illustration is an exact representation of a sample of sugar-pea received from T. W. Wood & Sons, of Richmond, Virginia. Mr. Wood says he found some plants growing on a relative's estate in England, three years ago. The following is his description: "This variety continues to bear several weeks. We consider it a novelty of as great value as the Bush Lima bean, which we introduced and sold to Peter Henderson & Co. We think this pea destined to be universally planted, not only for its own excellent qualities, but for economy in money value, time saved in gathering and shelling, as well as space in growing. We think from the size of the pods that they should be sliced before cooking. Our pea differs from the melting sugar-pea, which has a white blossom. Ours has purple flowers and the pods grow one-third larger."

Sweet-Potatoes and Peanuts not Profitable at the North. — To test

the possibilities of sweet-potato and peanut-growing for profit, a half-acre plot was devoted to the experiment last season. I had once raised the former successfully in a small way. I now raised plants of Early Jersey Nansemond in a hotbed in the usual way. Shallow trenches were made four feet apart, manure put therein, and the earth thrown back, forming the ridges. Plants were set 15 inches apart. Cultivation was thorough and the tops prevented from rooting. The drouth injured the growth somewhat, but the crop was 25 bushels of marketable potatoes of one-fourth of an acre. In quality they were inferior to the imported stock, being rather wet when cooked, particularly the larger ones. They began to



WOOD SUGAR-PEA.

spoil very quickly. Owing to the extremely low prices in market last fall the experiment was not an unqualified commercial success. After deducting expenses the return was less than from the same area of Irish pota.

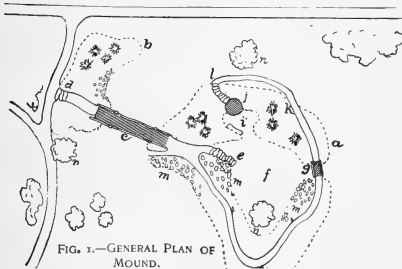


FIG. 1.—GENERAL PLAN OF MOUND.

toes. Previous experiments had been with the Early Peabody variety. The result was a vegetable of better quality, and I fancy they are better suited for northern planting than the Nansemond variety above mentioned.

All the Spanish peanuts, except a few, were planted a little late, the first week in June. Consequently they were half "pops." One northern seedsman, copying from southern catalogues in cataloguing Spanish peanuts, announces that they "may be planted after peas in July and will make a full crop before frost. Hogs can be fattened on them at nominal cost." The fact is that in this latitude, even when planted early, they will mature before frost only in favorable seasons and favorable localities. And even then, considering the work of growing, harvesting and curing, particularly that of picking the nuts from the stem, it is cheaper to buy than to raise them.—E. F. M., *Welland Co., Ont.*

Building a Mound.—A pretty effect was produced in the way of landscape-gardening, at small expense,



FIG. 2.—RUSTIC BRIDGE.

as follows: In laying out our grounds there was quite a large quantity of dirt taken from the walks, these being filled with rubble and gravel. As the yard was almost level it seemed quite desirable to have a mound, so all the rubbish around the place was carted to the spot selected, and then the dirt dumped on this, making the main mound (a), as shown in the illustration, fig. 1. Then another smaller mound (b) was made about 15 feet from the larger one, and connected with it by a rustic bridge (c). Figure 2 shows the general structure of this bridge. The wood of the osage, which is very rustic in

appearance, and wild grape-vines were used for everything but the stringers and the upright posts, which are of white oak. On one side of the smaller mound, at d, three stone steps were laid which lead from one of the paths to the mound. From these steps is a little path to the bridge, after crossing which the path continues about ten feet, and then divides. A flight of stone steps (e) protected on one side by a rustic railing, leads to a miniature vale (f). This is entirely enclosed by the mound except where there is a small archway (g) under the division of the path (h). The little archway or opening is crossed by a small rustic span. At i is a grotto made of stone with a stone arch opening into it. This is covered with earth on top, and is partly under the summer-house (j). A rustic seat in the grotto affords a cool retreat on a hot day. The general appearance of the summer-house is shown in fig. 3. Around the sides of the mound, within the vale, stones are inserted, and here ferns, wild vines, maurandia, thunbergia, violets and pansies grow luxuriantly, never requiring any water, as the stones cause the earth to keep moist all the time. The path (h) gradually ascends until it reaches k, when it gradually declines again to l, where a flight of stone steps leads up to a rustic arbor. The m's in fig. 1 indicate rock-work where ferns, vines, etc. are planted. Under the approaches to the bridge ferns are also planted. Where there is no stone-work the mound is sodded, or may be sown should sodding be an expense, and here and there a few evergreens are set out. The dimensions of the mound are as follows: Extreme length of back about 40 feet, width of wider mound about 25 feet. At the bridge the stringers are 2 feet 6 inches above the ground-level. Large old apple trees furnish an abundance of shade about the mound. The whole work serves as part of the background to the yard, and is a very charming feature of the scene.—MOUND-BUILDER.



FIG. 3.—SUMMER-HOUSE.

California Vegetation and Gardening.—Pale yellow dahlias, Marechal Niel roses, lilacs and many other flowers makes gay the grounds about Hotel del Monte in spring-time. Its many windows and turrets flash brightly amid the great pines and live-oaks beyond the long white beach of Monterey Bay. Beyond, at the foot of the



FIG. 4.—ANOTHER FORM OF RUSTIC BRIDGE.

cliffs, gleam masses of gayest wild-flowers. *Colinisia bicolor* in rose-purple and white flowers in whorls on delicate curving stems, covers one wide slope to the white, sandy beach. Beds of low blue and white *Lupinus nanus*, and bright yellow white-edged "tidy-tip," *Layia platyglossa*, some of whose tips turn pink as they fade, are adjoining. No

tufts are prettier on the gray rocks than those of the flaming "painted-cup" *Castilleja latifolia*, set among the pure lavender tints of the "sea-cliff daisy" (*Erigeron glaucus*) with blue-gray leaves. The orange-colored violet (*V. pedunculata*) loves the sea. Its long swaying stems cover fields and hills from March until May. It is larger than any of our eastern violets, has cordate leaves and a flower-stem six or seven inches long.

A novel feature of bordering used successfully in Hotel del Monte grounds, is the English ivy, the same that covers the trunks of the pines and oaks. It makes a handsome raised border a foot across, the pale young leaves mingling with the deep green older ones. In March it contrasted beautifully with ribbon-beds of pale pink and blue hyacinths, light blue tufted pansies, and rose and white tulips. Heliotrope and white jasmine sprays adorn one greenish-gray wall; trained blossoming fruit-trees and the richest of roses another, and white and purple clematis still another. Purple maurandia covers the lamp-post, masses of red poppies and pelargoniums, in exquisite shades, palms, bananas and oleanders abound. An immense old live-oak at "Sea-side," near by, covers $1\frac{1}{4}$ acres with its branches, some of which lie upon the ground. The fresh young foliage contrasts well with the old leaves. What are wrongly called "dead-oaks," because they drop their leaves in winter, are in spring a pale, pinkish green tint so pleasant to see. *Astragalus*



COLLINSIA BICOLOR.

they lie, send up branches in every imaginable form, often whitish gray and sharp-edged, but the bright green growth is vigorous, though bearded with moss and of

great age. May they long continue untouched by the dreadful lumberman. Cords and cords of pine wood are daily cut in their neighborhood, and taken north on



YELLOW DAHLIA.

the cars from Pacific Grove. The Monterey pine has long needles and flowers, and many rounded cones about three inches long. It is a slender straggling tree of hard pine wood, not at all popular for burning. Here pine-roots grow only on the surface of the rich loam, and are easily upturned by the wind after heavy rains. Wood is four dollars a cord, and pitch-pine kindlings half a dollar a sack. People are continually cutting down the pine trees in Pacific Grove. But little pine wood is used in building houses here.

Many graceful young trees of *Sequoia gigantea* grow about Oakland, California. The leaves are not at all like those of the pine. They grow in long feathery sprays and are prickly to the touch. The cones of this big tree are only $1\frac{1}{4}$ inches long. Its spreading branches trail upon the ground. The tree is very ornamental and is successfully grown in England. There are specimens quite 50 feet high in the Mount Hope nurseries, Rochester, N. Y.—K. P. S. Boyd, Cal.

Timely Hints on Geranium Propagation.—About the middle of August take boxes of any convenient size that are four inches in depth, and make openings three-fourths of an inch wide in the bottoms along the center, to provide ample drainage. Cover this space irregularly with hollow pieces of broken pots, place above this an inch of rough siftings of well-rotted loam and leaf-mold, and fill up each box to within half an inch of the top with a compost of two parts sand, one part leaf-mold and one part good rotted loam, these to be roughly sifted.

Blend the compost thoroughly together, and pack it solidly in the boxes. Now you are ready for your cuttings. It would be well for those trying this plan, to grow plants to furnish these cuttings in some other part of their grounds than the flower-garden, so there will be no need of disfiguring the beds, which just at this time are in full flush of beauty. Select as stock-plants the short-jointed and strong ones. See that each cutting is taken off close and clean just beneath a joint, and is not more than three joints in length. Then with a dibble place the cuttings in rows about two inches apart in the boxes in the full sun, and the most exposed part of your yard. Place them on a brick to keep them off the ground; this helps them to dry off more readily. Do not water the cuttings except when necessary, then water well and let them go dry again as long as is safe. Keep the cutting-boxes in this situation as long as the weather in the fall will permit. When frost threatens, remove them to the coolest part of the greenhouse, and place them near the glass, giving all the air possible, or better still, where it can be done, place them in coldframes, giving plenty of air. The plants can usually be kept in this manner until the end of November before being housed. The object is to prevent much growth, and make them strong and hardy.

Such cuttings are easy to manage when put into their final winter quarters. By January 15 have your cutting-bench ready and filled with clean, sharp, not too fine sand. Go over your boxes, and take off a good cutting from each plant and insert it in the soil on the bench; carefully labeling each variety as you proceed. You have now twice as many plants as before. Go carefully over the boxes again and see that each plant has been cut close and clean above the joint, or some will rot off, and you will lose them.

Keep the plants in the boxes in a dry condition from this time on until they begin to branch. It will be ob-

served that by the time the cuttings on the bench have rooted, their parents in the boxes will have begun branching, and you can place all the plants in three-inch pots, and give them the room necessary on the greenhouse benches, potting the two lots of each kind and placing them together. As soon as well established transfer them to four-inch pots. By April 15, make some ordinary frames in an open space out of doors, using any common rough boards of sufficient height to allow the plants to be covered clear to their tops. You may peg the lower edges, to keep them in place, with stout sticks an inch or so wide. This will keep all together firmly. Let the bottom of the filling-soil be of rough gravel or ashes. Have ready some covering in case of light frosts. Sashes will do, or any kind of doors or boards that can be put on closely when needed. Cover only when absolutely necessary. Put all the plants into this frame and allow them to remain until you are ready to bed them out. As soon as they show signs of growth increase the supply of water.

This plan has been most successfully practiced by the writer for more than fifteen years, and he has not yet seen a simpler method or one giving such satisfactory results. You will find you can succeed in growing about double the quantity of plants grown by any of the usual methods, and this plan gives us valuable room in the houses for other plants needed during the holidays. It also gives us a supply of strong bushy geraniums with roots and tops in best condition by May 15.

Do not begin propagation too early in the season. Try and have the plants, at the bedding season, not in full bloom, nor with their roots crammed in their pots, and brown, with their stems red and hard, but have the plants just beginning to show bloom, their roots still white in the pots and their tops still green, displaying that youth and vigor necessary for the best results to be expected from them.—ISAAC HUSBANDS, *Ohio*.

COMMENTS BY READERS.

[One idea often suggests another. Readers are invited to contribute to this department. If your experience, observation, or well-founded opinion differs from that recorded in any recent article in this magazine, or if you can add anything of special interest to the statement of other writers, the editor will welcome your contributions.]

Planting and Marketing in N. C.—(Page 204.) Twice in this article the word "sweet-potatoes" appears confusingly, as I was clearly writing about Irish potatoes.—W. F. MASSEY.

Figs for Market.—(Page 445.) Thanks to the warm, moist weather, the early figs are exceedingly fine. We weighed one San Pedro to-day (June 30), which weighed 96 grammes, or nearly a quarter of a pound. The trees are well set with young figs for the late crop. These large early ones are figs which set last fall just before frost, and wintered over in a dormant state. This early crop is always larger in size of individual fruits, but not so abundant as the late crop.—W. F. M.

Tea-Culture in the Carolinas.—(Page 81.) Let me call your attention to the following lines, which are a

part of my report to the Secretary of Agriculture in 1889:

"As our knowledge of the tea industry widened, it became evident that, even more than the cost of the labor, the controlling factor of profitable production was rainfall. In British India tea-plantations are not considered profitable where the rainfall is less than 80 inches yearly. In some parts 120 inches yearly rainfall is recorded, and the production there is at its maximum. In gathering, the young points of the growing shoots (having three or four small tender leaves) are pinched off between the thumb and finger; this checks the growth of the plant for a longer or shorter period, depending upon climate. If warm and dry it will be some time before a second crop of shoots is produced; if warm and moist, only a few weeks will intervene be-

tween the pickings. With abundance of moisture the plants furnish from 12 to 18 crops during the season. Thus pickings are continuous, and the manufacturing machinery is constantly employed. In dry climates only a very few pickings could be secured during the season. For long periods the machinery of manufacture would be idle, while the product would be inferior; the leaves would be hard and woody, as compared with the thin juicy leaves produced in warm climates saturated with moisture. Irrigation would be indispensable in any attempt to grow tea anywhere in the United States to commercial advantage, independent of considering the cost of manual labor here as compared with that of Asiatic countries. For these reasons no effort is made to encourage investments in the culture of tea, but from five to ten thousand plants are distributed annually in districts where a zero cold rarely if ever obtains, and where tea can be prepared for domestic use by simple methods of drying and roasting the leaves. Hundreds of families avail themselves of this mode of securing a delightful beverage, and samples have been received here of more than ordinary quality of teas prepared by those simple methods that are available in most households."—WILLIAM SAUNDERS.

The Hardy Orange.—(Page 430.) Mr. Purfield's letter in your July number reminds me to say that it is probable that I am responsible for the advertised statement that *Citrus trifoliata* is hardy at Ann Arbor, as I believe he planted his trees at my suggestion, and I had understood that they came through all right. I am glad to learn, however, that they survived two winters there even in an injured state. The fact satisfies me that this plant will, as I have said, prove to be the ideal hedging-plant over a large part of the United States. I am inclined to think that even in Michigan the trees will get harder with age, though, as Mr. Purfield says, their habit of making a late fall growth is against them. I would suggest that he pinch back this late growth as soon as a few inches are made, and try to induce ripening in this way. Such shoots here in the latitude of Raleigh, N. C., get ripe enough to suffer no injury, and usually, far north of this they get through the winter all right.—W. F. MASSEY.

Public Highways.—(Page 321.) In recent years the tendency has been growing among residents of cities, to spend a portion of the summer in the the country, these people being governed, in the selection of locality, in a great degree by the beauty of natural features and general attractiveness of the landscape. Some come as temporary boarders, others purchase a place and convert it into a summer residence. In this way many a quiet hamlet is growing into importance. While natural attractions, such as beautiful views of distant hills and vales, lakes or other bodies of water, have their charms, they are not the only consideration with city people in the selection of even a temporary summer home. They are strongly attracted by tidy farms, well-kept buildings, and especially by roads in good repair, and suitable for pleasant travel. In an out-of-the-way place that has a

rough surface, stones and boulders thrown promiscuously by the roadside may have a rustic and pleasing appearance, and perhaps even add to the natural charms of the place; but when, in another and tamer location, stones and boulders are thrown by the roadside in front of a finely cultivated field or clean meadow, the effect is altogether different. Yet such careless disregard of effect by the road-repairer is often seen. There should be coöperation in this matter between the land-owners and the road-master. It is a pleasure to ride over roads the sides of which are as neatly kept as the adjoining fields. The pleasure becomes intensified when such roads are brought in contrast with roads through rougher sections with appropriately rougher roadsides. Such drives, which divert the mind from thoughts of business, attract the city residents to the rural districts. The effect may be made still greater by careful roadside planting. Shade-trees and flowering shrubs and plants, together with well-kept roads, will attract pleasure-seekers from all directions. The line of public travel for pleasure always takes courses that lead by pleasant homes, where lawns are well-kept, and plants are always in bloom. These thoughts are suggestive and should inspire country people to put forth all the efforts in their power for the improvement of their roads. Good roads and attractive roadsides will bring travel, and with travel comes refinement and wealth. At the same time such attractions will keep the children at home, in the purity and sweetness of country life, and stem the tide which is fast sweeping them beyond its influence into crowded cities.—WM. H. YEOMANS, Conn.

Destroying the White Grub.—(Page 190.) It is strange, considering the depredations of this pest, that more attention is not given in this country to its extermination. It has been rapidly increasing in numbers in this neighborhood for the last few years. Two years ago large portions of the lawns about here were destroyed, and great ravages made in herbaceous borders and gardens. We then began fighting the beetles, by setting tubs of water about every evening at the time they began flying, and suspending lanterns over each tub. In this way we caught great numbers of them; but finally gave this up, and began gathering them from the bushes and shrubs on which they swarmed after dark, filling basket after basket with them each evening. As the grub lives three years in the ground before emerging into the perfect beetle, and as the latter seems to live and fly only for a few nights, it would seem that all efforts at destruction should be aimed at the beetles before they have had time to enter the earth to deposit their eggs. Of course there may be ways to get at the grubs also, by application to the soil or otherwise. The kerosene emulsion, I believe, has been used with good effect on small lawn areas. There is need for greater effort and for concerted action against the pest, and many readers of AMERICAN GARDENING would be grateful for hints given in its pages as to the best practical methods of destroying the grub. Let us hear from other practical horticulturists on this subject.—E. B. A., Rhode Island.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Acacia, mountain-ash and flowering fruit-trees are subject to borer attacks. Examine their stems near the ground from time to time, and dig out borers whenever found.

Achimenes delight in warmth and a moist atmosphere. Keep their roots moist.

Ageratum for winter-flowering must be cut back and held in check.

Annuals.—Keep the ground well stirred about the plants, or, better, apply a mulch. Give water freely in a dry time. Pluck all faded flowers.

Anthericum.—The variegated form is an excellent house-plant, but often demands more root-room than is convenient. In that case, wash all the soil off the roots, and repot them in fresh soil.

Aspidistra.—While leaves are growing, frequent applications of manure-water will be beneficial.

Aster.—Keep the ground well stirred among the plants. Water, mulch and stake as required.

Balsam.—Some fine specimens may now be taken up from the border and placed in large pots for window-plants after frost. Those left in the open border, treat as advised for asters.

Bedding-plants.—If a large stock is wanted next season, the first cuttings may be taken from especially valuable plants.

Begonia.—Shift flowering-plants into larger pots. Pinch back those wanted for winter-blooming, and thus induce stockiness.

Browallia.—Seed can yet be sown for pot-plants.

Calla.—Start plants intended for early flowering into vigorous growth by giving rich soil and plenty of water.

Camellia. must be kept moist at the root, yet not watered excessively. When the plants appear dry, place the pot in a tub or pan of water for a half hour.

Carnation.—If wanted for bloom during the holidays, cut plants back now for the last time.

Chrysanthemum.—Pot-plants now need special attention. Allow the large-flowering kinds to grow without check. To secure fine flowers for show purposes, remove some of the top soil, and substitute for it some rich, fine old manure. Stake and tie as needed.

Climbers on lawns, etc., need careful training until all bare spots are covered. In the greenhouse syringe freely to guard against insects, also give manure-water freely, and pick off dead twigs and leaves.

Climbing Roses.—Remove superfluous shoots, and train those remaining.

Coleus.—Make cuttings for winter. Old plants to be pinched back as needed to give good shape.

Cuttings of many subtropical plants, especially ficus, clerodendron, etc., also of rex begonias, may now be

rooted more successfully than at almost any other time. Place the green cuttings in sand, cover them with a bell-glass or tumbler, and water lightly as needed. Cuttings may also be made of coleus, geraniums, and many other plants desired for window or greenhouse decorations next winter and spring.

Echeverias like sandy soil, not any too rich. When grown in pots water them moderately.

Evergreens may be transplanted even at this time. Choose a cool, damp day for the operation, and be sure that the roots have no chance to get dry while out of the ground. Sprinkle the heads of the trees every evening for several weeks afterward.

Everlasting Flowers.—Gather for winter use.

Flower-beds.—Trim and clean up generally. Remove faded flowers, and dead stocks of perennials. Remove early annuals now past their season. Stir the ground frequently.

Freesias are just the thing for a window-box later on. Plant now a dozen or more bulbs in quite a large box, and you will be delighted with their beauty and fragrance.

Fuchsia.—Get in shape old plants of the winter-blooming kinds, now at rest. Take them from the pot, cut back to within a few inches of the ground, wash all the soil from the roots and repot them in new, rich loam, giving water but sparingly at first.

General Greenhouse Management.—Now that the houses are about as near empty as they ever are, is probably the best and most convenient time for cleaning, repairing, painting, etc. Be particular to clean and scrub all the woodwork. Provide pots, potting-soil, and all other requisites that may soon be needed.

Geranium.—Plants for winter-bloom should now be cut back severely.

Gladiolus.—Give supports to the tall flower-stalks. The spikes from especially strong bulbs may be cut early to finish flowering in water. This will encourage the growth of secondary spikes.

Hanging-baskets and Vases.—Give liquid manure once or twice a week. Loosen up the soil from time to time with a pointed stick. Remove dead leaves.

House-plants.—Most of these are now plunged in the open ground and do not need a great deal of attention. Look them over from time to time to see that all is well. Lift annuals that may be suitable for house-decoration. Sow seed of such kinds as ten-weeks stock, balsam, mignonette, etc., in pots or boxes. Get a supply of pots, moss and other requisites. Orange and lemon trees, and other plants and shrubs, may be shifted this month.

Ivy-geranium.—Repot young plants for rapid growth.

Lawn Management.—In a wet season keep the lawnmower going. Poultry in confinement will like some of the clippings. Watering by hydrant and hose is a good practice, which, however, in many cases, is greatly overdone. Too much water cannot well be given to lawn-trees. Keep walks and drives neat and trim, and free from weed-growth. Trim edges next to flower-beds and walks neatly every few weeks, using a sharp spade or an edging-knife. Plants in tubs, pots, etc., need frequent and thorough watering. Look also to the rock-eries, which often suffer from drouth at this time. Remove the tops of plants that have now ripened. It is still time to layer roses and other shrubs. In lifting from the border plants wanted for the house in fall and winter, aim to secure all the roots possible, pot firmly, shade closely for a few days, and sprinkle the tops several times a day for awhile. Stake and tie all tall-growing flowers in the borders.

Laurel, *aucuba*, *arbor-vitæ*, and other hard-stemmed plants that have completed their season in the ground, can now be lifted to good advantage.

Lilies now at rest, such as the white candidum, etc., may be transplanted.

Orchid.—As growth seems to be completed, gradually withhold water, and remove to cooler quarters. Plants still in active growth should be encouraged.

Pansy.—Sow seed for bloom in early spring.

Pelargonium.—Cut back at once, using the ends of shoots for propagation.

Petunia.—If nice plants, to be taken up in October for the window-garden, are desired, cut back straggling branches, thus insuring compact shape.

Pots.—Provide new ones; and clean and wash old ones before putting new plants in them.

Potting-soil.—It is always well to lay in a good supply in good season. The want of it when badly needed is always a great annoyance. Cut sods from a rich old pasture and pile them up where they will speedily rot. Haul sharp sand, muck, fine woods-earth, etc. Dig the old manure out of the hotbeds and make a big compost-heap, mixing in all other materials suitable for potting, hotbed and coldframe soil.

Roses.—Plants for winter-flowering keep in rather small pots. If earthworms give trouble, lime-water applied in a moderate quantity, and not too strong, will kill them. Syringe the plants daily, closing the house after the last syringing. To bedded roses give a liberal mulch of manure.

Smilax.—Sow seed for next year's plants. Start up old roots that have been at rest.

Stocks.—Sow seed of ten-weeks and intermediate kinds for winter bloom. To provide for a succession, we sow every six weeks.

Tuberose.—Plants in bud at the end of the month, if carefully lifted, will come handy for blooming in the house later on.

Verbena.—Plants, to continue in good bloom, need special attention at this time. Cut back the straggling branches, if not the ends of all branches, and give

liquid manure in frequent doses, or strew some good fertilizer (flower-food) around them, and thus aim to coax them into renewed flowering.

Veronica.—Plants now approaching their flowering season will be especially grateful for free applications of weak manure-water.

Vinca.—If plants are wanted for the house, divide the roots, and pot the part taken up. The other part, remaining in the ground, will have time to recover and become reestablished before winter.

Wild-flower Garden.—Now is a good time to start it.

II. GARDENING FOR TABLE AND MARKET.

Apples.—In marketing the early ones, ship only a selected grade, preferably in crates or other small packages. Keep the poor stuff at home. Let the sheep and hogs have the wormy fruit as it drops.

Asparagus.—The plants now store up in their roots the reserve material for next year's crop. Encourage them by keeping down weeds, stirring the soil from time to time, and giving plant-food.

Beans.—Gather your supply of seed of all garden varieties. Pick well-grown and well-filled pods of the Limas from near the ground.

Beets.—The early table sorts may yet be sown for succession.

Blackberries.—Head back the young canes and their laterals.

Budding.—Finish budding cherries and plums, and begin the latter part of the month with peaches. Watch the bandages and cut them before they cut into the bark of the swelling stock.

Cabbage.—Harvest the earlier crop and give good cultivation to the main crop.

Celery.—Set out plants for latest crop. Next month will yet do for this at the south. As the earlier plantings reach sufficient size for handling, begin earthing up gradually, or blanch with boards. Keep the later settings in free growth by thorough cultivation and frequent hoeings.

Cucumber.—The patch should be gone over every day, carefully cutting (not pulling) off the pickles while yet small, say two or three inches long. Specimens allowed to ripen on the vines, will soon exhaust the plants' vitality and stop further productiveness.

Currants.—Cuttings usually do best if made in early fall. After the leaves have dropped, thin out fully one-half of the new growth; this may be used for cuttings. Make them eight inches long, and plant them at once, slightly slanting and so deep that only the top bud is exposed, in compacted soil.

Egg-plant.—Give liquid manure freely, and hoe frequently. Watch for the potato-bug.

Endive.—Keep plants in good growth by free cultivation.

General Garden Management.—If the season be dry, keep the ground among all growing crops well stirred to retain moisture. All liquid manure, soap-suds, etc., available at this time, can be given to any of the crops

yet in vigorous growth. Sow for succession, spinach, bush-beans, beets, radishes, turnips, etc. The idle garden goes to weeds. Let no weeds go to seed to sow trouble for years to come.

General Orchard Management.—Take care of the orchard fruit. There will be but a light crop in the east. Make the most of what you have. Mow the grass, but leave it on the ground. Destroy the second brood of the fall web-worm.

Gooseberries.—Layering is the surest method of propagation. Bank up earth all around and well into the parent plant. See also directions for currants.

Grapery.—Give air freely to ripening fruit. Thin crowded shoots to insure perfect ripening of wood for next year's fruiting. In coldhouses thin the forming clusters and remove all imperfect berries.

Insects.—Use bubach or kerosene emulsion for the cabbage-worm, and all leaf-eating caterpillars. Probe out borers on fruit-trees. For flea-beetles and aphids apply a spray of strong tobacco-tea.

Lettuce.—Pull up the plants going to seed. Poultry are very fond of lettuce, and when in confinement will eat large quantities of it.

Manure.—It is not too early to look about for a new supply for next season. Often you can get some good city stable manure for the hauling at this time of the year. Get all you can.

Marketing.—Read the good advice given by practical growers elsewhere in this issue. If possible, use new crates and boxes, and sort and pack carefully. Don't store crops for higher prices after a decent price is offered. More money is lost in this way than in any other. The chances are against any profit in waiting.

Mushrooms.—People who make a business of growing mushrooms for market usually find it profitable if well-managed. A home supply can also be easily grown at this time under the greenhouse-stages. A cellar where an even temperature of from 50° to 60° can be kept without much difficulty, is also suitable. Collect a lot of fresh horse-manure, not too coarse. Spread it out as it accumulates, to prevent heating, and fork it over several times at intervals of a few days. A little turfy loam may be added, although this is not absolutely needed. Next make up a bed of about 18 inches deep and two or three feet wide, of any length desired, beating the manure down well. After the first violent heat has subsided, and the thermometer inserted in the manure indicates 80° or 90°, the bed may be "spawned." Break

the spawn in pieces the size of a small egg, and insert them two inches deep and eight inches apart each way all over the bed. In a week's time cover with two inches of fine loam, and wait for results.

Onions.—Harvest the crop when the tops begin to die down. Let the bulbs lie on the ground until well cured, and when perfectly dry draw them under shelter, on the barn-floor or other suitable airy place. Market as soon as possible. Prices this month are usually good.

Potatoes.—Keep them well cultivated until the vines cover the ground. Spray with Bordeaux mixture thoroughly and frequently to keep off blights. If bugs are troublesome, add a pound of Paris green to each 200 gallons of the Bordeaux mixture. Dig early potatoes and sell them if a fair price is offered. For home use dig only as wanted, and for seed not until tops die down. Growers south of Virginia may plant second crop this month.

Spinage.—Sow seed for late fall use.

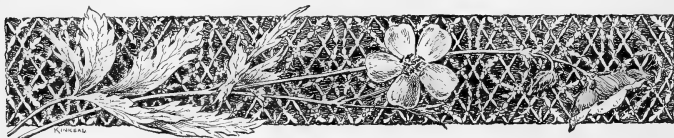
Squashes.—Continue to cultivate and hoe the vines until they cover the ground. Treat melons and late cucumbers the same way.

Sweet-Potatoes.—Lift the vines off the ground occasionally, to prevent them from rooting at the joints.

Tomatoes.—To get them into market early, pick them when just beginning to color, and spread in single layers upon a layer of straw in an unused coldframe or hot-bed, covering with sash. They will thus color up nicely and quickly, and give the fruit left on the vines a better chance to ripen.

Vineyard.—Let grapes get ripe before you market them. No Ives should be picked this month. If diseases are troublesome continue to spray with the ammoniacal solution of copper carbonate.

Waste Unnecessary.—Do not allow any waste of crops. One-fifth of all fruit, vegetables, and grain produce is wasted, without counting in the waste in cooking and serving. At least two-fifths more are lost after harvesting; but one-fifth before harvesting. Thus over one-half the productive power of our soil is lost, which means that we could easily feed more than twice as many people as we do. Almost every year we see thousands of bushels of rotten apples on the ground. Is it absolutely necessary that they should be lost? Good judgment would not plant one-fiftieth as much summer and fall fruit; but if it be growing it can be turned into cider and stored. Cider becomes vinegar, and vinegar keeps, and reaches remunerative prices in off fruit-years.



CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Blue Hydrangea.—I pot hydrangeas in peat and give them no manure, but plenty of pure water; such treatment will give them a blue color.—*Am. Florist.*

A Good Ink for Labels.—Higgins' waterproof drawing-ink does not run, nor is it blurred, when the labels are wet. Try first the common ink, then this drawing-ink, and apply the water-test. Use a stub-pen entirely free from common ink.—*Florists' Exchange.*

Hardiness of Tritomas.—Mr. Smith says it is his practice to plant tritomas deeply, so that the crowns are seven or eight inches below the surface. This practice, if generally adopted, would mean the salvation of many plants. A few inches of soil are wonderfully protective, and at that depth the crowns of these torch-lilies might survive a frost that would soften them to pulp if they were on a level with the surface of the soil.—*The Garden.*

Draining a Remedy for Heaving.—The frost will penetrate deeper in underdrained land than in land not underdrained. But the porous condition of the soil, allowing the surplus to pass through the underdrain, prevents heaving, which is so injurious to plants. The underdrained soil when frozen is open and soon thaws out, when the ice-melting temperature prevails.—*Drainage and Farm Journal.*

Watermelon Tests.—I draw my thumb-nail over the melon, scraping off the thin green skin. If the edges of the skin on each side of the scar are left ragged or granulated, and the rind under the scar is smooth, firm and white, and has something of a glassy appearance, the melon is ripe. But if the edges of the scar are smooth and even, and the thumb-nail has dug into the rind in places, and the skin does not come off clean, then the melon is green. You can easily learn on two melons, one ripe, the other green, noting the difference after they have been cut open.—*Southern Stockman and Farmer.*

Cucumbers not Unwholesome.—Many people are under the impression that cucumbers are very indigestible, but in fact they are very digestible when eaten properly. They cannot, indeed, be otherwise since they consist mainly of water, and those parts which are not water are almost exclusively cells of a very rapid growth. When eating cucumbers it is well to cut them into thin slices, and to masticate them thoroughly. Even the vinegar and the pepper so often added are of service to digestion if not taken in excess.—*London Hospital.*

Mulch the Cucumbers.—I have given cucumber-vines a heavy mulch of coarse manure for a number of years, and never failed to have good cucumbers and plenty of them. I use boxes about the hills, and after the first or second hoeing put on the mulch and leave the boxes until the vines are even with the top. If possible the mulch is applied after a heavy rain. In this way I am practically independent of droughts, and the vines retain their bearing quality most of the summer. Little or no hoeing is needed, and the land is in excellent condition for the next year's crop.—*New York Tribune.*

Advertising by Squashes.—A correspondent of *Country Gentleman* advised growers to trace the owner's name upon superior specimens. This may be done with the point of a slender pocket-knife, and as the cicatrices enlarge with the growth of the squash, the name will make a very pretty appearance, even though the tracing was not very artistically done. This will help the owner to dispose of his productions to better advantage, because those who buy them and like them will search for more with the same name upon them—a cheap way for a farmer to advertise.

Cracking of Tomatoes, Plums, etc.—If a bladder filled with syrup be immersed in a vessel of water, the water will, after awhile, become sweet; the syrup passes through the membrane of the bladder into the water, and correspondingly the water passes into the interior of the bladder. But this interchange is not an equal one; the light liquid—the water—passes in many times more rapidly than the heavier liquid, the syrup, passes out. The consequence will be that the bladder will be distended to its utmost, and at length burst. A ripe tomato or plum may be considered in the condition of the bladder of syrup. The rich juices of the fruit correspond to the syrup, and the thin membrane, which forms the skin of the fruit, represents the bladder. When the ripe fruit is kept constantly wet by a rain, osmose takes place and the water passing through into the fruit distends the skin which, not being very strong, is soon ruptured.—*New Orleans Times-Democrat.*

Getting Rid of Ragweed.—Ragweed (*Ambrosia artemisiifolia*) is an annual having a slender and much branched stem. There are several varieties, but the one shown in the sketch is the most troublesome. The leaves are much serrated, hence, probably, the name. The seeds are very numerous and possess much vitality.

The time of maturing the seeds extends from the latter part of July until frost comes. This weed is found in nearly every state in the Union east of the Rocky moun-



RAGWEED (*Ambrosia artemisiifolia*).

tains, and in nearly all the provinces of the Dominion of Canada. Ragweed may be eradicated by the following means: (1.) Drop out of the rotation such crops as ripen along with the ragweed. (2.) Give much attention to autumn cultivation. (3.) Mow the fields that have been sown to grass closely just before any of the seeds ripen, and leave whatever vegetation has fallen to lie upon the ground. (4.) Give attention to pastures and fence-corners. (5.) Grow hoed crops to the greatest possible extent, and make sure that none of the seeds of ragweed are allowed to ripen in them. The summer cultivation will favor the germination of the seeds. (6.) Use the mower on the highways at the right season. If the state of the highways will not admit of this, remodel them so that the mower can be used on every part of them.—*Thos. Shaw, in Ohio Farmer*.

Smoked Onions.—Large quantities of so-called smoked onions are brought annually from the Russian markets into Germany, which keep extra-long, as they do not sprout. In reality these onions are not smoked, but simply aired. Dr. von Rigel writes: "The onions are first dried in bunches in the open air, and tied to a string suspended from a covered roof, which protects them from rain. They are then placed on top of the big Russian stove, built entirely of brick, in a temperature of 122°-167° Fahr., so that they are slowly but thoroughly cured."—*Florists' Exchange*.

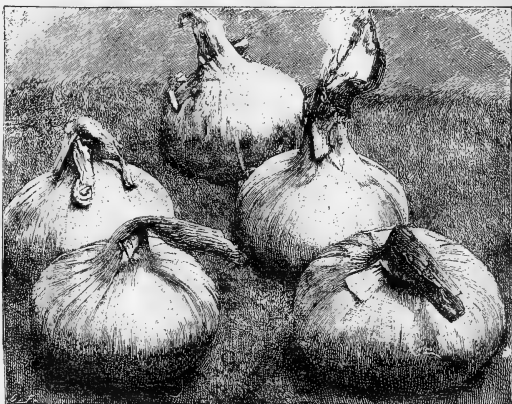
Onion Varieties in England.

The most reliable sorts for spring-sowing are Reading Improved and Rousham Park; for long-keeping qualities, James' Keeping, Danvers Yellow, and Brown Spanish or Deptford

(here figured); for sowing toward the end of July and again in August, the Queen, Early White Naples and Giant Rocca, a splendid, large, hardy variety of fine globular shape, and a good keeper. Silver Skin is a small white onion, and is cultivated for pickling. The Potato onion forms a number of bulbs on the parent root under ground, and by means of these it is propagated, ensuring a good supply even during a very hot and dry season.—*Gardening Illustrated*.

My Little Hoe.—"What a fine crop of carrots you have," said a visitor, "and so clean and even!" "Yes," I said, "they are good. I thinned them out with my little hoe." This hoe is one of the most useful implements on the farm. In fact, I have three of them—one an inch wide, another two inches and another three inches. I dislike to use or see a man use a dull, rusty hoe. We grind these hoes every day and take a good file into the field and keep the hoes always sharp. In time the corners of the hoe wear off and become rounded, and the hoe will no longer do effective work. Put one of these hoes in a vise and break off the sides of the blade slantwise, so that the lower part of the hoe shall be wider than the top, leaving in the center only so much as you wish—one, two or three inches. Grind it up smooth and bright and you have what some people may call a "plaything," but which in the hand of a man who knows how to use it and who does not want to do hard work will give you many hours and days of pleasure and profit in the garden.—*Harris' Rural Annual*.

Mushroom-Poison Tests.—The danger from mushroom poisoning has been greatly exaggerated. In observing certain rules of precaution, all possibilities of this



BROWN SPANISH ONION.

nature are averted. The mushroom must never be used unless perfectly fresh; if maggot-eaten, wilted, or in any

stage of putrefaction, poisonous elements in the form of bacteria are present. Whether raw or cooked, it is a dish that cannot be preserved. It must be used immediately. There are numerous tests, claimed to be infallible, for detecting the presence of these poisons. For example, a mushroom is rubbed with any article of gold; if the gold discolors, the mushroom is said to be poisonous. Another test is to dip a silver spoon into a kettle of boiling mushrooms. In case this immersion blackens the spoon, a similar verdict is pronounced. These tests are very unreliable. The only sure means of prevention against using poisonous mushrooms, is to learn the characteristic distinction of the comparatively rare, poisonous mushrooms, and to use none but those that are distinctly recognized as being harmless. —*Popular Science News.*

Irrigation in Utah.—From an ordinary city water-ditch two to five rows of garden vegetables are watered at a time. When the ground is very dry, enough water must be turned into each row to flush it through. Allowing the water to run for five minutes in a row wets the ground very well, and from 10 to 15 minutes soaks the soil like a very heavy rain. A garden to be easily irrigated must be leveled and prepared for the purpose. The object is to have just sufficient slant for the water to run slowly through the rows. Head-ditches across the garden, from 50 to 100 or more feet apart, help much to control the water and flush it through the rows of vegetables. Where there is naturally too much slant to the land, so that the water would run too fast to soak in the soil, head-ditches are run diagonally across, or straight down, and the rows planted so as to be as nearly level as practicable. This permits irrigation even on a hillside. —*American Agriculturist.*

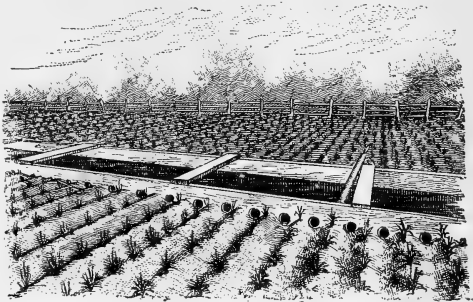
Wire Guard for City Trees.—City trees require protection. Horses will nibble and deface them, and malicious persons will slice the bark with knives and hatchets, so that it is necessary to provide some kind of safeguard against these depredations. As soon, therefore, as the wooden boxes by which the trees should be protected during the first three or four years after being set out can be removed,



WIRE GUARD.

it will be prudent to inclose the stem of the trees for six feet in height by a wire guard. Woven-wire netting,

such as is used for fences, will be found to form a very neat, cheap, and efficient material for this purpose. Of course, the meshes should be small enough entirely to prevent horses from defacing the bark of the tree.



IRRIGATION FROM A BOXED DITCH.

Scarred and bent tree-trunks though sometimes picturesque are not desirable here. —*William Saunders in Report of Department of Agriculture.*

Plowing Under Green Crops.—In a warm climate and a sandy soil no green crop should ever be plowed under in hot weather. Keep peas or clover growing, and the nitrate machine at work until fall. The peas lose nothing by dying on the land, except water, and are storing fertility as long as they are alive. Plowed under in fall when dead and dry, nothing but good can ensue. But plowing under a heavy growth of clover or other green plant-growth in midsummer is to say the least a risky matter. When necessary to plow a sod in midsummer, graze it short or mow it before plowing. A coat of lime after plowing will be of advantage. Clover will add nitrogen to the soil, but it must be supplied with the other elements of fertility to do so effectually. Use liberal applications of fertilizers abounding in phosphoric acid and potash to promote a heavy growth of the renovating crop, be it peas, clover or other legumes, and depend upon these for the production of the sale crop. —*W. F. Massey in Practical Farmer.*

Rooting Strawberries on Turf.—My mode of layering has been to get some good fibrous turf from two to three inches thick, and cut it into squares about four inches in diameter. The man who layers takes a number of these in a basket with some short wooden pegs and a trowel. Holes are made near the strawberry-runners to allow the squares of turf to drop in level with the ground, and a runner is pegged on the center of each. The turf is used upside down, and as there is generally a good deal of foliage about the strawberries at that time, it is astonishing how little the runners suffer from drouth. The roots penetrate the turf in a very short time, and if it is soaked in manure-water before being used, the roots will quickly take possession without entering the

surrounding soil, and in a fortnight or so after layering the plants and turf become firmly attached. I never knew plants layered in this cheap and simple way to fail to do well either in the open ground or in pots for forcing. They grow freely from the first and never seem to get root-bound, as is the case when layered in small pots.—*Gardening Illustrated*.

Marketing Ungraded Fruit.—"I brought three bushels of Bartlett pears to town to-day, and I could not get more than 40 cents a bushel. That price doesn't pay, but I had to let them go." This is what a farmer said to us one day. We turned to look at the fruit. He had been paid all

it was worth. The fruit was brought in large baskets holding $1\frac{1}{2}$ bushels, and was evidently just as it came from the tree—a most unattractive looking lot of fruit. Had this man picked out only two bushels of the finest fruit, rejecting every irregular-shaped and all small and worm-eaten specimens, he would have had no difficulty in getting \$1 a bushel and would thus have received 80 cents more for two bushels than he got for three, and had a bushel of inferior pears left. These again assorted would have produced a half

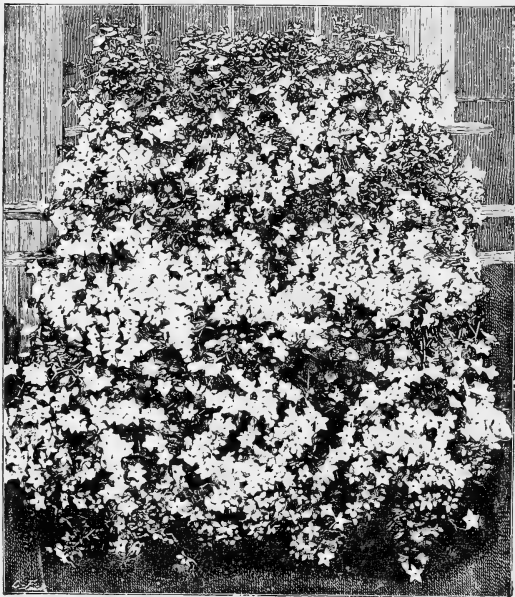
bushel of fair pears; the remainder he should have given to the pigs, or used for drying.—*Orange County Farmer*.

Campanulas for Windows.—These are pretty and succeed admirably in pots as window-plants. There are many beautiful varieties, such as *C. Barrelierii*, a drooping kind with a profusion of star-like bright blue blossoms, its shoots hanging down for about a foot, rendering it very suitable for suspended pots or baskets, and *C. Carpathica*, blue and white. *C. (Platycodon) grandiflora*, another drooping kind, having far larger and more substantial flowers than *C. Barrelierii*, droops sometimes two feet, and is grand for hanging-pots or baskets. *C. iso-*

phylla and its white variety are delightful trailing pot-plants for a window, inside or out, and do well also if grouped on a stage in front of a window or in a greenhouse (see illustration). Campanulas delight in light, rich soil; equal parts of loam, peat and leaf-mold, with plenty of sand added, suit them well. Do not pot them very firmly, and give plenty of water when in growth and in flower. Keep rather dry at the root during winter, and divide and repot in the spring as soon as growth commences. The drooping kinds do best in slight shade. A 5-inch pot is large enough for each plant of the drooping kinds. The pots should be suspended by means of wires

and the shoots allowed to droop over regularly all round.—*The Garden*.

A New Water-Lily.—*Nymphaea Laydekeri rosea* is a new hybrid lily introduced this year by Monsieur Mariac, who has previously added *N. chromatella* and numerous less known nymphaeas to our collections. As this variety was sent out in the late spring, the plants have not had time to become thoroughly established and show their best form but they flowered as early as established plants. The flowers are rosy pink of a deep tint, deepening toward the base of



CAMPANULAS FOR WINDOWS.

petals. They are single, and in form very much resemble those of *N. pygmaea alba*. The deep orange stamens also resemble that variety in their arrangement. The leaves are small, broadly sagittate, smooth, very slightly undulated, a vivid green above and of a reddish hue underneath. The flowers were about twice the size of those of *N. pygmaea alba*, and opened about ten o'clock A. M., closing late in the afternoon. It is evidently a thrifty, quick-growing variety, is said to flower continuously till October and will prove a welcome addition to our collections, though probably not a variety of first rank in size of flower.—*Garden and Forest*.

Poppies by Wholesale.—As the cultivation of tobacco is prohibited in England except under a special license from the excise authorities, so the cultivation of the poppy in British India is forbidden unless a license has been taken out. When a cultivator takes out a license from the Opium Department to cultivate a certain area (usually two-thirds of an acre of his own land), he receives an advance in money to secure his allegiance, and he binds himself to deliver to the opium-agent at a fixed price, ordinarily of 5s. a pound, whatever opium may be produced on his land. When official supervision is efficient, it is certainly very difficult for a man to cultivate the poppy on a larger area than is covered by his license without detection. The cultivation cannot be concealed. The poppy-plants are grown in little squares or beds, intersected by tiny water-channels for irrigation whenever this is possible. The growth of the plants is carefully tended; and at length the time comes when they burst out into flower, and the fields look like a sheet of silver, the white petals of the flowers glistening with morning dew. The women and children of the cultivators' families come forth and pick these beautiful petals off one by one, and carefully dry them, so that they may serve afterward as covering for the manufactured cakes of opium. Then the poppies, with their bare capsule-heads, remain standing in the open field until they are ripe for lancing. The cultivators then come forth in the evening, and with an implement not unlike the knives of a cupping instrument, they scarify the capsule on its sides with deep incisions, so that the juice may exude. In early morning the cultivators reappear with a scraping-knife and their earthenware pots, and scrape off the exuded juice and collect it in their pots. This is crude opium.—*Blackwood's Magazine*.

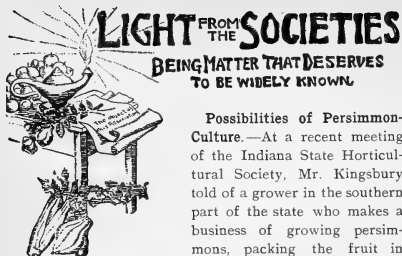
Hedgerows.—The old "haga," "haye," enclosure, or "hedge," dates from very early days in English history. As a rule, inclosure was carried on briskly throughout the country proportionately with the rise in the price of corn. Temporary accidents stopped it, such as the rage for sheep-walks, which marked the later Tudor times. Writers of the eighteenth century bestow many directions on the making of fences, and their particular injunctions show the downfall of the "common" system of agriculture. Many old sheep-walks were enclosed, and that more wheat might be grown the rabbits were exterminated from numerous old warrens while the high price of corn prevailed, early in the present century, especially in such years as 1810, 1812 and 1813. These newly acquired fields were surrounded with hawthorn and blackthorn hedges, infinitely less picturesque than the old informal fences described above, but far more beautiful than the attenuated hedges of the modern scientific farmer. Being planted on the surface of the soil and not on mounds, if neglected, cattle soon make their way through them, while the weaker parts and undergrowth are devoured and trodden under foot, leaving only the stouter hawthorns, with gnarled stems and bushy heads. Hence, the lines of hawthorns which the traveler by rail frequently observes in Northumberland, Lincolnshire,

and other counties. They stand like survivors of an older state of things, and possess great beauty of their own during autumn, when frost has touched them with crimson hues and they are hung with red berries, the harvest of fieldfares and redwings.—*Longman's Magazine*.

Spraying Potatoes.—*The Kural New-Yorker* uses the following formula: Two ounces of copper sulphate (crystals) are put into a one-gallon demijohn of cold water. They will dissolve in 24 hours. Three ounces of quicklime are put into another one-gallon demijohn of water, the lime first being slaked by adding only a sufficiency of water. The two gallons are poured into the ordinary patent water-pail, and we are ready to spray, using an ordinary aquaput pump, which, for small patches, answers just as well as more costly pumps. To every pail of the copper-lime liquid, a level teaspoonful of Paris green is added so that the application may serve to kill the potato-beetle as well as protect the vines against blight. Constant stirring is necessary while spraying, or the lower part of the liquid will have an undue proportion of lime and Paris green. The copper sulphate is entirely soluble. The above quantity of liquid will serve for a row of vines about 40 feet long. For larger areas, the same proportion of copper sulphate, lime and Paris green would be as follows: For 16 gallons of water, use two pounds of copper sulphate and 1½ pound of lime, adding one teaspoon level full of Paris green to every two gallons of the mixture.

The Large-Flowering Single Rose.—Judged by the specimen in the Arnold Arboretum, there is no shrub more beautiful at this time than *Rosa grandiflora*, with its great single white flowers as handsome as those of the Cherokee rose and far more fragrant. This fine plant, although an old inhabitant of gardens, is rarely seen in these days, but taste for single-flowered roses must soon bring it into general cultivation.—*Garden and Forest*.

Good Foliage Necessary.—The best-flavored, best-colored and finest specimens of fruit ripen on plants having an abundance of healthy foliage. The finest strawberries are found in the densest foliage, and so with grapes and other fruits. Yet the question is occasionally submitted as to whether or not the leaves should be removed from a bunch of grapes, so that their maturity might be hastened by exposure to the sun. It has been advised as a necessity, and that it is a rule to do so in some European vineyards. To all this it may simply be said that the removal of leaves never yet improved the quality of fruit or hastened its healthy maturity. Exposure to the sun will sometimes effect a premature coloring in grapes, but the mere coloring is not a sign of maturity, although it indicates approaching ripeness. The only true indication of a ripened bunch of grapes is when the shoot upon which it is growing has turned brown and hard. Pulling the leaves from figs, grapes or any other fruiting plants with a view to assist in ripening their crop is a fatal error, because such treatment has quite the opposite effect from that intended.—*Department of Agriculture*.



Possibilities of Persimmon-Culture.

—At a recent meeting of the Indiana State Horticultural Society, Mr. Kingsbury told of a grower in the southern part of the state who makes a business of growing persimmons, packing the fruit in boxes and sending it to Indianapolis, where it sells for 20 cents a box, and the boxes do not hold over a quart. He has been doing this for years and now has a large orchard of persimmon trees. He has also established a nursery for them and is raising trees to sell.

Keep Immature Products at Home.—The practice of marketing fruit and vegetables before they are ripe is resulting in a reduced consumption and will surely injure the business. An Akron lady told me that she would be glad to have peaches as dessert twice a day, could she get thoroughly ripened, full-flavored fruit; but the flavorless ones found in the market were not good, so they did without. A New York paper is responsible for the statement that the muskmelon market there was totally ruined by the unripe melons sold early in the season.—*L. B. Pierce, Ohio Horticultural Society.*

Packing Apples for Market.—I use a table eight feet long with side boards six inches high, that will hold two barrels of apples. Sort them into two grades at least. For the first grade set two tiers of smooth, good-colored, medium-sized apples, and fill up the barrel with apples that will run as good or better. Shake them well, level off the end, press the head in so tight that there is no chance for an apple to move, and after the head is nailed turn the barrel upside down and put your name on it as guarantee of a No. 1 apple, to be sold for what the buyer is willing to give.—*Nelson Cox, at Farmers' Institute in Ohio.*

Cold-Storage for Fruit.—At the last meeting of the W. N. Y. Hort. Society, Mr. Powell said it would pay to have cold-storage for the Bartlett pear, for otherwise it crowds upon the market too fast. A portion of the crop should be held back so as to prolong the season of marketing. Temperature is an important consideration. If too low, the flavor of the fruit is injured; 36° or 37° Fahr. is about right, for that is low enough to prolong the season of marketing a little while. Apples may be kept in a considerably lower temperature, and if held back and marketed in April, the owner will reap considerable advantage.

Stock and Graft in Apples.—Two years ago Dr. Wilcox directed my attention to some Wealthy apple trees top-worked on Transcendent and full of fruit. The fruit was ripening and we tested it. There was no difference in the fruit of Wealthy on its own root and on Transcendent stock. Grafting the Wealthy on the

Transcendent was a remarkable success. I believe that a good way to utilize a few Transcendents in the north would be to put Wealthys on them. The Bethlehemite apple is much grown about Wheaton, Ill., and it was a favorite winter apple of mine. In that vicinity they got to working it on the native wild crab. They found that it united better with the wild crab than any variety I am acquainted with. Mr. Fuller, knowing I was partial to the Bethlehemite apples, brought out a plate of them. He watched me quite closely until I had taken a bite and began to draw up my face. Some of those Bethlehemites had been top-worked on the native crab, and although they preserved the shape of the Bethlehemite, they had the astringency of the crab. The union seemed good. It looks to me as though in this case it was a real example of communicating that particular flavor that the wild crab has, to the Bethlehemite.—*Prof. J. L. Budd, Northern Iowa Hort. Society.*

Keeping Grapes Fresh.—The following recipes were given at a fruit-growers' meeting in Ohio: (1) Dip the stems of the bunches, where broken off, into melted red sealing-wax and pack them in cotton in large pasteboard boxes. They must be kept where it is dry and cool. (2) Toward the end of October cut the shoots with the cluster attached, sharpen the lower ends to a point and stick them into potatoes. Spread the bunches out on straw or dry hay, so that they shall not touch each other. The grapes must be placed where it is dry and cool.

Worm Attacking Carnations.—At a recent meeting of the Chester County Carnation Society, Mr. Shel mire showed an enemy to the carnation-plants in the field, a small "measuring worm" that attacks the newly set plants at or slightly above the ground, boring into the center of the stalk, the plant withering and dying above



CARNATION ENEMY, MUCH ENLARGED.

the point of attack. The roots are not killed and presumably renew their growth. The "worms" as shown were from three-sixteenths to one-half inch long, and for about one-third their length, in the middle, brown, each end being white.

Dooryard Pruning.—A distinguished landscape-gardener once said to me, as we stood in the Spring Grove cemetery: "A man of leisure with no eye for the details of landscape beauty, can in a single spring day, with pruning-saw and ax, do more to mar the beauty of a home than a landscape-gardener can do to create it in half a life time. If idle men who desire to enjoy the April sunshine would get a pile of sand and shovel it back and forth as the children do, they would do infinitely more for rural adornment and taste, than they do in pruning their shrubbery. Men are all born butchers, and when they get too old, or too lazy, or too rich to butcher men or animals, they butcher the innocent trees and shrubs around their homes. They ruthlessly throttle every effort of nature, and make their door-

yards a grass-plat stuck full of broom-handles and hop-poles." Symmetry is not the essence of beauty. If it was, then a new umbrella would be one of the most beautiful things in the world. Two of a kind does not constitute beauty. If we take out of the problem of door-yard decoration the two items of symmetry and duplication, we knock out the main props that sustain your neighbor in his burning ambition to excel in door-yard pruning.—L. B. Pierce, *Summit County Hort. Society.*

The American Association of Nurserymen met for its seventeenth annual convention in Atlanta, Georgia, June 1. This is one of the most important of the trade societies, and its meetings are usually interesting and the results commensurate. The Atlanta convention was the first visit of the association to the south, and for most of the members the trip was a journey into a new land. The Governor of Georgia and the Mayor of Atlanta welcomed the nurserymen at their opening session in the beautiful capitol building, and the usual felicitous remarks followed. In the absence of the president, J. Van Lindley, ex-president N. H. Albaugh was called to preside. The programme was gone through with rapidly, a few papers being omitted, and the active work of the meeting was concluded by noon on Thursday, June 2.

The boycotting tactics of California nurserymen in their attempts to keep out, by fair means or foul, the nursery stock of the east, was discussed and vigorously denounced. Col. U. B. Pearsall, of Fort Scott, Kansas, was the expositor of this matter, and at his motion a resolution was adopted threatening the California fruit growers with retaliation on their green fruits if the present regulations were not greatly modified. The resolution is as follows:

We, your committee, appointed upon the subject of the California quarantine laws, hereby respectfully recommend the passage of the following resolutions:

Resolved, That the secretary of this association notify the president and secretary of the California State Board and other proper officers, that the people east of the Rocky Mountains consider the present inspection laws of California a measure uncalled for and a great discrimination, and demand their prompt repeal.

Resolved, That in the event of a refusal to repeal such obnoxious laws, we pledge ourselves to make a united effort to have our several states pass strict inspection laws relative to the importation of green California fruits.

Resolved, That in the event of having to pass such laws, the executive committee be requested to employ a good attorney to draft a uniform law to be passed by the respective states east of the Rocky Mountains, and one which shall be so framed by a schedule of fees as to be no expense upon the states.

Papers were presented on the following topics:

"Duty of American Nurserymen at the World's Fair," by Hop. N. H. Albaugh; "Fruit Tree Packages," G. J. Carpenter, Fairbury, Neb.; "Grading and Assorting Nursery Stock," W. F. Heikes, Huntsville, Ala.; "Interstate Shipment of Nursery Stock, with Reference to the California Monopoly," Col. U. B. Pearsall, Fort Scott, Kan.; "One Way of Preparing a Nursery Catalogue," J. Horace McFarland, Harrisburg, Pa.; "Who Makes the Most Money, Nurserymen or Fruit Growers?" J. H. Hale, South Glastonbury, Conn.; "Suggestions to

Nurserymen," Prof. P. J. Berckmans, Augusta, Ga.; "How to Eat Other People's Watermelons," W. L. Glessner, Americus, Ga.

Very little work was done outside the programme, and there was less discussion than usual upon the papers as read. A committee was appointed to memorialize the postmaster general to arrange for the mailing of catalogues, etc., at a pound rate of postage, without stamps.

Henry Augustine, of Normal, Ill., was elected president, and Z. K. Jewett, of Sparta, Wis., vice-president. The city of Chicago was selected as the place of meeting meeting in 1893.

About 120 of the nurserymen were taken on Thursday afternoon to Fort Valley, 106 miles south of Atlanta, to see the wonderful development of peach-growing in that vicinity. They were shown thousands of acres of trees, many covered with beautiful fruit, and entertained in the hearty southern style. On Saturday a party of about 40 were given a special train on the Georgia Southern and Florida railroad, and taken 105 miles south of Macon to yet another fruit-region in the vicinity of Tifton, Cycloneta and Poulan. This proved to be a most agreeable and instructive trip, and aided the nurserymen in forming an idea as to the wonderful capabilities of the Georgian climate and soil for early and fine fruits.

The meeting was a great success in that it introduced into a practically undeveloped region of great possibilities an important association, representing over \$25,000,000 invested in horticultural work. Good must surely come from the Atlanta meeting.

Can Insects Survive Freezing?—It is usually supposed that most worms and insects which hibernate in the ground can be killed by simple exposure to freezing. Fall plowing is the means, therefore, frequently recommended to secure that end. In a paper read before the Entomological Society of Ontario, H. H. Lyman gave some interesting data showing that caterpillars and other insects can stand a good deal of solid freezing. From the entomological appendix to the "Narrative" of Sir John Ross' second Arctic voyage, he quotes the following: "About 30 of the caterpillars of *Larva Rossii*, a species abounding in the Arctic regions of this continent, were put into a box September 15, and after being exposed to the severe winter temperature of the next three months, were brought into a warm cabin, where, in less than two hours, every one of them returned to life and continued crawling about for a whole day. They were again exposed to the air at a temperature of about 40° below zero, and frozen hard. In this state they remained a week, and on being brought again into the cabin only 23 came to life. These were, at the end of four hours, put out once more into the air and again hard frozen. After another week they were brought in, when only 11 were restored to life. A fourth time they were exposed to the winter temperature, and only two returned to life on being again brought into the cabin. These two survived the winter, and in May an imperfect larva was produced from one and six flies from the other." That a caterpillar infested with parasites should have been able

to survive such severe treatment and spin its cocoon is remarkable, and it is not strange that alternate freezing and thawing was generally fatal.

Making Old Orchards Profitable.—There are some old orchards in which there seem to be no chances for profit. Some of this kind are comprised almost entirely of worthless varieties, and are good for nothing but firewood. There are in Illinois many old orchards that, with good management, could be made profitable. A large number of them are composed of trees that bear little fruit, but what little fruit they do bear is generally of good quality. Some of these trees are dead in the lower limbs and bear only in the tops; some of them are too closely set, and might be thinned and the oldest trees taken out. The orchard should not be thinned by the amputation of the limbs on the trees that interfere with the limbs of other trees. If the trees are so close that their branches interfere, the thinning should be done by removing some of the trees themselves, and enough should be removed to give the trees that are left plenty of room. Water-sprouts should be left to protect the trunks of the trees against sun-scalds. If the soil is poor sow red clover-seed. If the shade is dense plant orchard-grass. It will not be practicable to plow deep, even where such plowing is needed, and the clover-roots will do the plowing better than can be done by any implement. Hogs are better than colts for pasturing in the orchard. Light grazing may be allowed in the fall. The orchard must be fed, and if the trees have borne many full crops they will be found to be getting weak from fruit-bearing. In this case barnyard manure should be put on, and this seems to be the best kind of manure for this purpose.—*F. J. Mann, Central Illinois Horticultural Society.*

Stirring the Soil after Rains.—I found during my studies of soil-moisture, when taking samples of soil just before a rain, and again immediately after in the same localities, that on several occasions the soil at some distance below the surface was drier after than before the rain. I found, also, on two different occasions, by determining the amount of water in an area of field-soil down to a depth of four feet, and then adding with a sprinkler a known quantity of water to the surface, that after the lapse of about 24 hours the lower three feet contained less water than before the sprinkling occurred, while the upper foot had gained in water more than had been added to the surface. I have not been able yet to determine whether this principle applies to all soils, but there is a condition of moisture for clayey soils underlain in which a certain amount added to the surface increases for a time their power of drawing water from deeper below the surface, so that in these cases the surface foot may receive not simply the rains which fall upon them, but an additional quantity brought up from below in consequence of the rains having fallen.

These facts make it evident that there may be times when to leave a piece of ground unstirred two or three days after a shower may result in leaving the upper four or five feet of soil in a drier condition than if it had not rained at all, because not only will the rain itself have

been evaporated from the surface, but in addition some portion of the deeper soil-water which the rain was the occasion of bringing up from below. If the surface is broken as soon as the soil will permit of it, there will be retained near the surface, where the moisture is most needed, not only most of the rain which fell, but in addition that which the increased capillary action has brought up from below.—*Prof. F. H. King, before the Agricultural Convention.*

How to Drain.—The best material for a drain-pipe is round or cylindrical tile, without collars or joints. As to the merits of soft and hard (or glazed) tiles, there is but very little difference. The latter are not so likely to crack and flake where exposed to the frost, as at outlets. The water goes in through the joints, and not through pores of the tile as some suppose. Each tile should be rejected that does not show a clear red color and give a metallic ring when struck with a hammer. Most authorities have advised them too small. The tendency in this country is now toward larger tiles, and that is simply because they are needed. Even the two-inch tiles are becoming scarce. The tiles used should be large enough not only to carry off all extra water in a short time—and the sooner the better—but also to provide for cases of emergency. For sizes from three to six inches and grades less than three feet to the hundred, a good rule for finding the number of acres any tile will drain is to square the diameter and divide by four. For example, for every 500 feet: A 3-inch pipe will drain $2\frac{1}{4}$ acres; a 4-inch main will drain 4 acres; a 5-inch main will drain $6\frac{1}{4}$ acres; a 6-inch main will drain 9 acres. For steeper grades than three feet to the hundred, it may be divided by three. Have the mains large enough to take the water as fast as the soil can filter it and the laterals collect it. A depth of four feet may do very well for the deep loamy soil of the western prairie, but for the compact clayey soils of Ohio a depth of $2\frac{1}{2}$ feet is quite sufficient. Where the tiles are placed shallow the drains can be closer together. The minimum depth should be two feet. But it must be remembered that the filtration is less, and the consequent loss of manure or fertilizing material is greater. For horticultural purposes they should be 25 feet, and in loamy soil they may be four or five rods apart. Hand-work, with hand-tools, is decidedly best. The first implement to use is a two-horse plow. First cut deep with the plow, in the fall; then the light snows will prevent freezing. Thus the workman may keep busy nearly all winter, and the ditch may be worked while the surface of the ground is frozen. If ditching is done in the winter the work should be commenced at the outlet and continued back upward. The same process should be observed at any time when the ground is saturated with water and it is ready to run off through the ditch. But in commencing at the lower end to place the tile, great caution should be observed in keeping mud or dirt from passing into the drain, and each evening it should be well stopped at its upper end with a bunch of grass or hay.—*From lecture by W. I. Chamberlain, before a meeting at the Ohio State University.*

HE THAT QUESTIONETH

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists.

Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

2994. **Street-trees for Shade.**—I wish to have my townspeople plant 500 shade-trees. Some streets are high and dry, others low and wet. We also wish to avoid sameness. What kinds would you recommend, and in what positions to plant?—B. H. I., *New York Suburbs*.

2995. **Blood-leaved Plum and Variegated Cornus.**—How far do you plant them apart for such a bed as was recently illustrated by you?—W. C. E.

2996. **Carnation Rust.**—I enclose some Carnation-leaves bearing rusty spots. What ails them, and what remedy should I use?—W. E. S., *Indiana*.

2997. **Paper Flower-pots.**—where are they made, and where can they be procured?—S. Q. D., *Brooklyn, N. Y.*

2998. **Black Flies on Chrysanthemums.**—How can I kill them?—H. M., *Brooklyn, N. Y.*

2999. **Hydrangea-Culture.**—What treatment do hydrangeas require? During what months are cuttings taken and rooted?—C. M. S., *Michigan*.

3000. **Azalea Treatment.**—Plant bloomed last winter but now looks almost dead; can it be cut back so as to produce new branches? I notice some green tufts coming out of the trunk in one or two places.—M. L. R.

3001. **Starting Nelumbium luteum.**—I planted seeds in pots of rich soil immersed in water, kept at a temperature of from 70° to 80°. Three seeds germinated, but the plantlets soon died. What was wrong?—M. L. R.

3002. **Chinese Fringe-tree.**—Is it likely to thrive in Lawrence county, N. Y.? Where can it be obtained, and how should it be treated for best success?—L. D. V. H.

3003. **Perennial Poppies from Seed.**—Is seed usually slow or uncertain in germinating? What treatment is required? When should seedlings be transplanted?—C. L., *Nevada*.

3004. **Wistarias Not Blooming.**—Is it worth while to cumber the ground with them longer than 7 or 8 years spent in fruitless attempts to make them bloom.—M. H.

3005. **Rose-Rust.**—A dark brown spot appears upon a branch; the leaves turn yellow, and finally the whole plant dies. How should I treat my plants?—H. F. D.

3006. **Borers in Plum and Cherry Trees.**—A gum-like nucliage is oozing out of some of my trees. What is the cause and remedy? What is black-knot?—F. E., *Washington*.

3007. **Remedy for Curculio.**—A small beetle does much mischief in my apricots, plums and other fruits. How can we get rid of it?—T. E. L.

3008. **Niagara and Imperial Gage Plants.**—What is their exact time of ripening at La Salle? G. W. S., *Connecticut*.

3009. **Pruning Currants.**—Our bushes have made a remarkable amount of new growth. Should all the old wood be removed immediately after fruiting?—L. E. S., *Ohio*.

3010. **Raising Small-Fruits.**—I propose to raise small-fruits for market. What kinds do you consider hardy and profitable for Rockford, Ill.—J. G.

3011. **Huckleberry-Plants from Seed.**—How and when should huckleberry-seeds be sown? I have failed with them repeatedly.—F. W. C.

3012. **The Wonder Strawberry.**—Is this the same as the Oregon Everbearing? If not, where did it originate?—OREGONIAN.

3013. **Gathering Blackcap Raspberries.**—Has a good machine for this purpose yet been invented? If so, where can I get it?—C. C., *Illinois*.

3014. **Downing Mulberry Dying.**—About one-half of my tree's thrifty new growth was cut back last fall. The tree is now dead. Was it caused by pruning in wet weather?—M. H.

3015. **Preserving Unfermented Grape-Juice.**—Please republish full instructions. Should we use sugar or water? Are the skins or seed removed before boiling?—G. W. S., *Conn.*

3016. **Grape Not Fruiting.**—A seedling grape has flowered abundantly for the last two years, but bears no fruit. It blooms a week earlier than any of our other sorts. Shall we root it out, or may we expect it to fruit later?—L. G. P., *Ohio*.

3017. **Building a Fruit-House.**—Please advise how to do it.—G. W. B., *Ohio*.

3018. **Budding Fruit-Trees.**—Please give us an illustrated article on budding.—F. A. W., *Mass.*

3019. **Whole vs. Piece-Roots for Trees.**—What is the advantage of the former?—J. E., *Minnesota*.

3020. **Russian Apricots.**—By whom are the Gibb, Alexander, Nicholas, Alexis, Catharine and J. L. Budd propagated and disseminated? What do you think of them?—G. W. S., *Conn.*

3021. **Apple-Tree Blight.**—In some localities here apple-trees are usually killed by blight before they are eight years old. How can we prevent it?—J. E., *Minn.*

3022. **Spreading Apple Trees.**—What kind is most thrifty and spreading in growth?—G. B. D. V.

3023. **Peach Leaf-Curl.**—What causes the leaves to curl, and what is the remedy?—H. R. T., *R. I.*

3024. **Arsenic Mixtures for Grasshoppers.**—The Horticulturist's Rule-Book gives the following proportions: "Bran 40 lbs., middlings 15 lbs., arsenic 20 lbs., syrup 2 gals. Mix in soft water to a paste." This seems a great amount of arsenic. Is it all right?—E. L. S.

3025. **Potash Salts.**—You mention them as killing cutworms. Where can these salts be obtained?—A. W. H.

3026. **Wild Parsnip.**—How can it be distinguished from those cultivated? Will seed blown from the garden parsnip and started in the field produce the wild poisonous kind?—J. W. P., *O.*

3027. **Marketing Vegetables.**—Please give us some information on preparation and packing, from asparagus to turnips.—C. L. G., *Mass.*

3028. **Cucumber Pickles for Market.**—Please give the best method of preparing them.—B. C., *Mo.*

3029. **Marketing Spanish Onions.**—Could we not adopt a trade name for these onions and a uniform method of putting them up? How would "Domestic Spanish" do? What is the standard size of crate?—E. S. G.

3030. **Packing Mushrooms.**—Would like to pack them into 1-pound cardboard boxes. What is proper size and best shape?—C. E. S., Conn.

3031. **Cold-Storage for Vegetables.**—The object is to keep them in best shape until they can be put on the market to advantage. How shall we do it?—F. S. T., Maine.

REPLIES.

2880. **Increasing Size of Vegetables or Fruits.**—

Answered by Prof. Bailey: The large specimens of fruit raised by the French and others are usually obtained by espalier or wall-training, and the persistent and judicious thinning of the fruit. But very much depends upon the variety selected for the purpose.

Answered by E. S. Goff: The general principle is to provide abundant nourishment and restrict the number of specimens. In the case of a tomato or squash, I should plant on rich soil, pinch in the plants after they have attained a proper growth, and take off all specimens of fruit with the exception of one or two.

Answered by William Falconer: Keep the vines restricted to moderate size till the fruit is set and has begun to swell; then pinch off the fresh sprouts as they appear. Reduce the number of fruits to one or two to a plant, and feed the plants with weak liquid-manure. Just think how greenhouse grapes or exhibition chrysanthemums are grown and take the hint.

2897. **Making Oil from Sunflower-Seeds.**—The seeds (sunflower, poppy or whatever they may be) are first carefully screened, then bruised by passing through heavy rollers, and finally ground on edge-stones. The pulp is usually heated, put in strong, coarse woolen sacks and squeezed dry by hydraulic pressure. The resulting oil is then refined. The oil-cake is a valuable food for stock. In the "cold process" of extracting these oils the pulp is not heated. The chemical process consists of bruising the seed and heating them with bisulphide of carbon. Sunflower-oil has no pronounced flavor, and undoubtedly would be useful for many purposes. The seeds contain about 30 per cent. of oil. Any large-flowering variety may be planted, but the black-seeded Mammoth Russian is probably most profitable. The crop requires soil that has plenty of potash. The heaviest yield we ever had was grown on a rich, black, mucky soil, too moist for corn. A fair yield would be 30 to 35 bushels of seed to an acre, although 40 to 50 bushels are occasionally grown. You may count on a gallon of oil to a bushel of seed.

2898. **Coal-Oil Stove in Greenhouse.**—Gas from coal oil is quite injurious to plants, but with a little ingenuity you can easily contrive to carry off any escaping gas.—W. F.

2899. **Heating a Small Greenhouse.**—There are now on the market two appliances for heating hot-water pipes with gas. Both are designed for domestic use, and both are entirely suitable for heating pipes for warming greenhouses. They cost only a few dollars each. One is a small gas-stove with coils of pipe. The other is a burner designed to fit under a boiler. They can be seen at the Gas Appliance Exchange, No. 37 West 14th Street, New York city. The Hopson & Chapin Mfg

Co., New London, Conn., has also a new gas-heater for heating small radiators for rooms and greenhouses.—CHARLES BARNARD.

2937. **Onion-Plants in Hotbed Dying.**—In some of my beds I have used soil mixed with considerable quantities of coal and wood-ashes. In these a large proportion of the plants have been dying down, and the remaining ones seemed to be sickly until after they were transplanted. Where ordinary good loam was used for hotbed soil, the plants grew nicely and remained healthy.—CARL HOLTMAN.

2939. **Cellar for Storing Roots.**—Fourteen hundred bushels of roots will require between 2150 and 2200 cubic feet of storage-room. The main object in storing roots is to keep them at a uniform temperature as little above the freezing point as practicable. One of the best ways to do this is simply to pile them in long narrow piles on well-drained ground, convenient to the place where they are to be fed. An excavation about a foot deep should be made and a layer of clean straw placed beneath the roots. When the pile of roots has been made it should be covered thickly with straw and then with a foot of earth. At distances of six or eight feet along the apex of the pile, a drain-tile should be inserted to give ventilation. For a permanent cellar, in many cases, the most convenient arrangement is simply to partition off a corner of the barn basement by setting up 10 or 12-inch studs, boarding on both sides and stuffing the interstices with chaff or cut straw. Often a very convenient root-cellar may be made in a gravelly or sandy bank adjoining the barn cellar. This arrangement is especially convenient where the root-cellar can be so built that it can be filled from the driveway in the second floor of the barn. Where a cellar is built in this way, grout walls cemented on the inside should be used, both as a protection from cold and against rats. The relative advantages and cost of these various ways of storing roots will, of course, depend entirely upon individual circumstances and surroundings.—H. H. WING.

2942. **Irrigating Gardens.**—This is the way we grow celery in Colorado. A smooth piece of ground with a gradual slope is plowed, harrowed and laid off in rows 4 feet apart. Furrows are opened 6 or 7 inches deep with a 10-inch listing-plow. Two inches of well-rotted manure is mixed with the soil in these trenches. We usually do this mixing quite conveniently and thoroughly by running a one-horse wheel-hoe three or four times in each trench. Next, the bottom of the trenches is leveled with a 12-inch steel rake. Now the water is turned into the trench and allowed to run through to the lower end. In 12 to 24 hours, according to condition of soil, the ground in the trench will be dry enough to set the plants. We plant double rows, 11 inches apart, and plants six inches apart in the rows. The water is then turned into the trench again, and always made to run between the two double rows. This is repeated once a week, until the celery is large enough to handle. We turn the water on for from 6 to 8 hours at a time, so it will thoroughly soak the ground from row to row.—WALTER L. HAWLEY, Colo.

2943. **Irrigation Problems**—You can run water over grass for a week or ten days without doing any harm. If the water is kept on continuously for a longer period, it will kill out the tame grass, and wire grass or other wild grasses will take its place. The furrow system is a good one for irrigating strawberries. Draw a furrow large enough to hold an inch of water between each two rows, and let the water run in as long as required, the length of time depending on supply of water and slope of land.—WALTER L. HAWLEY, *Colorado*.

2948. **Grapes under Glass**—Black Hamburg and Muscat of Alexandria, for all practical purposes, are yet unsurpassed. Strawberries need a place close to the glass and full light, and when they are in flower a dry atmosphere and airy house. You cannot grow them under the shade of grape-vines.—W. FALCONER.

2950. **Elm Tree in Low Spot**—See illustrated article on page 492.

2959. **Treating Lily-of-the-Valley**—See illustrated article on page 491.

2992. **Wintering Cabbage in Quantity**—The ordinary method for wintering cabbages for spring use is to stand them, roots up, in rows upon the ground in a well-drained spot, and cover them with ridges of earth. If you want to keep them from freezing, so you can get at them any time during the winter, another method must be employed. Leave the cabbages outdoors as long as safe; then put them into a barn or other out-building and let them get thoroughly chilled, but not frozen through; then cover them with straw, hay or chaff enough to prevent them from freezing solid. Or you may put them in a heap outdoors, cover them with a roof of old boards, straw and earth. The sides of the structure may be simply stuffed with plenty of straw or dry forest-leaves.

2994. **Street Trees for Shade**—As for kinds to plant we cannot advise you better than to use such first-class hardy trees as American elm, horse-chestnut, Norway, sugar and soft maple, linden, red and white oak, and, according to circumstances, Carolina poplar and the European white and cut-leaved weeping birches. An advantage of such a selection is that all will give satisfaction in a vicinity where the land is not too wet or too dry to make comfortable house-sites. The elms, soft maples, lindens and birches would be best suited to the wetter lands. Suppose you adopt the grouping system by planting an elm section, a maple section, and so on; then in passing from one group to another mix the trees somewhat, so the change may be gradual. The formal arrangement of four poplars or four oaks at the corners of street crossings is not commendable, but if such "corners" were made centers for grouping of oaks, poplars, etc., respectively, that would please us better. Still, we would not care to see this idea too closely observed all over the town—better have some group-centers midway between corners. As for distance apart, a very suitable scale would be 40 feet for elms, and from 30 to 35 feet for the others, except the pyramidal birches, which might be from 25 to 30 feet apart.

2995. **Blood-Leaved Plum and Variegated Cornelian Cherry**—They are planted about three feet apart in a cluster in the center of the bed. The variegated Cornelian cherries stand in a circle on the outside, about 30 inches apart. The bed at this writing is simply magnificent.

2996. **Carnation-Rust**—The leaves sent us are badly spotted with rust, a new and very destructive carnation disease. In the May issue (page 316) you will find a full description of this fungous pest, with suggestions concerning its treatment.

2998. **Aphis on Chrysanthemums**—Spraying or sprinkling with strong tobacco-tea or with the kerosene emulsion are the means most likely to give you relief.

3000. **Azalea Treatment**—Assuming that the root of your bush is in a fairly vigorous condition, it would be all right to cut down the plant with a view to forming a new and shapely top from the young growth.

3001. **Starting Nelumbium luteum Seed**—We have no doubt that, between the temperature of 70 and 80 degrees in the darkness and perhaps the closeness of the room your nelumbiums get such a bad start as to lead to the disastrous results you report. This nelumbium is a habit of some of our northern states, hence it is plain that it could be injured by kindness in the respects which you recount.

3002. **Chinese Fringe-Tree**—This shrub is not familiar to us beyond our knowing that it is a native of China. We do not know where it can be obtained. The American species, *Chionanthus Virginica*, or White Fringe, is one of our finest ornamental shrubs or small trees.

3003. **Perennial Poppies from Seed**—Seedlings are easily grown. The transplanting, however, owing to the long, slim roots, is somewhat difficult. The safest and surest way is to sow seed just where plants are wanted.

3004. **Wistaria Not Blooming**—The Chinese wistaria is slow coming into bloom. Be patient; if the plant is vigorous its blooming should be only a matter of time.

3006. **Borers in Plum and Cherry Trees**—The gum oozing out of the trees indicates the presence of borers. Dig for them with a small sharp knife, or probe them out with a piece of wire or a twig.

3007. **Remedy for Curculio**—The insect sent us is the ordinary plum-curculio, which is especially fond of apricots. In order to save the fruit you will have to spray the trees when their leaves begin to unfold, with the following mixture: Water, 200 gallons; Paris green, 1 pound; lime, 2 pounds. Spray again after the fruit has set. Or, instead of this treatment, spread sheets under the trees in the morning during the curculio-time, and jar the tree by a quick stroke against the stump of a limb, or by shaking; gather the insects as they drop and destroy them. Repeat every morning for a while.

3008. **Niagara and Imperial Gage Plums**—The plum trees on our grounds are only three or four years old, and with the exception of some of the Japanese sorts (Botan and Ogon), have never borne fruit. Growers in this vicinity will answer the question in our next issue.

3009. **Pruning Currants.**—Wait until the leaves have fallen, then cut out the oldest wood, leaving enough of the newer to make a well-shaped and reasonably compact bush. If the new growth has been vigorous it may have to be thinned, and perhaps cut slightly back.

3011. **Huckleberry-plants from Seed.**—Jackson Dawson, of the Arnold Arboretum, advised me to bury the seeds in damp sand until the beginning of winter, and then to plant them in thoroughly firmed soil in shallow boxes and place these boxes in a moderately heated greenhouse. I followed this advice and found that the seeds germinated freely. I was not able, however, to grow any of the plants up to bearing size. I made the experiment twice without success. I now think that I kept the soil too moist, and believe that if I had applied less water I might have succeeded.—E. S. Goff.

3013. **Gathering Blackcap Raspberries.**—A few years ago a fruit-grower of western New York exhibited before the Western New York Horticultural Society a device for the rapid gathering of blackcaps. It consisted of a paddle and a large shallow box with a muslin bottom. The box was to be held close to and under the bushes, and the berries had to be knocked off and into the box with the paddle. The berries were then to be screened in a fanning-mill and evaporated. This new plan, however, has not found much favor with the general grower.

3015. **Preserving Unfermented Grape-Juice.**—Extract the juice of clean selected clusters by mashing and squeezing in the ordinary way. Neither sugar nor water is to be added. Just boil the juice until it makes a thick syrup. Then bottle and cork tight. More information on the subject of preserving the fresh juice, without boiling down, will be given later.

3019. **Whole vs. Piece Roots for Trees.**—See reply to query 2972, on page 447, July number.

3020. **Russian Apricots.**—We believe the newer named Russian apricots were first propagated and disseminated by Carpenter & Gage, of Nebraska. You can get the trees from any leading nurseryman, for instance, of Ellwanger & Barry, Rochester, N. Y. We have trees of Gibb, Alexis, Alexander and other Russian sorts. They were planted four years ago, and have made a good growth. One or two of them made feeble efforts to bloom this year and last, but we have had no fruit as yet, and do not expect much in future. We have not much hope for the apricot industry in the northern states, except in especially favored localities.

3021. **Apple Tree Blight.**—The disease affecting your young trees and finally killing them is probably the powdery mildew. Spray the trees frequently with the ammoniacal solution of copper carbonate.

3022. **Spreading Apple Trees.**—The thriftest and most spreading grower we ever had on our place is Tompkins King. Twenty Ounce is thrifty, but more compact.

3023. **Peach Leaf-Curl.**—The leaves become blistered and crumpled early in the season, and usually drop. The real cause of it we do not know. The "cold, unfavorable season" usually receives the blame. Neither can

we point out a preventive or remedy. Nature always tries to repair the injury, and new leaves are sent out the same season. The trees should receive good cultivation and judicious feeding, especially with mineral manures.

3024. **Arsenic Mixture for Grasshoppers.**—The formula given in the Rule-Book is used with great success in California.—L. H. B.

3025. **Potash Salts.**—The potash compounds which are promising as destroyers of various insects and worms in the soil are kainit and muriate (chloride) of potash. They can be obtained of all the leading dealers in fertilizers. The kainit will cost from \$8 to \$10 a ton, the chloride about \$40 a ton.

3026. **Wild Parsnips.**—The "wild parsnips" found so abundantly in fence-corners and around old gardens are usually nothing but garden parsnips escaped from cultivation. Parsnips produce seed freely, and plants are liable to spring up wherever the wind blows the light seed. Growing in hard ground, in sod and among weeds, the wild-flavored, fleshy root becomes hard, astringent, stringy and unwholesome. There is no reason to suppose that roots thus recently derived from the cultivated parsnip, and while yet succulent, should be poisonous in any degree, and none probably are virulently poisonous at any time.

3027. **Marketing Vegetables.**—You will find useful suggestions about the preparation and packing of vegetables on page 480 of this issue.

3028. **Cucumber Pickles for Market.**—Gather the cucumbers when from three to six inches long. The first size is usually preferred. Make a brine strong enough to float an egg, and keep the cucumbers covered by weighting them. They can be taken out any time, and put on the market. Or they may be further prepared by freshening and sealing up in hot vinegar in jars.

3029. **Marketing Spanish Onions.**—It will be advisable to move slowly in this matter. The markets are always prejudiced against any new thing, although it may be of good quality. The "domestic Spanish" (a good name) onions must make a name for themselves before retailers will take kindly enough to them to pay for the trouble and expense of crating them. The size of crates in which the imported Spanish onions are marketed is as follows: End and middle pieces are 19½ by 7 inches. The sides may be made of split stuff, 19½ inches long. Cut a little piece off each corner of the end and middle pieces. Such a crate holds a scant bushel, especially if the specimens are very large. Our commission-merchant just now advises us to ship in crates.

3030. **Packing Mushrooms.**—Archdeacon & Co., of 85 Barclay street, New York, who handle mushrooms largely, say that the best package for shipping mushrooms is a 5-pound common flat splint-basket with a handle. A canvas cover is sewed over the mushrooms. The card-board boxes do not keep the mushrooms in as good shape as the larger packages. Some shippers use the common quart strawberry-box, which is better than the paper one, but not so good as the 5-pound basket.



THE FLOWER GARDEN, WASHINGTON PARK, ALBANY, NEW YORK.

American Gardening

The American Garden—Popular Gardening

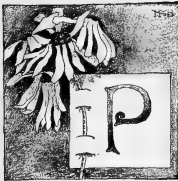
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SOME ATTRACTIVE NATIVE PLANTS.

ALL WORTH A PLACE IN THE GARDEN.



PEOPLE usually make too hard work of cultivating wild plants. They are apt to attempt to imitate the natural conditions under which they find the plants. This, to a certain extent, is wise, but in most cases it is easily carried too far. The problem is simplified when we once come to understand

that wild plants grow where they are obliged to grow, rather than where they desire to grow. Because a plant grows in the woods is little reason to expect that it may not grow equally well in the sun. And then, it is not necessary to wait until fall or spring to take up the wild plants. At every outing, whatever the time of year—if the ground is not frozen—I mean to go prepared to bring home roots. In these sultry July days I am bringing home wild herbs, and next year I expect to see most of them bloom. I dig them up with a comfortable ball of earth, cut the tops off nearly to the ground, and keep them moist until I get them home; then they are set in the border, and if dry weather follows, a little water given occasionally at sundown helps them to grow. I do not pretend to say that July is as good a time as April or October to remove plants, but one must capture the good things as he finds them.

Most people have a great admiration for orchids, but they usually go to the greenhouse to see them, and they are surprised if told that some of the handsomest species grow in our own woods and bogs. About 60 species grow in the northern states east of the Mississippi, and fully half of them are worthy of cultivation as ornamental plants. The native orchids, however, usually require careful management, being among the most difficult of native plants to colonize. Most of them require complete or partial shade and a moist subsoil. If a water supply is at hand, a moist plat under trees or about buildings, where there is some protection from wind, can be made,

and clumps of many species can be removed with safety. It is best to remove them in summer, as soon as the flowering season is past. In most cases, however, the plantation will prove to be short-lived, and fresh recruits will be needed from time to time; but the hunts for these



FIG. 1.
LARGE YELLOW LADY'S-SLIPPER.
(*Cypripedium pubescens.*)

and the other wildings which one now and then brings home to the moist orchid-beds are themselves sufficient pay for the effort.

Many of the orchids, like most wild plants, make attractive winter bloomers. Establish plants in pots or boxes during the spring or early summer. In the autumn cover them with leaves or litter to avoid too great freezing, and as they are wanted bring them into the conservatory or house. Keep them very cool, and do not allow them to have too much sun at first. Soon they will begin to grow, and in a short time will bloom. The same plants can then be put aside in a cool light place, where they can make the remainder of their growth and be used in the same manner for the next winter; but in general, fresh plants do better. Many plants can be taken up now for blooming next winter, especially such early-blooming ones as hepaticas and the like.

The lady's-slippers are our most important native orchids. A half-dozen of them grow in the northern states, inhabiting swamps and cool woods. The showy lady's-slipper, or *Cypripedium spectabile*, is the largest and finest species, and it is always in demand by plant-dealers.

I know of several swamps in which it once grew freely where collectors have obliterated every trace of the plant. Although this showy orchid commonly grows in dense peat-bogs, it will thrive in almost any black, moist soil in a shady place. I have in mind such a bed of them which has maintained itself in full vigor for several years. This species grows two or three feet high, bearing several large and very showy white and pink flowers. Perhaps none of the many exotic greenhouse cypripediums excel this native species in beauty and interest. Scarcely second to this plant is the stemless lady's-slipper, shown in fig. 2, known to botanists as *Cypripedium acaule*. It will be seen that the plant has no true stem, but the flower-stalks proceed directly from the crown of the plant. Each stem bears a single large flower, which is pink-purple, or sometimes creamy white. This species grows both in swamps and dryish, shady woods, where the great broad and thick leaves are conspicuous objects on the surface of the ground. It blooms in May and June, fully a month ahead of the showy lady's-slipper described above, and it is found over a wide range of territory from Canada to Carolina and west to Minnesota. There are two other

red and white-flowered lady's-slippers growing in the north, but they are not so well known as the preceding. One is the ram's-head lady's-slipper (*Cypripedium arietinum*), and the other is the white lady's-slipper (*C. candidum*). The latter is rare. Both species are small-flowered, and are not likely to become very popular in cultivation although interesting to botanists.

There are two yellow lady's-slippers in the northeastern states, both of which are illustrated herewith. They are much alike, and are perhaps only forms of one species. The large yellow lady's-slipper, or *Cypripedium pubescens*, is shown in fig. 1 on preceding page, and the small yellow, *C. parviflorum*, in fig. 4 on the next page. Both grow in bogs and low woods throughout the northern states, and both are easily grown in protected places in the garden. The larger species is one of our commonest orchids.

Another attractive class of native orchids are the habenarias, of which nearly 20 species grow in the northeastern states. Nearly half of these have showy flowers, and some of them are of the brightest purple

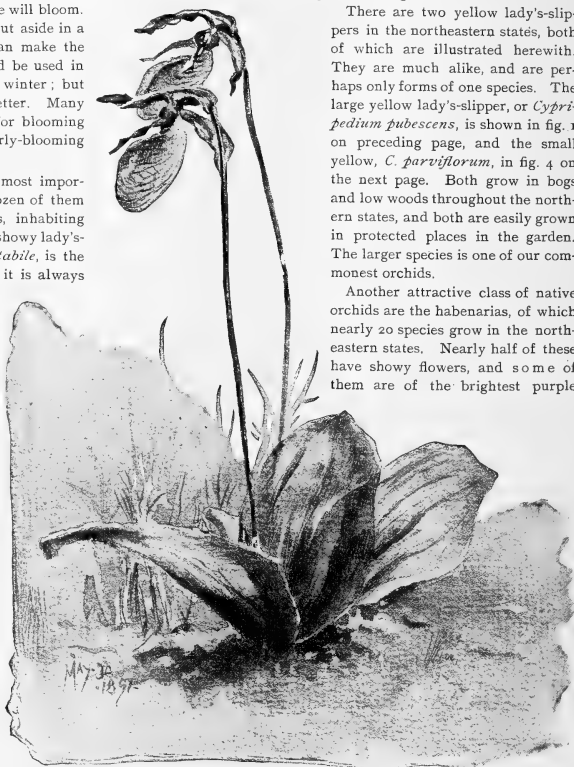


FIG 2.—STEMLESS LADY'S-SLIPPER (*Cypripedium acaule*).

colors, with deep fringes. A lilac-purple species (*Habenaria fimbriata*) is shown natural size in fig. 3, on opposite page. Perhaps the handsomest of the native species is the white-fringed orchis (*Habenaria blephariglottis*). All the habenarias delight in moist, partially shaded, grassy or boggy places, and they are not difficult to establish in cool places in the garden. Much like the habenarias in general appearance are the twayblades, plants which inhabit similar places and demand similar treat-

ment in the garden. They are low and comparatively inconspicuous plants, but none the less interesting. The species represented in fig. 7 (page 517), *Liparis liliifolia*, has dull brown-purple interesting flowers, and is worth cultivating. All the orchids mentioned in this article are now to be had from dealers in native plants.

Another interesting class of plants is the dicentras, familiar to everyone in the popular bleeding-heart. Seven or eight species occur in this country, two of which are common and well known in the east. These two are the white and tinted-flowered Dutchman's-breeches. *Dicentra cucullaria* (fig. 5, page 516) and squirrel-corn, *D. Canadensis*. These are among our earliest and best spring flowers. They spring up in old fence-rows and on the borders of woods, appearing in tufts of



FIG. 3.—PURPLE ORCHIS.
(*Habena fimbriata*).

or wild-ginger, which grows in low, thick clumps in rich woods. One unfamiliar with the plant sees only a mat of broad velvety leaves standing close to the ground, but

he who has made its acquaintance pulls aside the leaves and finds the chocolate-brown, thimble-like flowers lying upon the ground, sometimes almost covered by dead leaves. I know of no plant which is a greater surprise to the casual observer than this when its hidden flowers



FIG 4.—SMALL YELLOW LADY'S-SLIPPER (*Cypripedium parviflorum*).

finely cut fern-like foliage and nodding racemes of heart-like flowers. The roots are bulbous, and they are transferred to the garden with the greatest ease. Closely allied to these plants is the native smoke-vine, or Alleghany-vine (*Adlumia cirrhosa*), a biennial climber of finest texture and pinkish flowers like those of the bleeding-heart.

Another curious and interesting plant is the asarum

are brought to view, and it is worth growing for this curious feature alone. I once found a mat of the asarum with variegated leaves, and it was transferred to the garden. Fig. 6 (page 517) shows a sprig of the common *Asarum Canadense*, but it gives little idea of the character of the plant as seen in its wild colonies.

A more delicate plant than any which we have yet described is the small miterwort (*Mitella nuda*), which is shown natural size in fig. 8 (page 518). It grows in peaty bogs or deep woods, lending a peculiar starry charm to the moss in which it usually grows. A more familiar plant is the large miterwort, which grows in sunnier places, is much larger, and has two leaves midway its stem, while the stems of the smaller species are leafless or occasionally have a small leaf near the base, as in the illustration. Both the miterworts are offered by dealers in native plants, and both are worth the care of growing for the sake of the small fringed flowers.

The smilacinas are attractive low, white-flowered herbs of the lily family, which grow in dryish soil in copses and about the borders of woods. Two species found wild in our northern states deserve a place in the garden, especially the one sometimes known as false spikenard, or *Smilacina racemosa*, shown in fig. 9 (page 519). This is a plant bearing a cluster of flowers three or four inches long, which is succeeded by bead-like almost translucent claret-colored and dotted berries. Few plants are more easily grown than the smilacinas. The root-stocks may be removed late in summer or in fall, and in almost any good soil they soon multiply into clumps.

Perhaps everyone is familiar with the snowberry-bush,

which is nearly always found about old gardens, holding its soft snow-white berries until late in autumn. As children we used to squeeze the ripe berries to hear them pop; and the memory of them recalls all that wonderful panorama of childhood which of late years has become so much magnified by the lens of time. Few people, perhaps, are aware that this old friend is a native of river-banks and ravines in our northern states. To botanists its name is *Symphoricarpus racemosus*—a barbarous name on first acquaintance, but one which improves by familiarity. My readers will recognize a sprig of the plant in the accompanying tail-piece.

L. H. B.



NOTES ON AMERICAN WILD-FLOWERS.

FINE FORMS FOR PARKS AND GARDENS.



THE VALUE of our native plants for flower-gardens, parks and other ornamental grounds becomes yearly more apparent to the best landscape gardeners at home and abroad. A large number of flowers have been used in planting the World's Columbian Ex-

position grounds, and still more will be planted in the spring. Many native shrubs and wild flowers were planted in Cadwallader Park, Trenton, N. J., last fall, and also several thousand by William Rockefeller upon his new grounds at Tarrytown, N. Y.

Many more wild flowers would undoubtedly be cultivated if flower-growers were better informed concerning them. In my last paper, contributed to the January issue of AMERICAN GARDENING, some wild plants were described whose culture has already become general. Those described below are quite as deserving, and though specially adapted to culture in parks will grow well in any ordinary flower-garden having some shade. We find them growing in open woods in a well-drained soil of rich leaf-mold and sand. Among small pretty plants to be used in a limited way, but not showy or suitable for massing, are the following:

Anemone nemorosa (Wood-anemone).—Height six inches; flower cup-shaped, white within, purple outside, about three-fourths of an inch in diameter. Blooms in April and May.

Allium tricoccum (Wild Leek).—Eight inches high. Leaves pretty in April, disappearing before the small white flowers, which appear in May.

Cornus Canadensis (Low Cornel). Five inches high, with small white-bracted flower-clusters; a miniature of the flowering-dogwood. Prefers low, moist, rich soils, and blooms in May.

Panax trifolium (Three-leaved Ground-nut).—Five inches high, the small white flowers borne in small dense



FIG. 5.—DUTCHMAN'S-BREECHES (*Dicentra cucullaria*).

umbels, the pistillate quite distinct in appearance from the staminate. April and May.

Hydrastis Canadensis (Golden-seal).—A well-known medicinal plant, eight to ten inches high. The flowers

are white and not very attractive, but the large shining green leaves are quite pretty. May.

Uvularia sessilifolia (Wild Oats).—Plant eight inches high; flowers whitish yellow, bell-shaped, about an inch long. May and June.

Some plants of great beauty well adapted for growing in masses form the next group:

Sanguinaria Canadensis (Bloodroot).—Foliage and flowers both handsome. Height about nine inches. The leaves are heart-shaped, lobed, and of a beautiful sea-green color. Its pure white flowers, about an inch in diameter and of a square outline, appear in April before the leaves.

Dicentra Canadensis (Squirrel-corn).—The finely divided leaves are of a beautiful sea-green color. The pretty small white flowers, somewhat resembling the bleeding-heart (*Dicentra spectabilis*) in form, appear in April and May. The root bears golden yellow tubers like large grains of corn. Has the handsomest foliage of any of our wild-flowers.

Erythroniums were described in my January notes. As they grow in woods where the ground is not only matted with tree-roots but full of boulders, florists will find it much more profitable to buy small bulbs and keep them until of flowering size.

Tiarella cordifolia (Bishop's-cap)

—About eight inches high. The large shining evergreen maple-like leaves and clusters of small white flowers are very pretty. In its native haunts it forms immense natural flower-beds of much beauty. Fine for bouquets. May.

Dentaria laciniata (Cut-leaved Pepper-root). A pretty plant with divided leaves. It bears clusters of purplish fragrant flowers in April. About six inches high.

Dentaria diphylla (Two-leaved Pepper-root).—Has two trifoliate leaves and a terminal cluster of fragrant white flowers; the handsomest of its species. Both are as fine as some of the candytufts common in cultivation.

Viola Canadensis (Canada Violet).—This leafy violet grows from ten to eighteen inches high. The flowers are large, white and fragrant, with a faint bluish tinge. April and May.

Viola striata (Yellowish-white Violet).—About a foot high, leafy; flowers larger than the preceding, yellowish white and handsome. May.

Viola rostrata (Larkspur Violet).—Eight inches high. Its pretty pale blue flowers have long, sharp spurs like larkspurs. May.

Viola canina Muhlenbergii (Muhlenberg's Dog-violet).—Somewhat like the last, but the flowers are pale purple, smaller, and the spurs shorter and blunt. May.

Viola glabella (Smooth Yellow Violet).—Instead of growing in dry, sandy, hilly woods as the downy species does, this is found in deep-wooded river-valleys. The leaves are smaller than those of that species, and the stems, spreading and prostrate, are about ten inches long. Not so fine as those previously described. May.

Viola cucullata (Common Blue Violet).—This pretty stemless species with fine blue flowers of many shades is common everywhere. Its finest form is variegated with blue and white.



FIG. 6.—WILD GINGER (*Asarum Canadense*)
See page 515.



FIG. 7.—TWAYBLADE (*Liparis liliifolia*)
See page 515.

Claytonia Virginica (Spring-beauty).—About 6 inches high; covering the ground in its native haunts.

Flowers pretty, whitish or purplish, with deeper veins. April.

Erigenia bulbosa (Pepper and Salt).—A dainty little plant with finely divided leaves and small umbels of pretty white flowers, having conspicuous brownish or purplish stamens. April.

Hepatica triloba (Round-lobed Liverwort).—About six inches high, with large three-lobed dark evergreen leaves and many flowers, ranging in color from deep blue to white, rarely purple. It has many varieties, but the next species has a greater number. It is, however, the larger plant. I have never found it in the same woods

with the next: As semi-double varieties occur wild, it is evident that skillful attention can produce many varieties having double flowers. Hepaticas are certainly more promising than the original daisy (*Bellis perennis*) was the foliage being handsomer and the range of color far wider. April.

Hepatica acutiloba (Sharp-lobed Liverwort).—It is difficult to find two plants with flowers alike, there are so many varieties. The colors range from deep purple to white, rarely bluish. The flowers open in April, and are prettier than those of *triloba*; but the leaves, lighter and acutely pointed, are not so attractive.

Waldsteinia fragaroides (Dry Strawberry).—Plant five inches high; grows on sloping hillsides. The leaves resemble those of the strawberry, but are thin, shining green and deeply cut-toothed. Its pretty yellow flowers are borne in clusters.

Pyrola elliptica (False Wintergreen).—Leaves broad, evergreen. Flower-stem eight inches tall, bearing many rather large white, wax-like flowers.

The following taller plants grow in similar places:

Phlox divaricata (Spreading Phlox).—Plants a foot high, bearing in April and May large corymbs of large blue and purple fragrant flowers.

Hydrophyllum Virginicum (Virginia Water-leaf).—A curious and handsome plant about a foot high, with large pinnate mottled leaves and many clusters of rather large bell-shaped, white-purplish to sky-blue flowers, somewhat resembling those of the phacelia, but much larger. It is not very showy, but I find it to be one of the finest of bouquet-flowers, as its peculiar shade of color harmonizes well with many other shades.

Trillium grandiflorum (Great-flowered Trillium).—This is justly one of our most popular wild flowers. The plant is from eight to twelve inches high. The flowers open in May, are very showy and from two to six inches in diameter. Their colors range from pure white to deep rosy purple, and they are often beautifully variegated.

Trillium erectum (Bath-flower).—About a foot high; flowers of a peculiar dark reddish purple. There is said to be a variety with flowers white or cream color, but I have never seen it. It flourishes in deep, rich, moist, well-shaded soil, while the purple variety grows on drier lands. Handsome. May.

Uvularia grandiflora (Great-flowered Bellwort).—A beautiful plant of the lily order, with pretty sea-green obovate leaves and rather large yellow, drooping, bell-shaped flowers $1\frac{1}{2}$ inches long. April, May.

Mitella diphylla (Miterwort).—About a foot high. Leaves somewhat like the bishop's-cap. Flowers in long, loose racemes, small, white; the petals fringed in a remarkable manner. May. Not showy enough for large beds.

Arisaema triphyllum (Indian-turnstile, or Jack-in-the-Pulpit).—An odd and well-known plant. April and May.

Smilacina stellata (Starry Solomon's-seal).—A pretty plant about 18 inches high, with many attenuated lance-oblong leaves and a terminal simple raceme of pretty pure white flowers. May, June.

Smilacina racemosa (Clustered Solomon's-seal).—Larger and coarser, from $1\frac{1}{2}$ to 2 feet high. Flowers in a rather large panicle of racemes, very numerous and small, of a greenish white color. This species has been planted on the World's Columbian Exposition grounds.



FIG. 8.—MITERWORT.

Podophyllum peltatum (American Mandrake).—A well-known plant with two very large coarsely divided leaves and a large, solitary, very handsome pure white wax-like flower. Plant ten to eighteen inches high. May.

Michigan.

WILFRED A. BROTHERTON.

OUR NATIVE ORCHIDS—II.

RATTLESNAKE-PLANTAIN AND CORAL-ROOT.



AMONG our most attractive native orchids there is one known to botanists as *Goodyera pubescens* (fig. 1, page 520), which has the advantage of preserving its attractiveness at all seasons, for its leaves are evergreen, and quite as pretty as the flowers. At any time in winter when the ground is bare of snow you will find it nestling in a cosy bed of dead leaves, or sheltered

under a canopy of evergreen boughs. Its habitation is generally chosen so far from trodden paths, deep in some recess of rich hillside-woods that, if you wait for summer, you will be likely enough to miss it altogether. For this reason, many who know the leaves are unacquainted with the flower. In July and August, when it blooms, the woods are dense with growth, and the place of its retreat is often passed unseen.

The common names of our wild-flowers are not always

well applied, but no one will be at a loss to understand why this pretty orchid is called "Rattlesnake-Plantain." To the popular fancy, there is something undeniably suggestive of the "rattler"—or some snake of his kind—in the appearance of its fleshy root-stock, creeping on the surface of the ground, and its flat clusters of dark green leaves, laced with a curious network of white veins, and cold and slippery as the serpent's handsome skin. Their shape is much like that of the common plantain-leaves, and the flower-stalk, with its thick spike of pearly-lipped blossoms, by some exercise of imagination, may be supposed to continue the resemblance to this plant.

There is a smaller and more slender species, *Goodyera repens*, blooming later, and found more commonly among the mountains. Still another, *G. Menziesii*, is peculiar to the woods of the northwest. It differs from the typical plant in some respects, having a loose, one-sided spike of flowers, and the leaves but little, or not at all, variegated with white. This has been taken by some botanists for a form of spiranthes, to which genus the goodyeras are closely allied.

Plants of parasitic habit are rare in the orchid family, the numerous representatives of the order, which, in tropical regions, are found attached to the branches and trunks of trees, being simply air-plants, and taking nothing of their sustenance from the trees to which they cling. But we have a genus including several species which are supposed to be root-parasites—the genus coral-orchiza, or coral-root. The common species, and the largest of the genus, sometimes 18 inches high, native to most parts of the country, and strictly an American plant, is the curious *Corallorhiza multiflora* (fig. 2, page 520). It is destitute of proper leaves, and is all of one color—stems and flowers both being purplish brown. It grows in dry woods—in oak woods most commonly—and may be found in bloom from July until September, though it is apt to escape the notice of one who is not a close observer, because its dull hue is so much like that of the weed-stalks and withered grass around it.

When it does attract attention, however, the strange, uncanny-looking plant is sure to be an object of lively interest, and we suspect at once that its purple stem and dark, spotted flowers are not its worst point of difference from ordinary and respectable neighbors. If we regard it from a moral point of view, our queer orchid is decidedly not respectable. It is a kind of vegetable vampire, drawing nourishment from the life of other plants. By digging down to its base, we shall find a thick bunch of brittle sprouts and protuberances, which resemble nothing so much as a mass of branching white coral. They certainly do not look like roots—and they are not. Of real roots, the plant has none. Usually, there will be found a quantity of the fibrous roots of some other plant, dry and thin, as if sucked of all their juices, interlaced and twisted in the coral-like root-stock from which the coral-orchiza takes its name. From these dry roots *C. multiflora* has mercilessly drawn the sap for its own nutriment.

The smaller members of the genus, which flowers quite early in the season, are rare in New England woods; and another large species, with larger flowers than those of *C. multiflora*, belongs entirely to the western states.

FRANCES WILSON.

CULTURE OF OUR NATIVE ORCHIDS.

Most of our native orchids like shade, and for that reason they are useful for shady corners where many other flowers would not flourish. In growing them in the garden, it is best to have plenty of leaf-mold mixed with the soil and packed around the plants. They like rich soil, and must have plenty of water to drink. I have tried keeping the plants moist with sphagnum, but the birds would use that material for nest-building.

Early in May we find, in rich woods, *Cypripedium spectabile* with its purple and white flowers. It succeeds well when transplanted to the garden. Twenty or thirty plants, when massed together, make a fine display. At a little distance they look like hyacinths. Most of my



FIG. 9—FALSE SPIKENARD (*Smilacina racemosa*). (See page 516.)

plants have black spots on the leaves soon after they come up. These spots spread, and the plants, when they have flowered, die off entirely, but come up all right the next year. I think ants may cause the trouble, for some plants that are in another part of the yard,

where there are no ants, stay green all summer. The smooth bright green parallel-veined leaves are handsome.

C. pubescens and *C. parviflorum*, the large and small yellow lady's-slippers, grow on wet uplands. *C. pubescens* varies much in size and color. In some places you will find that the flowers of this plant have small lips and dark brown sepals and petals; in other places they will have large lips and pale brown or greenish sepals and petals. I have some with the sepals and petals almost a pure yellow. These two plants take readily to cultivation. It does not seem to make much difference when they are taken from the woods, but *C. caule*, which is found on much drier ground, and is much more plentiful, is a little harder to naturalize. Toward fall seems to be the best time to take it up, as plants that are taken up in the spring, or when in bloom, very often die about the middle of summer. The flower varies from rose-purple and pink to pure white, but the white variety is quite rare.

C. pubescens does not force well. The flower bursts out before the plant has unfolded its leaves, and then it is a curious sight, with a thick green stalk three inches high and the flower upside down or sideways. The leaves are developed after flowering. *C. caule* is a good plant to force, and in March a pot with three or four plants in bloom is a pretty sight. The foliage is beautiful and a much richer green than when grown outdoors.

June brings us the *Pogonia ophioglossoides*, which is found in wet, sunny places and meadows, its charming pink or white flowers sending out a delicious perfume. These plants can be had in bloom as early as April, and will fill a room with their fragrance. A boon companion to the pogonia is the showy calopogon, bearing from three to ten flowers of the brightest pink-purple, but lacking in fragrance. It grows from ten inches to nearly two feet high. It does not seem to do so well in

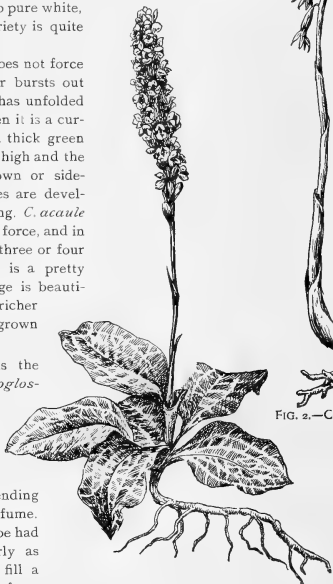


FIG. 1.—GOODYERA PUBESCENS.

the garden as in a pot or box. I filled a deep cigar-box full of bulbs, and wintered them over in a cold room. They came up large, healthy plants, and had fine, large flowers, while those in the garden were small, the stems

weak, and hardly any of them bloomed. The calopogons force well, but I have not had them in bloom earlier than about the second week in May. A plant with ten flowers lasted just a month from the time the first flower opened till the last flower dropped its lip.

Habenaria fimbriata, with its spike of large lilac-colored flowers is a very showy species. It is found in wet woods and bogs, and blooms in June. It blooms well in the garden, but does not grow so high as in the woods. The bracts, or upper leaves, instead of being three or four inches apart, as when found wild, were nearly opposite. *H. psycodes* is another handsome species similar to *H. fimbriata*, but the flowers are smaller, more crowded, more numerous, and of a deeper shade of rose-purple. It grows in similar situations, but blooms from the last of July to the middle of August. It succeeds in the garden almost or quite as well as *H. fimbriata*.

Liparis liliifolia is another June orchid, growing in soft, grassy places in woods, its bulb half out of the ground. It sends up two green leaves and a stalk from four to six inches high, bearing, perhaps, a few outer petals, or, perhaps, nearly thirty curious-looking flowers. The sepals are stiff and greenish; the thread-like petals and lip are purplish. It grows much higher under cultivation. I had one plant that bore over fifty flowers and was over a foot high.

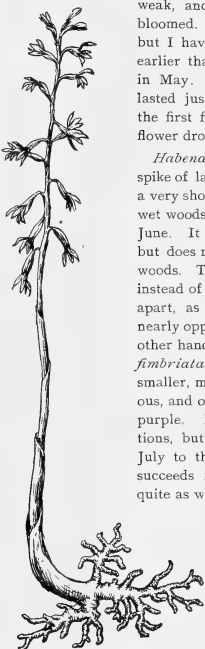


FIG. 2.—CORALLORRHIZA MULTIFLORA.

When once the simple rules of culture necessary for our native orchids are understood, any of us may indulge in orchid blossoms as beautiful as those which cost fabulous sums; for where in the whole aristocratic cypripedium family will you find a finer flower than that of *C. spectabile*? On the shaded borders of lakes in parks and gardens it spreads into masses of beautiful bloom. V.





WASHINGTON PARK: THE SUPERINTENDENT'S COTTAGE, "SUNNYSIDE."

WASHINGTON PARK.

AN ILLUSTRATION OF THE BEAUTY AND VALUE OF PUBLIC GARDENS.



NEAR the heart of the city of Albany, New York, lies that great fair public garden called Washington Park. It contains 65 acres of mowed lawn, 6 acres of lake area, 3 miles of carriage drives and 6 miles of foot-walks. The people of Albany are naturally quite proud of this beautiful 90-acre "breathing place," so rich in grassy lawns, grand trees and fine forms of shrubs and flowers.

Washington Park is ably superintended by William S. Egerton, who also has charge of the smaller city parks. From his recent report on "The Public Parks of the City of Albany, New York," the views presented with this article are taken. In this book much historical and statistical information and many fine maps and illustrations are given in a manner that cannot fail to interest the reader.

According to this report, the necessity of some movement to secure an extensive park was forcibly impressed on the city authorities of Albany as early as 1863. In a paper presented that year by Prof. Murray, of the Albany Institute, the benefits to be derived from a park were set forth with great force. Among other things it

was shown in this paper that cleanliness, fresh air and the presence of vegetation are essential to health; that private enterprise, even when aided by intelligence and wealth, cannot always obtain these in large cities; that a beautiful park in any city is a great moral power, and does more than criminal courts to repress crime. Men are wiser, better, more temperate and loving when they have wandered amid trees and waterfalls and heard birds sing, and children laugh and play. The slovenliness and filth which sometimes unnecessarily disgrace the tenements of the poor in cities are put to shame by the sight of the beauty and freshness of nature.

Ground was broken for the improvement of Washington Park in 1870. It has been considerably enlarged since then by additional purchases.

One lesson early learned by the Albany park projectors may be cited for the benefit of other towns contemplating similar public improvements. The system of intermittent purchases and the acquisition of contiguous property for park purposes was found to be expensive and unsatisfactory, as values were enhanced by the successive improvements made, and property-owners were not to be cajoled or frightened into selling their property by increased assessed valuations or cumulative taxes. Besides

this, each acquisition of new territory necessitated some modification of portions of the park area already defined, and still further advanced the value of lands ultimately found necessary to be taken for park purposes. All this points to the desirability of locating parks where sufficient land for the purpose can be obtained in a body.

There is an interesting quotation in Mr. Egerton's book from the report of the treasurer for 1875, that cites some pecuniary advantages conferred by parks upon surrounding portions of a city. "The assessed valuation in the year 1868, one year prior to the organization of the park-commission by the legislature, of portions of the Ninth

But aside from this pecuniary aspect of the case, the city has an asset that is cumulative in interest to the citizens. Every year lends additional charm to the park. "The fundamental elements of any large park," says William McMillan, "are not its roads, walks, bridges, buildings and other accessory features requisite for public accommodation in the use of the grounds. These may rather be classed as necessary evils. The essential element is the landscape, its surface undulations of hill and dale or lawn; its trees, shrubs, flowers, single or massed, in grove or copse; its deep woods or open glades, and its broad stretches of green sward or water. All of these



WASHINGTON PARK: DWELLINGS ON THURLOW TERRACE.

and Tenth wards—those most benefited by the park—was \$2,696,688. This exact area, now contained in parts of the Tenth, Thirteenth, Fourteenth, Fifteenth and Sixteenth wards under the reorganization of the wards of the city, was assessed in 1875 at \$4,843,440, being an increase of \$2,146,752. The assessed valuation within the same bounds in 1891, according to the present report, was \$14,534,000, showing an increase of \$9,690,600 in 16 years, or \$11,837,352 since the organization of the board. The assessed valuation of the Englewood Place, front on Washington Park, formerly called Robin street, was, in 1875, \$9,500; in 1891, as improved, it was \$175,800. The same comparisons could be made on State and Willett streets."

in their endless combinations are constantly modified by the varying conditions of the point of view, the atmosphere and the seasons. Many visitors, however, because they happen to have little knowledge of individual trees or shrubs or little taste for landscape beauty, take in like proportion little notice of the ever-fresh, ever-changing features of the verdant landscape, and enjoy chiefly the accessory works of mechanical construction. But the true ideal of park recreation to persons worn by the harassing turmoil of city life is the refreshing enjoyment of all that is beautiful and blissful that may be seen and felt amid the serene manifestations of nature embodied in the scene."

Alluding in this report to the flower-garden, illustrated

in the frontispiece, it is stated "that this portion of the park has been somewhat formally treated with reference to the central effect ultimately to be obtained by the erection here of the King fountain, the basin of which will be about 50 feet in diameter, and the apex of the central figure of a group, representing 'Moses smiting the rock,' about 30 feet above the grade of the surrounding walks. The foliage-bed in the center of the picture now occupies the site of the proposed fountain."

On page 522 is given a view of "Thurlow Terrace," a short street connecting Western avenue with Western park. "This street, or park-way, is maintained by the

park board, the title being vested in it. The cost of maintenance is assessed upon the private property fronting upon both sides. The sidewalk spaces are planted with elms, and the middle park-like strips are planted with flowering shrubs. The dwellings are set back 40 feet from the street line, presenting fine lawn effects along its margin. The constructions are limited, by a clause in the deeds of conveyance, to dwellings of a certain character, and no objectional fences or erections can be placed within the limits of the avenue." Some fine views of this park, which we give on pages 521 to 524 and as frontispiece, will give an idea of its beauty.



WASHINGTON PARK: THE RUSTIC SHELTER AND LAWN.

AN IDEAL ENGLISH GARDEN.

THE ARRANGEMENT OF HOME GROUNDS.

THE NON-DIVISION of the flower-garden from the space devoted to the cultivation of vegetables is a common but lamentable mistake. It seems absurd to bring a display of cabbages, potatoes, corn and other indispensable kitchen supplies in juxtaposition with flowers.

The weekly wash left hanging to dry in front of the house is another disfigurement of our home-gardens. "Necessity knows no law," and poor people must dry their clothing somewhere, but frequently I have noticed in front of a finely-built house with a beautiful lawn and

prettily-designed flower-beds, poles with ropes or wire permanently fixed, on which surged about the weekly wash of the family. Sometimes these poles were at the side of the house, but in full view of the street. In these particular cases want of space was no excuse. Would it not be preferable to use the back-yard for a drying ground, dividing it from the front by a neat trellis-work covered with creepers, thus hiding from the passer-by an unsightly laundry-ground?

I remember a spot in England as the *beau ideal* of garden arrangement. I do not mean that I have seen no

gardens in this country that equalled the one I propose to describe. Indeed, I have seen many that surpassed it in elaborate arrangement and expensive detail, but none of them were more artistically arranged or contributed so much of comfort to the home.

In front of this ideal home was a beautifully kept lawn, green and soft as velvet. Two or three pieces of statuary graced it, and rustic vases, filled with choice flowers, were arranged close to the windows of the sitting-room, so that, when the windows were opened, the odor of flowers was wafted in. The porch at the doorway was covered with clematis and honeysuckle, and seats and single tables were arranged in the cool shade

turfed over and used as a children's play-ground. In one corner there was a summer-house made of lattice-work with a domed roof. In the other corner was a large lilac tree, and near it a graceful laburnum with golden tresses. In the center of the play-ground was a swing. The summer-house contained a table and movable seats, and here the children found shelter from April showers or the heat of the summer sun. Here, in the summer afternoons, the mother brought her needle-work and taught her little girls to sew, while some one read a poem or a story. How much better it was for the children that they should spend all their play-time under such influences than in the streets! The entire play-



WASHINGTON PARK: THE RUSTIC SHELTER.

of a "spreading chestnut tree." In a greenhouse on one side of the dwelling were reared the more delicate plants, and from a vine that spread its broad leaves under the glass hung heavy bunches of grapes, the flavor of which I well remember, but cannot describe. White and red roses climbed all over the front of the dwelling, completely concealing the stone-work, and reached high above the latticed windows of the bedrooms. When the casement was opened, they peeped in and looked around like the bright rosy faces of children, each striving for the first morning kiss and caress.

The kitchen-garden was at the back of the house. One-half was devoted to vegetables, and the other was

ground was surrounded by a solidly built brick wall, some ten feet high. The gate was of massive iron-work, and the grotesque birds and beasts adorning it were worked into an elaborate design. On the wall were trained, in espalier fashion, peach, pear, apricot, plum and cherry trees. Beyond this wall there was a paddock for the pony and an orchard where the most delicious apples ripened.

I cannot paint for you in poor words half so beautiful a picture of this garden as the one that lives in my memory, but, after all, does it not seem like an ideal garden? Is not this the real mission of gardens—to contribute comforts and tangible delights as well as mere outward beauty?

LILLIAN CHAUTER, *Missouri*.

THE ECONOMIC PLANTS OF JAPAN*—XV.

CUCURBITS AND LEGUMINOUS PLANTS.



THE cucurbits are largely cultivated in Japan. One or another of the many kinds can be seen on every little farm, and in their season on the stands of vegetable-dealers everywhere. No member of the family is so generally grown as the common cucumber, *Cucumis sativus*, L., Jap., *Kiuri*. Cucumbers are cultivated throughout the country, and seem to be appreciated by everybody. Not only are they grown for home use, but near the cities one may often see considerable areas in this crop for market, and cart-loads and basket-loads find their way to the town over every road. They are for the most part gathered when about fully grown, but before they ripen.

The uses of cucumbers may be placed under three general heads, according to the mode of preparation, viz., fresh, pickled and dried. In the fresh state they are often used as a salad, much as with us, or they are sliced and boiled as an ingredient of some dish. That this vegetable is much appreciated may be inferred from the fact that it is no uncommon sight to see people, both old and young, pick cucumbers from the vines and eat them out of hand, as we would eat bananas, with as much apparent relish. As a pickle they are preserved in salt, packed in tubs, and used as occasion demands through the year. They are not pickled in vinegar as with us, nor do the Japanese select the small ones for this purpose, as we do. When preserved in the dry state they are first pared into long ribbons which are dried in the sun on long bamboo sticks, and when thoroughly dry can be kept for a long time. These dried ribbons of cucumbers (and also of melons) are called *kamfiyo*, and are used in soups and as an ingredient of many other dishes.

The Japanese method of cultivating the cucumber is quite unique. As everyone knows, the cucumber-vine is provided with tendrils, and nature evidently intended that it should climb. The Japanese act upon this suggestion in their culture. They drop the seed in double rows on a bed, and when the plants begin to form vines they are brushed as we brush peas, with the brush of two adjoining rows leaning against each other. This method is invariably among the farmers, and the vines take kindly to it. The moist climate prevents them from drying out and burning up

as they probably would do in some places in this country under similar treatment: nor do the vines blow down or suffer from the weight of their fruit. To a foreigner it is a novel sight to see rows of tall brush covered with cucumber-vines, and these laden with heavy fruit, some eight or nine inches in length. The cucumbers are of good quality, but most of them are rather late in fruiting.

CUCUMIS CONOMON, Thunb.; Jap., *Shiro-uri*, *Makuva-uri* (Japan Muskmelon). This is probably only a well-marked form of the common melon, *C. melo*. All the native varieties which have come under my observation have had rather small fruit of oblong shape with smooth or but slightly netted rind, feeble aroma and indifferent quality. None of them can compare in flavor and sweetness with the best American varieties. The most common sort is called *Shiro-uri* (white melon), a name which is also used in the generic sense for the entire class. These melons are small, oblong and nearly white when per-



FIG. 1.—MOMORDICA CHARANTIA.

fectly ripe. They are much relished by the Japanese.

American varieties have been introduced, but these are as yet confined to the environments of open parts of the country, and have apparently not gained a strong foothold

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even there. The native sorts have a thin rind and firm, greenish yellow flesh, but they lack flavor and sweetness. They are cultivated in hills, but instead of planting the seed directly in the hill it is frequently started on a gentle hotbed made of rubbish, and the plants set out when well under way. They can always be found in the stalls of the vegetable-dealers during the latter part of the summer. They are eaten ripe, and immature fruit is also frequently pickled or sliced and dried like cucumbers.

C. FLEXUOSUS, L.; Jap., *Awo-uri*, *Tsuke-uri*. A long green variety cultivated like the muskmelon. It is always used green, being pickled like the *daikon* (the large radish), which it is said to excel in eating qualities when properly prepared. It is also excellent for

ribbed squash; *O-tonasu*, a variety like the last, but larger; *Kikuza-tonasu*, a deeply furrowed flat squash; *Ko-tonasu*, small and flat; *Kabochia*, a rather large, oblong and rough variety. All of them are distinguished for their rough, warty appearance. "*Tonasu*" means Chinese egg-plant, which would indicate that it has been introduced from China. It has been grown by a few experimenters in this country, among whom are Professor Troop, of Indiana, who made a report on the subject some time ago. The Japanese squash may be sure of a favorable reception by the horticultural public.

MOMORDICA CHARANTIA, L.; Jap., *Tsuru-reishi*, *Niga-uri*. This plant is not a native, having been introduced (probably from China), but it is nevertheless quite commonly cultivated, partly for its fruit, which is not poisonous like that of some allied species, and partly for ornament. It has become wild in central Japan. The vines are

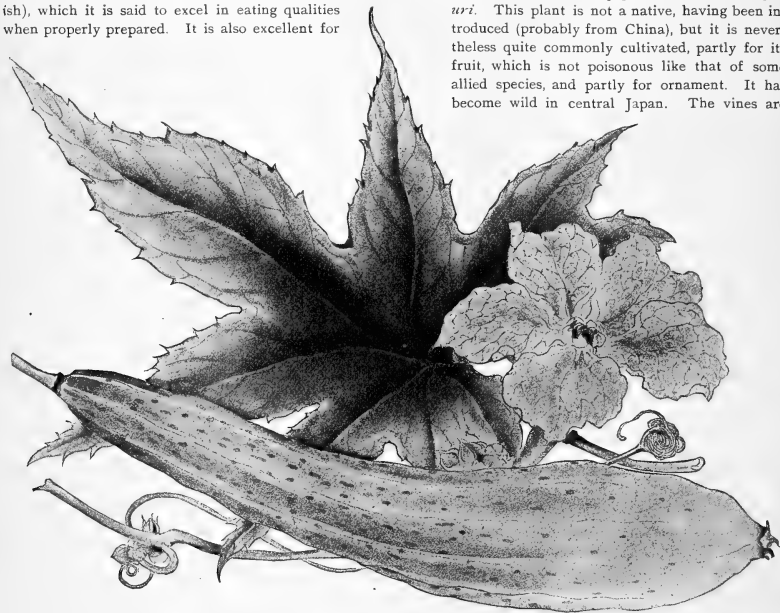


FIG. 2.—THE TOWEL-GOURD (*Luffa petola*).

preserving and for making sweet pickles in the same manner as American housekeepers use watermelon-rinds.

CUCURBITA MELO-PEPO, L.; Jap., *Tonasu*, *Bofuri*. (The Squash). The Japanese squash is worthy of the attention of our horticulturists. From the utilitarian standpoint it has more genuine good qualities to recommend it than any of the other cucurbits peculiar to Japan. Most of the varieties have large fruits with very firm flesh of excellent quality, and they are splendid keepers. Some of them can be found in the market until spring or early summer. They are cultivated in hills, as with us. The following are some of the varieties: *Tonasu*, the most common kind, a medium-sized dark green, flat, warty and

angular and hairy, with a single tendril on the axil of each leaf. The leaf is 5-7 parted and palmately veined, the lobes having a few pointed serratures. The flowers are yellow, one inch in diameter, and borne on a long pedicel with an orbicular bract a couple of inches from its base. The fruit is oblong, very warty, six inches long and yellow, and when ripe it bursts open, displaying the bright crimson envelopes of the flat gray seeds. This crimson covering of the seeds is edible, and has a pleasant though somewhat insipid taste. Fruit and leaf are illustrated in fig. 1, on preceding page. The split fruits are often displayed in the markets, and have a luscious, attractive appearance. The vines should either be grown

on a trellis or supported with brush in the same fashion that the Japanese train cucumbers.

CITRULLUS VULGARIS, L.; Jap., *Suika*. (The Watermelon) Watermelons are in common cultivation throughout the country, especially near Tokio and other large cities. They are not shipped to distant markets, as is the case here, but are consumed near the place of production. They do not appear to be much esteemed. There are but few varieties, and those which have come under my observation are of indifferent quality. The Japanese do not exercise sufficient care in the selection of seed. American varieties have been introduced, but they have not been kept pure, and deteriorate in the course of a few years. The climate is too moist for the best development of the watermelon.

LAGENARIA DASISTEMON, Miq.; Jap., *Togan, Kamouri*. (The Gourd.) A large coarse plant cultivated for its fruits. Vines long and rough; leaf large, reniform, lobed; flowers yellow, three to four inches in diameter; fruit large, rough. There are several varieties, of which the following are grown about Tokio: *Tojan*, a very common sort. *Onaga*, or *Riukiu*, a very large variety. *Hira-togan*, a large flattened fruit. The plants are usually trained on a horizontal trellis, and, like other cucurbits, are often raised on hotbeds and transplanted. The fruit is used in cooking, either fresh or pickled.

LAGENARIA VULGARIS, Ser. (*Cucurbita Lagenaria*, L.); Jap., *Hyotan, Sennari-hyotan, Hata-fukube*. (The Bottle-Gourd.) This vine is similar to the preceding, but its leaf is less reniform and its flowers are white. The male flowers have very long stems and fruit in many shapes, usually contracted in the middle, forming a kind of bottle with two divisions. These fruits are very largely used for keeping and carrying liquids, the rind being very

hard and impervious. To remove the inside the fruits are buried in the ground for a few weeks soon after they are ripe, until, by the aid of water and a stick, they can be cleaned through an opening where the stem was attached. With age the shell turns yellowish, then brown. Polished and decorated, these bottles are common objects all over the country. They are also often represented by artists with paints, imitated in *faience*, or even in precious metals. The young fruit, sliced and sun-dried, is also used as an article of food, and in this state it is also preserved for soups, etc.

LUFFA PETOLA, Ser. (*L. fetida*, Sieb. and Zucc.); Jap., *Hechima*. (The Towel-Gourd.) The plant is not a native of Japan, and was probably introduced by the Dutch. It is, nevertheless, quite frequently cultivated, partly for ornament and partly for use. It is usually grown on a horizontal trellis, or rambling over fences and similar supports

The vine is rough, pentangular and of great length. The leaf is 5-7 pointed, palmately veined, and has strong tri-fingered tendrils, the middle one being the largest. The flowers are large and yellow. The staminate ones are borne in a long-stalked spike in the axils, only one being opened at a time, and it apparently on the end of the spike; but the latter continues to elongate and develop new flowers, which take the place of those that fade. Pistillate flowers are borne singly in axils. The fruit varies greatly in size and shape; usually it is club-shaped, and from one to six feet long. The young fruits are used for food, being sliced and sun-dried, as already mentioned. When fully grown the fibrous network inside the fruits is used in many ways. Fig. 2, on opposite page, illustrates fruit, flower and leaf greatly reduced.

Kansas Agricultural College. C. C. GEORGEON.

A TALK ON ROAD-MAKING :

POINTED AND PRACTICAL.



ANY OF OUR American parks and garden cemeteries contain excellent examples of what a good stone-road suited to our climate should be like. Having observed the fine condition of the drives in Forest Lawn Cemetery, of Buf-

falo—a magnificent garden burial-ground embracing near 600 acres of land—the writer recently asked Mr. George Troop, superintendent of the grounds, for information about the construction of the roads. To Mr. Troop's kindness the readers of AMERICAN GARDENING are largely indebted for the following valuable information.

The first question to be determined in road-construction is the proper kind of roadway and the depth of the material. Roads made only of small stone, however carefully laid and compacted together, are found not to be so durable in this country as they are in Europe, where so many good roads of this class were made by Mr. Macadam, who first built them, and built them so systemat-

cally and extensively, that this kind of pavement is still called by his name even when, as is now generally the case, only the surface coat is built with Macadam stone. In this country the power of the frost is so destructive every winter, and the road-bed becomes so spongy each spring as the frost thaws out, that a pavement of small stones only has little bond. The small stones sink too readily into the soft subsoil under heavy loads, and a corresponding rut is at once made on the surface. The cohesive power of the pavement being once broken, it yields under further travel on the same principle that an arch settles when the keystone is removed.

For these reasons all good roads of the kind usually known as "Macadam roads" have a carefully laid rubble-stone foundation. This method was at first practiced extensively in England by an eminent engineer named Telford. All our so-called "Macadam" roads of any value are of this class, and are sometimes named "Telford Macadam." Figure 1 shows a cross-sectional view, including the gutter and copings, of a portion of Telford

road-bed 18 inches thick. Its construction consists in first laying a foundation of any rough rubble-stones of convenient size for handling, and placing them carefully by hand in parallel courses across the road-bed as for a rough street pavement. The nearer such stones can be brought to the general form of paving-stone by judicious

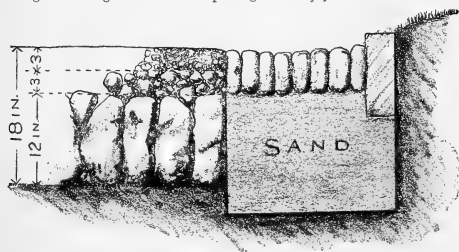


FIG. 1.—CONSTRUCTION OF GUTTER, COPING AND PAVEMENT.

breaking, the better the work. Blocks averaging 6 inches in thickness by 12 inches in depth will make strong work, however rough their general shape. They should be placed on edge, with the largest edges down, and be set as closely and firmly together as their rough shape will permit. Where the jagged upper edges project too high for the established thickness of the layer, they should be broken off, and all low places should be filled with suitable chips well packed into place. The whole course should be gone over, and all open spaces be filled by ramming stones of suitable sizes into all interstices with pounders or heavy hammers. When the surface is level enough for rolling, the heaviest roller obtainable should be used, and the rolling be continued until the whole foundation course is perfectly solid and of the right shape and height to receive the Macadam course; that is, the course of small stone.

The depth of this course of small stone will vary with the same circumstances which determine the whole depth of the pavement. Usually it is about one-third of the whole. Thus it will be 4 inches thick if the Telford course be 8 inches, and 6 inches if the foundation be 12 inches deep. The stones may be laid in two courses if the depth be 6 inches, and each course be rolled separately. For the lower course the stones should all be small enough to pass through a 3-inch ring, and through a $1\frac{1}{2}$ -inch ring for the upper coat. To make at once a smooth and firm surface it should be dressed with an inch of fine stone screenings or selected gravel of similar quality. This should contain some fine sand or earth loam, just sufficient to sift into the finer chinks and to bind the Macadam stones into one firm crust when well watered and rolled.

For the best work a steam-roller is necessary at every stage, and each course should be rolled until no further impression can be made, or, in other words, until the roller leaves no track behind it. Horse-rollers, however heavy, are very inferior, because the stones shift so easily

under the horses' feet. The heavier the draft the greater the disturbance will be. Another defect is the frequent turning necessary, and the impossibility of packing firmly the parts of the road where the horses turn. For ordinary cemetery use a steam-roller of from 5 to 10 tons will suffice. In compacting the surface coat, frequent sprinkling is also necessary. Both sprinkling and rolling should be continued together or alternately until the surface becomes perfectly solid. If, finally, the water from the sprinkler be all shed into the gutter by a water-tight surface, so much the better.

A common error in road-making is to have the pavement too shallow. It must be strong enough to withstand the heaviest traffic to which it may be subject, without yielding when the frost thaws out in the spring. Where the subsoil is exceptionally sandy or gravelly a depth of from 6 to 9 inches might answer fairly well, but under ordinary conditions a 12 to 18-inch depth is necessary for a cemetery road subject to much travel, while public highways should ordinarily be still thicker. Few are aware of the great difference in power to support a load between a firm layer 6 inches in depth and a compact mass 18 inches deep. The surface pressure of the passing vehicle will spread through either layer, as shown in fig. 2, in the form of a cone with its apex at the wheel and its base on the road-bed. The area of this base will increase (to use an engineering term) "as the square of the depth." Thus, if the depth of the stone be 6 inches, the weight of the road-bed under the stone will be over 36 inches. If the depth be 12 inches the base will measure 144 inches; if 18 inches deep the weight will spread over an area of 324 square inches. Thus a pavement of 18 inches is nearly ten times as strong as one of 6 inches, instead of

being only three times as strong, as most people would naturally suppose. In a like ratio is the power to resist the upheaving of frosts, especially if road and road-bed be well drained.

The question of depth being decided for any given case, the excavation at the sub-grade level should conform as nearly as possible to the

established grade of the finished road, both in profile and in cross-section, as shown by fig. 3, on the next page.

The proper form of the finished surface will vary considerably as the grade varies. On a nearly level grade the height of the center above the edges of the gutter should be in the ratio of 1 to 25. This will give a crown of 6 inches for a 25-foot road, or 12 inches if the width be 50 feet. If the grade be steep, the crown should be

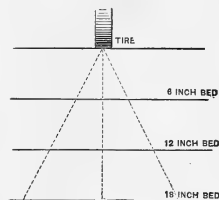


FIG. 2.—SHOWING HOW THE STRENGTH OF A ROAD IS PROPORTIONAL TO ITS THICKNESS.

proportionately higher, so that in all cases the water will find its line of quickest descent toward the gutters, and never parallel with them. When newly finished, the crown is better too high than too low, as it will constantly be wearing down under the travel upon it.

Paved gutters to carry off the surface-wash are of the utmost importance wherever the grade is steep or the flow likely to be large under a heavy rainfall. If the grade

will deepen with wonderful rapidity. Every shower will wash them out, and heavy rains will gouge them into watercourses of whatever size the flow may require. After rents are patched up the seams will long remain, as

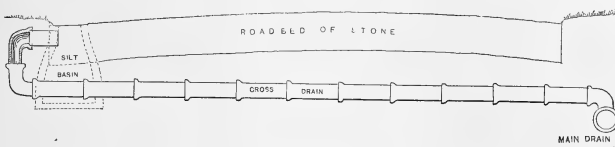


FIG. 3.—CROSS-SECTION OF ROAD-BED.

be less than one foot per hundred, gutters may not be necessary. Well-laid Macadam stone will stand a heavy flow on an easy grade. The width and depth of the paved gutters will vary in proportion to the amount of water to be carried off. If they are not large enough the water will quickly gouge out another gutter in the Macadam along the inner margins. The best work is done with regular blocks, laid lengthwise, as in the best street pavements, but where good cobble-stone is cheaper it may be used. All gutters should have a bed of sand at least 12 inches deep.

The proper laying of underdrains in connection with fine roadways is a matter of great importance, for it largely effects questions of construction and maintenance. If provision be not made for carrying the heaviest rain-falls from the roads, frequent damage of a very aggravating character will be done by severe thunder-storms. It will be cheaper in the long run to provide ample drainage at first. This is a problem that may require elaborate engineering calculations, and some competent expert should be engaged for the purpose.

Catch-basins, such as are shown in fig. 4, to carry off the wash of the road-gutters into sub-drains, should be placed alongside the road at frequent intervals. The overflow drain should be near the top of the basin, the bowl of which should be deep enough to hold all the heavier silt of each storm-flow. The inlet gratings should be fine enough to keep out coarse drift, liable to choke up the drain, and yet open enough not to close up readily with fine grass, dead leaves and other light refuse always abundant in a cemetery. The road-drain should be placed where it will not only carry off the surface-water, but also be most effective in draining the subsoil. Where the subsoil is liable to become water-soaked at certain seasons of the year, the road-drain may be placed along one margin of the drive and a small pipe, for sub-drainage only, be laid along the opposite side.

The proper care of the road under ordinary wear and tear is as important as its thorough construction. The old adage of the thrifty housewife, that "a stitch in time saves nine," may be applied to a Macadam road without

travel will shun them because they are rough and softer than the body of the road.

To maintain a smooth surface, regular sprinkling is necessary in dry weather. It is needed not only to lay the dust, but also to prevent the surface from breaking up. In a long drouth the grit and gravel will be loosened by the horses' feet for several inches in depth, and the particles will be rapidly ground into powder. The surface may be kept comparatively whole by simply keeping it uniformly moist.

On the other hand, in wet weather, it is equally important to scrape off the mud. A muddy road is not merely a dirty one. Wherever there is mud enough to be sticky it will be lifted with the tires, and much grit will be picked up along with it. The mud also prevents water from

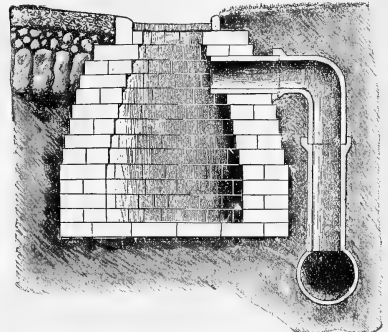


FIG. 4.—CATCH-BASIN AND ITS CONNECTION WITH DRAIN UNDER ROAD-GUTTER.

running off freely, and it is soon worked into slush. In such condition all travel on the road is abominable. The adhesion of the Macadam stones is also soon destroyed by the constant churning of the surface and the softening of the matrix in which they were bedded.

The foregoing details given by Mr. Troop are drawn from many years of successful practice. His conception of the whole matter is, that to secure a really permanent road-way, wholly satisfactory at all times, the utmost care must be taken to make the work as substantial as possible at every stage in the first construction. In the

subsequent wear and tear of travel, equal care should be given to prevent incidental damage of any character, under all circumstances, and if damage be done in spite of all precautions, it must be promptly and thoroughly repaired. The lesson is one that everywhere deserves wide consideration.

TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XXIII.

HOW A WATERSIDE LAWN MAY BE IMPROVED.



FROM a reader in the western part of the state of New York the following communication has been received :

"I have been vainly waiting month after month for an article on waterside gardening in the present interesting serial, but as none has appeared, I make bold to ask for assistance in arranging my own grounds, which have a creek frontage on one side. The enclosed diagram (fig. 1) shows the shape of the place.

It has a street frontage of 215 feet and a creek frontage of 370 feet. The depth along the house-line to the orchard is 220 feet. The trees at present on the grounds are shown by X. The buildings now on the grounds and a temporary road and walks are also shown. The course of the latter can be changed if this would improve the appearance of the place, provided the new road and walks do not run wide of the present location. We wish to erect a small boat-house, and would be glad for any suggestions as to its location. From the veranda on the creek side of the house there is a beautiful view of the water for nearly the entire length of the place. The distance from the house to the water's edge is 190 feet, with a slope of about 15 feet. Toward the rear of the house, beyond the young orchard, are some rough factory-buildings, which are something of an eyesore. We are heartily in favor of hardy shrubs and flowering trees, as well as hardy plants for screens and for adorning grounds.

"If you can, with these particulars before you, give some directions for improving the grounds, the favor will be greatly appreciated."

It is evident that the chief improvements for these grounds must be in the selection and arrangement of trees, shrubs, etc., but a few changes in the drives and walks may be made. As one of these changes, we would suggest a convenient turning-place in the drive for the carriages of callers. The presence of the porté-cochère to the left of the house implies that visitors who drive would enter here, so a convenient turning-circle may be introduced a little beyond. This is shown in fig. 2 (opposite page), which plan also embraces the other improvements that suggest themselves to our mind. The circle may be 40 feet across from outside to outside, with a carriage-track 8 feet wide surrounding a 24-foot grass-plot, planted in the center with a mass of trees or shrubs. Just out from the turning-place, the lawn being narrowed here, would be the place for the boat-house, which might be connected by a walk with the carriage-drive, and thus by a direct course with the buildings. By this means something like a division of the lawn is obtained, making a front and back lawn, which might be an advantage in grounds of such length.

In planning for the location of trees and shrubs, we must work with the purpose of enhancing the pretty lawn and water-views in the direction of the creek, and of hiding the factory-buildings near the rear of the grounds. If the orchard consisted of large, old trees, perhaps these might hide the buildings; but as the trees are young, a screen of kinds that grow more rapidly than fruit-trees, and are more ornamental, may be planted in a heavy mass of growths to the left of the barn. Suitable trees

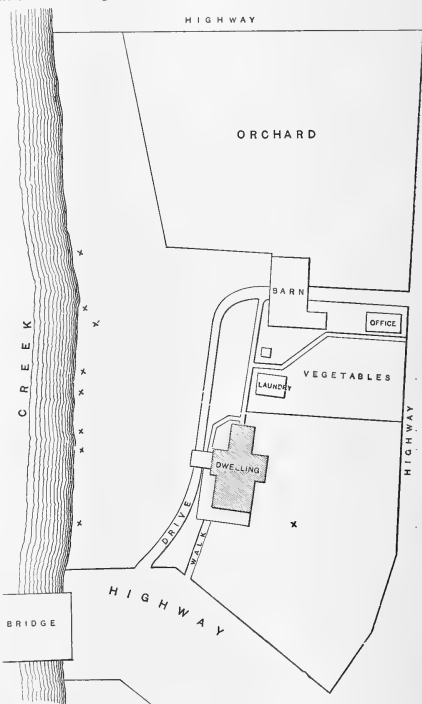


FIG. 1.—DIAGRAM OF HOME-GROUNDS WITH WATER FRONTAGE.

for planting here would be specimens of Carolina poplar—a very neat-looking tree, which does not sprout like other poplars, and often reaches a height of 20 feet in three years from planting. European larches, Scotch and white pines, Norway spruces, varieties of silver maple, the European bird-cherry, the laurel-leaved willow, the royal willow, the ailantus, etc., would all be suitable for planting here. Let but a rich soil and clean cultivation be given to these trees, and it is surprising what a mass of wood and foliage they will give five years from planting. Some flowering shrubs that, planted next to such trees, would enliven the mass of their bloom and varied foliage, are strong-growing weigelas like *amabilis* and *candida*; spiræas—*Billardi*, *sorbifolia*, *opulifolia* and *callosa*—single mock-orange, lilac, *elæagnus*, *forsythia*, ornamental plum, etc. Good perennial plants for such a place are the hollyhock, delphiniums, helianthus, lilioms—*candidum*, *tigrinum*, *umbellatum* and *hemerocallis*—upright phloxes, etc.

Standing away from the mass alluded to, and between it and the circle, as shown in fig. 2, might be placed three trees, a double scarlet thorn, a cork-barked maple, and a yellow-wood or *Cladrastis tinctoria*.

In treating the creek front there is ample room for the exercise of taste and good judgment. In a landscape of any kind water appears with better effect when seen in vistas appearing between trees that stand at or near the shore, than in an unbroken expanse; hence it is fitting that groups and masses of trees be introduced in this part, leaving open views in the direction of the dotted lines in fig. 2. Some trees and plants are better suited by nature for growing along the water than others, and mistakes should never be made in choosing the right kinds. Our correspondent's allusion to a boat-house implies that the creek is used for boating, and it will be easy to arrange the planting with a view to pretty effects in the garden as seen from the water.

In the arrangement of the water-edge groups a distribution of trees, etc., such as is shown in fig. 2, might be as satisfactory as any. In selecting sorts of trees and sites for planting them, let us start from the back of the boat-house. Here, next to the house, might be placed a group of tamarisk a little in from the water's edge, and back of this a European larch. These trees are much alike in general effect, their foliage and branches having a light, feathery appearance.

Crossing an open space back of this group, a rather bold mass of foliage is indicated. Suppose we set lengthwise the center of the mass two European white-birch trees, and outside of these such free-growing flowering shrubs as bush honeysuckles, deutzias, sumachs, including the purple-fringe, and toward the water the ornamental elders in three or four varieties. For the margin of the group fine hardy kinds of perennial flowers can be employed. Next to the margin of the bed as we proceed up the bank, set moisture-loving plants like the iris, day-lily, wild Canadian lily, hardy lobelia, eulalia,

marsh-marigold and *sarracenia*s—these down next to the water-line. In the water, assuming that the creek is shallow near the edge, might be planted the pickerel-weed (*pontederia*), which forms clumps of stately plants with fine leaves and attractive blue flowers, the arrow-head (*Sagittaria variabilis*), and white and yellow water-lilies. Here would be the place to try the wonderful *nelumbium* known as the Egyptian lotus, which is found to do well in many places north. Other rare aquatic plants that might be suited to the place are offered by

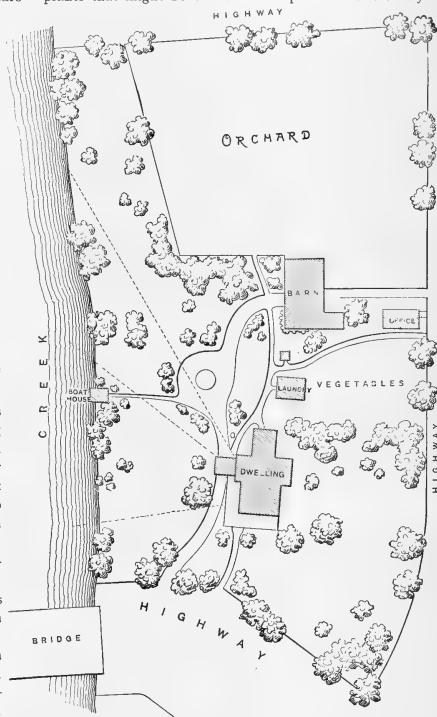


FIG. 2.—THE SAME AS FIG. 1, WITH CERTAIN IMPROVEMENTS.

dealers, but the foregoing, with the exception of the lotus, are indigenous to the latitude of the grounds, and are certain to succeed with little trouble.

Further along the bank, a little back from the water's edge, two or three red-oak trees might be located, with a weeping willow or a laurel-leaved willow down almost to the water. From this point, crossing an open space of lawn, there might be planted a continuous clump of moisture-loving plants, reaching to the further limit of

the water's edge. Such a clump might include one or two linden trees, a black or mahogany birch (*Betula lenta*), any of the alders offered in the nursery catalogues, and the black and other elders which, when in bloom, are particularly attractive as they hang over the water's edge. This would be a very suitable place for one or more laurel-leaved willows—a species of great value for water edges, on account of its rapid growth and large shining leaves, which strikingly reflect the light and sunshine.

Proceeding from the boat-house toward the front highway, we find that near the former would be a good place for several cut-leaved European white weeping birches, a silver-leaved maple, and some shrubs of the red-twigged dogwood, which here near the house would show pleasingly in the winter in contrast with the snow and the white bark of the birches. On the shore directly out from the porté-cochere a scattering group of American hemlocks, four trees, might be placed, as indicated in fig. 2. For the two trees near the highway at the water's edge, what could be more suitable than American white elms? Two more elms planted near where the drive enters the street, a European white linden or horse-chestnut near the porté-cochere, a Weir's cut-leaved maple back of this, with a mass of flowering shrubs, including lilacs, weigelas, etc., will finish this lawn section.

The trees in front and at the side of the highways might comprise red and white oaks, red maples, horse-chestnuts, sweet chestnuts and European elms. At the rear of the highway, to aid in shutting off the obnoxious factory-view in that direction, Carolina poplars, silver maples or American elms should be planted.

At the lower right-hand corner it would be well to shorten the extended area of lawn by planting a heavy, irregular clump of flowering shrubs, with hardy flowering plants at the margin on the lawn side of the same. Similar masses of shrubbery and plants would be in order at the rear end of this area, as shown, shutting off the vegetable-garden in a measure. For the center of these clumps such tall shrubs as aralia, golden-leaved poplar, ailantus and paulownia (with severe annual cutting back), red-bud or Judas-tree, sumach, lilac, althæa, viburnum, mock-orange, thorn, flowering plum, Japan blood-leaved plum (*Prunus Pissardii*) might be used. Smaller shrubs suitable for planting outside of these are plumed hydrangea, *Weigelia rosea* and its varieties, barberries, dwarf spiræas, mahonias, daphnes, deutzias, dwarf mock-oranges, roses, flowering almonds, kerrias, shrubby cinquefoils, variegated dogwoods, dwarf buck-eyes, etc. Just outside, and in a measure alternating with the lower shrubs, would be a good place to plant any of the hardy perennials offered in the nurserymen's catalogues.

Somewhat within this ample lawn section might be displayed the rarer ornamental trees as single specimens—Colorado bluespruce, Nordman's silver fir, the conical spruce, Camperdown weeping elm, kilmarnock weeping willow, magnolia, maiden-hair tree (*Salisburia adiantifolia*), River's blood-leaved beech, etc. Near the veranda some beds filled with bright summer flowers or plants would be effective. At the veranda pillars plant hardy climbing vines, being sure to include the improved clematises, Dutchman's-pipe, *Akebia quinata* and Hall's Japan honeysuckle.

THIS YEARS' FLORAL FASHIONS.

BEDDING AND BASKET-PLANTS.



THIS may be called a scarlet geranium year, since that color leads for this favorite plant. Double flowers are more popular than single ones. There is no doubt that in the long run scarlet is always the most desirable color, as it suffers less from rain or drought than the lighter colors.

One of the handsomest trailing vines we see in vases this season is the lophospermum, which is now making a fine show with its large tubular, rose-colored flowers. It is not a new vine, but has been rather neglected. All sorts of vines have been greatly in demand for bedding this season; this is a class of plants with which the trade is never overstocked. There are few new additions to the ranks of bedding climbers; more often we see old and forgotten things revived. The thunbergias are still very popular, and so is the old cobæa. Nasturtiums keep their freshness best in localities where the nights are cool; when exposed to continuous heat the foliage is liable to suffer. A little variegated tropeolum, seen recently, is likely to be a good thing for baskets and vases, but it is not yet out in the trade.

This year the old lantana, which has been little used for some time, has been very popular. Some of the florists have handled it extensively, and find it very acceptable to their customers. Its one defect is the strong and peculiar odor; but, on the other hand, it is clean in habit, robust in constitution, and almost perpetually in flower. It keeps on blooming all summer without losing vigor, and is excellent for city use. It is much esteemed in cities for vases or boxes, and is likely to be still more largely used another season.

Another reinstatement has taken place in the use of the summer pinks, both single and double. They bloom profusely, the colors being very rich, and seem likely to continue flowering until frost. A good many of these plants were sold in the early auction sales, and experience with them in bedding proves their desirability. Some of the large single flowers are even more showy than the double ones. The small double pinks are suggestive of our old friend, the sweet-william.

Some perennial poppies recently noted made a conspicuous bed; the flowers were of the usual scarlet color, but very large. Many of the double poppies resemble hollyhocks.

EMILY LOUISE TAPLIN.

PROSPECTS AND PROBLEMS FOR THE GRAPE-GROWER.

HANDLING VINEYARD PRODUCTS.



UNLESS fortune's wheel makes a sudden and unfavorable turn, we may expect a large crop of grapes this season; the supply seems assured. But what will be the demand? How can good markets and good returns be insured? Are we in immediate danger of overproduction? Will continued heavy planting for commercial purposes be safe and advisable? Practical grape-growers express their views on these important questions in the following communications:

HOW CAN WE INSURE PROPER HANDLING AND DISTRIBUTION?

The present outlook for a full crop of grapes of good quality is unusually promising on the shores of lakes Keuka, Seneca and Canandaigua. The growth has been very rapid of late, and although there is some mildew in some localities, and signs of black-rot and other diseases of the vine, favorable and comparatively dry weather from this time onward till September would seem to insure a fine crop of grapes. The great (prospective) shortage in the general fruit-crops of the country for this season, especially of peaches, in Maryland, Delaware and New Jersey, gives promise of good prices for grapes during autumn.

I do not think there is any immediate and but little future danger of overproduction in grapes. There are not now, and probably will not be in average fruit-years, more grapes produced in this or any other portion of the country than will be needed for table and wine-making purposes, if they can only be properly handled and distributed. But how to insure such handling, distribution and sale as will make the most of annual crops, is a complex problem not yet fully solved. I cannot advise continued heavy planting of grape-vines for general commercial purposes until we can solve this problem and reduce marketing to a more perfect system, but would advise a more careful culture of existing vineyards. Under no circumstances should they be neglected because prices are temporarily depressed. All bearing vineyards of good standard varieties have cost too much to be abandoned, or depreciated in value as a consequence of neglectful culture; and they can be perpetuated in good condition much cheaper than new ones can be started.

Grapes should be nicely packed and marketed in neat 5 and 10-pound "Climax" baskets. Pack them with care, allowing none but good, choice, ripe and well-graded fruit to go in any package, and sending all that is inferior in appearance as well as in fact to the wine-cellar. I believe the time will come, and the sooner the better, when a uniform size of package will be used, and that it will be a 7-pound Climax basket.

Grape-growers should ship to all places that promise a good demand for their fruit, and commence shipping just as soon as (and not a day before) the variety to be marketed is really ripe and sweet enough to be palatable, and eagerly sought for table uses. Sour or imperfectly-ripened grapes tend directly to disgust the public taste and to quickly break down the markets beyond any chance of more than a partial recovery during the remainder of the season. The practice of shipping such grapes does incalculable injury every year to the grape-producing interests of central and western New York.

The best way to get full and fair returns from commission-men is to ship only to honest ones of good and well-established repute, whose business cards are found in reputable horticultural journals.—J. H. BUTLER, *Editor of Vineyardist*.

EXTENSIVE PLANTING NOT SAFE.

I am by no means sure that the continued heavy planting of the grape will prove to be a safe commercial venture. It is, doubtless, true that the consumption of this fruit in a fresh condition is increasing at a rapid rate, and it may reasonably be anticipated that such consumption will continue to increase. On the other hand, public sentiment grows stronger and stronger against wine-making, and this seems likely to diminish the demand for grapes for such purposes.

The grape can be, and is, successfully and profitably grown much farther north than any of the tree-fruits, since by lying down and covering the vines they can be carried safely through the severest winter cold. With judicious selection of a vineyard site, many of even the late-ripening varieties mature with nearly or quite the same certainty as farther south. As a case in point, a fine collection of well-ripened grapes, grown in southern-central Minnesota, was shown at the New Orleans Exposition during the winter of 1875. Among them were perfectly ripe Catawbas which, even in southern Michigan and northern Ohio, ripen thoroughly only in exceptionally favorable seasons or in protected or sheltered localities. A subsequent visit to the vineyard in which these specimens were grown revealed the fact that their maturity was due to the training of the vines upon a low trellis with a southern slope and exposure. The vines were covered with earth in winter.

At the date of our visit (the last of August) the medium varieties—Delaware, Eumelan and several others—were already in use for dessert, and ripe (?) Minnetonka-grown Concord was plentifully offered in Minneapolis markets. It is probable that the result stated may also have been partially due to the increased length of the day in higher latitudes, accompanied as it is, at the west especially, by an increased proportion of sunlight and warmth

The foregoing particulars seem to strongly indicate that it may prove unsafe to plant extensively here (as may be done in the case of the tree-fruits) for the supply of the more northern markets.

My personal experience in commercial viticulture is too limited to justify advice as to the handling of vineyard crops, beyond the very general outline that the aim should be to grow as few imperfect bunches as possible, and to pack mainly in small, attractive packages for the retail trade.—T. T. LYON.

A CHARTERED COMPANY OF FRUIT-GROWERS.

I do not apprehend much immediate danger of over-production here, as the territory in which we can grow grapes successfully is limited, while the part of our country that must be supplied from it is large. If the Canadian government should remove the duty our markets might be over-stocked from the United States. Still I would not advise too heavy planting for commercial purposes among vineyardists.

We market grapes in 10-pound baskets, and do our own commission business, as we have a chartered company of fruit-growers who employ agents of their own in all of our principal markets. Each shipper and stockholder is charged 10 per cent. for the sale of his fruit, and in this way we have the sales in our own hands. If there is any profit in the commission, it is shared by the stock-holders.—A. M. SMITH, *Ontario*.

PROSPECTS FOR THE CROP GOOD—NO DANGER OF OVER-PRODUCTION.

The outlook for the grape-business for this season and in this locality is good. There is some mildew, but far less than in 1890. The grape-clusters are well advanced, and the prospects for prices fair. The apple failure will help the sale of grapes.

As to over-production, if all the lands well adapted to grape-culture in the United States were planted with grapes, they would be capable of producing more than the 65,000,000 people could consume. But it is not at all probable that there will be such extensive planting as to more than keep pace with the increased consumption for the next ten years. Immediate danger of over-production is possible, but not probable.

"Can you conscientiously advise continued heavy planting for commercial purposes?" Yes. Just so long as bananas are sold in all our northern towns and villages by the wagon and car-load we say, plant grapes. The capacity of our people to consume grapes is only just beginning to be tested. What we want is to improve their quality, to cheapen and quicken transportation and to extend the season. Every northern market should be supplied with fine grapes from June until January, and in abundance. Our people have only been eating grapes for two months; they ought to be supplied for six.

Grapes should be ripe but not overripe for marketing, and should be packed in 9-pound and 5-pound baskets, with the name of the grower and a printed guarantee of quality on every basket cover. Then, when the express and freight-men learn the difference between handling

grapes and cord-wood, the fruit may reach the consumer in perfect order. The legitimate market for Chautauqua grapes reaches from Augusta, Maine, to Galveston, Texas, and from Baltimore, Maryland, to Denver, Colorado. Our first business, however, is to perfectly supply markets lying within a radius of 200 miles.

Fruit-growers need to tone up on honesty. They should put up honest goods in first-class order, stop growling at commission-men, and improve the quality of their fruit. Have a perfect understanding with your commission-house. Let the house know what you have, and just when it will be shipped. Make daily reports, use the telegraph, get acquainted with a trustworthy firm, and stick to it. It is possible to have good, faithful, conscientious producers and shippers at one end of the route, and good, prompt, honest dealers at the other end; but there must be mutual and continual understanding and coöperation.—S. S. CRISSEY.—*Chautauqua Co., N. Y.*

OVER-PRODUCTION IMMINENT—GOOD WORDS FOR COMMISSION-MEN.

When the price received for the grape crop is little above the cost of production and marketing, it is fair to say that there are more grapes produced than are being consumed. Grapes, being perishable, must be placed in the consumer's hands as soon as they are ripe. Being largely eaten out of hand, the consumer must be satisfied that they are wholesome; otherwise consumption stops. When we remember the sprayed-grape scare of 1891, we see the result commonly called over-production, but which is, in fact, under-consumption. Taking for a basis the average sales of grapes in the last three years, the price received, as compared with the cost of production, will lead any one who contemplates planting to look carefully to all surroundings, climatic conditions, facilities for marketing, etc. Unless all these are very favorable, costs will exceed receipts. The market is well supplied with grapes now, and unless the would-be planter has exceptional facilities, he had better not plant heavily for commercial purposes.

As to the condition and shape fruit should be in for market, the standing rule in the packing-house on the Esperanza vineyards is that all fruit must be ripe, fresh, and choice when packed. There are all sorts and conditions of packages for grapes, but the great bulk of the crop is marketed in 5 and 10-pound "Climax" baskets.

Some commission-men are, without doubt, honorable and honest. Satisfy yourself that you have such a man for your consignee, then stick to him. He may not always get the highest prices, but I am certain he will average up all right. Your fruit may leave your hands in good condition, but it is perishable, and numberless unlooked-for causes may detract from the beauty and freshness it should have when it leaves the grower's hands, necessarily causing it to bring a smaller price than was expected. I am inclined to think the commission-men are often charged with negligence and dishonesty of which they are not guilty.—GEO. C. SNOW, *Yates county, N. Y.*

EVERYTHING DEPENDS UPON THE EFFICACY OF SPRAYING.

Somewhat careful observation in this Hudson River grape-region leads me to conclude that there is danger of over-production, and that even now there are more vineyards in this, our immediate region, than can be made to pay. Of course, this opinion is based upon the assumption that the rot can be controlled by spraying. Whether this is absolutely certain, as has been generally supposed, is, however, a matter of some question, in the light of recent developments here. A prominent grower of Milton, who markets about 20 tons of grapes, told me a few days ago that he never sprayed a single vine, but raised just as good grapes and as many as his neighbors, who, though they spray carefully and profusely, had just as much rot as he did. Other growers here say that this year some of the sprayed vineyards seem worse affected by the rot than those that were never sprayed at all. I thought we had found the trump-card for this grape-rot trouble in

the copper solution. It will be most unfortunate, indeed, should we find our vines to be still at the mercy of this dreaded disease. If so, then all danger of over-production vanishes at once, and we must battle for grapes. But continued heavy planting does not seem wise unless this fact is established, and even then grape-growing would be a precarious business, requiring great capital and patience. At the present prices, even with the decimation from rot and disease, how could a full crop of fruit be marketed with profit to the grower, when his partial crop scarcely nets a paying price?

Too much care can hardly be used in packing and marketing grapes. The fruit should be in the best condition possible—the baskets clean, bright, new, tasteful, and sold with the fruit in every case. Inferior fruit should be sold by itself, and on its merits. In my opinion, holding shipments for a good price is a dangerous and uncertain business under ordinary conditions.—H. HENDRICKS.

GRAPE-VINES FROM GRAFTS AND CUTTINGS.

FURTHER NOTES ON VINEYARD-MAKING.



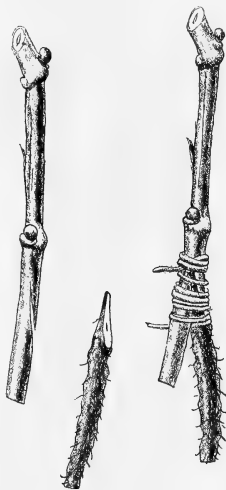
GRAPE-VINES are usually propagated from cuttings. Some vineyardists make these cuttings from six inches to a foot long; others use 18-inch cuttings, contending that these make the best plants, and I think that in the long run they are right. An

intelligent French engineer told me that in France they lay a cutting three or four feet long in a furrow, bending the top end up so that the upper eye is just even with the surface of the ground. These cuttings are put down a foot or more deep. That shallow roots will not hold out in the dry seasons that we have here at times, is well known.

When I was superintending the Bluffton Wine Company's outdoor department here, 25 years ago, the land was in pretty heavy timber. All trees and roots were grubbed out 18 inches deep, and the land then plowed and subsoiled to that depth. The result was an astonishing growth of vines and immense crops of fruit. Some of these vineyards are still in good condition, but most of them have been grubbed out on account of the cheapness of wine and the rot of the grapes. The first year I grew 75,000 plants from cuttings, and I am satisfied that not five per cent. of the cuttings put in failed. They were taken from the vines early in the winter and cut in lengths averaging about 10 inches, some longer and some shorter, according to the length of joints of the different varieties.

My plan of setting cuttings was, and is yet, to mark out the ground, previously well prepared, with a marker of my own make—a tool like a little sled-runner with a handle six or eight feet long, so that when held in the hand at a convenient height, the runner lies flat on the ground. With this I can run a line 100 yards long as

straight as an arrow, using three stakes as guides. I have not used the old-fashioned reel and line for 50 years. Now with a big, broad-bladed hoe, or a spade if one prefers it, cut a trench along this line down as deep as the cuttings require it at an angle of 45°, making a



GRAPE-ROOT GRAFTS.

smooth edge along the line. One man comes along with the cuttings which are laid two or three inches apart with the upper eye just even with the top of the ground. Then another man follows with a hoe and draws down earth enough to cover the cuttings half way up, walking in the furrow and treading the ground firmly down upon the lower part of the cuttings. He then goes over the row again and draws more earth over the cuttings, making the surface level and firming it lightly. If the ground is in good condition, I can put in 5,000 cuttings a

day myself, and if they are sound and taken from an easy-growing variety, I will not lose three per cent. of them. Clean culture and mellow soil are essential.

As soon as the cuttings have grown three or four inches, they should have all save the best shoot removed. When they have grown six inches, hill up an inch or two of earth around the plants. This will cause additional roots to start from the young wood, and increase the growth of the vines greatly. I have had cuttings make a growth of five feet of strong wood the first season, and in the fall when taking them up found them to have a tangled mass of roots that required some work to dress out. When one has only a few cuttings, brush or stakes such as we use for peas, will make a nice support for the vines to cling to. Trained in this way the ground can be worked more easily and the vines will grow faster.

A good strong layer from the previous year's wood makes a good vine, but vines grown from green wood are of little value. To plant vines from single eyes, such as are usually sent out, is about the poorest plan of all. When the Empire State grape first came out I paid \$6 for three vines. Now, after a number of years, I have never gathered five pounds of grapes from them. I procured eight grafts from a friend the year after these three vines were planted, set them in strong stocks, and soon had strong vines and plenty of fruit.

The following method of propagation has done well where I had a new variety that I wished to multiply rapidly: In taking up vines in the fall, when clipping

back the roots, I save bits of them about a quarter of an inch in diameter, and keep them in damp sand until needed. In February or March I cut these roots in pieces two inches long, using a piece to each graft, as in apple root grafting, but instead of that method cut the upper end of the piece of root wedge-shaped and insert it in the lower part of the graft, as shown in the illustration on preceding page. If the wood is long-jointed, I use one eye to the graft, if short, two eyes. Tie the grafts firmly with waxed thread. The root gives the graft-eye a start, and by fall I have had a row of them averaging three feet in growth.

These grafts can be laid upright in boxes of sandy soil, and left there until they have started to grow. I have set them out when they had grown two inches, with but little loss. If you can give them a little bottom-heat it will be a great help. I usually set my grafts in the hotbed when the heat is pretty well spent. Accustom them to plenty of air and sunshine before setting them out in the open ground, plant them late in the afternoon, and shade them for a few days. The grafts soon callous at the lower ends and emit roots of their own freely. I have taken them up in the fall and found good, strong-rooted plants, but the piece of root inserted was no larger than when planted.

Missouri.

S. MILLER.



SEASONABLE OBSERVATIONS AT WOODBANKS.

NOTES FROM THE EDITORS' GROUNDS.



UR GARDEN TULIPS.—Whether the Dutch gardeners of the sixteenth and seventeenth centuries were at all justified in carrying the tulip mania to the extent they did, is a question not in our province here to discuss. Americans do not seem likely to suffer from such a craze. The tulip deserves more general culture among us—not the poorer, but the finer kinds. Let us sum up the merits of this class of flowers as they occur to us—merits noted among scores of varieties that have been cultivated in our grounds for years past.

First The bulbs of superior named varieties are expensive, our best dealers selling them at from 25 to 50 cents a dozen. A few sorts that are especially difficult to propagate sometimes sell as high as 60 or 80 cents a dozen. This is where one makes his own selection of named varieties; if he can be content to buy the bulbs in mixtures, without names, they need not cost above 25 or 30 cents a dozen—about two cents apiece. Some dealers hold out special inducements to buyers of named

varieties, offering collections of 50 or more varieties of named single tulips, one bulb of a sort, for \$2.25; or three bulbs of each sort for \$5. Collections of double varieties are sold at about the same price. Thus you can procure a fine assortment of flowers for a trifling outlay.

Second. Tulips are perennial, and when bulbs are once bought they grow and increase in numbers perpetually. Thus, if one invests in 50 sorts, plants them out in good garden soil and resets them occasionally, they may be depended upon to grow and bloom for a lifetime—a great advantage over coleus, geraniums, etc., which cost much more than tulips, and must be reset every year, and annuals, troublesome because of the yearly propagation they require.

Third. The season of tulips is in their favor. They come and go before tender bedding-plants are set out, and long before flowers from seed-grown annuals appear. They make their growth, flower, ripen and die down so early in the season that the same ground may be occupied later by other plants.

Fourth. The ease with which tulips are cultivated should commend them for general use. They succeed in

any good garden soil, but we observe that they attain the greatest perfection in light, well-drained soil that is very rich. It may be noted that their roots seldom extend beyond 9 inches from the bulb. The bulbs should be set in autumn, September being the preferable time, although they may be planted in October, or even any time before the ground freezes. We set our bulbs with their crowns at a depth of three, or for larger bulbs, four inches below the

surface of the soil.

Fifth. Great beauty, sweetness and variety are found in tulip-flowers. Some of the finest kinds growing on our grounds are named below :

Single Tulips.—

Duc Van Thol, in various colors, beginning to bloom in April here in the latitude of Niagara. Cottage Maid, delicate rose edged with white. Crimson King, brilliant crimson. Duchesse de Parma, red with a distinct yellow band. Grootmeister (see engraving), red in various tints, and pure white. Joost van Vondel, in two colors, deep cherry-red feathered with white, and pure

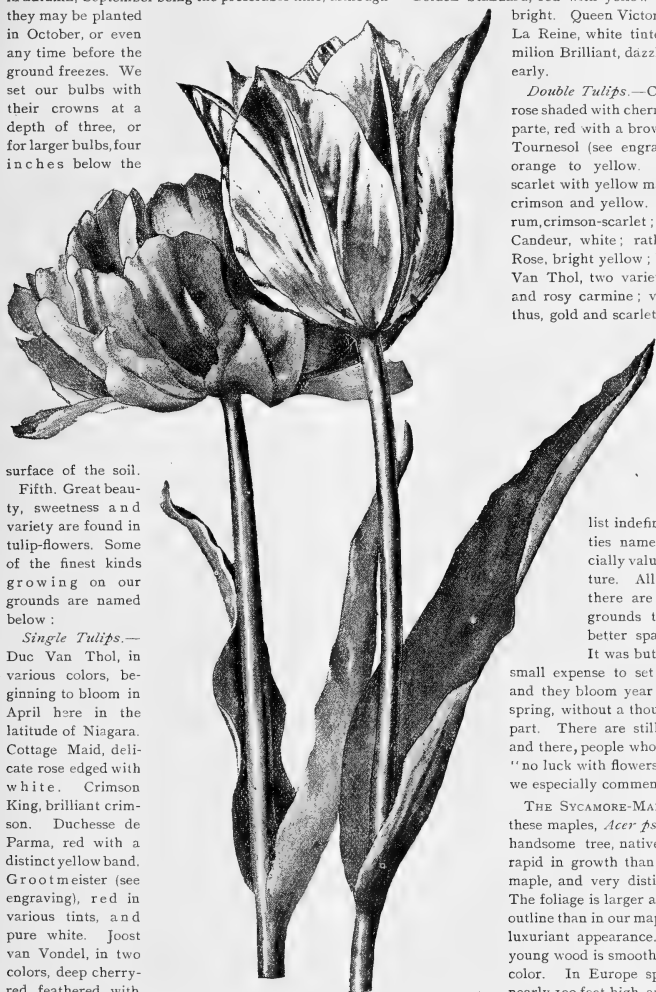
white. Keizerskroon, bright crimson margined with orange-yellow. Purple Crown, purplish-crimson; very early. Pottebaker, in three colors—scarlet, yellow and white. Silver Standard, white with crimson stripes. Golden Standard, red with yellow stripes; remarkably bright. Queen Victoria, sometimes called La Reine, white tinted with rose. Vermilion Brilliant, dazzling vermilion; very early.

Double Tulips.—Crown of Roses, dark rose shaded with cherry; extra fine. Bonaparte, red with a brownish tinge. Yellow Tournesol (see engraving), shaded from orange to yellow. Scarlet Tournesol, scarlet with yellow margin. Gloria Solis, crimson and yellow. Emperor Rubrum, crimson-scarlet; a striking flower. La Candeur, white; rather dwarf. Yellow Rose, bright yellow; late-flowering. Duc Van Thol, two varieties, red and yellow and rosy carmine; very early. Helianthus, gold and scarlet; superb flower.

To the above list must be added the parrot tulips in a number of colors, and the late bizarres and byblœmens, all of which deserve a place in the garden. Indeed, it would be easy to extend the

list indefinitely, but the varieties named seem to us especially valuable for popular culture. All things considered, there are few plants on our grounds that we could not better spare than the tulips. It was but little trouble and a small expense to set out our collection, and they bloom year after year, in early spring, without a thought or care on our part. There are still to be found, here and there, people who complain of having "no luck with flowers." To such people we especially commend the tulip.

THE SYCAMORE-MAPLES.—The type of these maples, *Acer pseudo-platanus*, is a handsome tree, native of Europe, more rapid in growth than our sugar or rock-maple, and very distinct in appearance. The foliage is larger and more rounded in outline than in our maples, and has a clean, luxuriant appearance. The bark of the young wood is smooth and of an ash-gray color. In Europe specimens are found nearly 100 feet high, and with trunks from 6 to 9 feet through. Besides this type we



TWO FINE TULIPS:
DOUBLE TOURNESOL AND SINGLE GROOTMEISTER.

have two varieties of it growing on our grounds. One of these is the tricolor-leaved sycamore-maple, a twig of which is shown on this page, the other the purple-leaved sycamore-maple; both are valuable for ornamental planting. The leaves of the tricolored maple are distinctly marked with pure light yellow, as represented by the lighter parts of the leaves shown in the engraving, and from this the marking varies to a mottled surface and to bright green dots on a yellowish ground. It may easily rank with the best variegated-leaved trees in cultivation. The purple-leaved sycamore-maple is characterized by leaves that are purplish beneath, with reddish leaf-stalks. It is a tree of vigorous growth, the foliage having a remarkably deep green, healthy hue on the upper side. When the leaves are ruffled by the wind the tree presents a very fine appearance



TWIG OF THE TRICOLOR-LEAVED SYCAMORE-MAPLE.

RUBUS PHŒNICOLASIUS.—This plant, which has been widely advertised as the Japanese wineberry, and for which the most exaggerated claims have been made, is now in its fourth season of growth on our grounds. It is anything but a vigorous plant, and it suffers somewhat from freezing back in winter. It has as yet failed to ripen a single berry, although at the date of this writing, July 20, there is a cluster of just nine undeveloped berries on our plant. The plant occupies a sheltered place some ten feet to the leeward of a fringe of bushes. While it might be claimed that it grows too near the bushes to make the test of its behavior a good one, yet in the same place the wild raspberry and blackberry naturally thrive. The handsome *Rubus odoratus* grows vigorously within six feet of the wineberry, and three feet nearer to the wood. Besides, we prevented encroachment of roots from the wild bushes on the wineberry by digging a

cross-trench between it and them. From its trial here we see nothing about the plant to recommend it either for fruit or ornament.

HARDY CACTUSES.—The adaptability of these plants for house-culture is well known, and an interesting class they are. What surprises many visitors to our grounds is to discover, so far north, two species of cactus that are perfectly hardy, living in the open air from year to year, with no more protection than we give hardy roses, and seeming to suffer less than they do in an average season. These two hardy forms are the Missouri prickly-pear (*Opuntia Missouriensis*), with yellow flowers, and the western prickly-pear (*O. Rafinesquii*). The latter has handsome yellowish flowers with a reddish center, from which rise many stamens of a brightly contrasting sulphurous hue. These cactuses were planted three years ago, and are now as fine and vigorous plants as any growing on our grounds. One condition only seems necessary to be observed in their cultivation—to locate them where the soil is not wet. For this reason we have grown them

on the east side of a mound, where they received not only some shelter from the prevailing west winds in winter, but frequently have had the kindly cover of snowdrifts during severe winter weather.

HEPATIC A TRILOBA.—When we observe how well this hardy wild liverwort of the north thrives on our grounds, we wonder that it is not oftener found in American gardens. It is perfectly at home under the dense shade of trees, growing and blooming with vigor, and its clumps increasing in size year after year. Its dense, rounded habit of growth, its smooth, waxen, three-lobed, mottled leaves, and the profuseness of its bloom early in spring, make it the equal of any plant in our large collection on the score of general beauty. Indeed, were we to name a dozen herbaceous perennial plants that have exceptionally fine foliage, the hepatica should be one of them. Many of our spring flowers lose their foliage before mid-

summer, but the hepatica continues handsome throughout the year. The profuse crop of double and single lilac-and-white flowers borne by plants of this genus almost before the leaves appear in the spring is not among the least of its charms. Taking this plant as a subject, we again urge all who love flowers to cultivate the acquaintance of the beautiful wild ones which may be had for the gathering.

MORE ABOUT STRAWBERRIES.—Our experience with strawberries in 1892 has more than ever before impressed us with the fact that we are as yet very far from having the ideal berry for market. Our favorites, Bubach and Haverland, are fine-looking berries, and we have enjoyed them greatly on the table. Their appearance is inviting and their quality fair, but they will not stand the kind of handling that the express companies give them. They soon wilt down and shrink, and dealers are afraid of them, often preferring much meaner-looking Wilsons on account of their firmness. Leaf-rust has been the Wilson's great enemy here and has wiped out all profit and enjoyment from its culture. A great question then confronts us: What variety shall we plant for market?

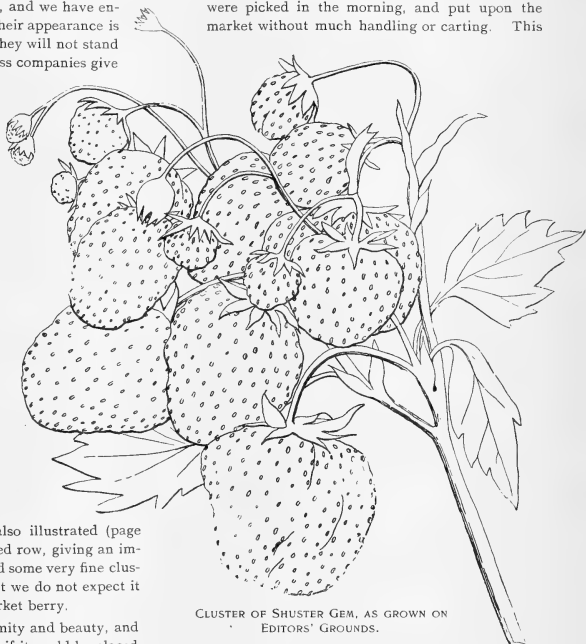
We have searched for the right berry among the new sorts, but have not yet found it. The Wilson's firmness and color seem to be lacking more or less in all the berries. Productiveness we find in many sorts, as also occasional clusters of especial beauty and attractiveness. At one time Shuster Gem, with clusters such as are shown in the engraving, appeared well; but its season is short, and it is not suited otherwise to the needs of our market. Barton, or Barton Eclipse, also illustrated (page 541), makes a thick and wide-matted row, giving an immense yield of pretty fair berries and some very fine clusters. It is generally promising, but we do not expect it to take the place of Wilson as a market berry.

Middlefield is a model of uniformity and beauty, and undoubtedly would bring a big price if it could be placed on the market in a good shape; but it is far too shy a yielder to be profitable even there. Parker Earle, now so generally praised, is remarkably productive, fine and late and reasonably firm. In form it resembles the older Jewell. With us, however, the plant lacks health, and its color is far too light.

In short, the ideal strawberry for marketing has not yet appeared. Long John has some qualities which we would like to see infused into a new sort with healthier foliage. If we could get a berry combining the shape, health and productiveness of Haverland with the dark, glossy color and firmness of Long John, we would not be

far from having our ideal berry for market. It seems to us that efforts in the direction of such a combination should be made. In the meantime we propose to do our best with Bubach and Haverland. The former, notwithstanding its lack of firmness, has possibilities not generally recognized.

The berry display in front of a Buffalo fruit-store during the berry season gave a good object-lesson. On one side stood baskets of Wilson marked "10 cents"; on the other side baskets of Bubach marked "20 cents." Those fine-looking Bubachs, as we learned on inquiry, were brought in by a grower who lives close to the city. They were picked in the morning, and put upon the market without much handling or carting. This



CLUSTER OF SHUSTER GEM, AS GROWN ON EDITORS' GROUNDS.

man had no difficulty in obtaining from 14 to 16 cents a quart wholesale for his fruit, while we were glad to get 10 cents for our Bubachs shipped by rail or wagon 17 miles.

We also found that the mode of shipment affected the price considerably. All the larger growers in this town take each day's picking to Buffalo on spring-wagons during the night. The roads are fairly good; the berry-grower himself drives the team, and is sure to do it with greatest care. The berries are well ventilated during their long ride, and the night-air is cool; consequently the berries are in pretty good shape when they are placed before the customer. Now ship berries by express, and

note the difference. They look like an altogether different lot of fruit when they arrive in market after being thrown about in loading and unloading at the train, and after being jostled in a hurry over the stone pavements of the city. We shipped berries in both ways, and found that it made a difference of nearly two cents on a quart in favor of sending by wagon.

SETTING PLANTS IN DRY WEATHER.—It is easy enough to give directions for setting out celery and other vegetable-plants in hot and dry weather. "Plant in freshly-stirred soil; firm the ground well about the roots, etc.;" all this is easily said. But when you come to set the average quality of celery-plants, with the sun blazing down from a cloudless sky day after day, and see fine plants, taken out of a dish of water beside you, wilt in your hands before you can put them in the ground, you realize the difficulties of the undertaking. To over-

come them we first try to get the best kinds of plants—those with good roots and comparatively little top. Plants of this kind we can grow, but rarely buy. The average vegetable-plant is top-heavy, but we have to set that kind occasionally. When this is unavoidable we watch the weather-reports, and plant at a time when cloudiness or showers are announced for the next day or two. Still, if ready to plant we plant even in cloudless weather, taking all reasonable care with the job. The plants receive a copious watering after they are set, and are left until the next morning. If the day promises to be clear we cover the plants, or the whole plant-bed, if planted closely as we now set our celery, with a thin sprinkling of hay. It is left on for a number of days, or until the plants have taken good hold on the soil, and is then removed, preferably on a cloudy or wet day, when the tenderlings will miss its protection least.

A STRAWBERRY AFTERMATH.

EXPERIENCES GLEANED HERE AND THERE FROM A WIDE TERRITORY.



IT WOULD be strange, indeed, if among the many new and fine varieties of strawberries so constantly being sent out, none, after thorough trial, should prove to be of superior merit; and strawberry-growers would stamp themselves a slow-going guild if no progress in methods of cultivation had been made of late. We wished to have all the advances made during the past season pointed out to our readers, and asked a number of experts for brief replies to the following questions:

Have the highly-lauded new sorts of strawberries proved satisfactory?

What varieties do you now consider most desirable and profitable for home and market?

What new points worthy of general adoption in regard to the planting, cultivation, picking and marketing of strawberries have come under your observation the past year?

Some replies to these questions are given below:

WILSON AND WARFIELD IN WISCONSIN.

The strawberry season just closing has, to me, been most unsatisfactory. The season of 1891 was one of almost unprecedented drouth in this portion of the state, and my beds—about four acres set for this season's crop—were caught by it before they had fairly started. Besides, I neglected to water them at the proper time, and, as a consequence, they made no fine growth of either stools or runners. Under such circumstances I had no right to expect a large crop of fruit, and I have not had it: but my crop of experience will last a long time. Moral: Fine crops of berries grown successively and successfully for many years do not warrant carelessness in berry-growing.

During the last season's drouth, the Wilson, the Bubach, Jessie, Haverland, Manchester, Crescent, Monadnock, Oregon, and a number of other varieties seemed to suffer about alike. Warfield stood the drouth much

better than any of the varieties above named, and it is the only variety that has given me a fine crop of fruit this season. The Beder Wood, Enhance and some other new varieties have not fruited with me. At one time I was much pleased with the Manchester, and recommended it to others, but I now believe that I must throw it away. It is a large and beautiful berry, and with me has been a splendid bearer; but it is difficult to get its blossoms fertilized. Twice within five years they have failed to get well fertilized, and, of course, were not at their best. Another objection is that they will not bear shipping any considerable distance. Still, if I were growing berries for my own family only, I should not like to do without Manchester. Next season I shall probably plow under nearly or quite all of the varieties that I have fruited, except Wilson and Warfield, and, possibly, the Bubach.

We have just finished picking our fourth or fifth crop of Warfield berries, and I must say that I am delighted with them. They really threaten to drive my magnificent Wilsons out of the garden. It is more than thirty years since I obtained my first Wilson plants, and I am certain that I speak within bounds when I say that I have spent more than \$1,000 in time and money in trying to get something better, for the variety is not faultless. But no strawberry that I have ever grown threatened to outrival it as does Warfield. The last spring setting of the two varieties are growing side by side, and the Wilsons are certainly the finest plants for their age that I ever saw, though Warfield makes a splendid showing.

I am following pretty much my old system of cultivation. We make the land very rich, put it in the best of order in every way, and set the plants early in the spring. They are cultivated thoroughly, and when the ground is frozen so hard that a team and wagon can go over the beds without breaking through the frozen earth,

we cover the plants with dry marsh-hay or straw just deep enough to hide them from view. In the spring we take off the cover, haul it away and stack it for use another year, put another coat of fine manure or ashes upon the beds, hoe them over and keep down the weeds until picking time, and then usually gather a crop of 200 or 300 bushels of nice fruit from each acre.

We turn the beds under as soon as the last berries are picked. We are ploughing under one of them to-day (July 12), and to-morrow we intend to set it out with cabbage-plants for the fall crop. The new beds that were set last spring are

filled between the rows of plants with bush-beans, early dwarf peas, onion sets, etc. These will all be ripe and taken off the ground in a short time. The newer strawberry-runners will be trained all over the ground, no two of them being allowed to run in the same place. They will be very carefully watched and cared for, and unless all present signs fail, next season will give us an immense crop of fruit.

Judging from my own experience in the last 25 years, Warfield is the only strawberry that will compare at all in financial value with Wilson; and this year, growing beside the Wilson and receiving the same treatment all the year, it has greatly excelled it.—J. M. SMITH.

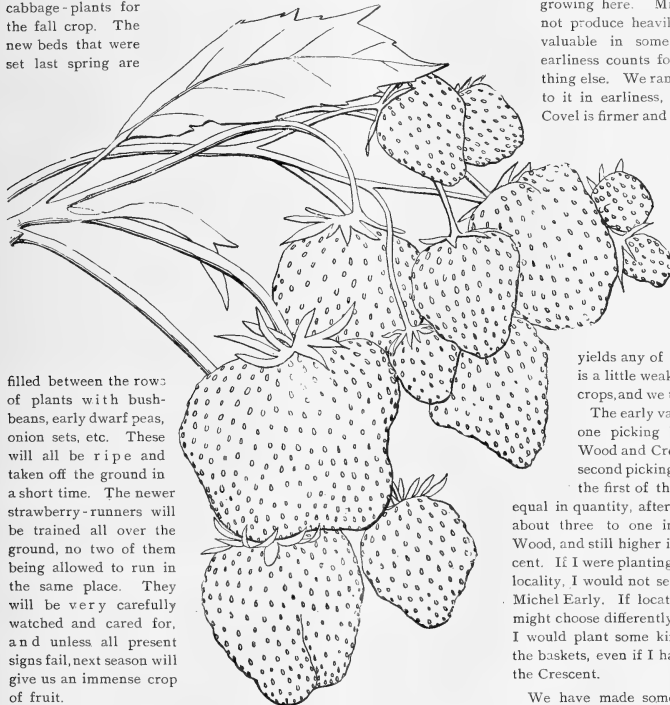
OHIO METHODS OF CULTIVATION.

Two facts in strawberry-culture have been brought out more prominently in the past season. (1.) None of the extra-early varieties are worth retaining for market purposes. (2.) Several new varieties are valuable pollen-

izers. Here in Ohio, our strongest competition comes from regions not far south of us, hence the simple fact that a variety is early counts for nothing unless it is prolific and the berries are large and showy. Berries are usually as low here before our season commences as during its height, and we might as well think of growing a small, unproductive sort alongside of Bubach and Haverland as to grow it in competition with Kentucky and Tennessee berries. This is the reason why Michel Early, Stevens, Covel and Crystal City are not worth growing here. Michel Early does not produce heavily, but it may be valuable in some localities where earliness counts for more than anything else. We rank the Covel equal to it in earliness, however, besides Covel is firmer and has a better color.

The foliage of the Stevens is so susceptible to rust that, in spite of earliness, the variety promises nothing. Beder Wood comes in only a day or two later than the above varieties, and out-yields any of them. Its foliage is a little weak, but it gives good crops, and we think it promising. The early varieties yield about one picking before the Beder Wood and Crescent ripen. The second picking of the former and the first of the latter are about equal in quantity, after which the ratio is about three to one in favor of Beder Wood, and still higher in the case of Crescent. If I were planting for market in this locality, I would not set a single plant of Michel Early. If located further south I might choose differently, but in any case, I would plant some kind that would fill the baskets, even if I had to fall back on the Crescent.

We have made some improvement in perfect-flowering varieties within the last few years. Lovett Early is one of the most promising of this class, even though its name is a misfit. The plants are healthy and productive, and the berries are of good size and attractive. Muskingum is still better in some respects, although it may not yield heavily. Parker Earle is a wonder in growth and productiveness. The plants show some inclination to rust and to overbear; hence, on poor soil and in unfavorable seasons, the berries will not reach a large size. I would think more highly of the variety if the plants set only



CLUSTER OF BARTON, AS GROWN ON THE EDITORS' GROUNDS. (See page 539.)

half its usual number of berries. The last season was favorable here, and Parker Earle produced as much fruit as the imperfect-flowered sorts, but I am satisfied that under unfavorable circumstances it will not do so well. Every fruit-grower ought to give it a trial. Enhance ought to be added to this list, even though many object to its cockscombed, acid berries. Plants of this variety are healthy and productive, yet are not likely to become popular for the above reasons. Farnsworth and Brunette have quality to recommend them. Brunette reminds me of Prince of Berries, but yields much better. Possibly it will prove to be a very profitable market sort. Van Deman is a good market sort, but falls a little below the size required in this locality. Woolverton and Saunders may also be mentioned favorably.

Some new imperfect-flowering sorts worthy of favorable mention are Greenville, Barton Eclipse and Martha. Bubach, Haverland, Crescent and Warfield are planted in this state more than any others, and are generally well liked. The trouble heretofore has been to find some good pollen-bearing variety to plant with them, but we can now overcome this difficulty.

Without going into details to show upon what grounds my opinion is based, I submit the following list of varieties that seem to have little or no merit: Alabama, Hatfield, Westwood, Bessie, Dew (our plants may not be true), Yale, Oregon Everbearing, Felton, Walton, Belle of Lacrosse, Swindle, Gen. Putnam and Porter. Crescent came to me under the name of Boynton.

There was some contention last season regarding gift-crates. Some growers have refused to ship to certain markets because the dealers refused to return the crates, some are using gift-crates extensively and prefer them, and some buy up the gift-crates of the dealers and use them in the local markets. The demand of the dealers is so strong that it will not be long before nearly all growers will be compelled to adopt gift-crates. Cheap quart-baskets are generally used, and but few growers make any effort to get them back for use the second time.—W. J. GREEN, *Ohio Experiment Station.*

THE NEW VARIETIES IN OHIO.

Despite the unfavorable season, Parker Earle, Barton Eclipse and Princess have done remarkably well, and, I think, will be classed with the Bubach, Haverland and Warfield as good and productive varieties. I set out 50 potted plants of Beverly last July, and they produced a fine lot of large, beautiful and delicious berries. It reminds one of the old Miner Prolific. Standard was somewhat disappointing. It is productive but not very attractive. Muskingum impresses me favorably; it is prolific, and the fruit is large and fine-looking. Lovett Early is a favorite with all who see it. The fruit is of good size, fine-looking, and produced in abundance. Yale is not productive here. Leviathan is very large, fairly productive, and of pleasant flavor, but lacking in firmness and color. Gillespie and Auburn, from southern Ohio, are promising varieties, which, I think, will do well anywhere. Saunders and Woolverton, from Canada, are good. Saunders is rather tender skinned, and is some-

times misshapen, but it is so productive, so large and so brilliant in color that I consider it one of the best. Woolverton remains in bloom until its first berries are ripe, and as it has perfect blossoms, it will be a good variety to plant with pistillate sorts. It is also large, productive and beautiful.

The plan of burning over beds as soon as the crop is secured must commend itself to all who give it a fair trial. Besides destroying many insects and leaving the plantation perfectly free from weeds, this puts an end to all rust for that season. As is generally concluded, the very finest fruit may be grown on fall-set plants, and one of the conditions is that they never be allowed to stop growing.—M. CRAWFORD.

A great many of the newer varieties of strawberries fall short of the mark in field-culture, though they may be good in a garden where one can give them the highest culture and close care. I have but few of these new varieties. Parker Earle and Great Pacific were the only ones that distinguished themselves as market berries. Owing to the wet spring the Warfield, Crescent and several of the small-leaved varieties rusted very badly. Warfield, Haverland, Eureka, Cumberland and Parker Earle can be thoroughly recommended for home use and market.

We set strawberry-plants with a spade thrust straight into the earth, using plants with roots not less than 6 inches long; thus set, such plants are absolutely safe from drouth. I plant strawberries 2 feet by 4 feet apart, and never lose more than 6 plants out of 1,000. The plants are set in sod and are never troubled with grubs, although there seems to be plenty of them present.—W. B. FULTON.

THE NEW STRAWBERRIES IN INDIANA.

Edgar Queen is the only one of the new ones that I have tested this season. It pleases me very much. The plant is vigorous and hardy, and the fruit is large and in most respects fine.

Haverland, Warfield, Bubach, Edgar Queen and Gandy are among the best varieties for general purposes here, but we need a good pollinizer. What is it to be? Parker Earle has some good traits, but in other respects is deficient. I fear the plant will not be vigorous enough.—W. H. RAGAN.

Strawberries were good and plentiful here this season. The plants were generally free from rust notwithstanding the very wet weather, and the main crop was marketed in good condition, and sold at fair prices. Bubach, Haverland, Cumberland and Crescent are the sorts most generally grown. Haverland will, no doubt, soon displace Crescent, but Cumberland will retain its place for some time, on account of its value as a fertilizer for pistillate kinds, and for its many other good qualities. Parker Earle is probably the best of the new varieties. It is very late, enormously productive, of fair flavor, and moderately firm, of attractive color and large size, and a strong grower. Its inability to mature all its fruit and to produce many new plants appear to be its only defects. Middlefield and Gillespie produced a few fine

berries, but not enough to pay for their cultivation. Beder Wood rusts badly, and its small, sour berries were worthless. Saunders and Woolverton have some good qualities, but are not worth retaining. Enhance is a strong grower, very healthy and productive, but variable in shape, sour, and not likely to equal such a variety as Haverland. Auburn is a most promising variety. In plant it resembles Wilson, but is a stronger grower and has very healthy foliage. Its berries are firm, above medium in size, abundant, of uniform, handsome shape, and of excellent quality. Jersey Queen is a better late strawberry than Gandy, as it is slightly later and produces more fine, large berries. Brunette, produced here from seed in 1887, was sold here this season for the first time in any market. On account of its exquisite flavor and fine appearance it readily sold for 3 cents more per quart than the best Bubach and Haverland. Its propagation has been neglected, but should it ever be disseminated it will give old strawberry-growers a new sensation in the matter of flavor.—GRANVILLE COWING, *Ind.*

VARIETIES FOR ILLINOIS

The strawberry crop was very light here this season. Of the very highly-lauded new sorts, none have proven themselves good enough to displace the old standard varieties except the Parker Earle, which has done well for the last two seasons, and will be generally planted.

The varieties most grown here are Capt. Jack, Warfield and Bubach. Capt. Jack is not as satisfactory now as it was a few years ago, and a better berry is wanted. Warfield does well when the plants do not stand too thick. It is fairly firm, quite productive, and keeps its color well when canned. Bubach is very productive and large, but soft and of poor quality; still it sells because of its size. The ideal strawberry is yet to come.—E. A. RIEHL.

DEVELOPMENTS IN KENTUCKY.

Last season I fruited 20 of the new much-lauded strawberry varieties, 11 of which have been discarded since fruiting on account of blight or unsatisfactory fruit. These were Gov. Hoard, Mt. Holyoke, Great Pacific, Farnsworth, Middlefield, Tippecanoe, Fulton, Martha, Hatfield, Shuster Gem and Beder Wood. The varieties thought worthy of further trial were Boynton, Crawford, Saunders, Woolverton, Barton Eclipse, Parker Earle, Yale, Walton and Lovett Early. The latter lacks at least ten days of being early when compared with a number of other varieties. Judging from one season's fruiting, the three most promising varieties for home and market are Boynton, Barton Eclipse and Parker Earle, named in the order of ripening, thus forming a succession from medium early to late.

Nothing new has developed in planting or cultivation. With regard to picking and marketing, it has been clearly shown during the last few years that to restore berry-growing to its former paying basis, growers (particularly those in the south) must pull out of the old ruts. The trade now demands something larger and of better quality than Crescent, Warfield, Cloud, Hoffman, and others of this type. More attention must be given to

picking and handling berries for market, if profit and reputation are desired. I have found it pays to incur the expense of rehandling all berries as they come from the pickers. See that no defective ones go on the market. All berries over-ripe or not fairly well colored all over should be thrown out, and the fruit then graded as to size, and stenciled No. 1 or No. 2, according to quality. Fewer acres and larger and better berries will yield a much better dividend than a large quantity of small and inferior fruit. Large berries of good quality will command from 25 to 50 per cent. more on the market than inferior ones.—A. D. WEBB, *Ky.*

FRUIT SCARCE IN MISSOURI.

The strawberry season in this locality lasted only about three weeks, and the crop was the lightest we have had for several years. It has been a good season to test the hardiness of the different varieties. Jessie, Cumberland, Sharpless, and other berries of that class were almost a total failure. Parker Earle bore a great number of berries, but failed to perfect even half of them. Bubach was the most satisfactory large berry I had, but it was late in beginning to ripen, and its season was quickly over. Capt. Jack did moderately well, but the berries were small. May King was poor, but better than many other sorts. Michel Early ripened two or three days sooner than any other kind. Earliness is its only virtue on my grounds. It is a very light bearer of small berries. Haverland was good considering the unfavorable conditions, but many of the berries rotted. One of my neighbors thinks it the best variety he has. Crescent bore a light crop of poor, soft berries, many of them knotty. I think the rains and cool weather prevented the blossoms of all kinds from being properly fertilized. Warfield was the most productive and most profitable variety with me this season. Its first berries were of good size, color and form, and ripened early. It gave us our latest pickings, though the last berries were quite small. It is a great runner, and is apt to get too thick in the rows.

From one acre of new beds set in the spring of 1891, enriched with 40 loads of stable manure and about four tons of unleached wood-ashes, and also nearly an acre of old beds, our pickings amounted only to about 2,000 quarts. Prices ranged from 20 cents a quart for the first few hundred boxes to eight cents for the bulk of the crop; total gross sales, \$190. This was only a third of the fruit and half the income that we would have had in an ordinarily good season.

At this time (July 8) we are nearly through with our raspberry crop. It has paid even worse than the strawberries. Many of the plants are dead or dying, and the berries are drying up. The season of '91 was extremely wet, and we were unable to cultivate our raspberries properly. Grass, weeds, and water played sad havoc with the crop. Our local market in a town of 5,000 inhabitants is almost bare of fruit, and the demand is very great. I have to dodge customers of former years that I cannot supply with berries. Last year fruit was

abundant and cheap, strawberries, nice fresh fruit in good condition, selling as low as five cents a quart. This year, in a bearing orchard of 700 trees there are not enough apples for our own family.—ROBERT E. BAILEY, *Mo.*

CANADIAN METHODS

Actual profits are largest when other people's crops fail and your own are good. This combination is rare, but its occurrence ensures an extraordinary acreage of plants set by your neighbors for miles around.

Strawberries require land that is very heavily manured, and they seem to effectually exhaust the soil for future strawberry-growing. They require good cultivation and many weeding, but the sum total of the labor is not greater than that involved by the occasional fights that the slipshod grower has to encounter. Those who possess suitable mellow soil, and attend to their small-fruits during all the months of spring, summer and autumn, will usually succeed in growing strawberries; those who cannot do this should leave them alone.

Wilson and Crescent have been leading berries here, but just now I have only one favorite—the Bubach. It

yields, for a considerable time, good pickings of large, rather handsome, irregularly-shaped berries, sweeter than those of most varieties and moderately firm. Plants of this variety are strong and multiply rapidly, and the foliage is unusually fine. Warfield is much like the Crescent in quality, and the berries are larger and more easily hulled. Col. Cheney, Seth Boyden, New Dominion, Early Canada, Atlantic, Great American, Monarch-of-the-West, Cumberland Triumph, May King, Jessie, Charles Downing, Manchester, Bidwell, Belmont, James Vick, Kentucky, Glendale, and many others I have tried and discarded. A large, regular, bright-colored, firm, sweet strawberry, abundantly produced by vigorous plants, is what we are longing for, but it is very long in coming.

With some fruit-growers, the mowing-machine is a favorite weeding implement. Many general farmers have read of the marvelous profits of strawberry-growing, and mix the business with haying or general farm-work. As may be supposed, it usually profits them nothing, but they succeed in preventing other strawberry-growers from making a profit.—E. MORDEN.

FIELD NOTES

AMONG ONIONS AND SMALL FRUITS.



YESTERDAY (July 7) I hoed my transplanted onions, which were set out from June 6 to 12. The seed was sown before the middle of April in flats in the greenhouse, but I could not get the plants to grow as they should, partly because I did not get the soil rich enough and partly because of the cloudy, backward weather.

We had rain all through May, and the ground was so sodden and other belated work so pressing, that I put off transplanting until the date given. I had doubts about the advisability of planting so late, but happened to meet W. J. Green, of the Experiment Station, and he advised putting them out, so I transplanted 6,500, and there are not more than 30 missing in the whole lot. The ease with which onions can be transplanted surprises me; plants accidentally dropped on the ground took root as easily as purslane, growing where they fell. I supposed that it was necessary to be very particular about not setting the plants too deep, but Mr. Green tells me it is not necessary to be so particular, and that he has a man who plants 8,000 or 9,000 per day. I could only sort from the flats and transplant 2,500 a day. I stretched a garden-line, and made a mark with a sharpened stick, but I have a friend who marks with a wheat-drill, removing every other hoe. This makes the rows about 16 inches apart, which is the distance I planted the onions, setting them three inches apart in the rows. The ground was a strip reserved on one side of the peas, and we cultivated it every time we cultivated the peas, so we killed several crops of young weeds, and there was very little weed-

seed left to germinate. Nearly a month afterward only a very few had started, and it was light work to hoe and weed a row 14 rods long in 20 minutes.

I did not gain anything in time, for a neighbor who sowed in the open ground has larger onions than mine, but he has had to do a great deal more hoeing and weeding than I, and his stand is not uniform. The labor of weeding and thinning is much greater than that of transplanting.

Next year I shall sow onion-seed by February 12, in very rich earth, and hurry up the plants so as to transplant them about May 1. There is one thing necessary in early transplanting that must be carefully attended to, and that is hardening off. A good many think that because the onion is hardy it can be moved directly from the warm hotbed to the open field. This is a mistake. All stuff grown under glass is tender when first taken from its protection, and must be gradually inured to the outdoor temperature. My wide awake friend at the Ohio Experiment Station had some onions frost-bitten from insufficient hardening, and a gardener friend who grows thousands of early cabbages lost heavily from the same cause. He had built a new plant-house, and it not being so easy to ventilate as a hotbed, he failed to get them hardened as much as formerly.

To-day we had our last dish of Kentucky strawberries, though we finished marketing all kinds July 1. Gandy berries, next latest to Kentucky, were about gone at that date. The strawberry season was not very satisfactory, either in price or quantity, and the quality was little better than rain-water stained with strawberry-juice. More than 40 days of nearly continuous rain

prevented perfect pollination and rendered the quality of the berries about as poor as possible. It takes sunshine and hot weather to make flavor and sugar. The large acreage of Bubach, which ripens the bulk of its fruit at two pickings, glutted the market and reduced prices, and I think the growing of so many Bubachs and Haverlands is reducing the consumption of strawberries, as people do not hanker after them as they do after fruit that leaves a pleasant taste in the mouth. Probably the gloomy, rainy weather affected the market also. A heavy rain in the afternoon certainly diminishes sales, and when it comes on Saturday it is quite disastrous.

The wet spring made it easy to transplant all kinds of plants, and new plantations are full and growing finely. I have 77 plants of the new Muskingum strawberry that on July 9 were loaded with ripe fruit, and growing in Zanesville. They were moved that afternoon and

planted two days later, and they all lived and are making runners freely. I know of no new variety that seems to have a more promising future than Muskingum. It is large, in form like the Cumberland, and dark red in color both inside and out. More than all this, it has a perfect blossom not easily killed by the frost.

To-day we have the first good picking of Palmer raspberries, although a few were ripe July 1. Planted side by side with Doolittle, the latter furnishes two good pickings before the Palmer, though the Palmer afterwards makes up for its tardiness in large size and abundant yield. Shaffer shows a few ripe berries to-day, but Hilborn has none. Cuthbert and Golden Queen show here and there a ripe berry, while Turner has already produced two full pickings, bringing 14 cents a quart, wholesale. Despite its soft berries and weed-like growth, Turner is a great favorite in some localities.

Summit Co., Ohio.

L. B. PIERCE.



CELERY-GROWING IN FLORIDA.

SOME HINTS OF VALUE TO ALL GROWERS.



OR several years a small quantity of celery has been grown for the supply of the great tourist hotels of Jacksonville and St. Augustine, and good prices have been obtained for it, especially in the first years of the undertaking. As high as \$1 a bunch was frequently received for it in February and March some years ago, but lately the acreage has been increased, so that 85 cents a bunch has been about the best price obtainable in Jacksonville and Atlanta, the price dropping to 35 cents in April and May. It has been found that about 25 acres would supply the demand in the two cities named. This year two or three venturesome growers have dared to offer Florida celery in New York in competition with the famous article from Kalamazoo and other points, and these offerings have been well received. Some of the earliest shipments sold in New York for \$6 a case—about 60 bunches—and from that price down to \$4.50 when it arrived in good condition, and much less when in bad order. Shipments by all-rail express have gone through in good order, but some that were sent in steamer-refrigerators spoiled.

B. H. Alden, of Lawtey, Florida, sows his seed in mid-summer. To protect it from the drenching rains and hot sunshine of the summer "rainy season" he sows it in beds sided up with boards about a foot high, on which coverings can be laid. After making the surface very fine and smooth he sows the seed, and does not cover it with earth at all, but spreads gunny-sacks over it and sprinkles

them twice a day. The beds are covered up dark and tight, and this gives a warmth which germinates the seed in about three days. It would require ten days or more to sprout it under ordinary methods and conditions. As soon as the seeds begin to sprout, the gunny-sacks are removed and placed on the boards covering the beds. During the day the ends of boards are lifted here and there to give the plants air. The process of hardening them to the light and sunshine is accomplished gradually by the removal of the sacks, spreading the boards apart, and finally removing them altogether—the whole process occupying about three weeks.

In this way Mr. Alden secures an almost perfect stand of celery. To protect the plants against vermin, chiefly flea-beetles, which are thick, he sprays the beds with a strong infusion of tobacco. The plant tops are snipped off now and then with a sickle or with shears, to make the plants grow stocky, and a thousand or more seedlings are removed and potted for several weeks.

For his earliest crop Mr. Alden transplants in November. To prepare fertilizer for his beds, he has several tons of muck from a cypress-swamp dug and dried. With this he heavily litters his cow-stalls. This is stirred occasionally to make it absorb all fertilizing elements and mix them thoroughly. With a mass of this, measuring perhaps 5 cords, he mixes 200 pounds of Florida soft phosphate, and firms it down with water in which has been dissolved 25 pounds of high-grade sulphate of potash. It is allowed to heat somewhat two or three times, to destroy germs and seeds, but not enough to "fire-fang"

before it is turned. This compost is strewn liberally in the furrows, and the plants are set above it in rows about four feet apart.

Cultivation and bleaching go on here much in the same fashion to which the northern reader is accustomed. Mr. Alden tried some stiff paper cylinders over a few plants, but their effect was not satisfactory, and he soon abandoned it for the banking system. His soil is a stiff, heavy sand—locally known as "flatwoods"—with a very slight inclination to the east. There is a subsoil of clay about 18 inches below the surface, that retains water and fertilizer well. This sand can be shaped up stiff and strong, almost like iron-molders' sand in a foundry. The banks reach almost to the top of the spade-handle, and run up nearly to a feather-edge on each side of the

plants. When smoothed and firmed with a spade they will turn water like a roof.

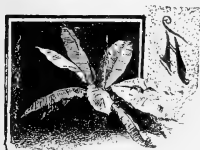
The variety most grown is Boston Market. It was ready for use in January, and we ate it for three months fresh from the beds. Some of the stalks were bleached 18 inches all were crisp, nutty and free from rust. A neighbor who did not use any soft phosphate, and whose plants did not grow so thriftily, had some rust. I have seen Kalamazoo celery in the Jacksonville markets that was decidedly more rusty than Mr. Alden's crop.

There is plenty of good celery-land in the flatwoods and hummocks of Florida, but the flatwoods land needs to be carefully selected to avoid iron-stains. This, I think, would make the celery-stalks rusty.

Bradford County, Florida. STEPHEN POWERS.

SUBTROPICAL PLANTS FOR WINTER.

LISTS FOR THE AMATEUR.



FINE selection of winter-blooming plants, suited to the warm-temperate, subtropical or tropical house, would be so easy for any one to grow that the scarcity of such collections is remarkable. I do not use the terms

"greenhouse" and "stove-plants," as they are not well understood. Any structure is called a greenhouse, irrespective of temperature. Subtropical plants are, perhaps, the most abundant, but very many of the purely tropical plants also will exist in a temperature ranging from 55° minimum heat to 80° or 90° maximum, with sun.

My list shall be an amateur's list, and the method of culture adapted to a scarcity of labor. The plants named may be propagated during March, and treated precisely as are bedding plants. Set them in a good, rich portion of the kitchen-garden, in rows about 2½ feet apart. A distance of 2 feet apart in the rows gives sufficient room for almost any kind of plants from a three-inch pot, while for such sorts as Libonias, for instance, one foot is enough.

Lifting from the ground and potting should be done from September 1 to 15 in southern climates, and from September 15 to 30 south of New York—as much to benefit by the natural heat and moisture, as to escape frost and chilly weather. It is astonishing how great a difference a week or two makes in transplanting at this season. A friend of mine asked my advice about lifting and potting some very fine dwarf dahlias. This was early in September. I told him he would succeed if he did the work at once, and fail if he delayed it. He lifted one plant there and then, and at the end of the month several more. I saw them all during October. The one was the picture of health, the others were dying off.

The temperature of the earth and the moisture of the air both aid in filling pots with roots early in September.

In some localities the plants, after potting, may stand in the shade of trees, and be syringed and watered there until rooted; in other cases the roof of a house had best be shaded for them, and the atmosphere within kept saturated with moisture. In the tropics, even during the height of the dry season, the wet and dry-bulb thermometers rarely vary more than 5° or 6°, while during the rains they read evenly all the time. Hence the need of constant syringing in a tropical plant-house, and shading to check evaporation. This is absolutely necessary with plants recently lifted, mutilated as their roots have been to a greater or lesser extent.

A soil composed of equal parts of rotted sods, thoroughly rotted manure and leaf-mold, with enough sand to give the whole a sandy appearance, will suit all the following plants: *Abutilon*, *Hibiscus Chinensis*, *Linum trigynum*, *Impatiens Hookerii* and *platyptala* (plant these in shade), *Inga splendens*, *Grayia Sutherlandii*, *Begonia hydrocotylifolia*, *manicata*, *Verschaffeltiana*, *longipes*, *Malabarica*, *subpeltata*, *nitida*, *suaveolens*, *Ingramii*, *fuchsioides*, *f. alba*, *metallica*, *hybrida multiflora*, *rosea multiflora*, *semperflorens*, *s. rosea*, *Weltonensis*, *W. alba*, *coccinea* and *argyro-stigma*. From the last two varieties I obtained a seedling with pink flowers, and placed it in the hands of Hallock, the florist. These three begonias, if well grown, will clothe with bloom a rafters 12 feet long.

Begonias do well planted outdoors in shade, if the soil be light and fertile; otherwise they do best in pots. Grow them from cuttings taken in March, and shift them about three times during the summer. Grown in a moist, shaded house, they form fine plants.

Luculia gratissima is a beautiful plant, and I wonder that it is not more grown. Its treatment is almost the same as that of poinsettia, except that the drying off must not be so thorough. After it blooms plunge the pots in ashes in a cooler house than the one it grew in, or at the cool end of the same house, and withhold water sufficiently to bring off nearly all the leaves.

Jasminum hirsutum and *J. grandiflorum*, *Cyclamen Persicum*, *Primula Chinensis*, *verticillata*, and the *denticulata* section all do well planted in the shade, in well-drained soil.

The plants named below may all be planted in houses in full sunlight, unless otherwise specified: *Tabernaemontana cymosa*, *Allamanda nerifolia*, *Datura Wrightii* and *D. sanguinea*, *Solanum capsicastrum*, *torenioides* (give them partial shade), *Tecoma australis*, *Thunbergia Harrisii*, *T. laurifolia* and *T. chrysoptera* (south of New York), *ruellias*, *Justicia speciosa* (splendid when well grown, but fugitive), *Machaya bella* (to be well dried in early summer and planted out

late), *Eranthemum pulchellum*, *E. Cooperii*, *Libonia floribunda*, *Clerodendron fallax*, *C. fragrans* and *C. nutans*, *Plumbago Capensis*, *heliotropes*, *Jatropha pandurifolia*, *Pedilanthus tithymaloides*, *Poinsettia pulcherrima* and its varieties, *gastonia araliis*, *tupidanthus*, and the tropical *hederas*, if fine foliage and curious flowers are appreciated; *Canna iridiflora* (in fashion under a new name), *Strelitzia Reginae*, *Schizostylis coccinea*, *Iris Chinensis* and other forms, *Amaryllis purpurea*, *Clivia nobilis* and *C. miniata*. Give shade to the *clivias*, and take care that the plants which grow in sunlight do not get too dry.

New Jersey.

JAMES MACPHERSON.

PRACTICAL NOTES ON PANSY-GROWING.



PANSY-FLOWERS as wide as the columns of AMERICAN GARDENING, of perfect form and in colors unsurpassed by nature or the artist's brush, might easily be grown in the gardens of all the readers of this magazine. The object of this paper is to help all

who love pansies to grow such blossoms.

Good soil, seed and location are matters of first importance in pansy-culture. Fine seed is produced only by the most careful attention of skillful growers, and is never found at the so-called cheap seed-stores, though it need not be very expensive. Failure is possible with good seed; it is certain with that which is not good. The site for a pansy-bed should be cool and airy. Often pansies are grown two or three to a six-inch pot, in cool, partially-shaded windows. Here at the north we grow pansies in the full sun of summer from seed sown in April and early May. Our finest flowers appear in September, after the heat of summer is past. Further south, or where it is very warm in summer, they should be partially shaded from the hottest sun by cloth screens. Still further south, where they cannot be grown in summer, they should be started just after the summer heat is past, and grown through the cool season.

The soil for pansies should be cool and damp, and made very rich with old well-decomposed manure worked into the earth to a depth of at least 8 inches. If the soil is prepared a month or two before the seeds or plants are planted in it, they do better. If manure cannot be obtained, use the best commercial fertilizer you can get, but stable-manure is by far the best and cheapest. A common fault in growing pansies is to crowd the plants. Each one should have at least a square foot of surface on which to grow; plants will cover the ground when they are four to five months old, and small, crowded plants cannot produce large flowers. The flowers should be removed as soon as they begin to fade, to save the vitality that would be used for seeds to produce other flowers.

Pansy-seed may be sown at any time. Seedlings will be large enough to transplant in 40 or 50 days after sowing, and should be reset before the flower-buds form. If

well cultivated, pansies flower in 60 days from the time of sowing the seed. If you wish fine plants in early spring for summer blooming, sow seeds in boxes in the house, in hotbeds or coldframes, or in the open ground as soon as the soil can be worked well. Cover the seed $\frac{1}{8}$ to $\frac{1}{4}$ of an inch deep with light soil. If the sowing is done in a box, make the rows an inch apart and put the seeds an inch apart in the rows. In the other places make the rows 3 or 4 inches apart, and sow 2 or 3 seeds to every inch of row. They germinate in from 8 to 20 days. The soil should not get dry on top until the seeds have been up a week; after this let the surface of the soil get dry between each watering. If the roots are kept constantly wet, the pansy-leaves turn brown and red, indicating an unhealthy state, which may soon end in death. Pansy-seed germinates in a low temperature, and the plants must be kept cool or they will grow up tall and slim; too much heat and moisture will cause them to damp off.

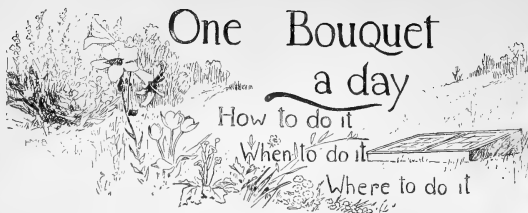
If plants are wanted for bloom in winter or early spring, the seeds should be sown outdoors after the summer heat is over. Water them well and shade them by means of boards or slats. As soon as the tiny seedlings appear above ground remove the boards, so that the plantlets may have light and air. If these plants are to bloom in spring, pinch out all flower-buds that appear in winter, and cover them lightly with hay or evergreen boughs. Too heavy coverings smother and choke pansy-plants. A fresh lot of plants should be grown every year.

Do not be disgusted with a new strain of pansies because young plants which begin to bloom in the heat of summer give weak, tiny flowers. During cool showery autumn or spring weather the same plants may give coveted two-inch blooms. For good flowers the plants must be vigorous and grow rapidly.

Plenty of water and liquid stimulants given at blooming time will give fine, large flowers even in midsummer. Pansy-blossoms are much prettier in early morning or at night, when the air is cool, than during the heat of the day. A strong wind or heavy rain spoils all the beauty of a bed until new flowers appear.

Maine.

DAVID B. WOODBURY.



TAKING THOUGHT FOR THE MORROW.

Field, forest and garden still abound in flowers. Just now—early in September—there is an embarrassment of riches. In gardens the autumn queen is beginning to open her buds, surrounded by scores of still lovely attendants, but the wildings are lavish and riotous in beauty and not to be eclipsed. Golden-rod and asters, gentians cardinal-flowers and tall, filmy ferns are scattered everywhere, bewildering the soul of the bouquet-gatherer who plucks them in careless, prodigal, Bohemian-fashion until his arms hold great sheaves, and then wonders, vainly, what in the world he is ever to do with them all.

But there is a crispness in September air that suggests coming frosts and if one would have flowers for "one bouquet a day, every day in the year," it is time to take thought for the morrow. The artist has made our model bouquet very simple and sketchy, and has furthermore declared that it must not be costly. "For two cents;" what more would you have? The prettiest bouquet-flowers are the sweet, simple, companionable ones with long, pliant stems, that wherever or however placed—thrust carelessly into a woman's belt or hair, pinned upon coats, arranged loosely in bowls and vases, or twisted by children into wreaths and chains, grace in a charming, natural way any spot where fate may fling them. Plenty of good green is indispensable for bouquets, as also are fragrance and bright, softly shaded flowers.

To grow one's own flowers for cutting gives much more pleasure than merely buying them. "Where to do it" must be in any space available for gardening, of course. Flowers, if you really love them, will grow for you in almost any place. Old Canon Hole laid down the first broad principle of horticulture, as well as of rose-growing, when he said that whoever would have beautiful roses in his garden must first have them in his heart.

Instinct, close observation, and experience will all be teachers of "how to do" this all around the year flower-growing, and this page of AMERICAN GARDENING will be devoted to helping those who care to help themselves in the matter. As for "when to do it"—now is a good time to begin. September is the best month for transplanting wild-flowers—between pages 513 and 520 we are told just how to do it—and some of them are lovely for bouquets. Then, too, in outdoor gardens there are still some fine young plants that have been laggards until now, and are just sending out full first crops of buds. Annuals they may be, a gay salvia perhaps, an *ageratum* with

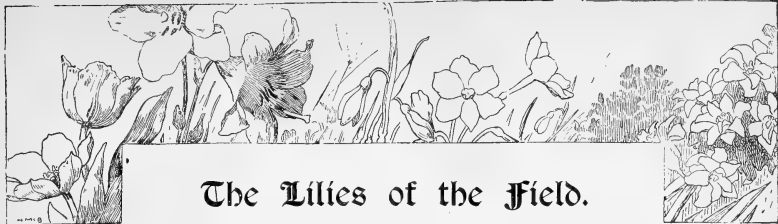
graceful, plummy clusters of cool delicious blue, or Swan River daisies, swaying like blue and white butterflies upon long, graceful stems; but annuals are not to be despised for winter bloom. Lift and pot them carefully and they will blossom gayly indoors for a long while.

Any greenhouse plants that have been calmly summering on benches under trees must be put under shelter from frosts in September; not crowded into a close room and shut up tightly, but set upon porches or verandas, where they may get plenty of air and yet be safe from frost. Next month there will be time to look them carefully over, select such plants as are needed for winter bloom, or that seem most likely to give it, and to send the rest to the cellar.

On another page, in the "Lilies of the Field" department, full directions are given for planting, during this month and next, all sorts of bulbs for winter blossoming, so that I need not repeat details of culture; but not all bulb-blossoms are fine for cutting. Rich, well-filled spikes of hyacinths that, growing on their own roots make a fine display, are too stiff and heavy for this purpose. Only the single, snowy bells of the little early Roman hyacinth are for effective bouquets. Freesias and lilies-of-the-valley at once suggest themselves as popular flowers, adaptable and easy to grow. "Pips" of valley-lilies, for winter bloom, must be extra strong and plump. One cannot have too many of them, and I like to grow them in long narrow boxes filled with moss, that fit the window-sills. Wait until the crowns have had a good, hard freezing, then select and pot the strongest ones from garden clumps. *Narcissus poeticus* and Paper White (polyanthus), anemones, ranunculus, snowdrops and lilies all force readily in winter, and all are fine for cutting.

The "fore-handed" gardener must take thought not only for the morrow but for the next year. Some annuals and perennials make finer, earlier-flowering plants if their seeds are sown in autumn. Soft mellow beds of soil are "made up" in sunny sheltered places on the lawn, and during September we sow in them seeds of myosotis, gypsophila, lychnis, silenes, nasturtiums, collinsia, sweet-peas, mignonette and pansies.

Pansies, violets and mignonette one must have all winter, and they cannot be grown in windows of warm rooms. The best way is to grow them in hotbeds or cold-frames, like the simple structure shown in the heading of this department.



The Lilies of the Field.

POTTED FOR THE HOUSE.

September and October are the months when we may do a good deal of work among bulbs, both outdoors and inside. The latter month is the time for planting many bulbs for house or conservatory, and this class of plants can be so heartily commended for indoor culture, that every amateur may indulge in them. Although we most frequently see tulips or hyacinths in the house, there are many other charming bulbs which may be used here. One of the most attractive is the freesia, which has been grown very extensively by the trade for several years past. Like many of the loveliest small bulbous plants, it is a native of the Cape of Good Hope. The flowers are tubular and pure white, with a yellow blotch on the lower petal. They are extremely fragrant, and are borne on a long scape, the blooms erect. The bulbs should be planted in October in a light soil, kept in a shady place and given a moderate supply of water. When they are well started put them in a sunny window and water them freely. After flowering the bulbs are dried out and put away until time for planting again. The freesia is a very useful bulb for a retail florist who grows his own flowers. It is admirable for cutting, and has been much in vogue.

Another Cape-bulb that is thoroughly satisfactory in the house is the *ixia*; it is very pretty, and not at all common; the flowers are freely produced in spikes, and are very showy. *Ixia crateroides* is perhaps the most showy, being a vivid scarlet, while the mixed varieties will give us differing shades of red, orange, yellow and white. They are useful flowers for cutting. The bulbs should be planted in October, in a sandy soil, about an inch below the surface. They should then be put in a cool cellar, covered from the light, and watered but little until flower-spikes show. Then bring them to the light, giving plenty of sunshine and water. After flowering they should be treated like the freesia.

The *lachenalia* is another bulb admirable for winter-flowering. It is quite uncommon and attractive. This plant has thick spotted leaves and erect flower-stems bearing a raceme of pendant flowers. There is a long list of varieties, all of which are natives of the Cape of Good Hope, excepting one variety from Persia. The bulbs may be potted in September, preferably in peat and sand, and left outside until frost. They bloom freely during the winter, and bear forcing well. They should receive little or no water when not in a growing state. For some years past there has been a growing taste for pot-lilies, confined almost entirely to the white

varieties, which are all classed comprehensively as Easter lilies. The quantity of these plants sold in pots about Easter is almost incredible; they find their way amongst all classes, rich and poor alike, and year by year we note an increase in the number of amateur growers who try their culture. A visit to one of the great lily-growers is a rare treat; the thousands of stately plants, each topped by a snowy crown of flowers, present one of the most beautiful sights the greenhouse affords. There is no secret in lily-culture; select good plump, juicy-looking bulbs, that give one the assurance of freshness, and plant them in September or October—not later. The best soil is a mixture of loam and peat, with a little powdered charcoal and fine sand. Abundant drainage should be provided. The bulbs are large, and produce a quantity of roots, so that a large pot is needed—a ten-inch size being suitable. The bulbs should be planted about two-inches below the surface. The pots are usually put in a frame, and well covered with leaves or ashes, to protect the bulbs from both frost and light. When young shoots appear the pots may be brought into the light, and forcing proceed. Before the plant begins to make growth above ground it requires very little water. The lily does not require any sort of stimulant, except when it is just about to flower. The favorite Easter lily at the present time is *L. Harrisii*, the Bermuda variety. It differs but little from *L. longiflorum*, but is considered better for early forcing.

The old-fashioned Madonna lily, *L. candidum*, is excellent for forcing; it produces a quantity of snowy flowers on each stem, and is a very free bloomer. This is also an excellent variety for outdoor culture because it is so thoroughly hardy. It may be seen sometimes in old gardens, forming a perfect forest of whiteness. It should be planted in September or October, and is not at all particular as to its location; any ordinary garden soil seems satisfactory. This is a very old variety, having been introduced from the Levant in the sixteenth century. It appears in many paintings of the Madonna, especially those of the Italian school, hence its popular name. The Madonna lily is profusely grown in Europe, being the chief feature in many cottage gardens, and here we frequently see it in old country places. It is not to be despised by the florist for cutting purposes.

Another lily excellent for forcing, which will brighten up a place wonderfully, is *L. tenuifolium*, sometimes called the Coral lily. It only grows about eighteen inches high, the stem being very slender, but it bears a

quantity of showy scarlet flowers, which form a glowing contrast to the deep shining green of the leaves. It should be planted in a rather sandy loam.

The glorious *Lilium auratum* may be forced with perfect success, though one seems to see it but rarely among amateur collections used for this purpose. It is admirable in a conservatory, and quite striking when seen among decorative plants. Still, it seems to find conditions most suitable outdoors. It should be planted at this season, and prefers a peaty soil, though we have seen it doing well in a rather heavy loam. In selecting bulbs of this lily, indeed in selecting bulbs of any lilies, large heavy ones should be chosen. This season a very large quantity of *auratum* blooms have been seen in the New York market, making a fine show in the florist's windows.

Most people are now familiar with that narcissus variously known as Chinese Sacred lily, Chinese New Year's lily, etc., which so often forms a celestial window-garden in the laundry of our friend, Ah Sin. This is a form of *Narcissus Tazetta*, and is remarkably floriferous, producing numerous flower-stalks, each bearing a truss of sometimes single and sometimes double flowers. The bulbs are very large, with numerous offsets, each of these offsets bearing flowers. The greatest peculiarity of this narcissus is its semi-aquatic nature. We usually see the bulb placed in a flat dish filled with pebbles and water. It may also be grown in sand or gravel, kept very wet. All bulbs are better for being in a moist atmosphere, but this is almost an impossibility in our super-heated winter-dwellings.

BULBS IN THE HOUSE.

ALL ABOUT GROWING THEM.—If I were an amateur, I would not try many of the kinds of bulbs advertised for window-culture, but would confine my selection to hyacinths, tulips, daffodils, freesias and *Harrisii lili.* These will give a pleasing variety of bloom, are easily cultivated; and are showy and beautiful bulbs.

A good compost is quite important and can be made by using one-third of garden soil, one-third old, thoroughly rotted manure, and sand in the same proportion. The amount of sand may seem large but try a compost made up after this formula and I think you will be pleased with results. I am an earnest advocate of liberal quantities of sand in all soils for pot-plants, with a few exceptions—and "exceptions prove the rule," they tell us. Mix the loam, manure and sand well, until you have a light, friable mass.

Do not use large pots, unless you plant several bulbs in a pot. I generally plant three hyacinth or tulip-bulbs in a six-inch pot. Four-inch pots are large enough for single bulbs of either of these plants. For large bulbs of *Lilium Harrisii* I use a six-inch pot, or pot three good-sized bulbs in a nine or ten-inch pot. Tulip-bulbs I cover about one inch deep. Hyacinths I plant about half their depth in soil. In potting the Bermuda lily, I fill the pot only about half full of soil and press the bulbs into the compost. As soon as they put up a stalk,

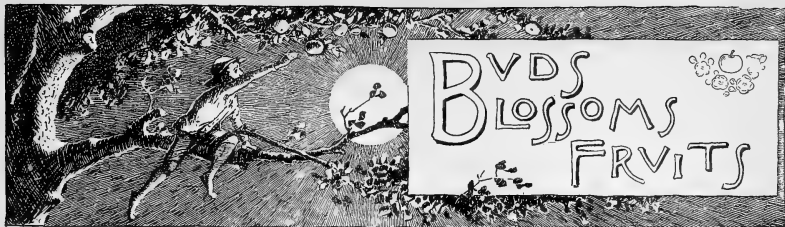
I add soil, and continue to do this as the stalk grows, until the pot is full. This practice does not generally prevail, I know, but it is one based on sound principles. The stalk of a lily throws out roots for its support *above the bulb*, and if you wish to secure a firm, strong growth you must set the bulb deep enough to allow you to give soil enough above it to contain these roots. Plant the bulb only an inch or two under soil and the flower-stalk has but little support, and you must tie it to a stick to prevent its being broken. Plant the bulb deep enough in the pot to allow four or five inches of soil above it and the stalk will require no support.

Potting for winter-flowering can be done any time after September, or *in* September, if you wish earlier flowers. When you pot your bulbs, water them well, then set the pots away in a *cool dark* place to allow roots to form. Plant a bulb in spring, and roots and top make simultaneous growth, so that you have weak, unsatisfactory bloom. It is the same when you plant bulbs in pots and put them at once in a warm, light place. If you want good flowers from potted bulbs you must put them away in the dark for at least six weeks to form roots. The cooler the place, provided they do not freeze, the better.

When you bring bulbs to the light, do not put them in a very warm room, or they will make a weak, rapid growth, and very often the buds will blast. If you have a room that is proof against frost adjoining one in which fire is kept, keep your bulbs there. The cooler you can keep the air of the room in which your bulbs bloom, and have it above frost, the longer the flowers will last. If hyacinths show a tendency to develop buds in a little bunch down among the leaves, make a cap of thick brown paper, like a cone, cut off its apex and slip the cone over the pot. The flower-stalk will reach up toward the light coming in through the opening at the top, and in this manner you lengthen it.

In selecting tulips for pot-culture, get single sorts. They bloom better than the double ones, and are really more desirable in all ways. Among hyacinths, too, the single sorts are best. The Roman varieties are favorites of mine. They send up several spikes of bloom, while the ordinary varieties seldom have more than one. Their flowers are arranged more loosely on the stem, and have a less stiff and formal effect. They are delightfully sweet, and come in pink, pale yellow, blue, and white. They are single, and excellent for cutting. Tulips, hyacinths and daffodils generally bloom in about a month after being brought out into the light. By keeping the pots in the dark the time of flowering can be retarded, so that one can have a succession of bloom. It is not easy to say when the *Harrisii lily* should be brought up in order to have it in bloom at Easter, because the conditions under which it is grown vary so much that advice seldom hits the mark. In a warm room the flowers come on rapidly; in a cool room, slowly. From this you can get an idea that may help you in governing the blooming period somewhat. If the plant seems developing too rapidly, put it in a cooler place; if too slowly, give it more warmth.

EVEN E. REXFORD.



INVITATION TO READERS.—We want short, practical notes on cultural methods and devices, and sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc. Therefore, for any available article occupying a half-column or so of space, or for any sketch or photograph from which an acceptable engraving can be made, a year's subscription to this magazine will be given. Please always so specify when contributions are sent in under this offer.

I. LITTLE TWIGS.

BEGIN to plant bulbs.

IN JAPAN, hothouses are unknown.

FALL PLANTING is preferable for peonies.

PLAN NOW for plenty of snowdrops next spring.

LIFT FROM THE BORDER EARLY all plants that are to be kept over winter.

YOU CAN GROW TULIP-FLOWERS in the window if you can grow anything.

OUR BED OF HARDY ROSES has not been a day without flowers since May 30.

A TREE-BALING MACHINE has been invented by a Nebraska nurseryman.

THE EARLIER THE BETTER is a good rule for planting Dutch bulbs after September 20 arrives.

DON'T LOOK FOR STRONG GROWTH of root or perfect ripening of fruit without the aid of healthy foliage.

MADAME CROZY CANNA—July 20 finds this the most distinct and attractive flower among hundreds in bloom on the writer's grounds.

A STRAIN OF SILVER-LEAVED POPLAR that would not sprout at the root would be a valuable tree. Cannot we have it, you originators of new varieties?

THE HORTICULTURAL DEPARTMENT at the World's Fair has received, from a gentleman in St. Louis, Mo., three palms and a bamboo, each about 35 feet in height.

GRAFTING-WAX made of bees-wax and rosin, rendered plastic by additions of alcohol, is used and recommended by Prof. Craig, of the Canadian experimental farm.

TRELISING TOMATOES.—No matter how simple tomato-trellises may be, in private gardens they are ornamental and improve the fruit in cleanliness and appearance.

OURS IS AN AGE OF SPECIALTIES.—Even horses can and should be trained to do special work. Note, for instance, the difference in their adaptability in cultivating hoed-crops.

DOUBLING NARCISSUS POETICUS.—It is said by an experienced gardener that this form of narcissus can be doubled by lifting and replanting the bulbs about the time of flowering.

BLACK FLOWERS.—What do we want with black delphiniums, pansies, callas, etc.? We can hardly find room for all our bright and beautiful blossoms without wasting space on such gloomy things as these.—L. G.

TREE BOOTHS.—The base of the big tree that goes to the World's Fair from California, will, it is said, be hollowed out into booths, in which will be sold California wines, fruits, and curiosities of polished redwood.

SUCH ANNUALS as *eschscholtzia*, *Centaurea cyanus*, single petunias, and other ready self-seeders, are perennials in one sense; they perpetuate themselves perennially, if not by root, at least as effectually by seed.

DAHLIA-BUDS will sometimes blast during a dry season. To prevent this, mulch the roots of the plants heavily with straw. The dahlia succeeds best in a rich, moist soil, and is greatly improved by good cultivation.—J. H.

NEMOPHILAS AT WOODBANKS were particularly fine this year, because of the damp weather in May and June. Seed sown May 8 gave us a choice treat of chaste blossoms in delicate lavender, cerulean blue and other tints.

MINIATURE VIOLETS.—A strain of new violets, tiny and exquisitely sweet, has made its appearance in England. The flowers are beautiful in form and color, much smaller than the ordinary type, and the habit of the plant is very dwarf and compact.

THE BLOOD-LEAVED PLUM in AUTUMN does not lose its bright coloring, as does nearly every other tree of similar characteristics, but is rich and bright in foliage-tints until the very end of the season. Other trees of this sort begin to fade in midsummer; for instance, the blood-leaved filbert, after July, is a dull-looking object.

"THE TALKING TREES," is the title of an attractive little art-book from an occasional contributor, Margaret Landers Randolph. She illustrates some of the picturesque and historic trees of Clinton, N. Y., about Hamilton College. The text is a poem upon the subject by Professor Edward North, comprised in his half-century letter to Hamilton College, in 1891.

SULPHUR FOR PINE-TREE BLIGHT.—James Gurney, the veteran superintendent of the Missouri Botanical Garden, and of Tower Grove Park, St. Louis, looks upon sulphur as a complete remedy for blight. When the tree shows

signs of the disease he simply scatters a liberal coat of flowers of sulphur—enough to cover the ground well—over the roots and spades it in lightly.

ENGLISH RHODOENDRONS.—English journals boast of the enormous scale on which choice English hybrid rhododendrons are imported into America. "Many thousands are sent over in March, packed in cases with dry moss, and after a fortnight's journey are said to flower perfectly well. England is not altogether played out yet." Why should we import English rhododendrons when we have so many fine ones of our own, better adapted to our soil and climate, that might be hybridized into as beautiful forms and colors?—L. G.

A NASTURTIUM BORDER.—In setting out some nasturtium-plants this spring, mistaking climbers for dwarfs, I planted a row along the side of a path. To make the best of it, I have since, by a little occasional attention, managed to keep all the runners in a line parallel with the path. Those that obstinately refused to come into the arrangement I simply headed off. The result is highly satisfactory. The different sorts and colors are now twined together, forming a gay and beautiful border.—W. O. EASTWOOD, *Canada*.

PLANT THEM DEEPLY.—If you expect to set some bulbs of the great Washington lily (*L. Washingtonianum*) of California this fall, plant them one foot deep. So we planted ours, and the result in growing and the July bloom of this remarkable species was astonishing. There were 20 lilies out at one time on a single stalk, which was five feet high. A friend who saw the plant says he has never succeeded in getting a blossom from this lily; but he planted the bulbs only 4 or 5 inches deep. A foot seems pretty deep, but it is right.

HARDY SUNFLOWERS are coming to the front. Here they come up in the fall, grow all winter, and in April begin to bloom, continuing until frost. They are a little larger than the perennial gaillardias, and of a deep rich yellow. The plants grow about four feet high, branching freely, and are loaded with flowers. I keep all old flowers cut off. Here the young girls wear them a great deal, as they are almost everlasting, and can be worn with almost any dress. Indeed the sunflower has become as fashionable as many of the blue-blooded hothouse flowers.—MARGARET CAMPBELL, *Louisiana*.

II. THRIFTY SAPPLINGS.

Seedling Fruits.—It is easy to grow seedlings from any of our leading fruits. When parents have not time for it themselves, children, if furnished with the seeds, would enjoy the experiment and develop a taste for horticulture. Some of our best Wisconsin apples originated from seedlings—Wolf River, Pewaukee, Windsor Chief and others—all hardy in this cold climate. We have much reason to be grateful to the originators of these varieties. Of course, every seedling does not prove valuable, but if one out of a hundred is good we are well repaid. Love of the work and perseverance have accomplished much in this line, and will accomplish more.—L. H. READ, *Wis.*

The Nomenclature Committee.—Must the duties of this useful committee of the Society of American Florists be widened to protect our originators of new varieties of plants in England also? According to *The American Florist*, some fine new chrysanthemums, raised by H. Tong, of which he held the entire stock up to last fall, were offered to the public in the catalogue of an English firm before he had permitted a single plant to go out of his possession. At least the names he had given the plants and had registered with the American Chrysanthemum Society were used, and in response to a query sent to the firm by a friend, at his suggestion, they referred to the varieties as American chrysanthemums.

Eel-Worms and Ferns.—In *Garden and Forest* Professor Halsted calls attention to the fact that eel-worms (nematoids) are very destructive to young ferns. In one bed of young ferns that he noticed, the dead plants were separated from the living by a line as distinct as that between the burned and unburned sections of a meadow in early spring. The first leaves of ferns are very small and delicate, and two or three worms are sufficient to destroy a plant, from which they pass on to others. The remedies recommended are heating the soil in which fern-spores are to be sown, to destroy the nematoids, and afterwards keeping them out of the soil with applications of lime-water or sulphur.

Names for Colors of Roses.—F. Schuyler Mathews, in *The American Florist*, critically considers the colors of the Mermet and Watteville roses. While these subjects have "a similarity in delicacy of color," yet they present a strong contrast in point of color-character. The Mermet's pink is yellowish; that of the Watteville is wedded to a yellow, while it retains its color-tone uncompromised. After a careful analysis he would describe Mermet as a most delicate pink rose, composite in character and yellowish in tone; Watteville as dual in color-character, the pink almost pure by itself and the creamy yellow tone of two-thirds of the petal distinctly unaffected by the pink.

Long-Stemmed Carnations.—The remarkable growth in the popularity of the carnation as a vase and corsage flower may be said to have kept pace with the growth of the stems in length. Perhaps even the foundation of our National Carnation Society may be attributed to the last named cause. In any event, the results which have been reached by American florists in raising seedlings with long stems—changing the carnation from a short-stemmed to a race of long-stemmed flowers—is remarkable. Blooms of Hinzie's White carnation have recently been authentically reported as fully two feet long and of corresponding stiffness. The flowers surmounting them were $2\frac{1}{2}$ inches across.

Arnold Arboretum of Boston has this distinct feature, as compared with the great botanic gardens of Europe: its collection embraces only what can properly be called woody growths, while other botanical gardens are largely devoted to herbaceous plants. As a tree-museum, it will, in time, if it does not now, excel every other collection in the world. The area of 150 acres included in the

arboretum will accommodate all hardy woody growths that will endure our latitude, giving them room to develop into magnificent uncrowded specimens. It is a school-garden of which our nation may well be proud.

Vines on the Veranda.—There is no kind of gardening that yields earlier or more delightful returns than the growing of a selection of climbing vines about the house. And besides the reward that comes in the shape of a quick growth of handsome foliage and flowers, there is a gain in appearances from an architectural point of view. From the street or lawn, compare two houses side by side, alike as to their construction, but the one garlanded with

year. Surely the American people, especially in the more northern states, are very far from being fully supplied with tomatoes. While perhaps well supplied and cheap in one section of the country, tomatoes are scarce, high-priced and eaten only as a delicacy in another. There is plenty of room for the expansion of tomato consumption. And when once our own people have their fill of the fresh tomatoes for at least three months, not speaking of the use of the canned article during the rest of the year, we may find ways to supply the growing demand of the people in England and other countries, where tomatoes rarely succeed in open ground, and must



VINES ON THE VERANDA. (From a photograph sent by W. C. Egan.)

a profusion of vines, the other bare, and you will understand to what we refer. Our illustration shows a vine-covered veranda at Egandale. If the vines be of hardy kinds, as is assumed, the effect for the better will be heightened as time goes on.

The Future of the Tomato.—Why should any one talk about over-production of this choice vegetable? There is even less sense in it than in talking about over-production of carrots, or celery, or potatoes. All these are standard crops, with the advantage all on the side of the tomato, as its value is being more and more appreciated, and its consumption is on an increase from year to

year. Surely the American people, especially in the more northern states, are very far from being fully supplied with tomatoes. While perhaps well supplied and cheap in one section of the country, tomatoes are scarce, high-priced and eaten only as a delicacy in another. There is plenty of room for the expansion of tomato consumption. And when once our own people have their fill of the fresh tomatoes for at least three months, not speaking of the use of the canned article during the rest of the year, we may find ways to supply the growing demand of the people in England and other countries, where tomatoes rarely succeed in open ground, and must

be grown under glass at greater cost of production than here. On the whole, a great future for the luscious tomato seems to be assured.

Flower-Growing as a Business for Women.—Four years ago, when our town fair, which is held in August, began, I had a bed of asters about a yard square. They were so bright and pretty that I concluded to put some of them on exhibition. I took second premium on asters, tried again the next year and won the first premium. I also took premiums on other flowers and designs, so that I realized about \$12. The cost of seeds had not been over \$1. The next year we realized about \$30 and last

year \$40. Aside from this, I have sold several dollars' worth of plants each spring. This is no great sum, but when we consider the amount that flower-culture gives back in health and pleasure, it pays. Besides, we feel that we can spend this flower-money as we please. I have enjoyed adding to our new home several extras, such as roses and other shrubs, that I should not have felt like asking my husband for, although he loves such things as much as I do and would be glad to indulge me in procuring them if he felt able. In the spring—in April—I put such annuals as need an early start into a hotbed. Asters, balsams, verbenas, stocks, pansies, etc., require a little earlier start than some others, such as alyssum, poppies, candytuft, and petunias. These last will do very well sowed in the open ground. When danger from frost is over, I transplant seedlings to the open ground where I wish them to grow. When this is properly done, the work in weeding is very light, as it can be done mostly with a hoe, nights and mornings while it is cool.—M. J. S.

Experiences with Asparagus.—My first asparagus-bed was made, with infinite pains and trouble, on the old orthodox plan, with two-year-old plants. For the next bed I raised my own plants from seed and planted them when one year old in trenches about a foot deep, enriched with stable manure. Having a number of roots left over, I planted them with a hoe, just as we plant potatoes. Besides these beds I have here and there through the garden quite a number of volunteer asparagus-plants, which, coming up as weeds, escaped the hoe until they had established a claim to live. Now, of all four beds, the volunteers are the best, because, as I presume, they have the most room. They get no better treatment than the other plants, indeed not quite so good. Between the other three beds of asparagus there is no great difference. I am trying to keep the banks of an open ditch, or small creek, from caving in by having several rows of asparagus planted on each side. The experiment promises well, both as a means of keeping the ditch in order and as the profitable source of a large supply of asparagus.—W. O. EASTWOOD, *Ontario, Canada.*

Fertilizer for Asparagus.—About six years ago some friends in the country showed me an asparagus-plant with stalks of enormous size. It was a stray plant that had been taken from the roadside and transplanted to the garden. I obtained seeds from the largest stalk, and raised from them a bed of ordinarily fine asparagus, but no stalks so large as those of the parent plant. I learned afterward that my friend's plant was probably highly fed with blood, as pigs were slaughtered near where it grew. So I concluded that large-sized asparagus requires a large amount of suitable fertilizer, and that there is probably not much in the selection of variety.—E. W. L.

What One Gooseberry-Bush Can Do.—Several years ago, almost accidentally, a single gooseberry-bush was planted at the end of my row of raspberries, and there it has grown ever since, surprising us with its yield of fruit and furnishing our table with a much-prized relish in winter. The plant has never had a trace of

mildew or blight, and the currant-worm has been kept off with a pepper-box full of hellebore. My record of the canning season for two years back has these entries: "1890, picked six quarts of gooseberries, stewed the fruit till soft, then added sugar at the rate of three-fourths of a pound to one pound of fruit, and cooked the berries gently for an hour; 1891, picked four quarts of gooseberries, saved a bowlful of the juice after stewing them, and next morning strained and made two glasses of delicious jelly." These confections are much liked with meats, and being less common than currant or cranberry sauce, have won much praise from guests. They are rather heavy and rich-flavored, so that a little goes a great ways, and although the record does not seem wonderful, each year's supply has been sufficient for the need of our small family. This plant has received no extra care, being simply kept free from weeds and surrounded at fruiting time by a little fence of sticks and crotches to hold the branches off the ground. Last spring it came in for a mulch of strawy manure when the neighboring currant-bushes were similarly favored, and I expect to have gooseberry jam to give away this year.—PRUDENCE PRIMROSE

Fruit for Food.—Fruit-culture should be quite as closely associated with family use as with market. I have eaten apples all my life, but never learned how to make the best use of them till last winter; it is worth living half a century to find out the real value of this fruit. Now we eat apples half an hour before meals instead of afterward. We eat all we want before breakfast and before dinner. The result has been so decidedly in favor of the fruit diet that we have very largely dropped meat. The action of the acid is then admirable in aiding digestion, while if eaten after meals the apple is likely to prove a burden. We follow the same line in using grapes, pears, cherries and berries. If disturbed by a headache or dyspepsia in summer, I climb a cherry tree and eat all I can reach and relish. In order to have cherries all summer I cover a dozen trees with mosquito-netting to keep off the birds. Currants and gooseberries I find very wholesome, eaten raw from the bushes before going to the dining-table. Nature has prepared a large amount of food already cooked, exactly fitted for all demands of the human system. Our kitchen-cooking never equals nature's. I am by no means a vegetarian or a fruitarian, but am convinced that we have not yet measured the value of fruit as a diet with milk, eggs and vegetables. Some one being told that such food would not give a workman muscular strength, pointed to his adviser's oxen, saying, "Yet those oxen eat no meat."—E. P. POWELL.

Another Alien Competitor.—The American fruit-grower is to have another competitor, or rather, an old competitor is to enter the field in a new form. For a long time the omnipresent banana has been a thorn in flesh of the fruit-grower—especially the grower of small-fruits. The ease and cheapness with which it is grown, the low rates of water transportation, the freedom from tariff duty, enable the vendors to put it on the retail market at a remarkably low price, which considerably curtails

the consumption of small fruits. But another step is to be taken, and the banana will take a form that will greatly enlarge the possibilities of its transportation and consumption. A company has been formed in New York for the purpose of drying and otherwise preparing the banana for food. It is proposed to make the port of Aspinwall, on the isthmus of Panama, the base of operations. A plentiful supply of the raw material can be obtained at this port very cheap during the entire year. The operators will thus have an added advantage over the evaporators and canners of fruits in the temperate climates, who can work only during a portion of the year. Some experiments were made in drying and shipping bananas a year or more ago, considerable quantities ha-

centage of water is considerably less than in either cornmeal or wheat flour, while the percentage of starch and albuminoids is about the same. If the new products suit the popular taste our fruit-growers are likely to have a more formidable rival than even California, with her enormous and ever-increasing fruit supply.—F. H. VAL-ENTINE, *New Jersey*.

The Russian Mulberry for Hedges.—The Russian mulberry does not make a serviceable hedge to turn stock, but for an ornamental hedge there is nothing that I know of equal to it, at least for the west and northwest. It endures the extremes of climate better than any other plant or tree suitable for hedge purposes. The accompanying picture will give an idea of the appearance of a



A RUSSIAN MULBERRY HEDGE IN NEBRASKA

ing been sent from Australia to Europe. These were received with such favor that the business is to be still further developed, and its extension will probably be limited only by the profits that can be realized, as the supply of raw material is practically inexhaustible. The banana is a healthful and nutritious food in its fresh state, and the manufactured product is said to be equally desirable. The company mentioned is planning to prepare it in different forms, either simply dried, as flour or meal made from the dried fruit, or canned. It is claimed that any of these forms can be put on the market so cheaply and attractively that they will speedily come into general use. The shrinkage in drying bananas is shown to be surprisingly small; they yield about double the proportion of desiccated fruit that apples do. The per-

well-grown, well-kept Russian mulberry hedge.—ANDREW ROSENBERGER, *Nebraska*.

Forcing Strawberries.—We are so abundantly supplied with early strawberries from the south that it may seem superfluous to advocate growing them under glass; yet, the small size, acidity and worthlessness of the berries received in early spring are some justification for the more extensive forcing of one of our most delicious fruits. The pleasure to be derived from a crop of first-class, large, luscious berries in the month of March is considerably heightened when we compare them with the quality of the southern product. The expense which the production of fine fruit involves is only that of labor, where a greenhouse is already on the place. Where plenty of greenhouse room is at command, a house devoted exclu-

sively to strawberries would be a decided advantage, and a succession of crops could be matured during the spring months with the aid of coldframes. I have grown and fruited strawberries successfully for years on hanging shelves in a house devoted to bedding plants, and the berries ripened by March 15. Where strawberries are wanted before March 1, a house devoted to their culture will be necessary, and my experience has been that before that date abundant fruiting is very uncertain. My custom has been to layer, in 3-inch pots, the strongest plants procurable as early as they can be had. I prefer the runners from young plants. Use the first plant on the runner and cut the remaining part away, concentrating the vigor of the runner in the potted plant. As soon as the pots are well filled with roots, replot the plants into 6-inch pots, using good friable loam and plenty of well-rotted manure. Place the pots on a bed of ashes, and give the plants an abundance of water. When the weather grows cold enough to affect the soil in the pots, remove them to a pit or coldframe where frost is excluded. Air should be given on every possible occasion when the weather is fine. If required to fruit in March, about January 1 remove the plants from the coldframe to a temperature of 45° to 50°. Avoid a higher temperature at the beginning, as therein lies the most frequent source of failure. After the plants begin to bloom the temperature may be raised to 55° or 60°. It is now quite important that each flower be gone over every morning with a camel's-hair brush, to assist in pollination; otherwise the berries would set imperfectly or not at all. Just before and during the ripening of the fruit, give the house plenty of air. Dampness at this time will cause the fruit to rot, and every effort must be made to maintain a good circulation of air and a dry atmosphere in the house. As to the varieties most suitable for this purpose, I have found Sharpless to be much superior to any of the other varieties tested. It is so amenable to this mode of culture that I can recommend it with confidence. In this simple and inexpensive way delicious strawberries may be had at a time when they will be thoroughly appreciated.—JOHN DALLAS, *Conn.*

A New Way of Grafting Grapes in France.—A French nurseryman, Mr. Martinand, according to the *Gardening World*, has excellent success in root-grafting the grape by the following method: Stocks and grafts are cut at the usual time of pruning, then grafted at once or preserved in sand by the ordinary methods until the time for grafting. The stock has two or three eyes, the graft only one; it is then rather short. The workman has cut both the stocks and the grafts, which are placed on a table within reach. When stocks and grafts have been united, the latter are left without ligatures. They keep their position by simple adhesion. The grafts are tied together, not too tightly, in bundles of from 12 to 15, with two bands of raffia. Then the bottom of an ordinary box is covered with a layer of damp moss. The sides also are lined with moss according as the bundles are arranged. The bundles are placed lengthwise in the box, separated from each other by some bits of moss. When

the box is filled, it is covered over with another layer of moss, 8 to 10 centimetres in thickness. When the operation is concluded, the contents of the box will not be touched for at least a month, except to water the moss from time to time. If it is winter, the boxes are put in greenhouses or heated rooms, and the temperature is kept uniformly low.

If the grafting is done in the cold weather, from March 15 to May 15, for example, the boxes are put into cellars, caves or lofts, away from draughts of air. When there is sunshine the boxes may be put outside without uncovering them, putting them back in the evening. At the end of about a month, owing to the heat and humidity, the union is complete, the radicles begin to bud, the stem of the graft is already several centimetres in length, but the growths made in darkness are white and tender. They are uncovered in a dark corner, and are gradually brought to a brighter light to give consistency to the young tissues. Then they are planted in the nursery, in warm, damp soil, and the young graft begins to grow vigorously. The development of the leaves takes place rapidly, and within the year the new tissue forming the union ripens perfectly, as also the young branch, and by the planting season the grafts will be well joined and vigorous, and can be placed in position in all security.

As moss is a bad conductor of heat, there are but very slight variations of temperature in the box; the grafts have the same amount of heat and moisture throughout, they all unite well, and the unions are not only on one or two points of liber in contact, but along the entire length, therefore they are perfect and solid.

Tuberous Begonias.—When I read of them I really thought the size of the blossoms was exaggerated, but early this spring I obtained some tubers and set them out in soil composed of leaf-mold, well-rotted manure and sand. Now (June 20) the plants are well advanced, and this evening I measured one flower that was a little more than three inches across—wider than any of the four leaves on the plant. It was scoop-shaped before it opened. The color is deeper than pink, but not scarlet. On the same stem are two buds over an inch long. Another plant has very large leaves and upright, cup-shaped flowers. I have ten tubers, all of which will soon be in bloom. Some are in pots, but I think the ones in the ground are doing best; all get sun and rain as it comes. I know of no other class of plants that will give equal satisfaction in so short a time and with so little care as tuberous begonias.—MARGARET E. CAMPBELL, *La.*

No Excuse for Unattractive Homes.—Nature is lavish in her treasures, and where there is no money in the purse to purchase plants for the adornment of home-grounds, field and copse and hedgerow overflow with beautiful things and furnish them to all freely. For neglected corners, where shade is constant and most cultivated shrubs fail to thrive, I often mingle clematis, the wild virgin's-bower (*Clematis Virginiana*), with *Apios tuberosa*, and let them run riot. For arbors or old fences these same climbers are also beautiful, and *Ampelopsis quinquefolia* is a sturdy and faithful assistant. In

the autumn this wilding is especially brilliant, with its crimson foliage. *Celastrus scandens*, the bittersweet, is also a fine climber. It is slow to start, but once established it never flags. Its orange and yellow berries and its pale yellow foliage make it very desirable for decorations-

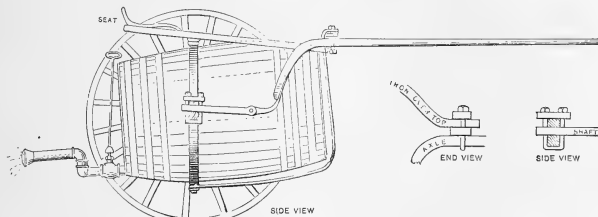


FIG. 1.—A SPRINKLER ON WHEELS. (Side view.)

Many native shrubs are worthy of a place in cultivation. The azalea, commonly known as honeysuckle, is a beautiful shrub, and will repay a little kindness most liberally. *Berberis vulgaris* is beautiful all the year round. Its drooping racemes of golden bells and its brilliant red fruit make it a showy object until well into the winter. *Clethra alnifolia* is the most delightfully fragrant of any of our native shrubs, and while not especially showy, its creamy white blooms increase in size and beauty under cultivation. There is much other native beauty obtainable almost anywhere—native asters in great variety, native lilies, cypripediums, gentians, golden-rods, lobelias—yes, scores of other things that would be eagerly sought in any place where they were not common. *Asclepias tuberosa* for real worth is unequalled. Once well established, it increases in beauty perennially. It starts quite late in the spring, but grows rapidly, and by August 15 forms a compact clump from one to three feet in diameter and about two feet in height, covered with umbels of brilliant orange-colored flowers, which remain unchanged for two or three weeks.—CHAS. PIERSON AUGUR, Connecticut.

A Water-Cart and Sprinkler.—Water for my garden must be carried from a distance, and so I rigged up a barrel on wheels. The wheels of an old wheat-drill will be serviceable for this cart, or old wagon-wheels may be used, as in my case. The axle (I have a forge of my own) was heated and bent until it would reach about half way around the barrel. I bolted 1½-inch old tire upon the axle in the middle of the bent part, then when past the end of the barrel, I bent it straight up, till it came a little above the barrel, then made a short bend at right angles to take the bolt of the singletree of the shafts. I then bolted short pieces on each side to lengthen the shafts, put the shafts on, bent the iron up in front on top of singletree and put the bolt through. Next I made a staple to drive into the top of the barrel, over the iron which comes up in front, and bent a piece of iron over the top of the barrel. This holds the barrel so that it can't rock, and also comes handy if you want to

put a seat on. A sprinkler to sprinkle potatoes can be put on at small cost, and if the wheels are too narrow to span two rows, a pole can easily be put on, with extra nozzle in the middle behind the barrel, so that three rows can be sprinkled at once. All the material necessary

can be found around almost any farm, except the sprinkling attachment, which must be bought at a plumber's. It takes one stop-cock, one T, four pieces of pipe about a foot long, four nipples, and a sprinkler for each pipe used. The cross-bar of the shafts will need to be shortened to make it fit the axle. The figures 1, 2 and 3, herewith, illustrate this

sprinkler.—F. E. POGUE, Delaware.

A Fine Shaded Border.—It is a front border, and must be made attractive, but on account of shade, no sun-loving plants will grow there. Last summer we contrived to have it a harmony of pink, rose-color and soft shades of green. The background was filled in thickly with hardy ferns brought from the woods. A dozen choice coleus were planted near the front of the bed, and between the ferns and coleus I set cuttings of *Impatiens Sultanii* taken from a year-old plant. They were stuck down here and there all over the border, and began to grow at once, blooming when only a few inches high, and never ceasing until frost killed them. The root or stock, from which the cuttings were taken, I set in the front corner of the bed. It soon put out afresh and grew to be a fine plant, more than two feet in height and diameter,

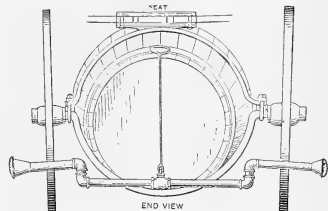


FIG. 2.—SPRINKLER ON WHEELS. (End view.)

and covered with hundreds of soft rose-colored blooms. Several pink geraniums bloomed profusely in this border. Their trusses of bloom were almost as large as a snowball. I had also in this border one or two blooming begonias; in future I mean to use more of them. Sweet alyssum formed the edge of the border.—MRS. W. V. L.

Ferns and Palms for House-Culture.—No collection of plants seems complete without a few palms and ferns, and though they were once considered unfit for house-culture, the ease with which they are cared for, even in a common sitting-room, has proved the contrary

to be true. They do not need a front seat in the window—give that to the blooming plants, and place these in the background, or at some east or northeast window where blooming plants will not flourish. Maiden-hair ferns, their common clay pots hidden by the pretty jardinières now so much in use, make beautiful table ornaments, and develop into symmetrical, globular masses of airy, filmy foliage in many blending shades of green. The sword-ferns (*nephrolepis*), large and small varieties, may be used in the same way on little tables or stands. They have a certain gracefulness and character of their own, which makes them great favorites. *Polypodium aureum*, a native of the West Indies, is a large, splendid fern, fine for house-culture. I have used it now for many years.

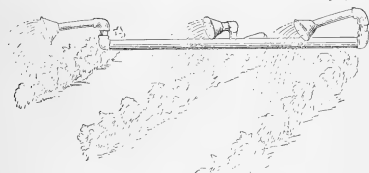


FIG. 3.—SPRINKLING POTATOES. (See page 557)

It will thrive well in shade, with plenty of water at the roots. A very beautiful and interesting fern is the *Asplenium bulbiferum*, a native of New Zealand. It has pretty feathery fronds, on the upper surface of which grow little leafy bulbs. When one of these is mature enough to start out on a life of its own it can be gently detached from the parent frond and planted carefully in a small pot. But the better way is to cut the frond off from the plant, just beneath where the little bulb has formed, and plant it, the earth just covering the tiny bulb, which will soon throw out little rootlets. When leaf-growth has well begun, the old frond can be cut away, and the new plant, if well watered and kept in the shade or in a sunless window, will thrive well. The parent plant, bearing here and there these little baby ferns, secure in their little brown cradles, is curious and beautiful.

The tropical-looking palms have proved to be most useful and durable parlor-plants. They need a well-drained soil, composed of rich loam and well-decayed manure, with a little sand and some peat added. Palms which have served for decoration in winter should be put out in the open air in summer, and given a shady place. If well watered, they will keep strong and healthy for many years. Of course, it will be necessary to report them as they increase in size. The cocos is an elegant small palm for table decoration. The large, fan-shaped *Latania Borbonica* is very showy, and kentias, or "curly palms," and filiferas are graceful and useful for house-culture. Several kinds of palms grow slowly, and thus serve as decorations many years before they get too large and difficult to manage.—MAY MACKENZIE.

The Common Cedar.—That "familiarity breeds contempt" is especially true of our local native trees and

shrubs. I sent to Michigan for a juniper, only to find that it did not differ essentially from our upland cedar, which grew in abundance within 100 feet of my place. I also sent for some Norway maples, but have found that the common swamp-maple is quite as vigorous and handsome a tree. Profiting by such experiences I shouldered my spade recently and wandered off in the woods and swamps, seeking for game that should be perpetuated, not destroyed. The first specimen found was a beautiful young maple, and next a number of fine shrubs, but best of all I soon found some beautiful common cedars (*Juniperus Virginiana*). This plebian tree I have learned to love, and I wish to give a few of my reasons for transplanting so many specimens to my grounds. First, then, it can be set out without excavating a big hole—one or two spade-fulls of earth is all that need be removed; the chances are that the soil in which it is set will suit it quite as well as that of its former forest or hedge-home. Second, it is usually a very bright evergreen, having a warm, cheerful appearance in winter and a cool look in summer. Third, it is spicy and fragrant. There may not be as much ozone in the cedar as there is in the pine-forests, but there is a much more agreeable odor. Fourth, it makes an efficient windbreak, and, if pinched back, forms an excellent hedge or a beautiful specimen tree. Fifth, it is a valuable timber-tree along the Atlantic seaboard. Next to locust, cedar is the most durable of wood for outdoor use. There is a growing demand for the wood for various manufacturing purposes, though it is of slow growth. Sixth, it is not at all fastidious as to soil or locality; it will grow almost anywhere, doing the best it can under almost any conditions, under other trees or grown in open ground. Seventh, its close, compact growth and rather forbidding foliage make it an excellent retreat for our delicate song-birds. This tree, however, is not perfect. Birds carry its seeds to hedges and neglected meadows, but it is of too slow growth to do any harm on cultivated land. In hedges it is apt to grow crooked and straggly. This is usually because of its good nature; it gives way for other trees, and becomes dwarfed in consequence. I do not claim that this cedar ranks high as a fine lawn-tree for purely ornamental purposes in the foreground of landscapes, where rarer and more expensive trees are obtainable, but there are thousands of places which might be improved and beautified at a trifling expense by the judicious use of the common and often-despised juniper.—J H. GRIFFITH, L. I.

Hardy Edging Plants.—In one of our gardening exchanges we find favorable mention of the use of a dwarf creeping phlox as an edging to a passage-way in a fine garden. In another, mention is made of a drive edged with the plantain-lily (*Funkia subcordata*), and its beauty is commented upon. Now as the gardeners in both these cases are excellent florists, who have at their command any quantity of greenhouse-plants, one of them, in fact, making floriculture his business, these instances show growing appreciation of the beauty and value of hardy perennial flowers. In our own garden we want both tender and hardy flowers, as well as annuals and

bulbs. It must be admitted that, for a score of years past, too much stress has been laid on the cultivation of tender flowers, the impulse thereto being given largely by enterprising American florists and horticultural writers. That a reaction in favor of the increased cultivation of hardy perennials and shrubs is in progress in many directions at the present time is apparent. Florists that have hitherto supplied tender plants exclusively, are now taking a growing interest in the culture of hardy flowers. This is both sensible on their part and gratifying to all lovers of floriculture. Why should not florists be prepared to supply to their patrons hardy as well as tender plants. If such a course, generally adopted, would result in lessening the annual breadth planted to tender stuff, there would at least be these consolations remaining: First, the list of hardy flowers, which would be suitable for florists to handle, embraces more than 500 varieties, and before our land would be stocked with these, thousands of florists could add to their profits by the trade relating thereto. Another gain of a general kind would be that hardy perennials, when cultivated by amateurs, tend to develop a love for gardening more than any other class of plants. Once awakened people to the pleasures of hardy-plant gardening, and their taste for hardy plants will so develop that it can never be satisfied short of planting hundreds of these flowers, and there will be a greatly increased appreciation of all hardy shrubs, vines and trees. Such a result is earnestly to be desired, for the lawns and gardens of Americans are, as yet, far from being planted ornamentally to the extent they should be. To encourage the planting of hardy trees, shrubs and perennials is to encourage the interest in popular gardening, leading people more into the pure air and the innocent pleasures of their gardens, and adding to the natural adornment of our fair land.

Horticulture at the World's Fair.—The following special rules have been announced for the department of horticulture: 1. Fruits, flowers and vegetables offered for competition must have been grown by the individuals offering them. 2. Exhibits made by state or other horticultural societies must be collected in the territory embraced in their jurisdiction. 3. A complete list of varieties of fruits, plants and flowers intended for entry must be furnished the management. No exhibitor will be allowed to make more than one entry for the same award. 4. All fruits, plants and flowers must be correctly named and labeled. 5. After exhibits are arranged and awarding committees notified they will be under the exclusive control of the management until awards are made, and the name of the owner must be unknown to such committees. 6. Artistic arrangement and superior quality, and not quantity, will be considered in making awards. Unworthy articles will be excluded. 7. An award having been given to any article it will be debarred from future entries. 8. All plants, fruits or flowers, when they show signs of decay sufficiently to become unattractive, will be removed, and exhibitors should be prepared to replace them with fresh specimens.

The grouping in department B is as follows:

Viticulture, Manufactured Products, Methods and Appliances.—Class 119, the vine and its varieties—shown by living examples, by cuttings, by engravings, photographs etc.; class 120, methods of planting, staking, and training the vine; class 121, vineyards and their management; class 122, grapes for the table; class 123, grapes for wine-making; class 124, grapes for drying—raisin-grape culture; class 125, methods of and appliances for cultivating, harvesting, curing, packing and shipping grapes; class 126, white wines; class 127, red wines, clarets, Zinfandel, Burgundies; class 128, sherries, Maderia, Port; class 129, sparkling wines; class 130, methods of expressing the juice of the grape, of fermenting, storing, racking, bottling and packing—wine coöperage; class 131, brandy of all kinds, methods and apparatus for the production of brandy; class 132, literature, history and statistics of viticulture.

Pomology, Manufactured Products, Methods and Appliances.—Class 133, pomaceous and stone-fruits—pears, apples, plums, peaches, nectarines, apricots, cherries, etc.; class 134, citrus fruits—oranges, lemons, limes, shaddocks, etc.; class 135, tropical and subtropical fruits—bananas, pineapples, guavas, mangoes, sapodillas, tamarinds, figs, olives, etc.; class 136, small fruits—strawberries, raspberries, blackberries, gooseberries, currants, etc.; class 137, nuts—almonds, pecans, chestnuts, filberts, walnuts, etc.; class 138, casts and models of fruits, imitations in wax, etc.; class 139, dried and evaporated apples, peaches, pears and other fruits—prunes, figs, dates, etc., in glass or boxes; class 140, fruits in glass or cans, preserved in syrup or alcohol; class 141, jellies, jams, marmalades; class 142, fruits glacé; class 143, cider, perry, vinegar and expressed juices of berries; class 144, methods for crushing and expressing the juices of fruits and berries, apparatus and methods of desiccating, apparatus for making vinegar, etc., cider-mills and presses; class 145, methods for preserving all fruits by cold-storage or chemical appliances, their keeping, packing and shipping; class 146, literature, history, statistics.

Floriculture.—Class 147, roses; class 148, carnations; class 149, orchids; class 150, rhododendrons, azaleas, etc.; class 151, chrysanthemums; class 152, dahlias, gladiolus, etc.; class 153, ornamental bulbous flowering plants, hyacinths, narcissus, etc.; class 154, pelargoniums, zonal and show; class 155, bedding-plants and flowering annual plants; class 156, climbing plants; class 157, perennials and flowering shrubs not otherwise specified; class 158, miscellaneous annuals, phlox, asters, etc.; class 159, palms; class 160, ferns; class 161, ornamental-leaf plants; class 162, cactaceæ; class 163, aquatic plants; class 164, native wild plants and flowers; class 165, ornamental grasses and reeds; class 166, rare exotic plants; class 167, cut-flowers, floral designs, pressed flowers, leaves, sea-weeds and bouquets; class 168, plants grown for commercial purposes; class 169, receptacles for plants, flower-pots, plant-boxes, fern-cases, tubs, jardinières, plant and flower-stands, ornate designs in flower-stands; class 170, literature, history and statistics; class 171, miscellaneous

Culinary Vegetables.—Leguminous; cereal and fruit-like vegetables—beans, peas, okra, peppers, tomatoes, cucumbers. Radicaceous and tuberous vegetables—beets, turnips, carrots, potatoes, radishes, etc. Class 174, vegetables cultivated for their leaves and sprouts—cabbage, lettuce, rhubarb, spinach, endive, asparagus, etc.; class 175, miscellaneous culinary vegetables not included in the above; class 177, vegetables dried or in cans or glass; class 177, pickles, champignons, truffles, chutney, mustard, etc., class 178, methods for preserving vegetables by cold-storage or chemical appliances, their keeping, packing and shipping.

Seeds, Seed-Raising, Testing and Distribution.—Class 179, display of vegetable and flower-seeds grown in different latitudes; class 180, general display of flower and vegetable-seeds by seed-houses or growers; class 181, methods of growing, harvesting and preparing flower, vegetable, tree and shrub-seeds; class 182, seed warehouse, methods of burnishing and packing for the retail trade—work of packing, etc., in operation; class 183, methods of testing vitality of seeds, as practiced by different seed-houses; class 184, tree and shrub-seeds, and seeds used for condiments and medicines.

Arboriculture.—Class 185, ornamental trees, shrubs, methods of growing, transplanting, etc.; class 186, fruit trees and methods of raising, grafting, transplanting, pruning, etc., means of combating insects and other enemies; class 187, nurseries and the nursery trade.

Appliances, Methods, etc.—Class 188, hothouses, conservatories, methods of construction, management and operation; class 189, heating apparatus for hothouses and conservatories; class 190, seats, chairs and adjuncts for the garden and conservatory; class 191, ornamental wire-work, trellises, fences, borders, labels for plants and trees, etc.; class 192, garden and nursery administration and management, floriculture and arboriculture as arts of design and decoration, laying out gardens, designs for the laying out of gardens and the improvement of private residences, designs for commercial gardens, nurseries, graperies, designs for the parterre, treatment of water for ornamental purposes, cascades, fountains, reservoirs, lakes, formation and after-treatment of lawns, garden construction, building, etc., rock-work grottoes, rustic construction and adornment for private gardens and public grounds, planting, fertilizing, cultivating and appliances.

COMMENTS BY READERS.

[Readers are invited to contribute to this department. If your experience, observation, or well-founded opinion differs from that recorded in any recent article in this magazine, or if you can add anything of special interest to the statements of other writers, the Editor will welcome your contributions.]

Wall for Rock-Plants.—(Page 439.) This should have been credited to *The Garden*, not the *Gardening World*.

The Siberian Iris (page 356) is hardy enough, but don't you find that it is the weed of the genus?—W. FALCONER.

Amaryllis Johnsonii.—(Page 362.) This is one of the flimsiest of the whole race; better pay twice as much for an aulica, or, better still, three times as much for a Defiance.—W. F.

New Jersey's Wild-Flowers.—(Page 350.) The little pixie (pyxidantha), while one of the loveliest and commonest of New Jersey's wild-flowers, does not take kindly to cultivation. On the other hand, the helonias adapt themselves readily to culture in nearly all moist garden-soils.—W. F.

Polyanthus Narcissus.—(Page 356.) I don't find them hardy, even with covering. The trouble is that oftentimes they start to grow very early in the fall, and so the winter is doubly hard upon them. But by lifting the bulbs in summer, and keeping them out of the ground until October 15, and then planting them, they have little opportunity to begin growth before winter sets in; then they can be wintered safely enough under a good covering.—W. F.

Perennial Gaillardias.—(Page 346.) Get seed of some fine strain and raise a lot of young plants. This is easily done; the seeds germinate as readily as those of the annual (picta) and the seedlings bloom well the first year. The roots live over winter, and even if cut up with the spade the plants will come up in spring and go on grow-

ing in size and increasing in bloom. You will be sure of some beauties among these seedlings.—W. F.

Perennial Gaillardias.—(Page 346.) The editor did not do justice to the perennial gaillardias. Here, in southern Louisiana, the flowers are much larger than in the illustration on page 347. I have grown them for the last ten years. There are two shades of yellow banded with maroon. Often they begin to flower in March, but the finest blooms open in April and May. The flowers open at this time (June 25) are two inches across. The gaillardias make large clumps, as tiny young plants spring up from about the old ones all the time. In June, when the flowers are not so large, I break out all the old blooming branches to give the young growth a chance, and from the middle of July until heavy frosts there is always an abundance of bloom. The flowers are borne on long tough stems, standing high above the foliage. Gaillardia-leaves have a pleasant balm-like fragrance, and the seed-balls are quite pretty when mingled with dried grasses and everlasting. I keep them cut from my plants, for if they are left to ripen the plants become exhausted and the flowers smaller and fewer in number. The roots of perennial gaillardias are almost as small as a knitting-needle, and run deep into the soil; but they transplant well.—MARGARET CAMPBELL.

White Grubs.—(Page 365.)—Don't be so sanguine about destroying white grubs. Goodness knows how they live; but live and get fat they do in our loam pile, where not a weed is allowed to grow. I must tell you how smart I was once: In April, as soon as I pruned the roses and cleaned the ground, I mulched all about the plants with

cow-manure. In midsummer the ground was alive with little white-grub larvae, so I had every bit of that mulch removed at once. Since then I have never used cow-manure as a mulch for outdoor roses before June 15.—W. FALCONER.

The Umbrella China-tree.—(Page 366.)—*Melia Azedarach* is the China-tree, and the dense-headed form known as *umbraculifera* is the umbrella China-tree. They will stand 12° or 15° of frost if it does not come on too suddenly or last too long, but they are not hardy in the northern states. There is a variety called *floribunda* which makes a delightful pot-plant. It is easily raised from seed, blooms when a foot high, and its flowers are sweetly scented. I have found it less hardy than either of the others.—W. F.

Lilium Auratum.—(Page 357.)—"The flower has been greatly improved since its first introduction, both in size and coloring," you say. I don't know about that. Certainly we haven't improved it any; but we now import a larger number of varieties of it. These are only varieties in color, and not exaggerations in size. Curiously enough, these imported forms have put an end to all our former notions about having raised hybrids between *auratum* and *speciosum*.—W. F.

Gladiolus-Bulbs "planted later than June 15, north of Washington, would hardly bloom before frost" (page 357). Here in Long Island I plant as late as June 25, and they always bloom before frost hurts them; but away from the sea-coast your advice is proper. Speaking of the improvement made in these flowers in France, prompts me to remind you that Queens, L. I., is the place to see improvements in the gladiolus.—W. F.

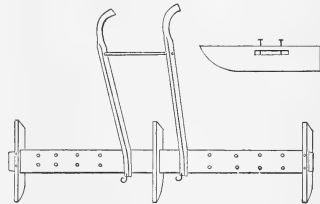
Begonia Evansiana.—(Page 22.)—I did not know that this was a tuberous begonia until I read Mr. Falconer's notes concerning it. Well may he praise it, for the whole plant—stem, leaf and bloom—is exceedingly beautiful. No *rubra* I ever saw can compare with it. It seems to be perfectly hardy here, coming up in the spring all over the yard in unexpected places, but always to the south of the first plant. I have had this begonia two or three years, but did not know the name; I could not find it in any of the catalogues. This winter I found it in Gray's Manual. He says it is rare. Mine was given me from an old garden—a most enchanting spot, and the only place where I ever saw it.—MRS. W. V. L.

The China Fringe-Tree.—(Page 374.) We have had it for years, and it blooms beautifully every summer. It comes into bloom a fortnight ahead of our white fringe-tree (*Chionanthus Virginica*) and lasts quite a while in beauty. Its flowers much resemble those of our American species, but the plant is more like a small shrub than a tree, and is not likely ever to become as popular as our native white fringe-tree.—W. FALCONER.

Hyacinthus Candicans.—(Page 376.) This is one of the easiest grown of all bulbs, and is perfectly hardy with us. I find very little difference between *H. Princeps* and *H. Candicans*. If you want to get up a big stock of the bulbs get some seed and sow it in rows as you would onions. Leave the bulbs in the ground in the

seed-rows for a year, then lift and plant them elsewhere in the garden.—W. F.

Adjustable Marker.—(Pages 348 and 434.)—I think I have a marker better than either of those described by you, and it is easily made. The marks are made by runners about 30 inches in length, 8 inches wide and 2 inches thick. The center runner is but six inches wide, and is spiked to a board 8 feet long and 8 inches wide. The end runners are mortised an inch from the top, so that they slip readily on this frame-board. They are held in place by wire spikes, slipped into holes bored



ADJUSTABLE MARKER.

through the runner and also through the frame-board. The distance can be readily varied to suit different needs. The marker may be drawn or pushed, as you suggest. The number of runners, weight, etc., may also be varied to suit the work the runner is designed for.—J. H. VAN.

Henderson Bush Lima.—(Page 366.) It has come to stay, and is a splendid addition to summer vegetables; to me it is indispensable. After July 15 we cannot expect good peas—the mildew ruins them. But about July 20, from a warm, sandy piece of land, I begin to pick Henderson Bush Lima beans. We sow them in rows as we do ordinary snap-beans, using only one-fourth as much seed. They grow well without any trouble, never run, and bear enormous crops. After large white pole Limas come, about August 10 or 15, we stop picking the dwarf ones. Again, in fall, Henderson Bush Limas are very useful. We have them sown close in rows, so as to cover them with frames and sashes from September to November, and in this way get fresh green Limas long after the frost has killed the pole-beans.—W. F.

One Crop at a Time.—(Page 377.)—That may do on the farm, but it won't in the garden, where we need to condense our system of cultivation. Don't bother your head about the fertility in the soil: all practical gardeners know well enough that they cannot get good crops without plenty of fertilizer. We believe in heavy manuring and heavy crops, and the more crops we can get off of a piece of land in a year the better we are pleased, for this is economy in manuring and a saving of labor. Think now and then of the market-gardens on the flats alongside of the Thames at London. They have been cultivated and manured for a thousand years, but they still yield enormous rents and crops. I spent two years among them, and I know that "one crop at a time," would drive the gardeners there into the poorhouse.—W. F.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Abutilons.—Take up pot-plants plunged outdoors. Lift before frosty weather all border-plants that are to be wintered over.

Acacias need plenty of water. Without it loss of foliage and flowers may occur.

Achimenes.—Remove them to a frame when active growth ceases, and gradually reduce the supply of heat and moisture.

Agapanthus.—After the flowering season remove half of the tops to prevent seeding, but continue to encourage growth by good feeding and free watering all through this month.

Annuals.—Asters, petunias, portulacas, balsams, ten-weeks' stocks, and many other of the more tender sorts are now in their prime. Encourage free-flowering by free picking of flowers, the prompt removal of faded ones, watering, and good treatment generally. The magnificent show will soon be over; enjoy it while it lasts. Especially fine specimens of asters, balsams, etc., may be lifted with care and potted for use in the house.

*Anthericum*s.—Repot in fresh soil as needed.

Azaleas and other hard-wooded plants may be kept safe from early fall frosts for a month or more yet in a sheltered place.

Begonias.—The tuberous sorts in the border must be dug up when frost comes. Dry the bulbs thoroughly and winter them in dry sand. All begonias in the greenhouse or window now coming into bloom like a sunny situation and an occasional free application of manure-water.

Bulbs.—The supply needed for this season's planting of tulips, hyacinths, crocuses and other hardy bulbs should be procured without delay. The sooner you plant after this the better. Prepare the beds some days before planting, making them rich with well-decayed cow-manure. Narcissus, crocus and snowdrops are well-suited for setting in close clumps by themselves. Set the crocus and snowdrop bulbs 2 or 3 inches apart each way, and about 4 inches deep. Tulips may be planted 5 inches apart, and 6 inches deep, hyacinths 7 inches apart, and 6 inches deep. No home should be without a full supply of these bulbs. They need little room, little attention, and are sure to give flowers at a time when they are most appreciated.

Cactus.—Lift pot-plants in the border, and house them.

Carnations in the open ground should be lifted toward the end of the month, leaving a ball of earth on the roots. In potting, this ball should be reduced to fit the pot by means of a pointed stick. Try to retain all roots. Firm good soil in between the ball of earth and

the pot. Water the plants well and set them in the shade for a week, sprinkling them frequently. Afterwards gradually accustom them to more light and sun.

Chrysanthemums.—The thinning of buds should go on from day to day. The value of the crop depends on thinning. One good flower is worth ten poor ones. The plants have now branched out into leaders and laterals. The leaders, of which there may be from three to five, will form what is termed the crown bud, one bud on each stem. The plant will branch again, forming leaders known as terminals, with buds known as terminal buds, or the termination of the plant's growth. As a rule the crown buds form the best flowers, but if they form too early, let the terminals grow and take out the crown bud. Nip out all buds except those in the center of the cluster. Keep show plants staked and tied up to induce shapeliness. Give all plants plenty of water and liquid manure twice a week.

Cinerarias.—Get the seedlings into good flowering shape by keeping them in a cool, airy situation.

Cytisus.—Lift bedded plants to pots, and encourage growth by generous treatment, thus insuring abundant spring bloom.

Dahlias.—Staking should be attended to, else winds and storms may do serious damage to plants.

Dracenas.—Repot now all plants in need of shifting.

Evergreens.—If pruning is yet needed, the sooner it is done the better. The idea that evergreens need no manure or cultivation is firmly fixed in many people's minds. Try good treatment and see the difference.

Everlasting Flowers.—Gather them for winter use before they open, and dry them in the shade.

Forget-me-nots.—Divide the plants without much delay. They will then become firmly established before winter.

Fuchsias.—Take up and pot winter-blooming kinds, especially speciosa. Let the summer bloomers now come to a rest by gradually withholding water.

General Greenhouse Management.—Before the houses are filled up again, fumigate them very thoroughly with tobacco, repeating the operation once or twice each week during the entire indoor season. Avoid starting fires in the houses as long as this can safely be done. When required, start fires up briskly, giving plenty of air. The free use of tobacco-stems about the pots when stocking up again, is advisable. It will tend to keep insects in check. If bouvardias, carnations, stevias, violets, etc., lifted from the beds, have been bedded out in the plant-houses, keep the apartments close and shaded. Sprinkle them frequently for a week or two, then gradually give them more light and air. Gather up the pot-plants which were plunged outdoors last spring, and return them to their winter stands before frost can injure them.

A frame is a good place for small plants for a while yet. Begin now to push propagation to secure the stock wanted next season. On the whole, newly-struck plants give better satisfaction to the florist than old ones. Pot cuttings at first sight of roots. Syringe all newly filled houses frequently, and ventilate them freely in all favorable weather.

Geraniums.—Strike cuttings for next season's stock.

Gladiolus.—Attend to proper staking. Remove dead flower-stalks. Let the strength of the plants go into the bulbs rather than the seed. Label plants before frost comes, if the variety-name is to be preserved. Light frosts will not hurt the bulbs if they are planted 4 or 5 inches deep, as they should have been.

Ivies.—Lift the bedded plants toward the end of the month. Shift young plants as they need it.

Jasminum grandiflorum.—Give manure-water once a week.

Jerusalem Cherries.—Lift and pot the plants to be taken indoors, and give them an abundant supply of water.

Lawns.—Mow them regularly except in seasons of drouth. Keep edges neatly trimmed, and weeds cut down or pulled up in walks and on grass plats. Stake and tie all tall-growing flowers in the borders.

Lobelia cardinalis.—Plants are easily grown from the seed now ripening. Sow it at once.

Orchids.—Gradually lessen the supply of moisture. Active growth during winter should not be encouraged by warmth or free watering.

Oxalis.—Start plants of floribunda, lutea, etc., into growth for use in the window later.

Pansies.—Keep the seedlings growing thriftily.

Peonies.—Clumps of these and other perennials, as phlox, lily-of-the-valley, lilies, etc., may be divided and reset as soon as they have finished their growth for the season.

Phloxes.—See peonies.

Primulas.—Keep them in a cool, airy situation, and guard against over-watering. The double white ones may be kept slightly shaded until next month.

Roses.—Lift plants from the border, and repot plants for winter flowering as needed.

Tritomas.—To bring out their best bloom, water them occasionally with liquid manure.

Vases.—Take pains to protect the vases and hanging-baskets, now so attractive, during the first few frosty nights, thus keeping them beautiful for a time.

Verbenas.—The best plants for keeping over are those started from tender shoots after the middle of this month.

Violets.—Set them in frames to secure fall and spring bloom.

Weeds.—Continue the fight against them. Chickweed and some other kinds grow rapidly during the fall and in early winter.

Wild-Flower Gardens.—This is a good month for starting all plants that can now be easily procured from the woods.

II. GARDENING FOR TABLE AND MARKET.

Apples.—Prompt destruction of windfalls will tend to lessen the amount of wormy fruit in future. Best methods of marketing should occupy the attention of producers. Good fruit nicely put up will find a good market.

Asparagus.—The beds may now be mowed and the tops promptly removed before seed is scattered to produce a new set of plants that will give trouble afterward. New beds can be made any time between September and spring. The soil should be warm loam, well manured and well prepared.

Beans.—Gather large, ripe pods of all garden sorts for seed. Of course the varieties mix easily, and when pure seed is desired it must be taken from plants standing at some distance from other varieties. All ripe garden-beans may be prepared for the table like ordinary field-beans. Be sure to save the seed of choice Limas, selecting the larger pods on the lower part of the vines.

Beets.—The early table sorts may now be sown in frames for late use.

Blackberries need no further attention for the present. Do not encourage late growth by continued cultivation.

Borers.—Hunt them up and destroy them.

Budding.—Finish budding peaches and quinces. If buds set earlier have failed to take, rebudding may be done as long as the stock is in active growth.

Cabbage.—Clear off the earlier patches and continue cultivating the later ones. For plants to winter over sow seed of Early Jersey Wakefield in open ground about September 10 and 20. One or the other of these sowings will be just right for transplanting in coldframes by November. Set them 2x3 inches apart.

Cauliflower.—Treat as advised for cabbage.

Celery.—At the south there is yet time for setting out plants for the late crop. Give clean and thorough cultivation in order to encourage free growth, and water in dry weather if practicable. All our washing-suds, as soon as they become available for the purpose on washing-days, are taken out and emptied along our rows of celery. We are gradually learning to dispense with hand-labor in bleaching the crop. We now neither "handle" nor earth up. Bleaching with boards is an easy and efficient method, when the plants are set in single rows. When planted closely, on the new system, and the plants grow as rank as they should, they will bleach without earth or boards, and sufficiently for winter storage in any case.

Corn.—If you have a surplus of sweet-corn, dry it for winter use. Boil it until the milk is set, cut the grains from the cob and dry them quickly.

Cresses.—If you are fond of the pungent flavor of cresses with your fall salads, you can have a full supply by sowing seed now. It grows quickly.

Cucumbers.—Continue gathering the crop of pickles. Before frost gather also all large ripe specimens, as they can be utilized in making mustard pickles.

Cucumber-Forcing.—To obtain cucumbers in January, sow seeds now and keep them in high heat.

Currants.—Prune out old wood and part of the new. The young shoots can be used for cuttings.

Egg-Plants.—A little hay, or other litter, placed over the plants during the first frosty nights will save them for further usefulness.

General Garden Management.—Continue the fight against weeds. Let none get ripe and scatter seeds. All late crops that do not cover the ground should be kept cultivated and hoed as late as possible. Get frames and forcing-pits in readiness for the coming season. Gather seeds of all choice vegetables.

General Orchard Management.—Thin late fruit. This is much better than propping up the limbs and gathering and marketing a lot of inferior stuff. Keep on hand a good supply of ladders. Make provision for packages. Use new barrels for apples, half-barrels or crates for pears, improving as much as possible on the usages of your particular market. Let no fruit go to waste this season; there is none too much. Pruning may be done where needed. In young orchards, hunt up and destroy borers. Don't grow grain—with the possible exception of buckwheat—among young or old fruit-trees. If you intend setting a young apple or pear orchard this fall, prepare the land early, and set the trees next month. Stone-fruits should be planted in spring.

Grapes.—See and heed the advice about handling the crop, as found elsewhere in this issue. Whatever you do, refrain from marketing grapes before they are ripe and palatable.

Grape-Forcing.—In houses where the wood has ripened and leaves begin to fall, prune the vines and cleanse the canes. Now wash and paint the inside work. Keep the forcing-houses as cool as possible. In later houses, keep the temperature about 50° to 60° at night, and 65° to 75° during the day. When fruit begins to ripen, keep the atmosphere rather dry.

Kale.—There is yet time to sow seed to obtain greens for fall and winter. Transplant the kale from the seed-bed into well-prepared and highly-manured soil, or sow the seed thinly in drills, and begin to use the largest leaves when plants are about six inches high. Growth will continue more or less all winter.

Lettuce.—Sow seed, and later transfer the plants into frames. This will give you a late fall crop.

Melons.—All late fruit that stands no chance of ripening should be removed at once, unless it is wanted for pickling material.

Onions.—Pull them up as soon as most of the tops have died down, leaving the bulbs on the ground to cure. Gather them up when perfectly dry, and store them in a loft or other airy place where they will be safe from rain

or dampness. Market them as soon as you can get them ready. If you wish to try planting sets in fall, send for a supply of the Extra Early Pearl this month, and plant about October 1. Fall sowing of any of our ordinary varieties is not a success here.

Pears.—The crop is ready to pick as soon as the color begins to change and the stem will part readily from the branch. The ripening process should then be continued indoors in a still, dark room, which must be cool for slow ripening and warm for quick ripening. For marketing especially fine fruit, use small packages. Bartletts may be picked while hardly more than half grown. They will ripen up for market, and sometimes bring a much better price than the later, fully-developed and matured pears, while those left on the tree will come out all the finer, and perhaps continue later in good condition.

Peaches will be especially scarce this year; gather and market them with greatest care. The trees must be looked over repeatedly, and the specimens picked when just in the right condition.

Plums.—Pick the trees over repeatedly, taking off each time only those specimens that are just right for market or use.

Peppers.—Harvest before frost touches them.

Spinach.—Sow seed for spring greens in rows a foot apart. In early winter the plants may be thinned if too crowded, and the thinnings used for greens.

Snails.—Spraying with lime-water after dark will quickly clear them from anything they infest. Sprinkling dry lime or ashes about infested plants is also a sure remedy.

Squashes.—Let no specimens worth saving be touched by frost. Gather them, and store in a dry, warm place.

Sweet-Potatoes may be left out until after the first fall frost, when the tops should at once be cut off, the tubers spaded or forked out, gathered when dry, and stored in a dry, warm room or packed in sand.

Strawberries.—Keep the beds scrupulously clear of weeds. For forcing the crop, see directions given elsewhere.

Tomatoes.—Frost usually comes before the crop is all gathered. It is a good plan to protect some fine plants during the first few frosty nights by covering them lightly with litter or hay. The tomatoes will then continue to ripen in the fine warm days that usually follow after these first frosts. Or you may pull up some of the plants and hang them by the roots in some sheltered spot. The tomatoes will thus continue to ripen, although in quality they will not equal those ripened in the natural way.

Turnips.—Weed and thin them.



CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Honey Strawberries.—These belong to the Alpine family of everbearing strawberries, so extensively cultivated in Europe. In fruit and general appearance of plant the Honey strawberry resembles the Red Alpine, of Switzerland.—*N. E. Farmer.*

Packing Apples for England.—If it is desired or expected to find as ready a market in England for our apples next season as we did this, or to continue to obtain as good prices, great care must be taken in assorting and packing the fruit. Apples not well sorted and firmly packed sold low last year, and always will.—*Ex.*

Effects of Locality on Fruits.—The instance of the Ben Davis apple proves that locality has much to do with the quality of the soil's productions. The same fact is noticed in other fruits, notably the grape, peach, orange, apricot, and prune or plum. With the exceptions of the grape, apricot and prune, the eastern and southern states produce much better-flavored fruits than the Pacific coast does.—*Orange County Farmer.*

Preserving Squashes for Winter Use.—When gathered from the field, squashes should be placed in a cool, dry room, and kept there until freezing weather approaches. Then remove them to what might be termed a warm and dry room. It is difficult to keep them during the entire winter without more or less trouble from rot; yet such varieties as the Hubbard and Turban may be preserved for quite a long period after harvesting.—*Country Gentleman.*

Summary of Experiments in Tomato-Culture.—

1. The plants must be kept growing vigorously; a condition involving rich soil and frequent tillage. 2. Frequent transplanting makes stocky plants. 3. Other things being equal, the earliness and productiveness of tomatoes are in direct proportion to the earliness of setting them in the field. 4. Trimming plants after a part of the fruit has set increases the yield more than one-third. 5. The best varieties for general use appear to be Ignatum, Perfection, Beauty, Golden Queen and, possibly, Prelude.—*Bulletin of Maine Experiment Station.*

The Alleged Progress in Small-Fruits.—There has been no advance in currants within the last 30 years, and barely two instances where a claim has been made for new varieties—both exceedingly doubtful. In red raspberries we have made "progress" by a retrograde movement; that is, by discarding the half hardy but very superior European varieties and taking up the natives, we

have been enabled to produce currants in great abundance, but not of high quality. In other words, we have secured quantity at a cost of quality.—*A. S. Fuller, in N. Y. Tribune.*

Use for the Wild-Flowers.—I find it good to have plenty of wild-flowers at hand to arrange with the cultivated ones when sending to the flower-mission. I am always sure that the wild ones will give pleasure. A lady who has had much experience in distributing the little bouquets in hospitals told me that it was most interesting to see how eagerly and quickly little children as well as older persons recognized a wild-flower, even if it were but a red or white clover, with some such pathetic and happy little exclamation as, "Oh, how it makes me think of the pastures!"—*Success With Flowers.*

High Prices for Dried Fruit.—The market is in a very bare condition. There has been an excellent demand for the last pack, and a larger quantity than usual has been shipped abroad. From California word comes that there are not ten cars of dried fruit left in the state, and growers are in good spirits over the outlook for the new pack. The more dried fruit is pushed into consumption, both at home and abroad, the greater will be the demand another season, because it is pure, of excellent quality, and fully retains its flavor. If there is any surplus of fresh fruit this season, it would not be amiss for growers to put up some dried fruit for market, but the work must be careful, clean and thorough, and the fruit later on must be shipped in neat and attractive packages. This will pay better than allowing the fruit to waste.—*Am. Agriculturist.*

Landscape Gardening in Cemeteries.—Monuments are not necessary, but may be admissible under the lawn plan. Head and foot-stones, however should be abandoned, and not allowed under any conditions. They are the multitude of closely-huddled stone piles that obliterate and destroy the beauty of any landscape, natural or artificial. Only by concerted efforts and by a display of good taste under the guidance of one controlling plan can proper effects be secured and the cemetery given unity in an endless variety, and yet be in harmony with its distinct purpose of burial.—*The Modern Cemetery.*

How to Have a Fine Lawn.—To preserve the beauty of a lawn the soil must be kept in condition to yield the desired verdure. Impoverishment will frequently bring in its wake a growth of moss. Now there are some per-

sons who think that the presence of moss has a pleasing effect on a lawn, but however soft it may be to walk upon, grass is preferable, and harmonizes better with the



FIG. 1.—NEGLECTED NURSERY TREE.



FIG. 2.—NEGLECTED TREE AT BEARING AGE.

well-kept walks and shrubbery borders. A dressing of manure upon the surface of lawns is sometimes necessary, but it should be applied according to quality—sparingly if rich, plentifully if poor. It should be fine when applied, so as not to impart a rough appearance to the lawn. Apply this dressing in the autumn, as soon as mowing is discontinued. A birch broom or a good rake, used with caution, will soon pulverize the dressing, and this accomplished, the roller can be applied with advantage. Care should be taken that the surface dressing is free from weed-seeds. Soot may be applied with caution; it does not contain weed-seeds, and assists in the production of rich soft green verdure.—*Gardeners' Magazine*.

Feeding the Birds.—The wild raspberry-plants and seedling cherry, apple and mulberry trees that grow along the fences, at the edge of the forest, and on waste land, have usually been planted by birds. If enough of these trees were allowed to grow to supply the demands



FIG. 3.—YOUNG TREE WELL PRUNED.

of the feathered horticulturists, their levies on cultivated crops would be much lighter. American landowners would do well to let these fruit-trees grow, or even to plant them by the roadsides, as they do in France and Germany. The trees would not only regale the weary traveler with shade and fruit, but also add largely to the value and beauty of the homesteads. They would afford nesting places for many of our valuable insectivorous birds that are becoming rare as our fields are growing treeless. They would more fully supply the wants of fruit-eating birds, and save a corresponding amount of better varieties of fruit in the orchard. After feeding the birds and the traveling public, the farmer would get fruit enough for himself to pay for

the labor of planting. Sweet cherry trees make excellent shade-trees for pastures, and their value to the animals, aside from the above considerations, amply rewards the farmer for the trouble of setting and protecting them until grown.—*Ohio Farmer*.

Pruning Young Orchards.—A symmetrical form can be preserved in fruit-trees by rubbing off needless shoots when they are only an inch or two long, much easier than by cutting them off with the ax or saw when they have grown into large boughs. Fig. 1 represents a nursery-tree which has had little attention as to form, the new head being a mass of shoots which were allowed to grow at random, and which, if still neglected, will grow into a bearing tree with straggling and spreading limbs, as shown in fig. 2. A skillful hand will bring the heads of such young trees, by timely pruning, into a much improved shape, but this pruning should never be undertaken after the trees have commenced growing in spring. A well-shaped and well-trained young tree is represented by fig. 3. This good shape must be maintained and even improved by rubbing off, early in the season, all deforming and needless shoots. If this is done at the right time every year very little work will be required. Trees thus properly trained and managed, instead of presenting the appearance shown in fig. 2, will more nearly resemble fig. 4.



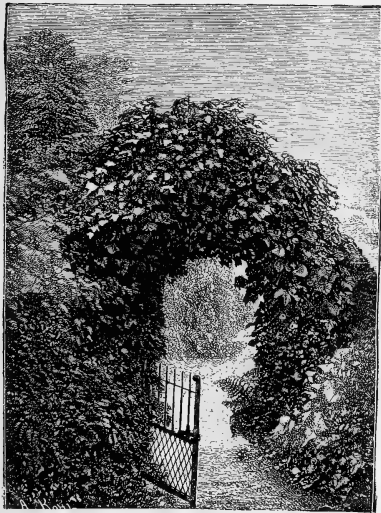
FIG. 4.—WELL-PRUNED TREE AT BEARING AGE.

In thinning the shoots which constitute the head of the tree, the course must vary with the variety and its peculiar growth. For example, in the Rhode Island Greening, the general tendency of the uppermost branches should be more upward than in the head of a Baldwin, and for the Northern Spy less upward than in the more spreading varieties. Heavily loaded limbs, which are borne down continuously for several weeks in summer, become more or less permanently spreading or drooping, and some of them irregular or straggling. The eye of the owner will quickly perceive which shoots can be best spared, and he will rub or cut them away. When trees are quite young, the general tendency of the upward shoots may be controlled in a great degree by leaving the last bud or shoot on the outside of the tree for an erect grower, and on the inside for one of spreading growth.—*Country Gentleman*.

Be Not Afraid to Thin.—The fruits especially benefited by thinning are the plum, apple, pear, grape and peach. The amount of thinning required is a matter of

judgment in each case. The best time to thin fruits is as early as the work can be done with ease and satisfaction. In thinning grapes it is usual to cut out a portion of the bunches; but those who raise Black Hamburgs or other hothouse grapes are in the habit of cutting out about half the berries from each bunch when they are about the size of peas, using sharp-pointed scissors for the work. After such thinning the grapes grow very large, and present a very attractive appearance in the bunch. It is in this way that the wonderful fruit exhibited at our horticultural shows is grown. It is not customary to thin small-fruits, though there is reason to believe that they would be better for it; but it is not likely that it would pay, unless for specimens for competition at the horticultural shows.—*Mass. Ploughman.*

The Hop in Gardens.—We lose much picturesque beauty in gardens by ignoring vines like the hop because they are "common." I remember a gnarled apple tree on the fringe of a beautiful pleasure-ground, over which the hop had spread its vigorous shoots, and it would have been difficult to discover a prettier bit of free and picturesque growth. Like the ivy, the hop makes a happy contrast to varieties of *Clematis Jackmanni*, the mass of deep green leaves intensifying the color of the rich abundance of deep-blue clematis flowers. Nor is its charm confined



HOP-COVERED ARCH.

merely to summer. As autumn approaches the plant carries rich clusters of golden yellow hops, an additional beauty of no mean kind. We can judge of the rich

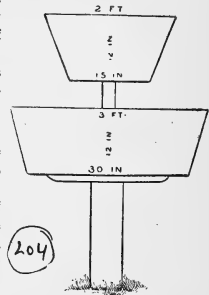
beauty that a common climber can give when once well established, by a glance at the hop-covered arch below. The Japanese hop has been much used for covering arbors and trellises. The growth made is surprisingly rapid. The bunches of flowers are larger, and, therefore, the plant has an advantage for the garden.—*The Garden.*

Vases and Vase-

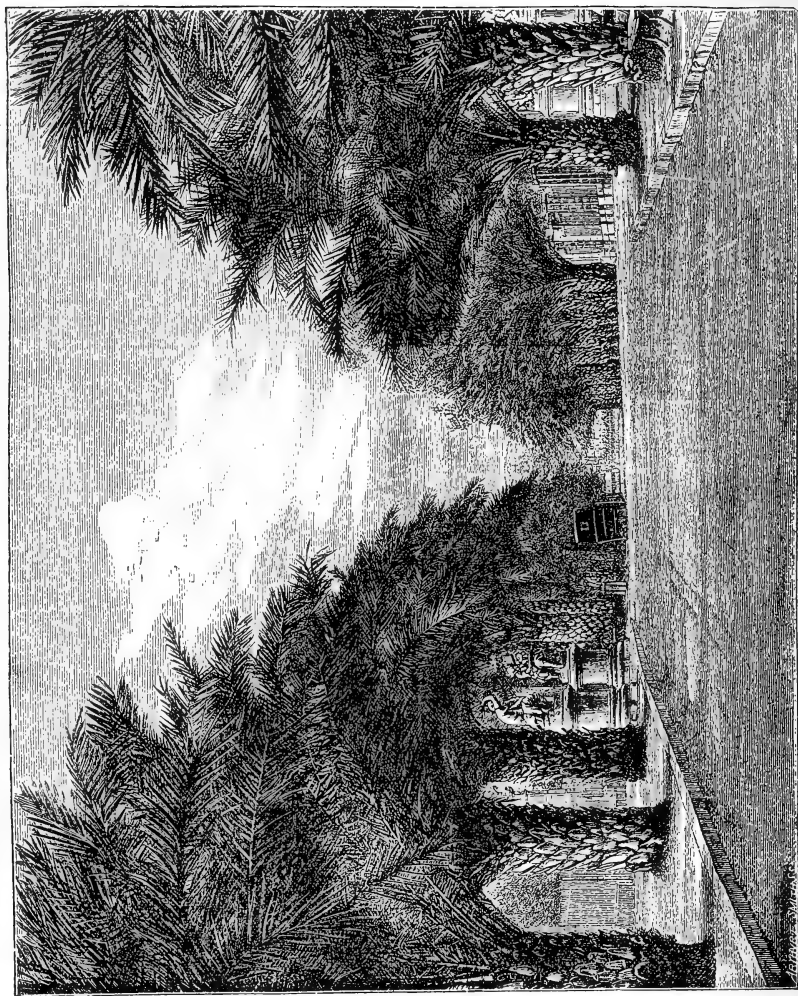
Plants.—One of the

great summer attractions of Lincoln Park, Chicago, is the large number of vases, which in June are a pyramid of bloom and foliage, and retain their beauty all summer long. Nearly all are of wood, and are made on the place. The simple wooden boxes are far more satisfactory than iron ones, and the plants grow so rapidly that they are soon hidden from sight. The soil for vases and boxes must be of medium weight. If too heavy, it turns into mud when heavily watered, and then bakes into brick; if too light, it does not retain moisture long enough. Nearly all the vases are of the style shown in the accompanying figure.

The object of the upper box is to give the pyramidal form to the vase, and in late summer, when the vines trail to the ground, the vase presents the appearance of a tall pyramid of foliage and flowers, without any part of the wood showing. Of course, the filling of the different vases varies considerably, but the general arrangement is as follows: In the upper box, which is 2 feet in diameter at the top, 15 inches at the bottom, and 12 inches deep, are some of the larger geraniums. Around these a mixture of silver-leaved geraniums and cinerarias, interspersed with smaller geraniums, are planted; then come a few plants of *Calceolaria annua*, double sweet alyssum, *Verbena hybrida*, *Petunia hybrida*, ivy-leaved geraniums (these for immediate effect only, as they do not hold out well all summer), and around the edge double nasturtiums (also for immediate effect), lobelias, and sometimes a few marguerites. In the bottom box, which is 3 feet across the top, 30 inches at the bottom, and 12 inches deep, the first row around the center is of tall geraniums, but not so large that they will overgrow the center. Then follows much the same collection as the upper box held, with the exception of the running plants. For plants to hang over the edge of the lower box, *Mauvandia Barclayana* is used. It makes a thick mass of foliage, and flowers freely all summer long. Another plant that is used very freely in this position is the single-flowered nasturtium. It grows rampantly and flowers copiously. German ivy (senecio) is also much used to add to the mass of foliage, as are the vincas, both green and variegated. Sometimes *Lophospermum scan-*



WOODEN VASES.



TREE AVENUE IN PALM GARDEN AT HEVERES, FRANCE.

dens is added—one or two plants in a vase. These are very effective, the gloxinia-like flowers always attracting much attention. The vases when first filled require an even moisture, but when the roots of the plants have taken a good hold of the soil, much more water is needed. In July, August and September very large quantities of water are needed to keep the vases in condition. Then the vases are watered thoroughly every other day, and sometimes every day, when drying southwest winds are blowing.—*American Florist*.

The Palm Avenue at Heyeres, France.—The illustration given on page 568 will convey to the reader a better notion of the climate of that lovely district than many lines of description. The palms are date-palms, hundreds of which have been planted along the boulevards. One avenue alone, about a mile long, reaching from the railway station to the town, is lined with them; and hence the name, Hyères-les-Palmiers, finds ample justification. For the rest, the vegetation is of the same rich and varied character as that usually seen in the Riviera—a vegetation which, like the visitors, is mostly of exotic origin.—*Gardener's Chronicle*.

Flowers for the Poor.—About the middle of May, Secretary Lyon, of the Business Men's Moderation Society of New York City, began his annual work of distributing flowers to the poor children of the city. He took his station in Paradise Park at three o'clock, just when the schools were dismissing their pupils. The flowers, which had been brought that morning from New Jersey, included violets, wistarias, honeysuckles, lilacs and dogwood-blossoms, and were tied in bunches of convenient size. As they were given into the eager little hands, the scene was a noisy as well as a smiling one, and the windows of adjoining tenements were crowded with grown persons, who shared the children's delight. This special charity is not fathered by the society of which Mr. Lyon is secretary, but is personally his own; and most, if not all, of the flowers which he thus distributes from time to time come from his grounds at Short Hills, and are gathered and arranged by his children. More good is done in ways like this than in many of the ways with which charity has been longer familiar; and the good is to the donors, of course, as well as to the recipients. Very few New York business men can be expected to take the time and trouble needed for the actual following of Mr. Lyon's example; but there are many who, with very little trouble indeed, could regularly send quantities of flowers for distribution to him, to some hospital, or to one of the many charitable societies which would thankfully receive and distribute them.—*Garden and Forest*.

Effect of Electric Light on Flowers.—Electricity is to have a new employment in horticulture, says *Electricity*. It has been shown that lettuce is particularly susceptible to the influence of the electric light, by means of which it can be grown for market in two-thirds the usual length of time. Other vegetables respond likewise in varying degrees. But everything depends upon the proper regulating of the light, and how to do that

can be learned only by the careful study of the results produced under all conditions. The effect of light being to hasten maturity, too much of it causes lettuce to run to seed before the edible leaves are formed. The light is not employed as a substitute for sunlight. It is used merely in a supplementary manner. The greenhouse that has the sun in the daytime is illuminated at night by arc lamps, towards which the plants incline their leaves and flowers. It was supposed that vegetables required intervals of darkness for their health and development, just as animals need sleep, but it has been shown that, supplied with the rays of electric light, they will go on growing thriftily between sunset and day-break. Opal globes diminish the intensity of the light. Under the full influence of the light the plants grow pale, run up quickly in sickly stalks, and soon die. It remains to be discovered exactly how much light is beneficial, and during what period of the development of the vegetables it ought to be applied. The influence of the electric light on the color and productiveness of flowers has been shown to be extraordinary. Tulips exposed to the light have deeper and richer tints, flowering more freely and developing longer stems and bigger leaves. Fuchsias bloom earlier under like conditions. Petunias bloom earlier also, and more profusely, growing taller and more slender.—*Journal of Horticulture*.

Frost Problems.—Tomatoes and other vegetables have been killed with frost when the thermometer hanging beside the door registered 40 or even more degrees at 5 o'clock in the morning. The explanation of this mystery lies in the fact that plants may, and sometimes do, have a temperature as much as 15 degrees below that of the surrounding atmosphere. During the day plants and other bodies absorb a certain amount of heat from the sun, and in the night they radiate more or less of that heat back into the air. Thus the plants, both in summer and winter, become colder than the air which touches them. At the same time it must be remembered that there is at all times a quantity of invisible steam, or vapor, floating in the air. Now, in summer, when both the air and the plants are above the freezing-point, the coolness of the leaves turns this vapor into dew, just as the cool window-pane makes dew when a child breathes on it; but some morning in the fall, when the air is at 40° and the leaves at 30°, or perhaps lower, the coolness of the leaves turns the vapor into hoar-frost. With a cloudy sky the earth is covered as with a blanket, and when in the night the earth begins to radiate away its heat, this blanket of clouds reflects the heat back to the earth, and this goes on until there is little or no difference between the heat of the air and that of the plants and other things on the earth, and so no frost can form. On the other hand, when the sky is without clouds, the earth's heat is radiated away into the atmosphere, the plants become cooled below the freezing-point, and show the hoar-frost in the morning. When it is windy, the air which touches the plants is removed before the plants have had time to change the vapor of the air into dew or hoar-frost.—*Farmer's Review*.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.



Apples for Northern Illinois.

—For perfectly sure ones, plant Duchess and Yellow Transparent, but I do not care what you take for a third sort. If hardness alone is considered, I do not consider any apples absolutely hardy except Duchess

and Wealthy. I believe in double-working.—*J. V. Cotta, Illinois Horticultural Society.*

Manure and Soil-Moisture.—I have found that manure has a marked influence in bringing water toward the surface, from depths as great as six feet below. While the manured ground contains, in the upper three feet of soil, three pounds more of water to the square foot of surface than the unmanured ground, the lower three feet of manured ground contains about the same amount less than the unmanured ground. It appears, therefore, that farm-yard manures have an effect upon vegetation other than that exerted through the plant-food they may contain. By increasing the movement of water toward the surface, they make available water and minerals held in solution, which, without this influence, would remain unused below the zone of root-action.—*Prof. S. H. King, before the Wisconsin State Agricultural Convention.*

Pedigree Plants and Trees Needed.—Look at the prize-winners in horticulture. The exhibitors go through their orchards, picking a specimen from this tree and that, until the collection is made. The tree that is loaded year after year with the finest fruit, true to type, high in color and rich in flavor, its perfect foliage and smooth trunk indicating perfect health—this tree that has stood the blasts of the severest winters is entirely ignored in the awards. The same is true of a vine or plant. I believe there is not a commercial nurseryman in America to-day who seeks out these deserving trees and plants, and makes a special feature of propagating from them. There are some seedsmen who have practiced selection until they have really become famous for their skill in improving known varieties. In the case of fruits, I believe it is a universal rule of nurserymen to take scions from nursery-rows or any convenient tree of the variety desired. I believe this has more to do with the failure of orchards than any other cause.—*R. M. Kellogg, Michigan Horticultural Society.*

Dooryard Pruning.—Ornamental trees, and fruit-trees grown for ornamental purposes, should have their branches started low, and if it is necessary to carry the top high enough to walk under, trim the side-shoots from the main branches just as if they were separate trunks. Evergreens should always be trimmed down instead of up. Resting on the grass the branches form beautiful backgrounds and screens. Trimmed to bare stems, with the foliage several feet up in the air the trees are

neither useful or beautiful. Time is a most important element in rural adornment. The beautiful trees we see here and there by the roadside fences, developed to the greatest beauty of the species, are the result of time and severe letting alone. Give natural growth time and it accomplishes wonders. Meddle with it every year, cutting back and mutilating with saw and knife, and its development is artificial and lacking in many of the peculiarities that distinguish species or varieties.—*L. B. Pierce, before the Ohio Horticultural Society.*

The World's Fair and the German Seedsmen.—A report has been widely circulated among German seedsmen to the effect that wholesale firms in this country will boycott any seedsmen of Germany who attempts to make an exhibit at the Columbian Exposition. J. M. Samuels, Chief of the Department of Horticulture, has made a thorough investigation, and having received emphatic assurance from many of the principle seed-firms of the United States that they know absolutely nothing of such an intention, but on the contrary are anxious to see a representative seed-exhibit from Germany, states that the report is entirely without foundation. The following resolution has been passed by the American Seed-trade Association:

"Resolved, That the American Seed-trade Association, in convention assembled, heartily deprecates any action that may have been taken to prevent exporters of seeds in Germany from making an exhibit of their products at the World's Fair in Chicago; that none of its members have ever participated in such a movement, and express a hearty desire to have the fullest representation of the products of the world, as relating to their business, exhibited at that time."—*A. L. Don, Secretary American Seed-trade Association.*

Preparing Fruit for Market.—The recent discussion on ways of marketing fruits, by the New Jersey Horticultural Society, touched a subject worthy of greater consideration. Mr. Parry stated that English jams were offered for sale in Philadelphia, put up in quart-jars and marked with prices between 65 to 85 cents. The large profits made by the vendors may be well understood, when it is learned that the preparation consists of about 3½ cents worth of sugar, besides the small quantity of fruit. If managed properly, we could undersell the world on these products, and make a large margin on fruit. It does not require the expensive machinery needed for canning. Every farmer can do it on his own place.

Mr. Rodgers said the foreign preparation of jam is superior to most American jams on the market. This makes the market for it.

Mr. Blackwell said that the demand was great for jellies, and the apple jelly sold was made by using dried cores and skins to flavor gelatine, thus requiring very few apples. But we are aware that some manufacturers offer only a pure article.

Canning and Preserving Fruits.—In a discussion of the Muskingum (Ohio) Farmers' Club, Mrs. W. S. Devol said that the first requisite in canning is to have perfect, ripe fruit of the best quality. Put in all the sugar and

flavoring the fruit is to have when prepared for the table. The fruit is kept boiling hot while it is being put into the cans. The cans should be perfectly dry and a silver spoon put in them to prevent breakage. She prefers the Putnam self-sealing and Mason's jars. The jars are filled full and dry covers screwed down firmly. If the edge of the cover has been nicked or bent it should be hammered out smooth, and if it will not screw down tight with one rubber on, put on two. Tomatoes should not be very ripe and should be well cooked and skimmed. Tomatoes canned early in the season, or by the middle of the season, keep better than those canned toward the close. Jars should not be put in anything cold until they are partly cooled. Blackberries should be put up the day they are gathered.

G. A. Wood said that the secret of canning is to kill all the germs of fermentation and mold within the jar, and to prevent others getting in. For this purpose, at the canning factories, after filling the cans with the prepared fruits or vegetables, they are placed in a box and subjected to great heat by steam, and sealed while very hot. Corn may be kept in open jars by mixing one part salt with three parts, by weight, of corn.

Mrs. J. G. Parker said that for jams the best result was obtained with fruit not quite ripe.

Feeding the Orchard.—I contend (1) that the soil should be cultivated and plant-food set free to the utmost limit; (2) that leguminous and tap-rooted plants should be used as plant-food gatherers; (3) that animals should be kept as much for the value of the manure they produce, as for the profit realized from them otherwise; (4) that the least possible amount of stalk and vine and limb consistent with economy and the health of the plant be grown; and (5) after having practiced all the economy possible, if there is still a lack of fertility, in order to secure the highest quality of product and the greatest net income, that commercial fertilizers of a high grade should be applied with a liberal hand. If it is found at any time that commercial fertilizers give better net results than farm-manures, then there should be no hesitancy in changing from one to the other. I believe that farm-manures which have lain in the open yards or have been heated, and which have been drawn long distances, are far more expensive than are high-grade fertilizers. Stable manure exposed in piles from April to October often loses half its value; therefore, I am led to believe that many tons of manure which are transported from the city contain less than a dollar's worth of soluble plant-food. This may act beneficially as a mulch, but, so far as the plant-food it contains is concerned, it is too often an expensive way of preserving the fertility of the land.—*Prof. Roberts, before the W. N. Y. Horticultural Society.*

Packing Plants for Transportation.—In packing orchids, great care and good judgment are essential. Take, for instance, a plant of *Odontoglossum crispum* with a spike of flowers bearing from 12 to 20 full blooms. How to pack such a plant is learned by experience and practice only. Get a light, strong stake, measure and cut it

about two inches longer than the flower-spikes, wrap the stake in tissue paper and put it as near the center of the plant as possible. After you have secured the stakes and cut some tissue paper into strips about one inch wide, begin binding the flower-spike close to the stake. A man new at packing such a plant will undoubtedly break off several flowers before he is through; if skilled, he will bind up the whole flower-spike without breaking a petal. Having fastened the flower-spike securely to the stake, the rest is simple and easy. Get four more stakes, paper them and stick one in each corner of the basket or pot. If the plant is to be packed in a basket, and the stakes are not firm, it is well to tie them to the basket, and so prevent any chance of a stake getting loose and the flowers being broken. Next, cut four sticks to fasten to the top of the stakes. In doing this see that none of the flowers touch the stakes, thus giving the flowers all the room necessary. Tie the flower to the stake at the top so that no movement is possible. After satisfying yourself that the stakes are fast, wrap the plant up in tissue-paper, cotton batting, and strong paper.—*A. Caparn, before New Jersey Social Florists' Club.*

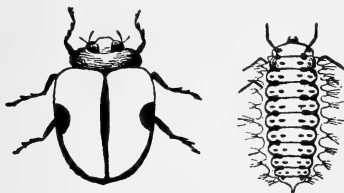
Missouri State Horticultural Society.—At the meeting held in June, Conway Hartzell carried off one-third of the prize-money for his large display of apples, consisting of a dozen varieties in perfect state of preservation. The apples were kept by the Hartzell plan.

In the discussion following the reading of papers on planting and pruning trees, the members present were almost unanimously in favor of low heads, from one to three feet high, and little or no pruning. The number of apple trees planted on an acre has been gradually increased, until now our most successful orchardists are planting from 70 to 160 trees on an acre. This is pretty thick, but the growers have found that the thicker they plant and the less they prune, the larger their bank account has grown; while those who have headed high and have employed professional pruners have not made money. Orchards planted and cared for according to this plan have yielded, at five years from planting, from \$50 to \$100 net an acre, and at 15 years from planting \$150 to \$450 an acre, net. The trees are cut out at 20 years from planting. We now plant for the money there is in it. So we push the trees for about 20 years, then let them go. There may be many good trees still in the orchard that might be nursed along for years, but we cannot afford to keep them. Neither can we afford to plant trees that the next generations may eat fruit therefrom. Old men have planted orchards in Missouri, gathered the harvest and planted again. The leading varieties are Ben Davis, Jonathan and Winesap.

We were told years ago that the people could not always be swindled with Ben Davis apples, that they would soon demand something better; but the demand for the Ben Davis apple has increased more rapidly than has its production. Still the Missouri people are trying to find or produce a better apple that can be grown here. We are testing everything that is promising.—*J. C. Duffey.*

A New Australian Lady-Bug.—B. M. Lelong, Secretary State Board of Horticulture, of California, describes the lady-bug received from Australia in April, 1892. This insect preys on the cottony cushion-scale. Its attempted colonization has proved successful. Experiments will soon be made to determine what other species this valuable insect, whose functions equal, if not surpass, those of the *Vedalia cardinalis*, will destroy.

The beetle is slightly smaller than *Vedalia cardinalis*, averaging one-eighth of an inch in length. The elytra are cardinal red when the perfect beetle issues from the pupa-case, afterwards changing to deep blood red. The male has a black line down the center of the back, from the



A NEW AUSTRALIAN LADY-BUG.

thorax to the point of the abdomen, where it widens, extending forward along the lower edges of the elytra to near the center; here it terminates in a small blotch. Head and thorax are dark, and together with the elytra are densely covered with microscopic light or yellowish hairs. The legs are black, with the exception of the tarsi, which are buff colored. The female can readily be distinguished from the male, in having the central black line extend only half way down the back; the remainder of her wing-covers are blood-red with the exception of two faint spots, one slightly under the center of each wing-cover; but in some specimens this is not discernable. The female deposits eggs upon or near the scale, so that when the larvæ hatch they will find their food convenient. The eggs are laid singly or in small patches upon their sides, instead of being attached at the end to the leaf or twig, as is the case with the twice-stabbed and some other species of lady-bugs. In five days they hatch into small, six-legged larvæ, very much resembling the young of the icerya, upon which they feed. In confinement they pass through three molts and the chrysalis state into perfect beetles within 31 days, but in the warm orchards and sunshine, this time will probably be reduced to 10 days. The larvæ, when full grown, measure about .18 of an inch, and are thickly covered with white powder or a fine down, but generally have the segments well defined. When newly molted they are brownish red or chocolate colored. Down each side of the back are what appear to be two black lines, but when examined with a good lens or microscope, a double row of dots or short lines upon each segment will be seen, and between the segments are large black spots,

forming a central row to the other markings. Upon each segment, along the sides, protrude small warts, from each of which grow four fine hairs; the first two segments from the head of each have two extra, smaller warts, with a single hair upon each. When full grown the larvæ seek a suitable location to go through the chrysalis stage. This is generally upon a branch or dry leaf, where it attaches itself, head downward, by a gummy matter exuded from the abdomen. In this position it remains a few days, when the back of the chrysalis splits longitudinally, exposing the pupa, which later changes into a perfect beetle.

Fruits and Flowers for the Poor.—The admirable work of charity started almost a quarter of a century ago by Miss Ella E. Russell, in New York City, has in the last few years spread out in so many different channels that it needs generous help more than ever. The headquarters of the Fruit and Flower Mission are at 104 East Twentieth street. Here, on Mondays and Tuesdays in each week, from 12 to 20 women interested in the work, come to arrange the flowers to be sent to the different hospitals and homes. Sometimes as many as 8,000 bouquets are sent out at a time. The flowers come from a variety of sources. Many contributors to the mission live far away. The fruit-farms of Ulster county, N. Y., send generous contributions. All the packages labeled for the Fruit and Flower Mission are brought free of charge by the Adams, United States, American, and Long Island express companies.

Many of the stories connected with the welcome which the flowers receive are more touching than an outsider can realize. In a cell of the women's ward, in the penitentiary at Blackwell's Island, not many months ago, there was placed a young woman who was sentenced for life. She was a beautiful girl of only 20 years, but in a fit of jealous rage she had murdered her husband. For weeks after she was placed in the penitentiary all she would do was to rock her body back and forth, and sit with her eyes fastened to the stone floor, saying over and over again to herself, "there is no rest, there is no rest." One of the workers for the Fruit and Flower Mission brought to this girl a bunch of pure white roses, and with them a message of cheer and encouragement. It was the first kind notice the girl had received since she had been there. The flowers brought back a happy girl's memory. Since then her life is a changed one. She is striving hard to make the best of its dreariness and is patient and uncomplaining. One poor woman whose home is on the top floor of a tenement, and who has been bed-ridden for a score of years, is so delighted with the flowers sent her from the Fruit and Flower Mission that she keeps them in a little broken vase by her bed long after they have faded and lost their fragrance. She won't let them be taken away until fresh flowers come to take their place. The crippled children in the different hospitals of the city grow wild with delight over a single flower, even if it be only a field-daisy. It is marvelous what cheering power is folded away in the petals of a rose, and what brightness it brings to the sick and weary.

HE THAT QUESTIONS

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists.
 Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following.
 Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

3032. **Paper Plant-Labels.**—Where can I get material for printed plant-labels, such as dealers in flowering plants?—A. L. G., Hampton, Va.

3033. **Greenhouse Glazing Fixtures.**—Where can those mentioned in the June number (page 372) be obtained?—F. S., Oregon.

3034. **Preparing Bordeaux Mixture.**—In preparing the lime-water for this mixture the lime settles to the bottom and leaves the water clear. Is the sediment to be stirred into the mixture or only the pure lime-water?—B. F. B., N. Y.

3035. **Poison for Gypsy-Moth.**—What is the right quantity of glucose to use with Paris green, as recommended by the Massachusetts authorities in June GARDENING, page 341?—J. D. W.

3036. **Lawn Fertilizer.**—What manure is best for lawns? How much should be applied each time per 60,000 square feet? When and how should the application be repeated?—F. C. S., Pa.

3037. **Grass-Seed for Lawns.**—Does the present season's growth of various lawn-plats on the editor's grounds show any change in the relative value of the different grasses and grass-mixtures?—A. W. M., N. J.

3038. **Crocus in Lily-Pond Muddy.**—Can crocus bulbs, planted on the lawn, be depended upon to push their stems up through the sod? How deep should they be set?—W. H. W., Mass.

3039. **Water in Lily-Pond Muddy.**—My lily-pond is 10 feet across and 2½ feet deep. In it I have Egyptian lotus, water-lilies in variety, and one water-poppay. Have used rain-water to fill the pond, but it remains muddy. Why is this?—W. J. M., Ill.

3040. **Lily Queries.**—What is the botanical name for the skeleton lily? Is *L. Kramerii* as hardy as *L. auratum*?—E. F. R., Maine.

3041. **Bulbs after Flowering.**—If tulips and narcissus must be taken up before they are fully ripe, should the leaves be cut off at once or left on until dry?—M. J. R.

3042. **Is it a Sport?**—In taking up a tulip I found a perfect bulb formed on the axil of a leaf. How shall I treat it?—M. J. R.

3043. **Keeping Dahlia Roots.**—I can winter the common varieties in sand in the cellar, but have no success with finer ones like *Camelliaflora*, *White Dove*, etc.—Mrs. H. F. D.

3044. **Culture of Hothouse Plants.**—Please give directions for growing *Tecoma stans*, yellow jessamine (*Gelsemium sempervirens*), pomegranate, *Passiflora incarnata*, Japan loquat and Cavendish banana.—W. H. B., Kansas.

3045. **Soil for Carnations.**—Can I grow carnations on the same benches and in the same soil used for forcing roses?—W. H. S., Ills.

3046. **Book about Tulips.**—Please name some good book on tulip-culture.—O. H. H.

3047. **Poplar Bolleana.**—How is it propagated?—J. E. W., Ohio.

3048. **Pomegranate not Blooming.**—The plant is 9 years old, about 2 feet tall, and has been allowed to form a shrub with 3 or 4 branches from the base. It is wintered in the cellar, brought up in March to a chamber window, and allowed to stand upon the lawn after warm weather comes. It now stands in an old water-pail. How can I coax it to bloom?—P. P.

3049. **Sarracenias in Baskets.**—How should they be grown in baskets near the glass? What is the real difference between them and nepenthes?—M. C. L., Texas.

3050. **Mildew on Abutilons.**—A leaf covered with small black mildew-spots is enclosed. It was taken from abutilon King of Roses. All my abutilons are close together in the same house, but only the maple-leaved varieties are diseased. Can you explain this and give a remedy?—W. W., Penna.

3051. **Japanese Reticulated Honeysuckle.**—The enclosed twigs are from a pretty, variegated-leaved, white-flowered honeysuckle. Is it a novelty? A seedling plant of this shows no green.—J. H. VAN., Mich.

3052. **Red-Flowering Dogwood.**—Is this a reality or a myth?—J. E. W.

3053. **Ginseng-Culture.**—Is it a demonstrated fact that ginseng can be successfully cultivated? What are the requisites in regard to soil, environment, cultivation, etc.?—B. T. G., Ills.

3054. **Eradicating Burdock.**—In order to destroy burdock is it necessary to dig out the root, or only to cut it off below the surface?—W. S. B., Mass.

3055. **Parsley-Seed.**—I have a good kind just now going to seed. Will this seed produce the same variety next year? Where can I get seed of a good early kind?—F. H., Kansas.

3056. **Cutting Asparagus-Tops.**—When is the best time for this? Will it hurt the plants to cut the tops as early as August?—Mrs. G. G., Md.

3057. **Growing Early Vegetable Plants.**—Are the early plants grown for sale raised in hotbeds, coldframes or greenhouses?—N. L. C. M.

3058. **Storing Irish Potatoes for Winter at the South.**—What methods are best?—H. C. M., Ga.

3059. **Mixed-Pickle Making.**—Will Mrs. Gaillard kindly give us the recipe for mixed pickles as mentioned by her in the May GARDENING?—T. W., Ala.

3060. **Unfermented Grape-Juice.**—Kindly give us the whole process of manufacturing it as practiced by C. J. Baldrige and others.—J. T., Ontario.

3061. **The Brilliant Grape.**—What is its history?—F. M. T., West Virginia.

3062. **Cherry Queries.**—Do Black Tartarian and Yellow Spanish cherries cover exactly the same season with you? Which is preferable as a late kind for family use, Windsor or Reine Hortense?—G. W. S., Conn.

3063. **Japanese Persimmons.**—Are they hardy and otherwise desirable for a general collection of fruits for home use?—F. C. S., Pa.

3064. **Persimmon Propagation.**—What is the best method?—J. E. W.

3065. **Making Tardy Trees Fruit.**—How should thrifty-growing fruit-trees of bearing age but tardy in fruiting be treated?—Wm. H., Indiana.

3066. **Switzer Apple.**—Can it be recommended for this section?—W. Y., Wisconsin.

3067. **Peaches for Ohio.**—Are seedling peach trees hardier and longer lived than budded ones? What late varieties of good size and quality would you recommend? Are Ellison, Wheatland and Wonderful good?—D. H. H., *Ohio*.

3068. **Seeds of Hardy Orange.**—Where can I procure seed of *Limonia trifoliata*?—J. A., *Ala.*

3069. **Strawberry Patch after Fruiting.**—Blight, I n spots all over the field, is increasing. Weeds also have grown, and in many places hide the vines. What can be done?—T. F., *Ontario*.

3070. **Starting a Blackberry Patch.**—I have allowed the suckers to grow. Can I succeed best by setting them this fall, or shall I plant root-cuttings, covering them deeply, just where I want the plants to stand?—O. M. M., *Indiana*.

3071. **Raspberry for Home Use.**—What do you consider the earliest and best for this purpose? Cuthbert is rather insipid.—Mrs. G. G., *Md.*

3072. **Cultivating the Orchard.**—How deep should I cultivate? Are 6 inches of loose earth not better than 2 inches?

3073. **Marianna Plum Cuttings.**—What part of the wood is used, and how are the cuttings rooted?—H. M., *Colo.*

3074. **Who Sells Nut-Trees?**—I wish to plant a few English and Japanese walnuts, some chestnuts, hazelnuts, etc.—J. R. G., *Ark.*

REPLIES.

2917. **Keeping Dried Fruit.**—Put it in stout paper bags and tie them tight. This is a sure way, provided millers and flies did not have access to the fruit before it was put in the bag.

2929. **Remedy for Rose-Bugs.**—Pour about a pint of boiling water, or as much cold water with a little kerosene added to it, in a tin basin. Shake the bugs from the roses into the water.—ADELE.

3008. **Niagara and Imperial Gage Plums.**—In the Niagara River orchards, Niagara plums are ripe enough to begin picking them by August 20, Imperial Gage by August 30. Both are often marketed earlier, in a green and unpalatable condition.—HENRY LUTTS, *Niagara Co., N. Y.*

3012. **The Wonder Strawberry.**—According to reports received, this appears to be none other than the Oregon Everbearing.

3031. **Cold Storage for Vegetables.**—A cold-storage house will keep vegetables fresh until they can be profitably sold. Produce left from one day's sales can be kept fresh and nice in these houses until the next day, and chilling it 24 hours before sending it to market greatly improves its appearance. Cold-storage houses are, in some cases, made large enough to allow backing the market-wagon into them, and loading it directly from the shelves. Ice is packed in the upper part of the house during the winter, in sufficient quantity to last all through the summer. Some, however, find it necessary, on account of the small size of the storage capacity, to repack with ice from time to time, drawing their supply from the nearest public ice-house. In late fall these houses are utilized for storing spinach, cauliflower and other vegetables for winter sale. The sides of the houses are double and packed with sawdust, so that they are frost-proof.—E. P. KIRBY, *Mass.*

3032. **Paper Plant-Labels.**—Any printing-house should be able to furnish the paper, if you give them a sample of label and order the labels printed. Perhaps

you can obtain the labels already printed from your florist's supply store. Ask Peter Henderson & Co., of New York City.

3033. **Greenhouse Glazing Fixtures.**—The fixtures illustrated in the June issue of AMERICAN GARDENING are an English device, advertised in English papers. We do not know that they are being used, as yet, by Americans; but if there is a demand for them, manufacturers will gladly supply them.

3034. **Preparing Bordeaux-Mixture.**—The mixture should be like white-wash. All gritty sediment may be strained out, but the lime in solution should remain. Stir the mixture, and at once slowly pour it off. The undesirable grit settles at once, and will remain at the bottom of the barrel.

3035. **Poison for Gypsy-Moth.**—The best proportion of glucose to mix with Paris green is as follows: Two quarts of glucose; or, if that cannot be obtained, use the same amount of molasses, with 150 gallons of water and one pound of Paris green. The glucose causes the Paris green to adhere to the leaves, so that it is not washed off in a moderate shower.—C. H. FERNALD, *Mass. Experiment Station.*

3036. **Lawn Fertilizer.**—Try a few tons of wood-ashes and 500 pounds of nitrate of soda on your 60,000 square feet of lawn area. Apply it in early spring. Or, in place of this, apply about a ton of some high-grade complete manure, which should be rich in nitrogen. Dried blood and ashes are good; in fact, anything that will supply the needed plant-foods, especially nitrogen. Of course, well-composted stable-manure can also be used to advantage. Cover your lawn over an inch or two deep with it in the fall. Don't use coarse, rank-smelling stuff.

3037. **Grass-Seed for Lawns.**—We have seen no reasons for changing our views regarding the relative value of the highly-lauded lawn-grass mixtures sold at an advanced price, and a simple half-and-half mixture of Kentucky blue-grass (*Poa pratensis*) and red-top grass (*Agrostis vulgaris*). Our preference is for the latter in almost every instance.

3038. **Crocuses in Sod.**—Crocuses grow readily in ordinary sod. The bulbs should be 2 or 3 inches beneath the surface. The flowers are scarcely out of the way by the time the grass needs cutting, assuming that the sod is one that is kept closely mown. A favorite place for growing crocuses in grass is under the shade of deciduous trees, where the grass does not make a strong growth. Another good place for them is about the base of evergreen trees, and under the branches of flowering shrubs.

3039. **Water in Lily-Pond Muddy.**—We cannot account for the muddy state of the water, unless there are frogs, turtles or other lively things in the pond. It should be clean.

3018. **Budding Fruit-Trees.**—The following account is taken from W. C. Strong's *Fruit Culture*, third edition, just published by the Rural Publishing Co., New York: At periods of active flow of sap the bark of

trees will readily separate from the wood. When this can be done, buds may be inserted under the bark and upon the sap-wood, where they will unite with the tree and yet preserve their identity and characteristics. The operation may be performed at any time when the bark lifts freely, provided buds sufficiently mature can be obtained. But the time of most certain success is when the summer growth is about to cease and the flow of sap will be

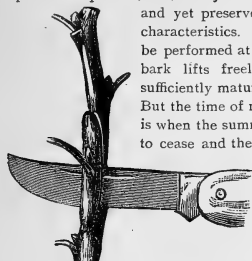


FIG. 1.
BUDDING FRUIT-TREES.

less abundant. Upon cutting the scion from which the buds are to be taken, the leaves should at once be cut, leaving about a quarter of an inch of the foot-stalk of the leaf, which will be long enough to hold the bud. After the foliage is removed, these scions may be kept several days without injury, if wrapped in damp cloth or in moss. With a keen, thin blade the bud is cut from the scion, as seen in fig. 1. The length of the cut varies, but in general is about half an inch above the bud, and slightly longer below. As little wood as is possible should be cut with the bud. Fig. 2 shows the perpendicular and horizontal slits through the bark of the stock, and fig. 3 shows the lips of the bark slightly raised by the thin hilt of the budding knife. In fig. 4 the bud is seen slipped into its place, the bark lapping smoothly over it. It is now necessary to bind the bud so firmly that the air and rain will be excluded, as may be seen in fig. 5. Soft and moistened strings from bass-mats have been used for this purpose. A grass called raffia is coming into use as an excellent material for tying. Some varieties of trees have an excessive flow of sap, and the buds are liable to be "drowned out," as it is termed. In such cases, make the horizontal slit at the bottom of the perpendicular incision, and insert the bud upward. This latter method, namely, of inverting the cross (thus, \perp) is practiced with maples and other ornamental trees, but is not required for fruits. The conditions of success are: vigorous stocks which peel freely; sufficiently mature buds; a smooth, thin cut of the bud, with but little wood adhering; no roughing of the cambium under the bark; a good fit of the bud; no delay in setting it, and an even binding of the bark so as to exclude all air. In about ten days or a fortnight after this work is done, if the stocks are vigorous, the strings will begin to bind, and must be loosened or cut. In early spring, the stock is cut away a few inches above the bud, and this projecting stem serves as a support to which the young shoot may be tied. In July the shoot will be strong enough for self-support, and the stub should be cut away close down to the bud, so that the wound may close over. Pear stocks are liable to leaf-blight early in August, and

therefore require to be budded before growth stops. Peaches, on the other hand, are in active growth in September, and work upon them may be delayed well into August.

3041. **Bulbs after Blooming.**—If narcissus or other bulbs must be taken up before they have ripened, the best way is to heel them in in a shady place, and give them a chance to mature. Of course, the leaves must be left on.

3043. **Keeping Dahlia Roots.**—The dahlia tubers can be stored like Irish potatoes, and usually keep as well. Why the varieties named did not keep well we cannot tell from the data given. If they rotted, they must have been kept too damp; if they shriveled, they must have been kept too dry.

3045. **Soil for Carnations.**—Your plants could not be expected to do so well in the soil in which last winter's carnation crop was grown as in a fresh soil. Florists are more particular to have their carnation soil fresh and suitable than they are about the soil for almost any other winter-flowering plant. One reason for this is that carnation-plants seem disposed, under some circumstances, to rot away at the ground, and a fresh soil is supposed, in measurable degree, to be a safeguard against this.

3046. **Book about Tulips.**—You will find much information on tulip-culture in Henderson's *Bulb Culture*, price 25 cents; and also in his *Practical Floriculture*.

3047. **Poplar Bolleana.**—All poplars are easily propagated from seed, suckers, or cuttings from branches or roots. The usual mode of propagating varieties is by cuttings from one and two-year-old wood, planted in spring or fall; or by budding on stocks of thrifty-growing varieties.

3049. **Sarracenia in Baskets.**—Native pitcher-plants are found in our swamps and bogs, and the soil found there, consisting of peat and living sphagnum, probably suits them best. "When growing," says B. S. Williams, in his *Stove and Greenhouse Ornamental-Leaved Plants*,

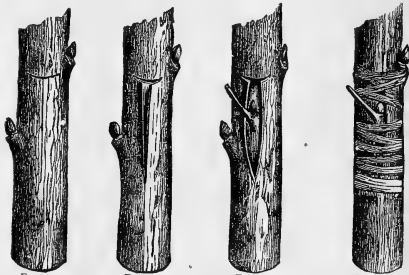


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

BUDDING FRUIT-TREES.

"they enjoy a top-dressing of rich, rotten manure. The pots (or baskets) should be thoroughly drained. We have usually grown them with some moss between the

pots, to assist in keeping the roots cool and moist, and occasionally treating them to a light sprinkling of water from a syringe. During summer an abundant supply of water should be administered, but in winter very little will suffice. The nepenthes belong to a different order from the sarracenias, and are native on the islands of the Indian Archipelago. They should be kept in a moist atmosphere, and given a temperature of about 70 degrees in summer, and at least 60 degrees in winter."

3051. **Japan Honeysuckle.**—This is probably a seedling of *Lonicera brachypoda aurea reticulata*—the Japan reticulated honeysuckle. The variegation is irregular. Our friend should propagate those shoots which are the brightest and most uniformly colored. In this way a variety of value may ultimately be secured.—E. S. CARMAN.

3054. **Eradicating Burdocks.**—If merely cut off at or near the surface, burdocks will sprout again. The only sure way to get rid of them forever is to pull them up, roots and all, or to cut them off near the ground and pour a small quantity of kerosene, turpentine or sulphuric acid upon the root left in the ground.

3055. **Parsley-Seed.**—Your home-grown parsley-seed will undoubtedly reproduce its variety. If you wish to plant new seed of any of the curled sorts, you can purchase seed of them from any leading seedsman.

3056. **Cutting Asparagus-Tops.**—The plants should be given a chance to grow and store up reserve forces for next year's crop just as long as there is no danger of stocking the ground with seed. Cut the tops and remove them before their seeds are likely to be scattered over the ground.

3057. **Growing Early Vegetable Plants.**—Our large plant-growers now grow almost all early vegetable plants in greenhouses. Until some years ago early cabbage, cauliflower and lettuce were started in open ground in September, transplanted to coldframes by November, and there wintered until time of sale. Small growers still adhere to this plan. It is a good one, as it insures the desirable point of hardiness, which we do not always find in greenhouse-plants. Still, the use of the greenhouse involves less labor and time. Seed is sown in flats in January and February; the tiny seedlings are pricked out in other flats, an inch or two apart, and grown on without check until ready for hardening off. The best thing that can be done to them for a week or two before sale, or setting, is to place the flats in a coldframe, and give the plants as much air and exposure as is possible. Early celery-plants are grown in about the same way.

3058. **Storing Irish Potatoes for Winter at the South.**—Prof. Massey recently asked a number of southern growers about their favorite methods of winter-storage. A summary of their replies is given in Bulletin 85 of the N. C. Experiment Station, as follows: "There is a diversity of opinion, but all agree that the late crop is especially easy to keep. Many prefer to store in barrels or crates in an outbuilding, some spread on barn-floors and cover with straw, but the majority prefer storing in hills outdoors and covering with earth. Nearly all agree

on the necessity for keeping the potatoes cool and dark." In view of this apparent ease of winter-storage for the late crop of Irish potatoes at the south, it is astonishing that they are not much more grown and appreciated as a food crop to compete with the northern-grown potatoes for table use in winter and spring. "The markets of the southern cities," says the Bulletin, "are still almost entirely supplied during fall, winter and spring with potatoes brought from the north; and the late fall crop of the south has, so far, made not the slightest impression on the food-market. The southern fall-grown potatoes keep unsprouted much later than the northern potatoes, and the ease and certainty with which the crop can be grown by proper treatment ought to enable our home-growers to supply the home-market at a profit. In all our southern cities Irish potatoes seldom sell for less than \$1 a bushel all winter, and usually for considerably more. Hundreds of thousands of bushels of northern potatoes are annually sold here at these prices, all of which can as well be produced at home. With the great depression in the cotton-growing interest, our people are asking what they can profitably grow. Why not grow late potatoes for the home-market for food as well as for seed?"

3061. **The Brilliant Grape.**—The following, from the report of the pomologist of the Department of Agriculture, tells the whole story: "This is a seedling originated by Prof. T. V. Munson, of Denison, Texas. It is the result of a carefully made cross between Lindley and Delaware, effected in 1883. It has been tested by a few of the best grape-growers in the country, and proves hardy in vine. The growth is quite vigorous, and, so far as can be judged, it bears abundantly. The cluster is about the size and shape of the Concord, being compact and slightly shouldered. The berry is large and hangs well to the stem. The color is red, nearly resembling the Catawba. In flavor it is about equal to the Delaware, being delicate, yet rich and aromatic. The pulp is very tender and the seeds seldom exceed two or three. The skin is thin, yet tough enough to ship well."

3063. **Japanese Persimmons.**—It is very doubtful whether Japanese persimmons will be found hardy enough for even southern Pennsylvania.

3064. **Persimmon Propagation.**—The native persimmon grows easily and rapidly from seed. Varieties may be budded on seedling stock the first season. If the stocks are kept over, they should be cut down severely in spring to give a new growth in which to insert the buds.

3065. **Making Tardy Trees Fruit.**—In such cases root-pruning is sometimes resorted to, but this is a violent process. Try checking the growth of branch, limb and shoot at or just before bearing trees are forming fruit-buds. Or draw a cord tightly about any of the branches or the trunk of the tree. A bolder method is to remove a narrow strip of bark from around the tree. This, when done after a part of the sap for the year's wood-growth has been deposited, will do the tree no permanent harm. The remainder of the sap will remain in the top of the trees until new bark has been formed, and this sap develops fruit-buds.—Z. C. FAIRBANKS, *Mich.*



ON THE BRONX RIVER : IN THE NEW BRONX PARK, NEW YORK.

American Gardening

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No. 10



OF EARLY PHILADELPHIA DAYS.

Thanks to the human heart by which we live,
Thanks to its tenderness, its joys and fears,
To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears.

—Wordsworth.

IZAAK WALTON, the happy philosopher, says:
"There be many men whom we anglers contemn
and pity. Men that are taken to be grave because
nature hath made them of a sour complexion;
money-getting men, that spend all their time, first
in getting and next in anxious care to keep it; men that
are condemned to be rich, and then always busy and
discontented."

It is a similar feeling that I share with Cowper for
crowded, gardenless town-dwellers. What can compen-
sate for not being able to watch the subtle daily changes
that sun and shower bring to growing plant-life? It is
an endless pity that more care is not taken to secure
gardens for new houses and to preserve the old ones.
Crowded between bare walls of brick and stone, human
lives must share the gracelessness of their surroundings.

We have ever been thankful that our childhood was
spent in one of those long, narrow gardens which early
Philadelphia houses boasted. The garden now is a half
wilderness, but in its ragged beauty lies a charm that few
trim gardens possess, much less the rims of patent pav-
ing that surround houses of the new order. Our old
playground will soon be changed, and I want to catch
some of its careless grace before art touches it again.

A fruit-farm, I believe, was our predecessor on the
soil. Soon after we came, fruit-trees sprang up over the
garden. Most of them were peach trees. I counted 25
full-grown ones at one time. What acrobatic feats, what
kinship with the birds we had! The trees came up irreg-
ularly, grew in social little clusters, and they yielded to
their neighbors in an unselfish way that the solitary little
tree of the orchard rarely learns. And they bore peaches

—so many, so large, so rare in quality, that our garden
was a famous resort for guests, invited and uninvited,
during August and September. There were dainty white
early peaches with not a blush on the ripened skin; there
were rich yellow ones with red-gold hearts, that ripened



THE OLD APPLE TREE HAS GROWN INTO AN ARCHING MASS OF GREEN."

late in the mellow October days; and between them were many and delicious kinds. Never, even in California's fruit-valleys, have I seen them equaled.

In among the peach trees were arbors of grape-vines—here a Concord, there a Diana, a Delaware or a Rogers No. 19. At the corner of the garden, next to the house, was a Rogers No. 9, whose history will come later.

There was room, too, for many a flower. A Jacqueminot rose-bush stands in honored old age to remind us of past glory. There was a little group of old-fashioned pink roses with tightly curled petals and a spicy fragrance. Japan quinces and flowering-almonds came early in the blooming time. For many spring days the ground was starred with white periwinkle, peeping above its shaded leaves. Blue periwinkle filled the borders that were not sacred to red geraniums, cannas, cactuses, lantanas, etc., for the man at the helm doted on red flowers. Farther down were white roses, and against the lower fences morning-glories hung their bells.

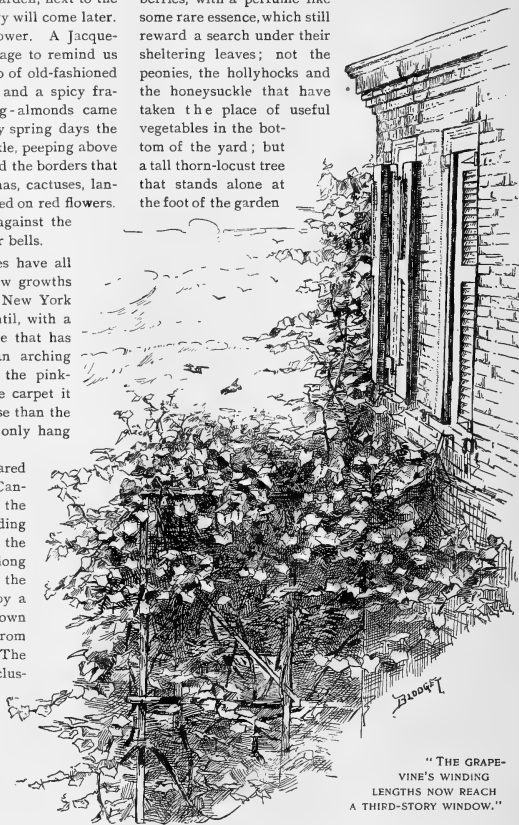
The peach trees and the rose-bushes have all died. Even with lavish fertilizing new growths refused to develop. An apple tree of New York state stock has grown and grown, until, with a smaller brother and a veteran pear tree that has outlasted everything else, it makes an arching mass of green. How we watch for the pink-touched snow of bloom! What a rare carpet it makes as it falls! But the fruit is worse than the fox's sour grapes, for the apples not only hang high, but they are also truly sour.

The modest corner grape-vine that shared honors with a wine-grape and a white Canada grape 15 years ago is now queen of the garden. In its waving, curling, winding lengths it embowers the entire back of the house, and stretches to the end of a long third-story back building. Far down the garden it has grown, too, supported by a trellis as irregular and slender as its own branches. Yet these branches spring from a trunk like a tree's in thickness. The grapes, borne luxuriantly in irregular clusters, even though the vine shoots are not disciplined as they ought to be with the pruner's steel, are rich, red and sweet. What feasts the sparrows have! On the ripest and sweetest berries of every bunch these noisy garden friends grow fat and saucy.

These little warrior birds, and the growing city around us, have driven away most of our old-time spring visitors—the robins, orioles and wild canaries—and with them have gone the fireflies of the summer evenings. Two springs ago an owl rested for a day or two in the apple tree. It was an odd sight, with its great eyes bewildered by the light and the city it had strayed into. I have often wondered over the fate of Minerva's protégé after it left our sheltered nook.

The most beautiful bit of the garden to me now is not

its roof of green, with flickering shade on the grass below; not the long grass, grown gracefully wild and high during the last few springs; not the fleeting glory of apple-bloom, nor the broad patches of violets which have long ignored their original bounds; not the tiny white strawberries, with a perfume like some rare essence, which still reward a search under their sheltering leaves; not the peonies, the hollyhocks and the honeysuckle that have taken the place of useful vegetables in the bottom of the yard; but a tall thorn-locust tree that stands alone at the foot of the garden



"THE GRAPE-VINE'S WINDING LENGTHS NOW REACH A THIRD-STORY WINDOW."

The trunk rises straight and solid to the height of the fence, and from here upward the branches stretch out on all sides their feathery tips. Against a warm June sky the tiny leaves tremble in the soft wind, the tender red shoots tint the outline of the tree almost like blossoms, and one thinks that nothing, in a city garden at least, could be more lovely. And yet in a rare sunset time, when the eastern cloud reflections pale and deepen again into the more mysterious tones of night, and the silvery

flood of the rising moon sifts through the tree's filmy branches, remembering that "the groves were God's first temples," we offer praise to Him for this pillar that is left to us.

I have only given a hint of the possibilities for pleasure we have found in our garden these 25 years. In the

brilliant sunshine of early spring-time, under the pattering summer rain, in the days of whirling gusts and falling leaves, and when the "boughs shake against the cold, bare, ruined choirs," it has had a perennial changing beauty, alive and loving in its sympathy.

E. B. WALKER.



A PLEA FOR INFORMAL GARDENING.

STYLES ADMIRABLE AND OTHERWISE.



BECAUSE all flowers are beautiful, must any flower-garden therefore be beautiful? This is not a necessary consequence. Evergreens are very handsome, yet it is possible to grow them so that nothing could be more hideous. There is certainly a relative beauty in gardens, and I wish to point out

some that are very low down in the scale.

Perhaps you will not object to my stating first some garden styles that I especially like. First of all, a very wild one, where the plants are set in beds that you happen on in cozy nooks; and where the beds themselves are only enlargements on nature's plantings. Some of the best flowers for such beds are wildings. I have nothing in my grounds more beautiful than the mass of violets, trilliums, bloodroots, etc., that my boys have collected and planted under a group of huge mock-orange trees and bush-honeysuckles. In a wide corner overrun with lily-of-the-valley, and in a mass of *tropæolums* trailing about the foot of a clump of red-barked dogwoods and climbing up the twigs, I also take great delight.

A vegetable-garden might be laid out for beauty as well as utility. Our mothers and fathers favored such mixtures, and they always took visitors to walk about the garden—meaning the garden of all sorts. There were rows of nasturtiums along the edges of the onion-beds, and a center plot for lilacs and pinks—the dear old grass-pink, the sweetest pink that ever grew. Then there were clove-carnations, entirely hardy and deliciously sweet; who has these real old clove-carnations now? Saffron made a sunny border at the foot of the garden, and was picked by us to make teas for all sorts of ills. Fennel and dill were needed on Sunday, for the sermons were one hour long and prayers nearly half an hour. Caraway we always had in cookies: bless the dear old-fashioned cookies! they have vanished too.

I like a garden full of plain rows of roses and lilies and

gladioluses, where one can go up and down and compare varieties. When we undertake to cultivate a large assortment, say 2,000 bulbs of 100 sorts of gladioluses, it



"THE THORN-LOCUST TREE AT THE FOOT OF THE GARDEN."
(See page 578.)

is folly to plant them about everywhere, so that the labor of caring for them overbalances the pleasure of seeing them. More formally grown they are more easily studied.

I detest a carpet-garden, where stars and moons are scattered over the grass, and the most intense colors are laid on as if by a paint-brush. I am sorry that many of our city parks are gardens of this intensely artificial sort. I overheard a countrywoman, in ecstasies over such a display, say the flowers were almost as handsome as artificial ones, such as bonnet-makers sell! She was right. It is a style that involves artifice, an immense amount of work annually, and never gives us a sensation of peace and rest. I notice that cannas are often introduced in this artificial manner. These glorious plants should be used with great discretion, and never in a formal way. We may set it down as a good rule that any arrangement that does not suggest homefulness and restfulness is a wrong method. Many of our parks have too many flowers. I remember a friend's complaining that in some parts of the southwest he could never get a whiff of pure air. There was so much perfume continually breathed out by flowers everywhere that he longed to find relief in some flowerless resting place.

Then I don't like flowers in borders. They are always weedy places, and make a vast amount of work. Grass-roots and clover will run two feet in a few weeks, and permeate such borders through and through. The same is true of many styles of beds. Let me suggest a simple remedy. Always have an alley outside any and all beds, wide enough to hoe in, and cut the grass-roots before they get to the beds. Unless you are rich enough to employ workmen without restriction, you must adopt the easiest methods of planting and culture. Of all abominations the worst is fussing, indoors or out. When I go among my flowers I don't wish to see Tom and Joe snipping and nipping and scratching about. I prefer to let dandelions grow in my lawn, to having an Irishman eternally in the middle of that lawn digging them out. And as for lawnmowers, they are purely hateful with their rattle. Let us have large lawns, plenty of grass and clover, lots of hedges and nooks, flowers in cozy corners and ample shrubberies, but no pretentious fussing.

Onida County, N. Y.

E. P. POWELL.



GARDENING IN NEW ORLEANS.

AMONG TROPICAL PLANTS.



LOUISIANA has many beautiful gardens. After a stroll along an avenue of cactus-plants and among my own crotons, ferns, geraniums, etc., I boarded a street-car, not long ago, and soon found myself on the extensive grounds of Florist Fonta, out in the suburbs of New Orleans.

On these grounds are many fine specimens of tropical plants, prominent among them a fine 16-year-old seed-

ling of *Cocos australis*. Amid the umbrageous, drooping foliage that crowns the top of the tree grow heavy bunches of nuts, many of them weighing 50 pounds. From these the florist makes excellent wine. They are borne in summer, and are about the size of crab-apples. This palm is a native of Buenos Ayres, but flourishes here as if in its native habitat, our climate and soil suiting it admirably, so that it does not need winter protection.

A fine *Sabal palmetto*, a special pride at this place, is shown in the illustration (page 581). It came from the West Indies. The florist tells me that 25 years ago palms were not cultivated outdoors in this city. To-day there are few gardens of any size that cannot boast of one or more of these stately exotics, and in some gardens they are numerous and lofty. Indeed, the "City of Palms" would now be no misnomer for New Orleans.

There are 15 distinct kinds of palms that grow outdoors here. When young they require protection from the cold for about 10 weeks—from December 15 to February 15. During this time they are packed around the heart with straw or excelsior shavings. It is customary, as a precautionary measure, to protect during January and February all young outdoor palms.

Florist Fonta makes a specialty of orchids as well as palms, and in his great hothouses grow more than 200 varieties of costly orchidaceous plants gleaned from all parts

of the world. A year or so ago, at the sale of a private collection owned by Mr. Onorata, he bought many choice varieties. In April they were a marvel of beautiful bloom. Here also grow several fine specimen pitcher-plants (nepenthes). One "pitcher"—the largest ever seen here—measured eight inches. The orchids generally occupy two large hothouses. The Mexican collection is placed outdoors in summer, under the shade of a large weeping willow and an arbor. These orchids will not bloom before winter. The collection is a very large and valuable one.

Cordova coffee-plants, growing under the shade of Leconte pear trees, have bloomed here for several seasons in the springtime, the small fragrant, white, star-like flowers holding firmly to the stems of the plants, and peeping out from beneath the safe cover of dark, glossy

fine plants, but to describe them all would require too much space. I will, therefore, only mention two specially lovely vines that were both growing in coolhouses. The first was a fine specimen of *Passiflora princeps*. This Brazilian vine is rare here, and a success only in the hands of florists. Several attempts of skillful amateurs to cultivate it have proved signal failures. The flowers grow on long, drooping sprays, and I counted 17 flowers and buds on one spray. The leaves are simple, glabrous, cordate-lanceolate in shape, and a bright yellow-green. The flowers are of a medium size, have 10 petals, and their color is a rich, glowing cherry-red. The plants bloom during the summer, and are propagated by means of layers or cuttings.

A fine *Allamanda Hendersonii* next attracted me. This vine was ablaze with the golden splendor of several



VIEW IN A NEW ORLEANS GARDEN.

green leafage as if afraid of the novel sights and sounds of a strange land. The Leconte pear trees are fine and healthy, bearing abundant crops of perfect fruit, much superior in flavor to fruit produced from sandy soil. This Mississippi river bottom-land is admirably suited to Leconte culture. The Kieffer is also successful here, and old orchardists think that the cultivation of these two kinds of pears could be made very profitable in this section of the state.

Within sight of these fruit-trees are several bay-rum plants (*Pimenta acris*) from the West Indies. They require winter protection, a light soil, and are propagated in summer by layers or cuttings. Much difficulty is experienced in their propagation, but they are considered well worth the trouble necessary to grow them well.

Florist Fonta's establishment is brimful of rare and

hundred large flowers, shining amid its rich, glossy green foliage. For the last eight years allamandas have been cultivated here in the open air, enjoying the hot summer suns. The cold weather during winter does not seem to injure them—that is, what little cold weather we have in this mild climate.

An extensive sale of plants, amounting to \$2,000 worth, was made in April by some of our florists to florist Albert Fuchs, for the Masonic Hall in Chicago, but the places of the plants sold were quickly filled by other specimens quite as fine. Another such sale is contemplated later on. New Orleans florists propose making a fine exhibit at the Columbian Exposition. Plans for this will be formed at their annual meeting; doubtless they will be well formed and well carried out.

New Orleans.

R. W. T.

THE GOLDEN-RODS.

A CAMPAIGN PAPER.



ALL HONOR to the golden-rod! Whether or not its blossom shall finally be dubbed with due formality "our national flower," it has long made good its claim to preëminence among the flowers of autumn; and indeed, though we are commonly accustomed to regard it as an autumn flower only, some species begin blooming in midsummer. Before the earliest aster shows itself in robes of lavender-blue—the exquisite tint of *Aster tinifolius*—the early golden-rod, *Solidago arguta*, has had its blooming season. In its place we find the low-growing species, *S. nemoralis*, readily distinguished by its dense, recurved and one-sided panicles of bloom, its roughish gray stems and scanty foliage. It grows from 6 inches to 2½ feet in height, and makes all the sterile fields and waste places blaze with its brightness.

From early in July until the close of "Saint Martin's summer" the golden-rods are, with us, blooming royally in spite of the fiercest drought, and they stand out against the invasion of frost until all the asters have gone down before it, and only a few hardy, late flowers are left to keep them company. I have seen *Solidago arguta* in bloom on the fifth day of July, and have found *S. cæsia*, the latest of the species, flowering well into November.

This last is the typical "rod of gold,"—a slender, swaying wand with bright yellow flowers set thickly in little clusters along the stem to its tapering tip, a cluster in the axil of each leaf, and the leaves alone attracting

genus. There is nothing weedy about this plant, whatever may be said of the coarser species. It is delicate and graceful, and does not flaunt its beauty boldly in the

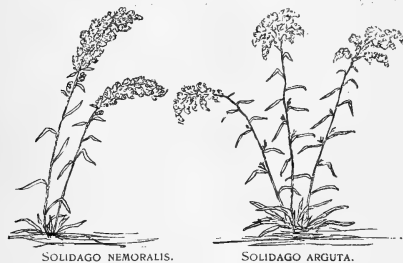


SOLIDAGO CÆSIA.

face of the passer-by. Look for it along the moist, shaded banks of some ravine where water runs, or in the borders of rich woods, and if you find the fringed gentian or its rarer sister, the mystical closed gentian, growing near, put the two in juxtaposition, and you will have a ravishing study in blue and gold. But the flower which I have most frequently observed blooming late in the season beside this dainty golden-rod, is the white, sweet-scented orchid, *Spiranthes cernua*.

Perhaps everyone may not know that there is a *white* solidago, which can hardly be called a golden-rod. Its ray-flowers are usually cream-colored, but often really white. This, also, is a wood-plant, but likes a dry wood-soil best, and may be found in copses and shaded places in company with the yellow (false) fox-glove, wild indigo and the uncanny looking rattlesnake-weed, *Hieracium venosum*—all plants of weird repute and curious properties. Our white solidago is not behind the rest in having the reputation of a healing virtue. It bears the name of being a balm for wounds; the type of the genus, in fact, was dedicated to this beneficent use, and derives its name from *solido*—to make whole. How can any one, then, decry the golden-rod as a worthless weed?

The white-flowered solidago, though not without attractions in the eyes of a true flower-lover, has nothing



SOLIDAGO NEMORALIS.

SOLIDAGO ARGUTA.

notice by their beauty. They are lanceolate in outline, with toothed edges, thin and beautifully veined, and their color is a rich, deep green, unlike the dull or dusty looking foliage often associated with showier flowers of the

very showy or striking in its aspect. It is not a tall species, 18 inches being, perhaps, its average height. The stem occasionally branches, but the usual form is a solitary stalk standing stiffly upright, bearing a few scattered grayish green leaves, and terminated by a thick spike of bloom, suggesting a club rather than a rod. To the uninitiated eye it bears little likeness to the golden-rods, but it is a true member of the genus, being in full, *Solidago bicolor*.

A handsome species, not so common as some others, is *Solidago speciosa*, which flowers in September. This plant grows tall and stout, with a dark, polished stalk and dark green, thick and glossy leaves. Its ample panicle of bloom is borne erect, much resembling a "pampas plume" in outline. It is thus distinguished at a glance from *S. arguta*, *S. Canadensis*, and other species that bear their flowers in curved racemes or drooping panicles. On closer examination it will be seen that each of the heads has five yellow rays (sometimes one or two more) which are large and conspicuous for the genus—considerably larger than the more numerous rays of other species. These rays lend to *S. speciosa* that peculiarly brilliant golden hue which, combined with its dark, shining foliage, gives the plant a striking individuality, and makes it perhaps the most attractive member of the genus. It is not rampant or weedy in its habit of growth, and would not be likely to make itself a nuisance if introduced in cultivated grounds, for which purpose it appears more suitable than some native plants that have been recently disseminated. This and *S. caesia* are the only golden-rods that can be recommended for cultivation.



SOLIDAGO BICOLOR.

S. odora, the sweet golden-rod, might find some favor for the fragrance of its leaves, which have the odor of anise; but the flowers are not especially pretty, and the plant is of weak habit, often falling over on the ground. It grows along the borders of thickets, in dry soil, and seems to be rather rare.

Other species more or less widely distributed, and some of them too well known as troublesome weeds, are *S. Canadensis*, a coarse-growing plant with masses of deep yellow flowers, borne in graceful, one-sided racemes; *S. lanceolata*, its tall stem thickly set with narrow leaves and small heads of greenish yellow flowers in dense, flat-topped corymbs; *S. tenuifolia*, which resembles the last, but has leaves more crowded and more narrowly linear, and heads of flowers in smaller clusters; *S. sempervirens*, a stout species growing in salt marshes and among the rocks along the seashore, known by its thick, fleshy leaves and showy flowers; *S. serotina* and its so-called gigantic variety, which have no particular marks of difference to an unpracticed observer; and others that cannot be conveniently described without the use of technical terms, and could hardly be identified without some knowledge of botany to guide. *S. Canadensis* and *S. lanceolata* are illustrated on page 584. The genus presents a difficult study to the inexperienced botanist, the species being numerous and often variable; but it is a study that will well reward patient people.

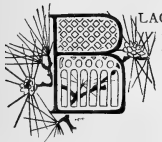


SOLIDAGO SPECIOSA.

FRANCES WILSON.

SEED COLLECTORS OF THE ROCKY MOUNTAINS.

A DISCOVERY OF VALUABLE BURIED CONES.



LACK "pine squirrels" of the Rocky Mountains exhibit a wonderful degree of intelligence in their manner of collecting pine and spruce-seeds for winter fare. As soon as the cones on these trees are fully ripe the scales open, and the seeds, being provided with gauzy wings, are scattered far and wide. The cones of different kinds of trees ripen at different times, and, to secure the seeds, must be gathered before they are fully ripe, covering a period of only a few days, or weeks at most.

The squirrels seem to know all about this, and as soon as the time comes for the conifer harvest all hands turn out and work from daylight till dark bringing it in. The place selected for storage is always under a tree with branches near the ground, and the same place of deposit

is used continuously for many years. At first, small holes are dug in the loose soil, and in each one from three to a dozen green cones are crowded together, points downward, thus keeping the seeds moist and preserving them in good condition.

In winter, even when the ground is covered with four feet or more of snow, the squirrels know just where to dig for their food. Securing a cone, they ascend the tree to the first limbs, where they proceed to tear it to pieces and devour the rich, oily seeds it contains. The remains of these cones, falling back on the place of deposit, in time form a bed of debris a foot or more in depth, and from 5 to 25 feet in diameter.

Several years ago, while exploring a wild region of country near the source of Bear Creek, Colorado, in passing a sharp point of rocks, where the cañon suddenly

widens out into a heavily timbered park, my attention was drawn to a number of squirrels gathering cones near by. Not having been seen by the busy little creatures,

I concealed myself behind a rock and watched their work.

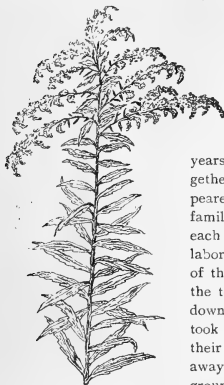
Their storehouse was around the foot of a large Engelmann spruce, and evidently had been used many years. While all worked together in harmony, they appeared to be divided off into families or small groups, and each group confined its labors to a single tree. Some of the squirrels were up in the top of the tree cutting down cones, which others took up, one at a time, in their mouths, and scampered away to the common storage grounds.

After satisfying my curiosity so far as the "field-work"

was concerned, I came out of hiding to examine the place that all interests seemed to center about. The cone accumulations of many years had made a bed from one to three feet deep, and 30 feet in diameter. The season for collecting seeds being well advanced, a very large quantity had been stored away. At least \$75 worth of seeds could have been secured in the cones there found buried, and some of them were from very rare and valuable species of coniferous trees. The little holes, crowded together like cells in a honeycomb, contained at least seven varieties of cones, and yet each excavation contained seeds of but one variety. I learned afterward, by observation, the reason for this method of storage. Each family or company gathered from one tree at a time, and used only the holes dug by its own members.

My presence created a great commotion among these little nomads of the mountain forest. They scolded and chattered in the most vehement manner. Some of the old ones descended from the trees and came within a few feet of me, in their efforts to drive me away. The uproar of the noisy little creatures attracted the attention of other squirrels farther up the cañon, bringing them down, until their number had swelled to a hundred or more.

Returning to the spot a few days later to secure some samples of the rare varieties of cones, I was surprised to find that every one had been removed, and not one of the little black squirrels was to be seen. I knew they could



SOLIDAGO CANADENSIS
(See page 583.)



SOLIDAGO LANCEOLATA. (See page 583.)

not have gone far away, and that further intrusion would bring them out from their hiding-places to repeat the scene of the week before; but I decided to leave them in peaceful possession of their rights, and did not disturb them again. Since then, when prospecting for the rare and beautiful trees and plants among the Rocky Mountains, the squirrels have sometimes rendered my valuable service in securing choice collections.

Denver, Colo.

D. S. GRIMES.

A PLEA FOR A BROADER BOTANY,

INCLUDING CULTIVATED PLANTS.



THE science of botany, as ordinarily considered and taught, has not laid hold of the full amount of territory to which it is entitled, and it has not, therefore, reached its full measure of usefulness. Strictly speaking, botany is the science of plants, but by general consent it appears to have dwarfed itself into a science of wild plants, or if it deals with cultivated plants, they are such as fall to the care of botanical gardens, or, in other words, those which are cultivated for the sole purpose of maintaining a collection. It is not strange that in the earlier days botanists should have eliminated from

their domain the whole realm of cultivated plants, for cultivation then meant little else than the maintenance and improvement of plants for merely economic purposes, and there was little science of cultivation. But now that the teachings of evolution have thrown a new purpose into the study of all natural objects, cultivated plants have acquired a fascinating interest from the abundant light which they throw upon variation and descent. In fact, aside from paleontology, there is no direction in which such abundant material can be found for the study of evolution as in cultivated plants, for in nearly all of them the variation is fully as great as in domesticated animals, while the species are very many

times more numerous; and, by the fostering aid of man, the accumulative effects of modified environment and selection are much more quickly seen—and therefore more intelligible—than in wild plants. My nearest neighbor, who is a paleontologist, and myself, a horticulturist, compare our respective fields of study to the decay and burning of a log. In both decay and burning the same amount of work is finally accomplished and the same amount of heat is evolved, but one process requires years, perhaps a century, for its accomplishment, and the other requires but a few hours. Cultivated plants afford within definite periods of time as much variation and progression as their wild prototypes exhibit in ages. So the garden is one of the best places in which to study evolution. It is a common opinion, to be sure, that the variation of cultivated plants is anomalous and unconstructive because influenced by man, but this is wholly erroneous. I have yet to find a variation in cultivated plants which cannot be explained by laws already announced and well known. It is strange that one can ever believe that any variation of natural objects is unnatural.

But wholly aside from the fascinations of pure science, cultivated plants and cultivation itself demand the attention of the botanist, for horticulture is nothing more than an application of the principles of botany. Just now, mycology is making important additions to horticultural practice, but there are greater fields for the application of an exact science of plant physiology, whenever that science shall have reached a proportionate development. In short, the possibilities in horticulture, both in science and practice, are just as great as they are in the science of botany upon which it rests; and inas-

much as it is absolutely impossible to separate horticulture and botany by any definition or any practical test, the two should go together in an ideal presentation of the science of plants. Horticulture belongs to botany rather than to agriculture.

The ideal chair or department of botany, therefore, should comprise, in material equipment, laboratories, botanic gardens, greenhouses, orchards, vegetable and ornamental gardens, all of which should be maintained for purposes of active investigation rather than as mere collections; and I am sure that no department of botany can accomplish the results of which the science is capable until such breadth of equipment is secured. I am aware that there are difficulties in such a comprehensive field, but the only serious one is the lack of men. Botanists, as a rule, care little for gardens and cultivated plants, and horticulturists are too apt to undervalue the importance of scientific training and investigation; but the time cannot be far distant when men shall appear with sufficient and practical training to appreciate the needs of the whole science, and with enough executive ability to manage its many interests. Men are no doubt teaching in some of our colleges to-day who might do this work well were the opportunity open to them. One cannot be a specialist in all, or even several, of the many subjects comprised in this ideal, but he may possess the genius to encourage and direct the work of other specialists. The first need is the opportunity, for there is not yet, so far as I know, an ideal chair of botany in existence, where the science can be actively studied in its fullest possibilities and then be presented to the student and the world.

L. H. Bailey, in Science.



A SOUTHERN CALIFORNIA CAÑON.

THE FLORA OF THE WILDERNESS.

EASTERN readers are often puzzled by the meaning of the word cañon, the name being applied to narrow, shallow valleys, to gorges with deep, precipitous walls, or to what in England would be called defiles. The mesa lands bordering the coast of southern California are broad level plains, deeply cut by narrow chasms that are always invisible to the eye until one stands upon their very brink. At the bottom of these cañons there is frequently, in springtime, a muddy little stream, but through the greater portion of the year only sand and water-worn pebbles and boulders mark their course. The mesas are densely covered with a growth of chaparral (brush), composed largely of

adenostoma, rhus, ceanothos and scrub-oak, but large areas are destitute of perennial vegetable growth, except for the occasional cactuses and undiscouraged forms of earth-lichens, which lend color to the landscape.

The cañons, too, are often densely wooded with impenetrable thickets of manzanita or other growth ranging about breast high, in which the rabbit and coyote once played hide and seek.

Among the foothills at the base of the Sierras there are larger and deeper cañons with perennial streams and a ranker growth of vegetation, often arborescent in character. In one of these I spent a few hours with a friend in the latter part of April, and while resting on one of the smoothly worn boulders of a dry side-arroyo, I made a few notes which may be of interest to others.

THE TREE POPPY.—The cañon slopes for half a mile

around me were covered with the brilliant lemon-yellow flowers and pale pea-green foliage of *Dendromecon rigida*. The slender, leafy stem of this shrub bears its wealth of beauty at from two to six feet above the ground on a level with the surrounding chaparral. Its flowers are extremely delicate, two to four inches across, much resembling some forms of the *eschscholtzia*. The pods burst at maturity, making the seed difficult to gather, so that this shrub has not yet found its way into general cultivation. It does not tranquilly bear transplanting in the way shrubs are usually handled.

THE YERBA SANTA.—A broad, sticky-leaved variety of *Eriodictyon glutinosum*, with large heliotrope-purple flowers, was a near neighbor of the *dendromecon*. It was very different from the narrow-leaved, white-flowered mountain form of the yerba santa, sometimes classed as *E. angustifolium*, more nearly resembling in aspect the Coast-valley form, formerly known as *E. tomentosum*, which has conspicuous broad, light green, velvety foliage. At a distance, a n occasional mountain yucca (*Y. Whipplei*) with its magnificent candelabra-like panicle of creamy white flowers tinged with a rich maroon, lent a tropical appearance to the cañon slope.

THE BLUE CYPRESS.—With the exception of a few sycamores growing along the course of the clear mountain stream running very leisurely through the cañon at this season of the year, *Cupressus Guadalupeensis* formed the chief arboreal growth; but a disastrous forest-fire swept over the mountains a few years ago, leaving only dead and blackened cypress skeletons, to which the very persistent cones still cling with tenacity. Here and there a cypress thicket had escaped apparently unscathed, and formed a dark green relief to the red, sun-baked earth so prevalent through this section of the state. The blue cypress rarely attains a height of over 30 feet, more often less than 20. Millions of young cypress trees have started up along the water-course in this cañon, with the evident aim to reforest the desolated slopes. Probably the seed had been retained in the cypress-cones for years for just such an emergency, and the fire that destroyed the parent trees liberated it, thus indirectly repairing the injury done.

MIMULUS PUNICEUS.—Another elegant flowering shrub which never fails to excite admiration is the shrubby monkey-flower, with dark evergreen foliage and rich, brilliant, velvety crimson blossoms, borne in great pro-

fusion. It blooms when less than a foot high, and under favorable circumstances forms a wide-spreading bush six feet high, with slender, drooping branches. The flowers on one bush will occasionally vary from a shade of buff to deepest crimson—the usual normal color. A smaller species, *M. glutinosus*, bears larger, uniformly buff or salmon-colored flowers.

PICKERINGIA MONTANA.—Beside the *mimulus* in this cañon there grew a slender bush a few feet high, with light pea-green foliage. It was literally covered with small pea-shaped flowers of a dark, rich magenta color. As it is a peculiarly profuse bloomer, much might be expected from it in cultivation, but I do not know of its having yet been introduced into gardens. The shrub was only from two to four feet high, and was most abundant on the dryest and rockiest ridges of the cañon slopes.

CHAMÆBATIA FOLIOLOSA.—A low, rosaceous shrub, at times scarcely a foot high, with delicately divided, fern-like foliage, and white, strawberry-like flowers, was found in considerable patches, almost monopolizing the ground where it grew. This shrub, *C. foliolosa*, might very appropriately be called the strawberry flowering bush, but has the far less pleasing common name of "tar-bush"—from what cause I know not.

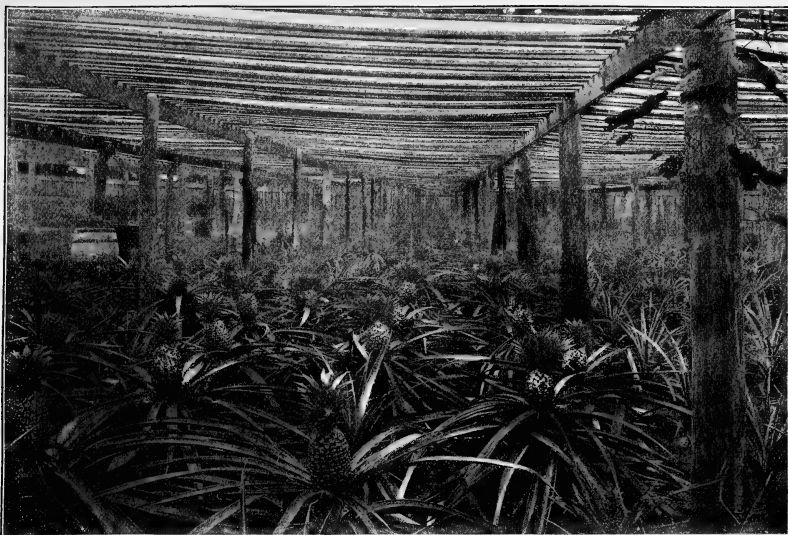
FREMONTIA.—The crowning glory of the cañon at the time of my visit was the tangled jungle of *Fremontia Californica*, then in full bloom. It bordered the slow-running stream for miles, its beautiful wax-like yellow flowers giving occupation to millions of bees, and reminding one somewhat of abutilon blossoms. Even young plants of the *Fremontia* are tree-like in shape, and in cultivation it makes symmetrical flowering trees. It is also of comparatively quick growth, and the green leaves, tawny beneath, do not detract from its beauty. *Fremontia* is certainly destined to be one of the most popular flowering shrubs of California. A single tree growing in San Diego invariably causes inquiry from every one interested in horticulture.

There was beauty enough in this southern California cañon, at the time of our visit, to make us long to repeat it. The wild white sage, *Audibertia polystachya*, was just coming into bloom, and our last look backward showed glimpses of tall lilies growing beside the water and nodding us goodbye.

San Diego, California.

C. R. ORCUTT.





A PINEAPPLE SHED IN FLORIDA.

PINEAPPLE-GROWING IN FLORIDA.

A NEW AND PROMISING INDUSTRY.



HE pineapple seems to find a congenial home in Florida, and from the present rapid development of the industry, it is not too much to expect that the state will soon be as famous for her pineapples as for her oranges. Within the last five years the industry, starting

with a few small plots out on the Keys south of our peninsula, has grown until now there are hundreds of acres on the Keys, and the craze for "pine-growing" has reached the mainland. There are now thousands of acres planted to pineapples on the lower eastern coast, known as the Indian River and Lake Worth sections. Some planting is also done on the mainland along the lower Gulf portion of the state, where there is little trouble from frost. Here, in the farther northern portion of Orange county, there are a good many acres of pineapple-plants, and larger fields will soon be planted.

All pineapples grown in this section are protected from frost by a "pineapple-shed." This is a framework over the whole ground, made on posts $7\frac{1}{2}$ feet high, covered with 1x3 strips, placed 3 inches apart, to let in the sun and air. The whole is boarded up on the north and west sides during the winter. The latticework overhead is

left on the year round, as the pineapples are thought to be finer when grown in partial shade. A pineapple-shed is a pretty sight when the fruit is well developed.

Last April I visited Eden, on the lower Indian river, where hundreds of acres of open ground are planted in pineapples. Many of the planters began here with little means, but some of them are now called rich. The sale of fruit has brought from \$400 to \$500 an acre. Last season one grower sold his new plants from one acre for \$2,500. Some of the fancy varieties were sold for \$300 per 1,000 plants. As 10,000 plants are required to set an acre, it costs considerable to start a pineapple-farm if smooth-leaved Cayennes, Abakchis or Black Jamaicas are used. Most of the pineapples grown heretofore have been Red Spanish, and some Queens. Plants of the former sell for half a cent each; of the latter, for from 5 to 25 cents each. The demand now is for finer and larger sorts. It is just as much trouble to grow a Red Spanish that, when ripe, weighs two pounds, as a smooth Cayenne, that weighs eight pounds.

The pineapple crop just harvested from the Indian River section amounts to some 25,000 barrel-crates, and the net returns to the growers to about \$122,000. It is safe to say that next season's crop will be twice as large.

Florida.

JAMES MOTT.

TASTE AND TACT IN ARRANGING ORNAMENTAL GROUNDS.

XXIV.

TWO WAYS OF LAYING OUT A CITY GARDEN.



WE HAVE, in our cities, quite a number of people who are anxious to make attractive the small yards surrounding their dwellings. In many cases past attempts at gardening have proved unsatisfactory or out of keeping with surroundings, and the dissatisfied owners wish to change the plans of their gardens and begin the beauty-growing work anew. Such is the case of the correspondent whose place we treat in this paper, and, assuming that among our many readers there may be other gardens with similar faults in arrangement, we give his letter in full, with suggestions for improving the garden :

"Noticing the kind manner in which you have assisted many readers with suggestions for improving their grounds, I present my own case, in the hope that it may receive some needed assistance at your hands. The size of my grounds is 72x120 feet, part of which is occupied by my residence, size 32x80 feet extreme measurements, and located as shown by the enclosed diagram (fig. 1). The lawn, walks, a few trees and shrubs and some flower-beds are also shown. The flower-garden proper, having a circular bed in its center, as shown, was laid out with much care six years ago, and pleased me well for a time, but in recent years it has proved unsatisfactory. The walks are of gravel, and the beds are raised about a foot in height; their steep, sloping sides are covered with grass. The defects of the arrangement are that grass and weeds spring up through the gravel walk; the grass on the sharp slope of the edge of the beds is not easily kept neat, for to shear it by hand is a good deal of a task, and its shape forbids the use of the lawn-mower in trimming; and besides this, the grass edge at the top encroaches on the beds in some places, while at others it has been broken down as a result of frosts and mishaps. The beds themselves contain numerous tender and hardy perennials and annuals. My family and myself are all passionately fond of flowers and plants, and would like a hundred kinds where now we have one; but I am appalled at the state of things that prevails here, in the attempt to grow a comparatively small number of kinds. My grounds are limited, but I want them to be handsome. The sensible advice which has appeared in your columns as applying to the gardens of others leads me to hope you will give me such practical suggestions as will supply my need."

With the area contained in this lot outside the buildings there are great possibilities for gratifying a taste for flowers. In undertaking to set forth some suggestions to such an end, let us first briefly touch upon the present unsatisfactory arrangement of the grounds. It is clear that the somewhat elaborate flower-garden was intended for the chief ornamental feature of the lawn. The owner has, himself, pointed out with much force the defects of this garden. It is easy to go farther, and show that such defects are the natural outcome of a system of gardening, which, although often practiced, is wrong in principle if we wish to obtain the best results for a moderate outlay of money and labor. Why should anyone think it necessary to raise flower-beds a foot above the common sur-

face? Is it because average plants and shrubs stand the severe frosts of winter and the excessive drouths of summer better for being planted in soil that sheds water readily, and is exposed from the sides as well as from the surface? Nature teaches us better than that. In meadow and forest it is, with certain exceptions, in depressions rather than on exposed mounds that we find the most vigorous tree and plant-growth. Has a sharp, grassy slope when in the form of an edging to a bed a single advantage over a flat, easily-mown surface of grass extending up to beds sunken a few inches below the grass

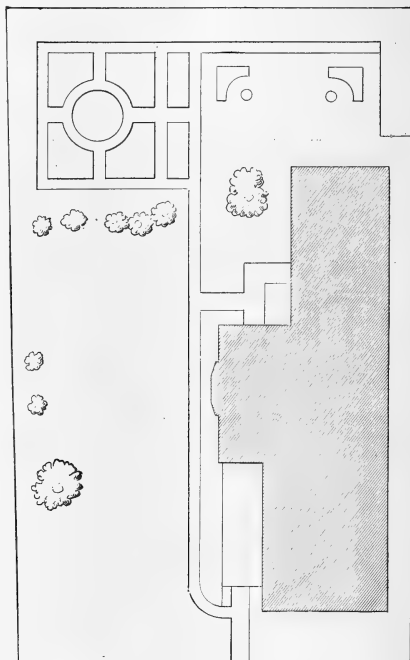


FIG. 1. A TYPICAL CITY GARDEN. (See Opposite Page.)

level? Our correspondent's own comments on the unsatisfactory state of these slopes are a sufficient answer. Are geometric curves, straight lines and precise angles so

handsome in garden outlines, and so easy to keep defined year after year, that we do well to employ them freely in a flower-garden? This, certainly, is a point that cannot be sustained.

Now, from an arrangement that is obviously defective in character, let us turn to another entirely applicable to the grounds, which presents some strong contrasts to the first. In fig. 2 this plan is set forth, its chief points of difference, as compared with the original plan, being noted below.

Instead of a contracted, formal arrangement of stiff, unpleasant walks and central beds too small for the growths a garden of this extent should contain, there are ample plant and shrub borders laid out at the margin of the grounds and defined by graceful, irregular curves, simple in design and restful to the eye. There are also several beds standing away from the marginal border, with a strip of grass between.

Let us dispense with the weedy gravel-walks, that in extent are laid out of all proportion to the cultivated area adjacent, and walk upon the grass—an arrangement easier for the feet, pleasanter to the eye, and which, if a lawn-mower is used, may be kept in perfect shape by any man who can run the machine.

Instead of the absurd raised beds, which dry out so quickly during drouth, and, being difficult to protect, unduly subject the roots of perennials to freezing, let the ample new borders and beds suggested be about four inches lower at their edges than the general surface of the garden. The beds may then be graded to a gently-rounding surface. Borders thus sunken at their margins and edged with the lawn at its common level are in the best possible shape to keep clean of weeds and attractive to the eye. Follow along the edge of this turf after each mowing of the lawn, and clip off any grass that projects in a reclining direction over the beds, with a pair of turf, hedge or even sheep-shears. Besides this clipping of the edges, the surface of the borders should be gone over with a hoe at each first appearance of weeds, stirring all parts of the surface, and finishing the job with a few touches of the steel rake to even up the top finely and to gather any weeds that may be present. A similar course with hoe and rake after each heavy summer shower will prevent rapid evaporation of moisture from the soil in case drouth should ensue.

Another point in favor of sunken beds is, that over their surface is heaped in winter the fleecy snow cover that nature provides as a protection for the roots of shrubs and plants. The stems of the shrubs, etc., will help to retain the snow, and the entire surface of the beds during winter is protected by perhaps six inches of it. From raised beds the snow is swept away by the lightest winds, leaving them bare, to lose afterward by the fiercer winds of winter much of the soil from about the roots of their plants. In every way the sunken bed is better.

But the greatest gain in the new plan over the old one is in roominess, sufficient additional space being given to gratify the owner's wish for a hundred plants where he now has one. In this respect the contrast between the two plans is striking. Where fig. 1 has a number of contracted, formal beds, the largest of which is not roomy

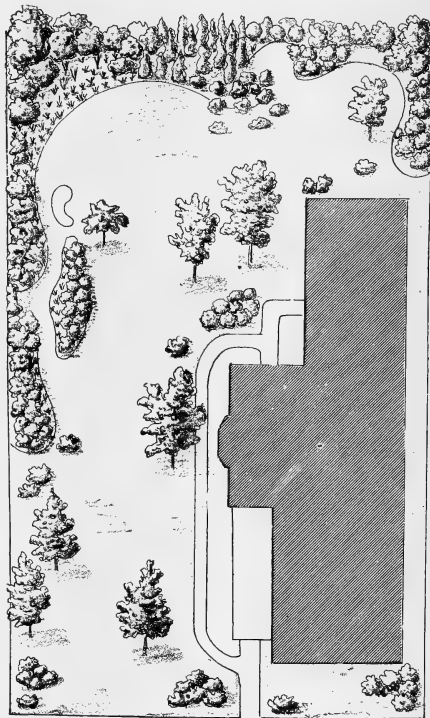


FIG. 2.—A REVISED AND IMPROVED EDITION OF FIG. 1.

enough to hold a respectable group of shrubs, fig. 2 shows a marginal border measuring about 160 feet along the edge, with a breadth and corresponding surface so ample that it will not be difficult to present a continuous succession of striking effects with plants, shrubs and even evergreen trees throughout the length. This long marginal border, the woody effect gained by planting numerous smaller shrub-groups in beds inside the margin and at points near the house-walk and street, and the introduction of a number of ornamental shade-trees about the lawn, should have the effect of providing an extensive and wonderfully varied collection of growths within the limits of a moderate-sized city lot. By examining fig. 2 it will

be seen that the borders, beds and masses are represented as occupied with shrubby growths of various sizes. Lists of shrubs that, being varied in habit of growth and flowering, are suitable for this purpose, have been given in this serial in previous issues of AMERICAN GARDENING. The spaces unoccupied here and there are to be filled with herbaceous perennials like the peony, phlox, lily, anemone, hemerocallis, iris, helianthus, pyrethrum, etc. Along the margin where the shrubs extend nearly or quite to the grass may be planted hyacinths, tulips, crocuses, etc., all of which bloom and mature their growth for the year almost before the shrubs show their leaves.

A group of evergreens is suggested for the rear of the lot; we would recommend such small growths as the globe arbor-vitæ, the junipers, conical and dwarf spruces, with white spruce (a more moderate grower than the Norway) in the background. Mugho pine and the dwarf mountain-pine might also be included, as there are few things more pleasing for the eye to dwell upon in winter than the form and foliage of pine trees.

Vines have not been forgotten. On the left side of the lot, back of the large inner bed, a rustic vine-covered

seat or arbor has been designed. It is reached by a grassy walk, which divides the border at this point. The vines should be planted in the ends of the borders and trained above the seat.

An examination of the outline of the marginal border of fig. 2 will show that besides its numerous curves of varying boldness at one point, near the rear, a certain air of intricacy is introduced. The reason for this is that a garden, like a lakelet, however small, appears finer if all parts of it cannot be seen at a glance from any one point. The irregular clump of evergreens located here, as seen from the street or arbor, suggests a continuation of the garden beyond it. A bed located directly in front of the vine seat, and planted in the same general style as the outer borders, would give a similar effect.

The center of the general garden area has no flowerbeds, walks or trees to mar its smooth surface, and the broad green stretch of grass gives dignity and repose to the new plan for the garden—qualities impossible of attainment in the old one, with its elaborate central planting, but qualities which are of first importance in every garden deserving the name.

TRAPS TO CATCH WINTER SUNBEAMS.

HOW TO CONSTRUCT AND HEAT AMATEUR GREENHOUSES.



YEAR after year the acreage of fields under glass increases. From a mere convenience and luxury of people in easy circumstances, glass structures are fast becoming a necessity to all who wish to see their tables well supplied with vegetables throughout the year, and to all who love flowers.

Even a small glass-covered house can add much to the enjoyment of life.

The construction of a suitable house need not call for great expense, nor its management for much labor, yet the practical results in table supplies, floral decoration, and in saving various small sums paid out to plant-growers and gardeners, may be quite satisfactory. We hope to see the time when a small glass structure is an adjunct of every home garden.

For heating small houses, steam seems to be out of the question, unless it can be had from the surplus of some other establishment where steam is used. The ordinary flue is out of date, and requires too much attention. Nothing, however, can be simpler, less laborious and more convenient in every way for this purpose than one of the base-burning hot-water heaters, now made upon a system of iron pipes, by different firms. Two plans of houses now in successful operation are given in the following contributions:

EBEN E. REXFORD'S GREENHOUSE.

My first greenhouse was an old veranda enclosed with glass in front and at the sides, shut off from the living-room by glass doors, and heated from a wood fire in an adjoining room. In this house I grew some very good

plants, but I was not satisfied with my heating facilities. It was necessary, on ordinary winter nights, to get up at least once and replenish the fire; on very cold nights to get up two or three times, and in winter I was always beset with the fear that the weather would turn suddenly colder while I was asleep, and that some morning I should find my plants frozen.

By and by an addition was made to the dwelling, and a little greenhouse with a glass roof was built. It was heated from a base-burning coal stove in the parlor, which opened into the greenhouse. This was a great improvement on No. 1, as the coal furnished a steady, even heat, which made it unnecessary for me to give it any attention during the night. In this greenhouse I grew as fine plants as I ever saw anywhere in mixed collections; but it was too small to suit me, and greenhouse No. 3 was constructed more after the plan of the orthodox greenhouse, and heated with hot water. This is the style of greenhouse I would advise amateurs to build, as it has proved to be entirely satisfactory in every way.

This greenhouse is built upon a foundation of stone, the base of which is below the frost-line, so that I have no trouble with broken glass from heaving of the walls. The building has 8x8 sills of pine, and on these are set up 2x4 pieces, reaching to the glass on the sides and end. (The house is built against the south side of the dwelling.) A thickness of matched sheathing is nailed to each side of the 2x4 pieces, and sheathing paper is put on, both outside and inside. Before finishing the walls, the frames for sash were put in, then the inside was finished with matched ceiling put on perpendicularly, and the outside with inch-lumber, having what is called a "ship-lap."

This is better than clapboarding, because it fits tightly to the sheathing, and makes a snugger joint. Constructed in this way the walls are very substantial, and have an air-space between them which serves as a non-conductor of heat.

These walls should be three feet high. The sides of the greenhouse being five feet high, there will be two feet of glass on each side. The entire southern end, with the exception of three feet of wooden wall, corresponding to that on the sides, should be of glass. The side-sashes should be hung with hinges at the top, and made to swing outward for summer ventilation. By all means have a door in the end to open into your yard or garden.

The roof of my greenhouse is an even span, sloping east and west. The center is 11 feet high. This may give a greater slant than some would advise, but I wanted room for tall plants in the center of the house, and could secure it only by having a pretty steep roof. On each side of the roof there should be a good-sized section of sash hung by hinges at the ridge, so that it may be lifted for ventilation. My house is fitted with ventilating apparatus, so that the ventilators in the roof and the side-sashes can be raised or lowered by turning a crank.

The roof is made of 12x20 double-thick glass on cypress sash-bars, with zinc joints between each light. The use of these joints enables me to have a roof without laps. It is consequently tighter, and there is no glass broken by frost, as there always is in lapped roofs. The glass is bedded in "rubber cement," used in constructing aquariums, and fastened strongly by large glaziers' "points." After putting it in place, white lead and putty, thinned to the consistency of cream, is applied by a "putty-bulb" to the space between glass and sash-bars, and fine, dry sand is sifted in. This forms a cement that, when dry, lasts for years. I do not understand why the zinc joints spoken of have not come into more extensive use. They are cheap, easily put in place, and form so close and snug a roof that they more than pay

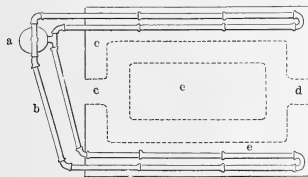


FIG. 1.—GROUND PLAN OF AMATEUR GREENHOUSE.

for themselves in one season by a saving of fuel. I have tried them alongside a roof in which the glass was lapped, and fully satisfied myself of their merit.

When this greenhouse was first built, I used a Hitchings base-burning heater to warm it. The diagram, fig. 1, shows pipes running from the heater. There was one 4-inch flow-pipe on each side, with two return pipes the same size. This amount of piping gave all the warmth

needed; indeed, more, for it was generally necessary to keep the fire checked. There are several cheap and efficient heaters in the market, and all are easily put in. As this part of the job must be done by a steam or hot-water fitter or plumber, it is not necessary to go into detail here. Tell him what you want done, and he will see to it satisfactorily. The pipes should run the length

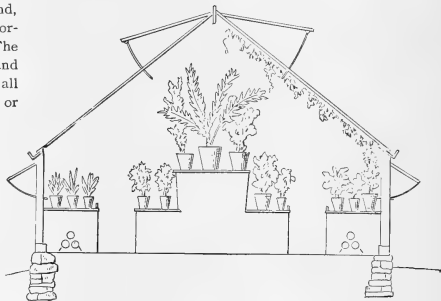


FIG. 2.—CROSS-SECTION OF AMATEUR GREENHOUSE.

of the house and across each portion of the end to the door, and return under the benches; no pipes will be needed in the center. To the 16x20 house I have recently added 20 feet, and this 40-foot house is now heated from a large Gurney heater, which warms the entire dwelling, as well as the greenhouse. Where the dwelling is not heated by hot water, the small heaters will be found very effective and satisfactory. They require but little attention, and are entirely safe. Fig. 2 gives a sectional view of my house, showing the arrangement of benches, etc.

I cannot give satisfactory estimates of cost, because the prices for material and labor vary greatly in different localities. An intelligent carpenter can easily estimate the amount of material, glass, etc., required, give cost of sash for sides and ends, and estimate of total costs.

Fig. 2 also shows the arrangement of benches in the house. The center bench or stand, having no pipes under it, affords a place for the storage of pots, etc. If this bench is dispensed with, one has ample space in which to group large plants. I like this plan best, but for the first year or two one may not have large plants, and in this case a central bench admits of an effective display of small plants. Plants can also be trained to the rafters and along the ridge.—EBEN E. REXFORD, *Wisconsin*.

A PORTABLE GREENHOUSE.

The illustration, fig. 3, on the next page, gives a sectional view of our portable greenhouse, erected about a year ago. This house is 15 or 20 feet, and extends north and south. Its height at the ridge is 8 feet, and the roof is a double span. The location is level, so that excavation was not required except for the heater. The side and end walls are of wood; 4 posts neatly squared are set 5

feet apart and extending 5 feet above the ground on each side; at the south end are set 3 posts extending 3 feet above the ground, or to the level of the benches. The north end has a door in the center of each span. To the posts two thicknesses of boards are nailed all around, excepting at the north end, which is boarded tight to the top of the ridge. Two ridge-pieces in the center of each

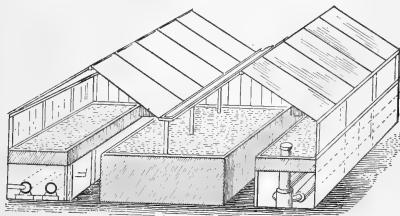


FIG. 3.—CROSS-SECTION OF PORTABLE GREENHOUSE.

span are required to support the sash at the top. These are of pine, 2x4 inches, and are supported in the center by posts made of 1½-inch gas-pipe.

In the center, where the two roof sections meet, the sash rests on a plate 8 inches wide, in the form of a gutter, to catch and carry off the water. This is also firmly supported by posts made of gas-pipe. The side plates are 2x4 inches, and are nailed on the top of the side posts to support the sash at the eaves of the house. A pair of rafters at each of the four gables complete the framework.

Portable sashes are used to enclose the house, namely: 20 hotbed sash of the usual size, 3x6, cover the roof; 6 2x5 side-sash (these are better known as cellar-sash); 4 5x5 sash for the south end, cut bias at the top to fit the slope of the roof (see fig. 4). These sash, excepting those used for ventilation, are all screwed tightly to the frame of the house; the latter are hinged to the cap on the top of the roof, as shown in fig. 5. Two sashes on a side will be sufficient for the purpose of airing the house. The joints where the sashes come together are made tight by the use of 2-inch batten screwed tightly to the sashes.

The interior arrangements are practical and simple. The center bed is 8x15 feet, made solid from the ground, and filled with rich soil to the top. The side tables are 4x15 feet. Under these the heating-pipes, running around the entire house excepting the north end, are placed. In the south end, where the pipes pass through the center bed, there is a boxing around them, forming an air-space. This admits of a free circulation of the warm air, which would otherwise be confined to the soil. The heating apparatus is a No. 22 Hitchings base-burning water-heater, designed expressly for heating conservatories and small amateur greenhouses.

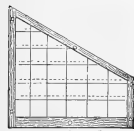


FIG. 4.

The heater is placed in a pit or fire-room situated on the side of the house near the north end. Two 2-inch pipes rising from it extend through the side wall and connect with the 4-inch heating-pipes, which pass around the house, terminating in an expansion-tank. This style of heater requires very little attention, is managed as easily and with as little care as an ordinary base-burning stove, and consumes about the same amount of coal as a stove of the same size. The boiler and pipes are filled with water at the expansion-tank to a height of three or four inches above the pipes, and the loss of water from evaporation is replaced at intervals of several days.

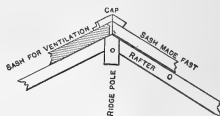


FIG. 5.—A BIT OF THE ROOF.

The water should not be drawn off after the apparatus has been in use unless there is danger of freezing. The chimney is not shown in the illustration (fig. 6); it may be built beside the boiler, and preferably should be of brick. To secure a good draft it must extend two or three feet above the highest part of the house. Earthen pipes are sometimes used for this purpose with entire satisfaction.

The number of plants that could be grown in a structure of this kind would depend altogether on the management. Plant-raising is my business, and therefore I have had considerable experience in that line. Perhaps a simple statement of what I grew in this small house the past year

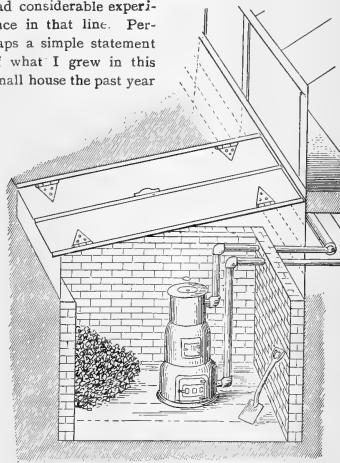


FIG. 6.—HEATER FOR PORTABLE GREENHOUSE.

may give others an idea of what can be done if one is willing to try. The house was used in the fall for blooming chrysanthemums, and several hundred fine flowers were taken from the plants. About November

15 the center bed was set with lettuce-plants seven inches apart each way, and the side benches with radishes in rows four inches apart. From this time until July 1 every inch of available space was utilized for growing plants and vegetables, and the quantity raised in this small house was surprising. At the end of the season I found that 65 dozen heads of lettuce, 58 dozen bunches of radishes, 390 cucumbers, 5,000 tomatoes grown in flats and pricked out into coldframes when large enough, 800 plants of cauliflower, 700 cabbage-plants, 200 egg-plants grown in large pots, and 500 flowering plants for bedding purposes, including coleus, geraniums, cannas, pansies

and chrysanthemums, had been sold from the house. Cucumbers at this date (August 15) are still bearing. They will be cleared away in a few days, and the house thoroughly cleaned and filled with chrysanthemums that have been growing in pots all summer. These will be plunged in the soil on the benches, and freely watered for a few days. Treated in this way they grow nicely, and, in season, bloom in great profusion. When the chrysanthemums have finished blooming, we will again be ready for winter crops of vegetables, and the house will be kept constantly at work and producing.—T. M. WHITE, *Monmouth Co., N. J.*

CHERRIES UNDER GLASS.

THEIR CULTIVATION IN RIVER'S ORCHARD-HOUSES, SAWBRIDGEWORTH, ENGLAND.

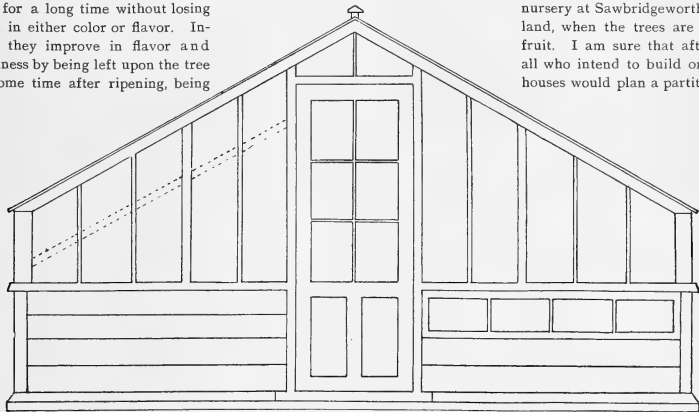


N ORCHARD-HOUSES the cherry can be grown with great success and to a high state of perfection. An orchard-house cannot be very far behind a greenhouse in beauty, for spaces between the trees can and ought to be filled with flowering plants, and in spring-time the houses are white with the soft, snowy bloom of the cherry trees. You can scarcely imagine a more beautiful sight than a cherry-house full of trees laden with beautifully-colored fruit, in rich variation from dark brown and black to light red and yellowish white. Some of the cherries are as large as medium-sized plums, and hang upon the trees for a long time without losing much in either color or flavor. Indeed, they improve in flavor and sweetness by being left upon the tree for some time after ripening, being

blossomed and the fruits ripen, the house is as full of beauty as it was before. For decorations on dinner-tables nothing could be finer than a pyramid of *Monstreuse de Mezel* cherry, with its big, bright-colored fruits and dark green leaves.

As I have said, cherries grown in orchard-houses may be left a long while upon the tree to grow fine-flavored and sweet. Another advantage of house-grown cherries is that a good selection of sorts will give fruit from June 1 to August 31. If they were given a fair showing, and a partition all of their own under glass, where they could be better tended than when mixed with other fruits, cherries would rank as high as peaches, nectarines and pears for this purpose. All who are fond of growing fruits in pots should see the cherry-house in Mr. River's

nursery at Sawbridgeworth, England, when the trees are full of fruit. I am sure that after this all who intend to build orchard-houses would plan a partition for



END VIEW OF AN ENGLISH GREENHOUSE FOR FRUIT CULTURE.

next to grapes in this respect; but this is not possible with outdoor cherries, as the rain, birds and mischievous boys would spoil the fruit. After the trees have

cherries. It is unreasonable to require a gardener to grow to the same degree of perfection in the same house several different kinds of fruit.

The method of growing cherries in River's orchard-houses is given below in detail, with plans of a house. Most of the trees are grafted on cherry stock, except the Duke cherries and Early Rivers and Governor Wood, which are grafted on Mahaleb stock. They are never lifted or replanted before potting.

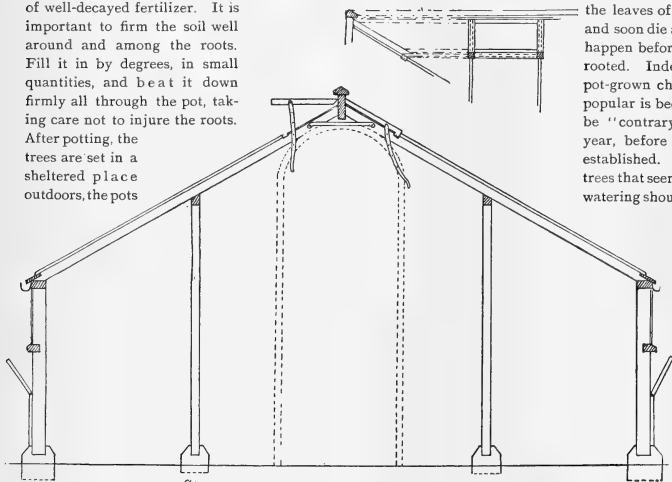
Early in autumn one and two-year-old trees are taken up, their roots shortened so that they can be put into the pots without breaking, and planted in 8 or 12-inch pots. This potting must be done carefully, and the trees must be set so deep that the big roots near the surface will be covered with an inch of soil. Cover the bottom of the pots with a good thick layer of drainage. The soil used in potting is a light sandy loam, enriched with one-third of well-decayed fertilizer. It is important to firm the soil well around and among the roots. Fill it in by degrees, in small quantities, and beat it down firmly all through the pot, taking care not to injure the roots. After potting, the trees are set in a sheltered place outdoors, the pots

sery three or four hundred potted cherry trees are sold yearly, the number increasing constantly. Old cherry trees that have been cultivated in pots for years are kept during winter in one of the orchard-houses. When spring comes and their buds begin to start, the pots are plunged up to the rim in the ground in the cherry-house.

Although during winter the trees seldom need watering, still the soil in the pots must not be dry when growth begins, as drouth at this time would soon greatly injure the trees. Cherry trees must be watered carefully. Too much or too little water spoils any plant or tree; it is better to have the trees flag from want of water sometimes when the sun is bright than to have the ball of earth soaked. When the soil is too wet growth stops,

the leaves of the tree turn yellow and soon die away. This is apt to happen before the trees are well-rooted. Indeed, one reason why pot-grown cherries are not more popular is because they are apt to be "contrary" during the first year, before their roots become established. The pots containing trees that seem to suffer from over-watering should be taken up from where they were plunged, to dry out.

Ventilation must be well kept up until the flowering time of the cherries is over; while the fruit is growing the house may be kept closer and warmer. Fruit stops growth or grows very slowly while the cherry-stones are "firming," and the house



PLAN—VENTILATION OF ENGLISH ORCHARD HOUSE.

being covered with leaves. If the soil is moist enough when the trees are potted they will not need watering.

When spring comes the trees must be thinned out and the pots plunged one-third of their depth in the earth. The trees remain here all the summer, are watered carefully every morning when the weather is bright and dry, and syringed with pure water if the greenfly is troublesome. In July, when the trees are well rooted, a top-dressing of stable-manure and kiln-dust in equal parts is given the trees. A few days before the top-dressing is used it is spread out in thin layers somewhere outdoors, and soaked several times with liquid manure. It is applied to the soil in the pots, in layers two inches thick near the rims, but thinner near the stems of the trees. This top-dressing greatly improves and strengthens the trees for the coming year.

After growing in pots one summer, trees are fit to be sold the following autumn or spring. From River's nur-

must not get too warm at this time, especially if the trees have been started early and the sun is bright. Give as much air as the state of the weather will allow, day and night, when the cherries begin to ripen, but always be sure that there are no drafts through the house. The plan of ventilation is shown in the diagram given above. See also pages 593 and 595.

Syringe the cherry trees once a day in the spring when the sap starts and the buds swell; twice a day later on, when the weather is bright and dry. During spring the temperature is kept up by means of glowing charcoal (charcoal burning without flame). When the nights are cold kettles 38 to 40 centimetres wide are filled with charcoal; this is lit, and the kettles, placed in the cherry-house, give out enough heat to keep up the temperature. In blooming time and when the fruit is ripe the trees are not syringed; only the floor is dampened.

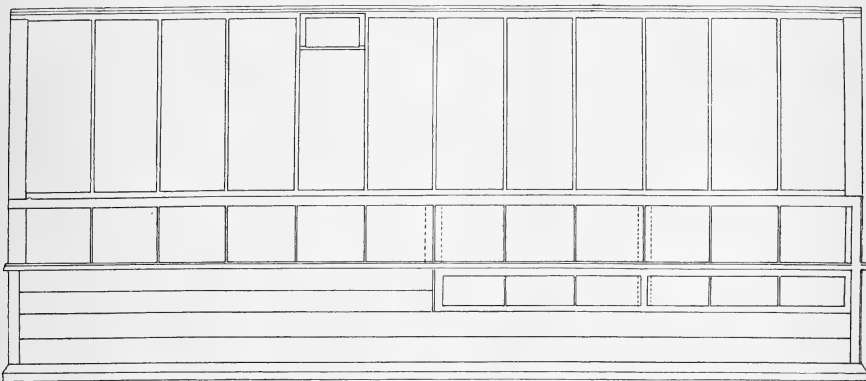
It is very important to give fertilizers to pot-grown

cherry trees at the proper time and in proper quantities. This gives them strength to carry a good crop of fruit to perfection, imparts to the foliage a beautiful color, and keeps the trees strong for the coming year. Liquid manures, top-dressings and artificial fertilizers are given the trees as stimulants during their period of vegetation. Liquid manure containing some soot and iron is given the trees once a week from the time the cherry-stones are set until the fruit ripens. The soil in the pots is top-dressed when the cherries are the size of peas. The layers for old trees are thicker than those described above for young ones. A fresh top-dressing must be given the pots during summer.

The liquid manure used is made by leaching fertilizers from cow and sheep-stalls. The artificial manures given are fish-guano and Thomas' slag, a teaspoonful to a 20-inch pot. The top-dressing is of horse-droppings gathered from the roads and streets. Collected in this way

The sour cherries, which form young buds on the side-shoots better, might be pruned less. Much winter-pruning is not needed for trees that have been well stopped in summer. Winter-pruning must be done as soon as leaf and bloom-buds can be distinguished. It is done upon the same principle as outdoor pruning, but as the room in orchard-houses is limited, all growth must soon be pruned into fruit-branches.

After the cherries are all gathered the trees are plunged outside in a sunny, sheltered place, and left here until repotting time in October or November. Trees that have been potted but one year seldom need larger pots at this time, so two or three inches of the top soil in their pots is taken out and replaced with fresh. Larger pots are given, in after years, when these young trees become root-bound and require them. Cherry trees ought to be repotted every other year. The drainage must be renewed whenever trees are repotted, and a layer of turf



SIDE ELEVATION OF ONE OF RIVER'S ORCHARD HOUSES.

a good bed of clay or sand adheres to the fertilizer, and makes it better than when brought directly from stables.

Trees well fed in this way seldom need to have their fruit thinned, but heavy-laden branches must be carefully tied up, and all decaying cherries removed. Dust is apt to gather on the fruit, and it must be brushed lightly with a very soft brush.

The pyramidal form is best and most used for potted cherry trees. Pruning is not often necessary the first year after potting, for the strength of the trees goes to form short fruit-branches; but after the trees are well rooted strong shoots are sent out in summer. Summer-pruning consists mainly in pinching back these strong shoots to 6 or 7 leaves each. If after this first stopping they grow out again, they are again pinched back. On the leading branches side-shoots that are not needed to fill empty spaces or make new leaders are stopped at the third leaf.

or moss laid above it to keep the soil from sifting through. Artificial manures are seldom mixed with the soil used for repotting. If the trees do not need larger pots, shake off two or three inches of old soil from about the ball of roots, replace the roots in the same pots, and fill up with fresh soil. The inside of the ball of roots ought not to be disturbed. Top-dress the pots in alternate years when the trees are not repotted. The soil used for repotting is the same as that before described; a little chalk is mixed with that used for old trees. The soil must be firmed as closely about the tree-roots in repotting as when they were first potted. By the above treatment old trees are kept fresh and healthy for years.

Of the forty varieties of cherries cultivated in River's orchard-houses the ten given below are best suited to cultivation in pots:

Early Rivers. A sweet black cherry of medium size

and fine flavor; an abundant bearer and strong grower. Keeps perfect on the trees 6 or 7 weeks after ripening.

Early Frogmore.—A medium-sized bigarreau, pale yellow with a firm rosy sun-side. The tree is a good cropper, but the fruit-flesh is soft, and does not keep longer than 2 or 3 weeks.

Belle d'Orleans.—A strong-growing tree with medium-sized fruit, which keeps for about a month.

Monstreuse de Menzel.—Cultivated under glass the fruit of this variety of the cherry grows to enormous size. The flesh is firm and rich flavored, and keeps from 5 to 6 weeks. A fine bigarreau; red, with brown-striped cheek.

May Duke.—Of good growth; the best of the duke cherries.

Large Black Bigarreau.—An old, well-known sort, well adapted to pot-culture.

Bedford Prolific.—Large, quite black fruit that keeps for weeks; tree a strong grower.

Elton.—One of the best and best-known heart cherries; keeps for 2 or 3 weeks. The large, drooping leaves and fine flowers of this variety make it a very handsome tree.

Napoleon Bigarreau.—A large, fine-flavored, beautifully-colored fruit. The tree bears heavily.

Late Black Bigarreau.—A good sort for the orchard-house, although the growth sometimes gets rather weak after having been cultivated for some time in pots

Turkey Black Heart.—One of the best sorts for house culture.

Guigne de Winkler.—This should be in all collections, as it is the latest of all the cherries to ripen, and its fruit keeps perfect on the tree a wonderfully long time after ripening. One year we kept these cherries in fine condition from August until the beginning of October.

Cherries as a rule are not suited to early forcing, but there are a few sorts that can be used for this purpose, *England*. A. K. ANDERSON.

A STUDY OF THE NATIVE PLUM

AS NOW UNDER CULTIVATION.



ILD GOOSE PLUMS were introduced some forty years ago, and since then there has been a steadily growing interest in the amelioration of our native plums. The native species possess certain advantages over the common plums of the *Prunus domestica* type, and they are so

widely distributed and naturally so variable that they have been easily brought into cultivation under a great number of forms. Over 150 varieties have been named and more or less disseminated.

CLASSIFICATION OF CULTIVATED NATIVE PLUMS.

A. THE AMERICANA GROUP (*Prunus Americana*, Marshall). To this type belong the hardy, strong-growing varieties from the northwest, which are characterized by a firm, meaty, usually compressed, dull-colored late fruit, with thick and usually very tough, glaucous skin and large more or less flattened stone, which is often nearly or quite free, and by large obovate, thick, veiny, jagged, dull leaves. *Prunus Americana* is generally distributed throughout the northern states from western New England to Kansas and Nebraska, and to the mountains of Montana and Colorado, in the middle longitudes reaching as far north as Manitoba, and as far south as Texas and even northern Mexico. Notwithstanding its wide range, most of its cultivated varieties have come from its northwestern limits, as northern Illinois, Wisconsin, Minnesota, Iowa and Kansas. This fact is an indication that the western plum may be a distinct species from the east-

ern and southwestern types. I have looked in vain, however, for characters with which to separate them. To this species belong Weaver, the stones of which, as shown in fig. 2, are very large, flat and smooth, and Wolf, shown in fig. 1.

The fruits of wild forms of *Prunus Americana* vary widely in season, size, shape, flavor and character of stone. Trees in the same clump often vary two weeks in the season of ripening fruit, which may vary from dull deep red to yellow; but the yellow of *P. Americana* is always a more or less ill-defined under-color, over which are laid blotches of red. The fruits are more or less flattened, usually oblong and truncate or somewhat flattened at the ends, and marked with a distinct suture. All the varieties have a light purple bloom.

The Texan form of *P. Americana*, known locally as the hog-plum, appears to differ somewhat from the northern forms, and it may be a distinct species.

West of the Mississippi there is a form of *Prunus Americana* with conspicuously pubescent and often glaucous leaves and shoots. This is the variety *P. mollis*, a plant commonly supposed to be confined to Texas and its northern borders. It certainly grows as far north as Iowa. The varieties known as Wolf and Van Buren belong here.



FIG 1.—WOLF PLUM.
(Americana Group.)

The following cultivated varieties of plums belong to the *P. Americana* group: American Eagle, Beauty Choice, Black Hawk, Brainerd, Cheney, Chippeway, Cottrell, Deep Creek, De Soto, Forest Garden, Gaylord, Harrison Peach, Hawkeye, Ida, Illinois Ironclad, Iona, Itaska, Kickapoo, Kopp, Late Rollingstone, Le Duc, Little Seedling, Louisa, Leudloff Green, Leudloff Red, Maquoketa, Minnetonka, Mussey, Newtown Egg, New Ulm, Ocheeda, Pepper Premium, Purple Yosemite, Quaker, Rollingstone, Speer, Van Buren, Wazata, Weaver, Wier Large Red, Wild Rose, Wolf, Wyant, Yellow Sweet, Yellow Yosemite.

The Americana group succeeds best in the northern states of the Mississippi valley, and it is the only one which is able to withstand the climates of the northernmost limits of the native-plum belt, as Wisconsin, Minnesota and Iowa. There are some varieties, however, which succeed so far south as Texas. In the Atlantic states the varieties are not grown far south. The varieties which are most highly prized are Cheney, Deep Creek, De Soto, Forest Garden, Itaska, Louisa, Purple Yosemite, Quaker, Rollingstone, Weaver and Wolf.

B. THE WILD GOOSE GROUP (*Prunus hortulana*, L. H. Bailey). This, perhaps the most important group of native plums, includes varieties characterized by strong, wide-spreading growth and mostly smooth twigs, a firm, juicy, bright-colored, thin-skinned fruit, which is never flattened, a clinging, turgid, comparatively small, rough stone, which is sometimes prolonged at the ends but is never conspicuously wing-margined; and by comparatively thin and firm, shining, smooth, flat, more or less peach-like, ovate-lanceolate or ovate long-pointed leaves, closely and obtusely glandular-serrate on stalks usually glandular. *Prunus hortulana* in the wild state appears to follow the Mississippi river from northern Illi-

nois to Arkansas, in its middle region ranging so far east as eastern Kentucky and Tennessee and possibly to Maryland, and in the southwest spreading over Texas.

The varieties are intermediate between the Americana and Chickasaw groups, while the Miner group, which I refer provisionally to this species, is anomalous in its characters. The fruits lack entirely the dull-colored, compressed, thick-skinned and meaty characters of the Americana, and approach very closely to the Chickasaws. They are usually covered with a thin bloom, and are more or less marked by small spots. They are variable in period of ripening, there being a difference of no less than two months between the seasons of some of the cultivated varieties. In color they range from the most vivid crimson to pure golden yellow.

The botanical features of the species are not yet well determined, and it is not impossible that more than one species is confounded in it. Some of the gross features of this species are well illustrated in fig. 3, on the next page.

In this group there are two more or less clearly marked types, which I am not yet able to separate by positive botanical characters. One type is characterized by thin and very smooth peach-like leaves, which are very finely and evenly serrate. It comprises Cumberland, Indian Chief, Roulette and Wild Goose. The other form or type is characterized by thicker, duller and more veiny leaves, which are more coarsely and more

or less irregularly serrate. This includes Golden Beauty, Kanawha, Moreman, Reed, Sucker State, World Beater and Wayland. It forms a transition to the Miner group.

The Wild Goose group includes the following plums: Clark, Cumberland, Garfield, Golden Beauty, Honey Drop, Indian Chief, Kanawha, Missouri Apricot or Honey



FIG. 2.—WEAVER PLUM. (Americana Group.)
Foliage and flowers one-half natural size; fruits and stones full size.

Drop, Moreman, Poole, Reed, Roulette, Sucker State, Texas Bell or Belle, Wayland, Whitaker, Wild Goose, World Beater.

The Wild Goose is either very variable, or there are two varieties passing under that name. I have not been able to observe any constant differences between the two types in foliage or fruit, and am disposed to regard these peculiarities as variations of one variety due to climate or some other local cause, for I find the same differences in other varieties grown here and in the south, as in Newman, Robinson and Mariana. The range of adaptability of the Wild Goose is great. It is hardy in central New York and southern Michigan, and it succeeds well in Georgia and Texas. The tree resembles a peach tree.

and by a more or less smooth and Americana-like stone. Fig. 4 (page 599) is an excellent illustration of the under surface of a leaf of this group, and fig. 5 (page 599) shows the general habit. It includes a few anomalous varieties, which appear to be intermediate between *Prunus hortulana* and *P. Americana*: Clinton, Forest Rose, Idol, Indiana Red, Iris, Langsdon, Leptune, Miner, Parsons, Prairie Flower, Rachel.

The Miner group appears to be a strong and hardy race, which is particularly adapted to the northern limits of the cultivation of the hortulana family. The varieties are much alike. The Miner is the most popular member of the group, and it succeeds even in northern Illinois. In New York the varieties ripen from late September even to late October.

D. THE CHICKASAW GROUP (*Prunus angustifolia*,



FIG. 3.—WILD GOOSE PLUM. (Americana Group.) Sprays half size; stones full size.

This group of plums, as a whole, appears to be best suited to the middle latitudes, being grown with satisfaction from Illinois and Indiana and the southern part of Michigan and New York to Maryland, Virginia and Tennessee, and in the southwest to Texas. The varieties that are most highly prized are Golden Beauty, Indian Chief, Missouri Apricot, Moreman, Wayland and Wild Goose.

C. THE MINER GROUP (*Prunus hortulana*, var. *Mineri*). This group differs from the species by their dull and comparatively thick leaves, which are conspicuously veiny below and irregularly, coarsely toothed and more or less obovate in outline, by a late, very firm fruit,

Marshall; *Prunus Chickasa*, Michx.). This group of plums differs from the Wild Goose group by a more slender, spreading and zigzag growth, usually a smaller size of tree, by red twigs, by smaller, lanceolate or oblong-lanceolate, very closely serrate, shining leaves, which are dupunculate or trough-like in habit, by early small flowers which, upon old wood, are densely clustered on the spurs, and by an early red (rarely yellow) more or less spotted translucent fruit, the flesh of which is soft, juicy, more or less stringy, and very tightly adherent to the small, broad, roughish stone. It is difficult to separate some of the cultivated forms of this species from small-leaved and weak-growing varieties of *Prunus*

hortulana, but the two species are easily separated in a wild state. The zigzag young twigs and trough-like leaves of the Chickasaws are characteristic, and are shown in fig. 6 (page 600), and a plate of the fruit in fig. 7 (page 601). The leaves are often very small, scarcely exceeding an inch in length, but upon the more vigorous cultivated varieties, as the Newman, the leaf-blades are often three inches long and nearly flat. In herbarium specimens the species is usually recognized by the two halves of the leaves being pressed together so that the upper surface is hidden. In a wild state the trees or bushes are thorny, and the thorns persist in some of the cultivated varieties. They grow wild, often in dense thickets, from southern Delaware to Florida, and westward to Kansas and Texas. The small acerb fruit of the thorny and scraggly wild bushes is known in Maryland as "mountain cherry."

The following plums belong to this group: African, Arkansas Lombard, Caddo Chief, Coletta, Early Red, El Paso, Emerson Early, Hoffman, Jennie Lucas, Lone Star, Newman, Ogeechee, Pottawattamie, Robinson, Schley (Schley Large Red), Strawberry, Wootton, Yellow Transparent. I have plants from Kansas under the name of "Kansas Dwarf Cherry," which are evidently a bush-like form of this species. They have not yet borne.

The "sand plum," which is occasionally grown in Nebraska, is *Prunus angustifolia*, if I may judge from leaves sent me Dr. C. E. Bessey, of the University of Nebraska. It is not improbable that this sand plum is the same as the Kansas dwarf cherry.

The Chickasaw group is particularly adapted to the southern states, and it succeeds as far north as Maryland and Kentucky, while some of the varieties are hardy in central New York. The leading varieties are Caddo Chief, Jennie Lucas, Lone Star, Newman, Pottawattamie, Robinson and Yellow Transparent.

E. THE MARIANA GROUP. The Mariana and De Caradeuc plums—and probably, also, the Hattie—constitute a distinct class from any of the foregoing, differing in habit of tree; very early flowering, elliptic-ovate, rather

small and finely serrate dull leaves, glandless leaf-stalks, soft, spherical, very juicy plums of a "sugar and water" character, and broad, ovate stones, which are scarcely pointed and prominently furrowed on the front edge. I



FIG. 5.—LANGODOD PLUM. (Miner Group.)
Three-fourths full size; fruits immature.

am now convinced that De Caradeuc is Myrobolan, and that Mariana is either the same species or a hybrid between it and some American plum, possibly the Wild Goose. This, I am aware, is a startling conclusion, particularly as the Mariana has come to be so extensively used as a stock to replace the Myrobolan, which appears to be used for this purpose much less than formerly.

The Mariana, shown in fig. 8 (page 602), is in several respects intermediate between *Prunus cerasifera*, as represented in De Caradeuc,

and the native American plums, particularly in the short-stemmed fruit, small, nearly sessile and clustered later flowers, erect, narrow calyx lobes, and spreading habit. It grows readily from cuttings, and this, in connection with the hardiness and vigor of the variety, and the readiness with which it unites in graftage with several species of prunus, has made it very popular as a stock. The Myrobolan itself grows from cuttings, but in most cases not to a profitable extent.

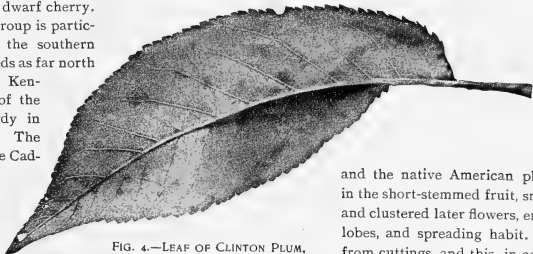


FIG. 4.—LEAF OF CLINTON PLUM.
(Miner Group.) Full size.

F. THE BEACH-PLUM (*Prunus maritima*, Wangenheim). The beach-plum is a straggling, more or less decumbent bush, reaching from 3 to 6 or even 12 feet in height, growing in the sands of the sea-coast from New Brunswick to Virginia, and perhaps extending farther toward the southwest. The flowers are rather large for the size of the plant, and are borne on prominent stalks in clusters. The fruit in the best forms is about a half inch in diameter (see fig. 9, page 603), deep, dull purple when ripe, and covered with a dense bloom; the flesh is brittle, sweet and juicy, entirely free from the stone; the skin is thick and tough, and usually leaves an acrid taste in the mouth when the fruit is eaten. Upon the Jersey coast the fruit is ripe the middle of August. *Prunus maritima* is in cultivation as an ornamental plant, it being very showy when in bloom and interesting in fruit. It succeeds well under cultivation in the interior states. As a fruit plant it has given rise to but one variety, Basset American, shown in fig. 10 (page 604).

G. *PRUNUS SUBCORDATA*, the wild plum of the Pacific



FIG. 6.—NEWMAM PLUM. (Chickasaw Group.)
Sprays half size; leaf and stones full size.

coast, was introduced to cultivation in 1889 by T. V. Munson. It is a straggling, much-branched shrub, growing from 3 to 10 feet high, and has subcordate roundish or round-ovate, tomentose leaves and large pedicelled flowers, which appear with the leaves. The red fruit sometimes grows three-fourths of an inch long. It is eaten by both Indians and whites, but its value in cultivation has not yet been determined.

H. HYBRIDS. It is not known to what extent the native species of plums hybridize with each other or with foreign species, and nearly all the definite attempts at crossing are so recent that results have not been obtained. The only apparently authentic hybrids have come from the union of the Wild Goose and the peach. Mr. Kerr has what appears to be an undoubted hybrid. One other apparent hybrid is the Blackman. The genuine Blackman has never been widely disseminated, but a spurious

and worthless substitute has been sold in large quantities. In order to avoid confusion the original Blackman has been rechristened Charity Clark. There are, therefore, two Blackman plums, one of which is practically unknown to cultivation, but which has been renamed; the other is barren, and will soon pass from sight.

UNCLASSIFIED VARIETIES. The following varieties are not yet referred to their proper species: Allen Yellow, Berry, Champion, Charles Downing, Cherokee, Col. Wilder, Cook Choice, Couler, Crescent City, Diamond, Dr. Dennis, Dunlap, Early Honey, Ellis, Esther, Excelsior, Hammer, Houston County, Hughes, Iola, Irene, Itasca, James Vick, Jewell, Jones, Miles, Milton, Mrs. Clifford, Muncy, Munson, New American, Okaw, Piram-Rare-Ripe, Raymond, Rockford, Rocky Mountain Seed,

ling, Round, Silas Wilson, Smiley, Tenneha, Tomlingson, Van Deman, Wady Early, Winnebago.

CULTIVATION OF NATIVE PLUMS.

The chief difficulty in the growing of native plums is the fact that some varieties do not fertilize themselves. This peculiarity appears to be due, not to any imperfection of the flowers, but to the comparative impotency of pollen upon flowers of the same variety. Imperfect flowers are occasionally observed, but they are apparently peculiarities of the individual trees or particular seasons. The impotency of pollen appears to be characteristic of certain varieties, as, for example, Wild Goose, Miner, Wazata, Minnetonka, Itaska. Other varieties of the same species are fertile with themselves, as Moreman, Newman, Wayland, Golden Beauty, Mariana, Deep Creek, Purple Yosemite. In order to insure fertilization mixed planting is practiced where the impotent varieties are

grown; and it is an important study to determine what varieties are the best pollinizers for a given kind. Evidently the two varieties in any case must bloom at the same time, and the pollinizer must produce an abundance of pollen. Thus the Newman is a good pollinizer for the Wild Goose, but it blooms too early for the Americana varieties. In some of the western states Forest Garden is considered a good pollinizer for Miner. It is a common opinion among good plum-growers that the common or domestica plums, the peach and even the cherry will fertilize the Wild Goose.

Many advise planting in hedge-like rows, the trees standing not more than 4 or 8 feet apart, every fourth or fifth tree, or every alternate row, being a self-fertile and extra polleniferous variety. Others set the trees from 9 to 12 feet apart each way, with the impotent varieties in alternate rows. In this way Forest Garden is made to fertilize both Miner and Wild Goose. This treatment is com-

monly known as "close planting," and has many able advocates. It is said, also, that this close planting shades the ground so completely as to make it too cool for the rapid development of the curculio. Such planting, unless the trees are heroically trimmed, soon results in an unmanageable tangle. I have seen a Wild Goose tree 36 feet across and still growing and bearing, and Miner, Leptune and Langsdon trees but little smaller.

Another important difficulty is that relating to the selection of stocks. The native species work well upon each other, but the permanency and strength of the different unions are still moot points. The varieties unite readily with Mariana; and domestica plum-stocks, myrobalan and peach are also used. In general, it may be said that a variety prefers a stock of its own species, but the true Chickasaws sprout or sucker so badly as to make them undesirable.—L. H. Bailey, *Bulletin 35 of the Cornell University Experiment Station.*

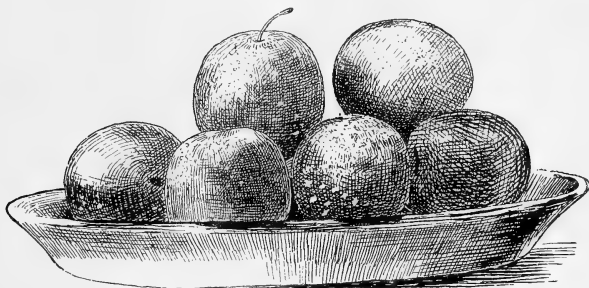


FIG. 7.—NEWMAN PLUMS (Chickasaw Group). Natural size.

FRUIT AND GARDEN NOTES.

PRACTICAL POINTS BROUGHT OUT BY PRACTICAL MEN.



THE MOST serious problem awaiting solution by the fruit and vegetable grower is how to market products in a way that will secure profitable returns for labor. The increased ease and certainty with which many crops are now produced, and the largely increased supply, make it a matter of great importance that means be found to prevent bunglers from demoralizing the markets. Never miss an opportunity to induce your neighbor, by example and advice, to sell only good products, and to ask for them the full price that the real state of the market warrants. Prevent him at all hazards, if you can, from breaking down your market.

SELLING PRODUCE.

An instance of the bungling manner in which some people try to dispose of their products, is instructively

told in *Gleanings*: A young farmer and his wife drove into Medina, Ohio, with half a bushel of green gooseberries. They went to all the groceries, but could not get an offer for them. Finally they came to Mr. Root, and asked him to take these gooseberries off their hands at some price.

Mr. Root, in telling this instance, says: "I could not help smiling at the wife's simplicity in offering to almost give the goods away before she had sounded the purchaser a little. When she first took them out of the buggy and showed them to me, I meditated giving her something like 6 or 7 cents a quart for them; but her discouragement over failure in not finding a buyer actually infected me a little, for I began to think that nobody wanted green gooseberries. Yet, as fruit was very scarce, I could not quite understand it either. There is a moral right here: The seller, if unwise in trying to dispose of his crop, may easily spoil the faith of the would-be purchaser. These gooseberries were very fine, and had been carefully picked and sorted. To be

on the safe side, I finally gave 4 cents a quart for the lot. Now here comes in the importance of a daily wagon in place of a grocery-store or any thing of the sort, especially for small towns. The boys soon drove up with the wagon, and I told them to start the gooseberries at 5 cents. How do you think it turned out? Why the first purchaser took the whole lot. The next day she sent for another similar lot, to be sent her by express. Then somebody who heard of it wanted another lot at the same

letting me know that she was afraid that nobody wanted them at any price. Then I bungled still worse by letting the report from the grocers influence my better judgment. As our bushes also were overloaded, I sold three lots at 5 cents a quart, and then found that the real value of the product—that is, letting supply and demand regulate the price—was about 8 cents a quart, or 60 cents a peck; and they are going at this price fully as fast as I want to see them go. Why, if any of us had looked at

the daily quotations in the papers in the city of Cleveland, we should have found green gooseberries worth \$2 at wholesale! Now, the price we get, \$2.40 per bushel, is a very moderate profit indeed for such a class of goods.

"The same thing is to be seen daily in almost all sorts of garden-produce. For instance, we are getting a cent an ounce for early cucumbers and crookneck squashes. The man who drives the wagon told me that it did not please well to tell customers that cucumbers, squashes and wax beans were a *cent an ounce*. A better way is to put them up in, say, 10-cent packages—10 ounces making a package. If a customer is shown some nice squashes or cucumbers, and told that the lot is worth 10 cents, he will buy right along. But experience has shown that it is not well to talk ounces or pounds to him. Weighing seems to be the only fair way of treating all alike; but the weighing is a matter that the seller usually keeps to himself. Of course, every little while somebody thinks we give only a very small lot for a dime; but the seller can say to him truthfully, 'My friend, at this season of the year this sort of stuff must be that which has been started under glass; and the very late and frequent frosts of last spring necessitated an unusual amount of sash handling. We succeed in this way in getting these nice goods when no one else has any, as you see. Is it anything more than fair that we should have something for our labor?' Explanations like these make a transaction pleasant that otherwise would only awaken hard feelings and complaining remarks.

"We produce crops when nobody else has any. We have no opposition—at least, not in our town—and stuff sent in from the cities cannot compare with ours; therefore, it is our right and privilege to have good pay for fine goods. We first started wax-beans, raised under glass, at 10 cents a quart. After the demand



FIG. 8.—MARIANA PLUM (Mariana Group)
Sprays half size; details full size. (See page 599.)

price; and the orders came so thick and fast that I was obliged to make an advance from 5 cents up to 8 cents. Had I not done so, every gooseberry would have been taken from our whole plantation before it was anywhere near ripe.

"This transaction indicates bungling work. The grocers made the first bungle in refusing to buy the gooseberries of this young man and woman. Then *she* bungled by

had been greater than the supply for almost a week, I suggested that we could get 15 cents a quart just as well, and the supply is still (July 12) less than the demand."

SWEET-CORN.

Growing sweet-corn for market and for home use are two quite different things. That "great beast," the public, cares nothing for quality in comparison with size, though, to do it justice, it has no particular objection to quality along with size. No early sweet-corn can compete in market with Cory, which is probably the very poorest sweet-corn ever put before the public—and the most popular. But Perry Hybrid, as a second early, is good, and as popular as Cory. Crosby, a choice table-corn, is said to be popular in the Boston market, but is not salable alongside of larger sorts of the same season. Washington Market (Egyptian) is probably the best of the late kinds, and sells readily. Black Mexican is quoted in many catalogues as the best late corn, and, some add, "a favorite variety;" yet leading seedsmen tell me there is very little sale for it—meaning, I suppose, among the market men. It is grown almost exclusively in private gardens. There is a variety of this "black" (dark purple) corn that is quite early. It has larger ears than the old sort, but it has as yet attracted no attention. This corn is interesting because its origin is known, which is not the case with the old sort, so far as I can learn. Some 20 years ago Dr. Sturtevant took a good deal of trouble to make a collection and write the history of as many kinds of corn as he could find; but he seems not to have been able to trace out the antecedents of "Mexican corn." There is no apparent reason for attributing it to Mexico; yet a number of varieties of parti-colored corn are known to be grown by the Indians, especially by the Pueblo tribes of the southwest. About 12 years ago Secretary Gold, of the Connecticut Board of Agriculture, sent me an ear of corn said to have been received from the Sioux Indians of Minnesota. This corn was early, quite dwarf, and the ears grew near the ground. They were small, and the kernels were milk-white and china-blue in about equal proportions. With very little trouble and a few years' trial the two colors were separated, the blue kind having a much darker shade of foliage. Some of this being planted not far from a piece of early white sweet-corn, ears appeared on the latter sprinkled with dark blue kernels, which, when dry, had the exact appearance of the Black Mexican. Planting separately for a few years brought this corn to a nearly

complete uniformity, with ears much longer and better and several weeks earlier than the old Black Mexican.

I note this experiment as illustrating the flexibility of the corn-plant, which admits of rapid adaptation to varied localities and conditions, but causes it to vary and degenerate readily under careless treatment. This is especially true of garden varieties, and explains why sweet-corn



FIG. 9.—BEACH PLUM (*Prunus maritima*). Sprays half size; details full size. (Page 600.)

carelessly grown, is found to "run out" in a very short time. Growers of sweet-corn for seed must exercise great care to keep it up to the standard in all telling points. In closely settled neighborhoods this is practically impossible, on account of mixing; and seed from such localities, no matter how carefully grown, cannot be strictly pure.

In drying sweet-corn for seed in any but small quantities artificial heat is essential, and the temperature must be sufficient to do the work rapidly, as otherwise the whole crop will sprout. The best method is unquestionably by a forced blast, such as is used in the rapid seasoning of lumber. With this properly tempered, the ears being arranged on slatted shelves, the corn can be rapidly and uniformly cured without impairing its vitality.—T. H. HOSKINS, *Vermont*.

SOME GRAPE ENEMIES.

In a conversation which I recently had with one of Vineland's most successful fruit-growers, he claimed to have succeeded in saving a crop of Ives Seedling grapes from the rose-bugs by hand-picking. It is a curious fact that this insect generally, if not invariably, comes first on one side of a field, or one end of a row, and gradually moves across. Mr. Ellis' plan is to watch for its first appearance, and to have men ready to meet it at once. A little kerosene, say a teacupful, is poured into a pan (a tin milk-pan is best), and the bugs are brushed into it, throwing them out and providing more kerosene as often as is necessary. No effort is made to get every bug, but rather to collect the most bugs in the shortest time; and when the men have been over the plat once they turn back and go over it again, following up this course while any bugs remain. From ten days to two weeks is all the time they ordinarily need for this work. Mr. Ellis has 25 acres of grapes, and from three to four men kept the bugs down, so that he has secured a full crop of grapes over the whole area. It is only during a few of the worst days that the men give their whole time to bug-picking. The grapes are worth 4 cents a pound for unfermented wine, the purpose for which he raises them, so it will be easy to realize a good profit on this investment, as experience has shown him that the bugs would have taken nearly the whole crop if allowed to do so.

There seems to be a great difference of opinion about the success of spraying grapes, which may, perhaps, be accounted for by differences in the way of doing it. Mr. Ellis says that a prominent grape-grower, who does considerable talking and writing on these subjects, induced several of his neighbors to try spraying, sold them sprayers, and gave directions about using them. His directions were carried out, with the result that the grapes rotted quite as badly as others not sprayed. When their condition was reported to the man who had advised spraying, he replied that he did not understand why the grapes so treated should decay, as his own grapes were all right. One of the men, however, was a doubter, and

examined the vines for himself, with the result that he found the grapes just as badly rotted as his own.

One of our intelligent grape-growers told me that he had sprayed five times this season, and was likely to lose all his grapes after all. On the contrary, L. H. Parkhurst, whose place is just across the street from the one last alluded to, has grapes in fine condition, there being only an occasional rotten berry on a trellis about 150 feet long. On this same trellis they rotted so badly in 1890 that the yield was less than 250 pounds. In 1891 he secured, by spraying, 1,600 pounds, and there is a promise of at least as large a crop this season.

What makes this difference? Perhaps a little insight into Mr. Parkhurst's manner of doing his work will afford a key. He has sufficient means to carry out what he undertakes, and his plans are carried out in the most thorough manner. He says he wants the best sprayer to be had, a man to handle it who understands the work; that the man must make it his business to spray whenever spraying is needed, especially after every rain; and that nothing shall be allowed to interfere with or delay it. Mr. Parkhurst sprays his grapes in field-culture with equal success.—WM. F. BASSETT, *Atlantic Co., N. J.*

GRAPES AND GRAPE-ROT.

The present season is more than wet enough to atone for the drouth of the two preceding years, and one effect of excessive moisture in the soil will be the apparent increase of grape-rot in the vineyards.

We have about two acres in grapes, consisting principally of Concord, Goethe and Elvira, with one or two vines each of about 30 other varieties. The soil is stiff clay, with good surface drainage and partial underdrainage. The grapes have been sprayed with Bordeaux mixture four times: as the buds were swelling; just before the bloom; when the grapes were the size of small shot; and, lastly, July 1, leaving an interval of two or three weeks between the sprayings. The rains were so frequent, however, that only the last spray remained long on the vines, the others being washed off by heavy rains within less than a week from the time of their application. A careful examination of the vines, July 29 and August 1, showed the presence of rot in considerable quantity; and a comparison of our vines sprayed four times with those of a neighbor, grown under similar conditions, but sprayed only once, showed no superiority in the former.

The rot seemed to have developed during the last week in August, when we had heavy rains preceded by ten days of extremely warm weather. It is not to be supposed that the disease has reached its full development, but a comparison of varieties, showing the amount of present injury, may be of interest to the reader. In the following table, the method of pruning, quality of fruit and number of bunches in which the rot shows, are given. The Concord, Elvira and Goethe have been in bearing several years, and have been pruned continuously on the old-wood, short-spur system. The remaining varieties are bearing their first full crop, though most of them bore some fruit last year. They are pruned on

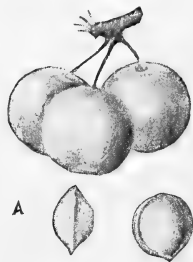


FIG. 10.—BASSETT AMERICAN PLUM (*P. maritima*). Full size. (See page 600.)

the renewal system, by cordon or fan, as indicated. The vines have been sprayed the past two seasons, the older ones possibly longer. All have been well cultivated throughout the season. The old vines have been summer pruned once; the remainder have been pinched back three times during the summer. In making the table, the figures given for Goethe, Elvira and Concord are averages of counts of a number of vines of each variety. In all other cases one vine only is represented:

Name.	Pruning.	Type.	Number of bunches.	Bunches with rot.	Growth.
Goethe	Spur	Hybrid	80	43	Very strong
Elvira	"	Riparia	60	1	Strong
Concord	"	Labrusca	37	14	Very strong
Ideal	Fan	"	18	1	Strong
Niagara	Cordon	"	18	1	Very strong
"	Fan	"	60	11	"
Wyoming red	"	"	78	3	Strong
Fockington	"	"	20	0	"
Moore Early	"	"	14	0	Very strong
Worden (small vine)	"	"	4	0	"
Hayes	"	"	34	0	Strong
Vergennes	"	"	71	3	Very strong
Eaton	"	"	40	1	Strong
Empire State	"	Riparia	35	3	Very strong
Centennial	Cordon	Aestivalls	55	19	"
"	Fan	"	72	45	"
Diamond	"	Labrusca	9	4	"
August Giant	"	Hybrid	49	16	"
Berckmann	"	Riparia	53	1	Strong
Highland	Cordon	Hybrid	24	4	Moderate
Duchess	Fan	"	60	16	Strong
Ulster	Cordon	Labrusca	25	1	Moderate
Delaware	Fan	Hybrid	102	0	Very strong
Early Victor	"	Labrusca	61	1	Moderate
Brighton	"	Hybrid	32	7	Very strong
Standard	"	"	20	0	Moderate
Mover	"	"	24	0	"
Lady	"	Labrusca	12	1	Weak
Potter	"	"	47	0	Very strong
"	Cordon	"	37	0	"
Jefferson	Fan	Hybrid	12	0	Strong
Jessica	Cordon	"	43	3	Moderate
"	Fan	"	120	1	Very strong
Poughkeepsie Red	"	"	47	3	"

The figures given may be considered as indicating, though not at all conclusively, the following points: (1) The cordon (double arm) system of pruning shows less rot than the fan system (with 3 to 5 canes). (2) The labrusca varieties are less subject to rot than those of hybrid derivation, the average being less than half as much. (3) No species represented in the table is entirely free from rot, though it has not yet developed in ten varieties. These sorts may not be rot-proof, however, as there is still plenty of time for the disease to develop before the fruit ripens. (4) The age of vines has no great influence one way or the other, or age has less influence than variety; for, while Goethe is the worst, Elvira is one of the least infected, both being aged vines. (5) Vigorous growth is no preventive against rot. No varieties in the collection are stronger growers than Goethe, Centennial, Brighton, August Giant and Diamond, yet these are among the sorts showing the disease most. (6) Among the sorts which have not yet shown the disease are some of the highest quality, as Delaware and Lady. (7) The amount of the crop seems to have no influence on rot. A very strong vine of Moore Diamond, capable of maturing 50 bunches, is bearing but nine bunches, four of which show rot. A

fan-trained Jessica, plainly overloaded, shows but one bunch with rot. In securing averages of Concord and Goethe grapes, the same fact was observed.—CHARLES A. KEFFER, *Missouri*.

TOMATO FORCING IN MASSACHUSETTS.

For several years I have experimented in forcing tomatoes. Beginning with five or six plants, I have gradually increased the number, until now I have as many as my greenhouse will accommodate. With one building for propagating bedding plants, sowing seeds and transplanting seedlings in, I have been handicapped somewhat in giving the different plants a "fair show," because, as all know, some like a temperature of 70°, while others prefer 50°.

The house, a three-quarter span 15x32 feet, and 11 feet high at the ridge, is built after the English style, with one walk, benches on either side, and narrow slatted shelves running from the rear bench to the top of the back wall. The house has a southern aspect, and when the sun shines it is difficult to keep the tomatoes moist enough without watering through the day. This is especially the case with those grown in pots. The shelves are but 10 inches wide, and it is impossible to use any but very narrow boxes.

Tomato seed is sown in flats the second week in August. When 2½ inches high, the plants are set five or six inches apart in other flats, where they grow until they interfere with each other. I then transplant them into four or five-inch pots, in which they remain until blossoms are formed.

From these pots I transplant tomatoes to 12-inch pots or small boxes, allowing each one about 16 inches shelf-space. I train tomato-plants to one stem fastened to a strong manilla cord stretched from the rafters to the edge of the shelf or box, and keep the side-shoots cut off, going over them at least once a week. I take no pains to fertilize the blossoms, as I find no trouble in getting the fruit to set. Water is used freely in sprinkling the foliage, as the atmosphere is naturally dry. The soil used is good garden loam, with some sand and a little well-rotted manure. At fruiting-time I top-dress the soil with more manure, and to plants in pots give, in addition, a dose of liquid manure once or twice a week. I keep the temperature at about 60° to 65° at night, and 80° to 85° by day, with sunshine; on cloudy days it is not so high. All shoots pushed forth from the end of the blossom-clusters are cut off.

The kinds now growing in my house are Essex Hybrid and Cardinal—varieties well known around Boston, but not generally catalogued. With me Cardinal gives largest tomatoes, but does not ripen so evenly at the stem as the Essex. Plants from seed sown in August sometimes give ripe tomatoes by December 15.

I should like to get an expression of opinion from other tomato-growers upon steam vs. hot water in heating such a house; and whether houses running east and west are preferable to those running north and south.—ALFRED G. CLARKE, *Massachusetts*.

AMONG THE FLOWERS AND VEGETABLES

IN THE GARDENS AT WOODBANKS.



THE CORNFLOWERS.—What is there so attractive about plain, old-fashioned flowers like the annual *centaureas*, otherwise known as corn-flowers, bluets, batchelor's-buttons in Kentucky, and perhaps other parts of the country as pinks, and in Germany as *Kaiser blume*? In part it may be old associations, but it is not alto-

gether this, for plants must have some merit besides to keep a firm hold on popular favor. Again and again, as visitors pass through the 500 distinct sorts of hardy flowers on the editors' grounds, they will stop before a mass of corn-flowers and say, "Among them all, I love these old things most."

Well! The colors *are* bright, the typical form being a beautiful blue tint; then there are white, rose, sky-blue, light and dark purple, and a mingling of all these colors in stripes and shades. The flowers have long wiry stems, which render them most convenient as bouquet flowers. The plants are of the easiest possible culture, grow in almost any soil, and the seeds sow themselves; thus, although the *centaureas* are annuals in character, practically they are perennials.

Two new varieties of *centaurea* have been grown on our grounds this season, and seem quite promising. One is *Centaurea Margaritæ*, shown in the engraving at about life-size. The flowers, as may be observed, are of much substance, and very much larger and fuller than the ordinary *C. cyanus*; the leaves, also, are broader and more distinct in form. The type is pure white, but one plant in our mass has rose-colored flowers of a delicate shade. The pure colors, fine texture and long stems peculiar to the common form of these *centaureas* seem destined to give them a prominent place among flowers useful for summer cutting. It must be said that the new forms do not flower with the almost excessive profusion of the old corn-flowers. They grow about a foot and a half high. The form illustrated was sent out as a biennial, but was sown here in May, and was in flower by July 15.

The other *centaurea* to which we have referred is a variety of *C. cyanus*, called *Victoria*. Its charming peculiarity is a diminutive form of growth and blooms; the plants forming dense rounded bushes about six inches high. The flowers are much smaller than those of the type, are bright blue and borne in profusion. It is a self-sower, like the parent plant.

THE ROSES IN AUGUST.—"Maximum results for a minimum outlay" is our motto in conducting the ornamental grounds at Woodbanks. These grounds cover

four acres, and are planted with about 3,000 trees, shrubs and hardy flowers, in 1,030 distinct varieties. Visitors are surprised to hear that the work of tending them is all done by one man, occupying not more than three-fourths of his time. Our plan of hybrid perpetual rose-culture will give some idea of the simple principles to which successful gardening may be reduced: (1) Tillage two spades deep, our soil being well drained and a peculiar natural mixture of fine sand and clay. (2) The plants are fed freely every autumn with our universal garden compost: two parts rotted sods to one part of rotted manure. (3) Rather severe annual pruning in early spring. (4) Thinning out roughly about one third of the blossom-buds in June, and cutting all flowers as they begin to fade. (5) Winter protection by laying down and covering the tops with earth.

Our crop of roses was fine in size, quality and quantity not only during June, but even up till now (August 20) we have had a fairly good show of flowers. There has not been a day this summer that we could not pick an attractive bouquet of roses from a bed of 35 plants. The kinds now showing handsome bloom are the superb *rugosa* hybrid *Madame G. Bruant*, *Francois Michelin*, *Coquette des Blancches*, *Magna Charta*, *Marchioness of Lorne*, *Anna de Diesbach*, *General Jacqueminot*, *Prince Camille de Rohan*, and *Alfred Colomb*. To this list must be added that wonderful new *polyantha*, *Clothilde Soupert*, which, with the same winter protection given hybrid perpetuals and remontants, appears perfectly hardy here.

Roses budded upon *manetti* or other wild stocks do not give results according to our motto, and so we are compelled to decide against them. Most ordinary gardeners overlook the wild rose-sprouts, and a busy editor has little time for keeping them down. Budded roses are comparatively a failure under our system, but with so many fine sorts that grow vigorously on their own roots and give profuse crops of perfect flowers, we do not feel the need of them. Still, there are many roses especially fine in quality but feeble in growth which would be of little value unless budded on stronger roots than their own. No aspiring rosarian should think of dispensing with budded roses. But as advocates of rose-culture for the millions, we cannot recommend them to the average grower.

If the simple, consistent course of culture marked out above is followed, there will be little trouble given by insects in outdoor rose-growing. Only the plants enfeebled by bad pruning, poor soil or overcrowding will be likely to suffer from them.

SUMMER CATERPILLARS.—Speaking of insects reminds us of a simple caterpillar-catcher improvised during the

warfare against web-caterpillars on trees and shrubs. Provided with a newspaper cone or holder in one hand, a glove on, and a short stiff brush in the other, and a step-ladder for reaching the higher nests, it is easy to go among bushes and trees and sweep the webs, pests, and any dead leaves into the holder. Then, when the round is made, fold the holder together at the upper end, lay it on the ground and tread on it a few times, afterward committing it with its contents to the flames. This is the least disgusting way of handling a most disagreeable task that must not be overlooked.

A MASS OF HARDY HYDRANGEAS. — The common saying that it takes half a lifetime to produce telling effects in tree and shrub planting is sheerest nonsense. On our lawn is a large bed containing 35 plants of *Hydrangea paniculata grandiflora*, set four or five feet apart. The plants are now about five feet in height, and each one is covered with scores of large white panicles of bloom. The group is a confirmation of our ideas on the advantage of massing shrubs and trees to produce bold effects in ornamental planting. This mass of hydrangeas was planted three years ago this spring, and is a telling repudiation of the old saying quoted above. Arrange trees and shrubs in masses, plant enough of one kind so that individual character may be increased with multiplication, give fairly rich soil, keep it well tilled about the roots, and we will warrant that the results of five, or even of two years' growth will agreeably surprise the planter. Starvation and mistreatment are the most common causes of disappointment in tree and shrub-growing.

FERTILIZERS FOR SPINAGE. — We have learned to think so highly of nitrate of soda that we almost invariably apply dressings of it to all our closely planted garden vegetables. We have also made frequent trials of it on

tomatoes, cucumbers, potatoes and other garden crops. Sometimes we have seen really remarkable results from its use, and at other times have looked vainly for the least difference in plants fed with nitrate of soda and plants not so treated. There is one crop, however, which in our experience has never failed to show the most astonishing

results from such applications; this is spinage. A dressing at the rate of 200 or 250 pounds an acre, costing about \$5, has usually doubled and trebled the yield of this vegetable. This summer we found the same happy effects from applications of sulphate of ammonia, made at about the same rate as that given for the nitrate. Part of the spinage plot received a dressing of one chemical, part a dressing of the other, and a third part nothing. The crop at the time of these applications was about half grown, but what a difference they made! There was no noticeable difference in the two plots to which nitrate of soda and sulphate of ammonia, respectively, were applied, but a striking difference between them and the plot that had received

nothing. In the former case, we obtained a heavy growth and the dark green color of health and thrift; in the other, a lot of small, yellowish-looking plants hardly worth harvesting.

This is a matter of the utmost importance to spinage growers. They can not afford to longer ignore these simple means of increasing their crops and multiplying their profits. The two chemicals seem to take effect immediately after application, and may be sown broadcast, even on

partly-grown plants; but the better time for this, we find, especially in the case of sulphate of ammonia, is shortly after sowing the seed.

EARLY GARDEN POTATOES. — It is just about 20 years since the Early Ohio potato was introduced. We have



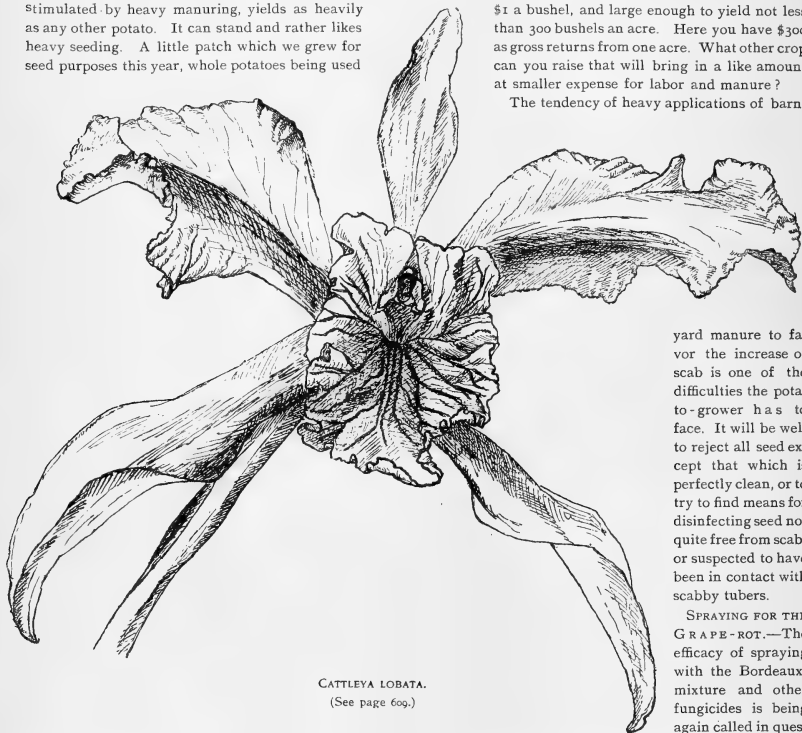
CENTAUREA MARGARITÆ.

grown it every year since, and must say that we are just as much pleased with it now as we were in the first year of its introduction. All things considered, we believe it is yet the best early garden potato we have. The reason that it is not more generally grown and liked, probably, is that it cannot be depended upon in field-culture. It requires rich, rather moist soil, such as we find in good average gardens. It is admirably adapted for strong loams, even if quite clayey, and on such soils, when stimulated by heavy manuring, yields as heavily as any other potato. It can stand and rather likes heavy seeding. A little patch which we grew for seed purposes this year, whole potatoes being used

unfit for human food as most immature things are. The Early Ohio gives to the market gardener who has the right kind of soil for it a chance to offer to his customers new potatoes which he can guarantee to be ripe and to cook mealy, in advance of his competitor who grows Rose or Hebron potatoes, and who cannot give this guarantee.

The question is, Will it pay to use rich ground and so much manure in potato-growing? With proper management the crop should be early enough to sell for at least \$1 a bushel, and large enough to yield not less than 300 bushels an acre. Here you have \$300 as gross returns from one acre. What other crop can you raise that will bring in a like amount at smaller expense for labor and manure?

The tendency of heavy applications of barn-



CATTELEYA LOBATA.
(See page 609.)

for seed, and these placed much farther apart than we would put them for the largest yield per acre, harvested at the rate of almost 400 bushels an acre.

The Early Ohio is several days, perhaps a week or more, earlier than any good potato now generally grown. It is also of good quality for a potato of its season, cooking dry and mealy even before it is fully ripe. Market gardeners ordinarily grow the Early Rose or Hebron, and in order to be in the market in time to secure best prices dig their potatoes when half grown and still soggy. These early-dug potatoes are notoriously poor, and as

yard manure to favor the increase of scab is one of the difficulties the potato-grower has to face. It will be well to reject all seed except that which is perfectly clean, or to try to find means for disinfecting seed not quite free from scab, or suspected to have been in contact with scabby tubers.

SPRAYING FOR THE GRAPE-ROT.—The efficacy of spraying with the Bordeaux-mixture and other fungicides is being again called in question. This season seems to be a genuine fungus year, and perhaps we may discover that a great deal of the exemption from disease in some of the years gone by was not all due to treatment of the vines with fungicides, but to a large extent to atmospheric conditions less favorable to the development of fungous growth. On the whole, we can not say that we are satisfied with our present formulas for fungicides, nor with the results obtained by spraying our disease-inflicted crops, nor with the rate of progress that is being recorded in this whole matter. Persistent spraying with the Bordeaux-

mixture has not protected our potato-vines from the attacks of our old enemy, a form of leaf-blight; nor our celery from the celery-blight, nor our cucumber-vines from the blight or blights peculiar to these plants. We could not positively affirm that we have noticed any effect of our sprayings, frequently as they were applied.

We believe that fungicides of greater power and effectiveness than any now generally recommended and used are needed. The scientists of our stations should make greater exertions to discover them. So far as the grape diseases are concerned, we may be able to give at least a hint. Our experience seems to justify the statement that a thorough washing or soaking of the still dormant vines in early spring, when such treatment is still safe, with concentrated solutions of sulphate of iron, and the thorough spraying of the trellises, wires, and even

of the ground with the same solution, will show better results in preventing these grape diseases than five sprayings of the foliage later on. We have for several seasons given our vines, badly diseased before, two such thorough washings each spring, and credit to this treatment the evident fact that the rot, etc., is gradually disappearing, and this at the same rate on vines sprayed and unsprayed during the growing season. Strong solutions of copper sulphate would, in all likelihood, be as effective as the iron-sulphate solution, and we suspect that a one per cent. solution of sulphuric acid would have the same happy effect. Of course, these solutions cannot be applied to the vines during their season of growth, as they would scorch the foliage; but they may give us a pointer as to where we must look for light upon the vexed question.

A RARE ORCHID AND A NEW AGAVE.

PLANTS FROM THE TROPICS.



THAT excellent plant, *Cattleya lobata*, is very rare in cultivation, considering the popularity of orchids in these days. It was introduced from Brazil in 1847, by Messrs. Loddiges, of London, England, and was first flowered at their nursery the same year, so that it cannot

by any means be called a novelty.

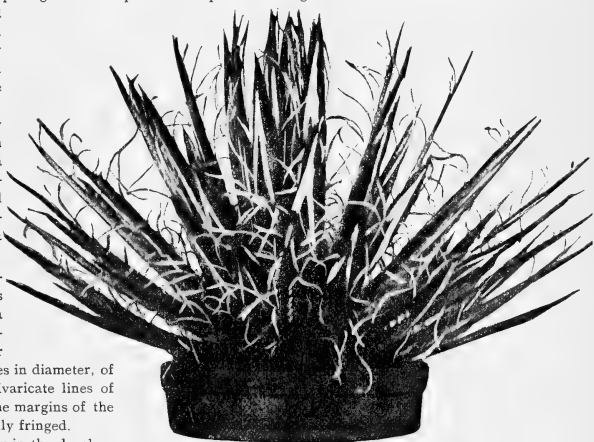
Having had occasion to trace up a figure of the plant some time ago, I was surprised to find that only one has been published, and that practically inaccessible. This appeared in that venerable journal—the *Gardener's Chronicle*—in 1848, with descriptive particulars by Dr Lindley. The illustration on the opposite page, taken from a plant which flowers regularly during May and June in the Harvard Botanical Garden, will give orchid-growers of to-day some idea of the beauty of the flowers.

C. lobata is a free-growing species, the club-shaped pseudo-bulbs bearing a single oblong leaf of a deep green color. The bloom-spikes are very long, and bear from one to six flowers, six inches in diameter, of pale purple color, with many divaricate lines of rich, deep purple in the lip. The margins of the lobed petals and lip are beautifully fringed.

Many regard this orchid as shy in the development of flowers, hence its neglect by cultivators. The specimen at this place is not at all coy in the matter, having borne 14 flowers this season and 17 last year. It is grown in a basket containing rough peat-fiber, charcoal and crocks, and occupies an airy position

near the glass in a house, the temperature of which seldom falls below 60° Fahrenheit. Water is given freely during the growing season, but almost totally withheld at other times.

The length of *C. lobata's* bloom-spikes renders them admirable for cutting, in which state they last a long time. They retain their full beauty unimpaired about six weeks after development, when allowed to remain on the plant that length of time.



AGAVE VESTITA.

THE NEW AGAVE.

Since the introduction in 1875 of *Agave Victoria Regina* from southern Mexico, there has been no more interesting or beautiful addition to the genus than that

of a species to which the name of *A. vestita* has been given. In 1889 it was found growing on rocky ledges near Guadalajara, Mexico, by that enterprising collector, C. G. Pringle, who has already contributed to our gardens much material of an ornamental character.

Mr. Pringle kindly sent us a living specimen of *A. vestita*, which was described as follows by the late Dr. Sereno Watson: "Leaves very numerous, stiff, straight, ensiform, a foot long or less, by 6 or 8 lines broad, flat above, convex beneath, attenuate to a very pungent brown tip, covered throughout when young with a thin white, continuous layer which is at length deciduous, leaving a smooth green surface, variegated with scattered round, lighter colored spots, the margin bordered by long, grey, recurved threads; flowers sessile in pairs; the narrow segments of the perianth 6 lines long, filaments twice as long, ovary and narrowly turbinate tube each 4 lines long; capsule broadly oblong, 6 lines long."*

* Proc. Amer. Acad., Vol. XXIV., p. 163.

The yellowish spots on the leaves, alluded to by Dr. Watson, were once quite a decorative feature of the plant, but they have disappeared in the case of our specimen. Severe drought, and the barren character of the plant's natural abode—circumstances pretty well reversed in the garden treatment—were probably responsible for their formation. It will be observed from the accompanying figure, however, that the plant is still exceedingly attractive without them.

There can be no doubt that these low-growing agaves will survive considerable hardship so far as soil and moisture are concerned, but they are sensitive to cold. Although they exist for a long time, even when neglected, yet it pays to be generous with them, and, having this in view, they should be potted in rich sandy soil, and given a plentiful supply of water during the annual hot weather period.

Harvard Botanic Garden, Mass. M. BARKER.



A CHAPTER ON TREES.

TREES GROWING ON TREES.—It is no uncommon thing to meet some tree or shrub growing in the fork of another. The writer recalls a mountain ash some 6 feet high growing from an elm tree some 20 feet above the ground. A contributor to the *Boston Transcript* recently described a currant-bush with ripe fruit which he had seen growing from the fork made by the principal branches of the so-called Washington elm at the village of Wellesley, near Boston. This currant-bush flourished about 25 feet above the ground. Such planting is to be ascribed to birds, who carry the seed into the trees, where it germinates and develops. A rather more singular case of tree growth on a tree was met by the writer some time ago in the city of Buffalo. The subject was a Babylonian weeping willow, which had lost one of its branches in years past, causing a large scar and decayed center in the tree, filled with moist, rotten wood. From the edge of the scar, which was situated about 6 feet above the ground, roots had struck into the moist substance in the tree trunk, had made some growth, and were in a thriving condition, thus causing the tree in part to be feeding on its own vitals.

WHO WILL PLANT COLUMBUS TREES?—The beautiful custom of planting trees to commemorate events and persons is not as much in vogue in this country as in some others. Perhaps Americans are too practical-minded to readily adopt such ideas; if so, it would be well to cultivate sentiment in a direction so commendable. These thoughts are suggested by the recommendation of the executive committee in charge of the Na-

tional Columbian School Celebration that on October 12—Columbus Day—the memory of the great discoverer be regarded by the planting of Columbus trees. The editor of this journal, for one, proposes to follow this recommendation on his own home grounds, and he hopes to have much company in all parts of America engaged in the same act. He will most likely set out an American elm as a Columbus tree, for it is one of our handsomest and most long-lived natives, and in all probability it will, if unmolested, be yet in existence when the five-hundredth anniversary of our country's discovery shall have come. There are numerous native trees, both deciduous and evergreen, adapted to every part of our country, that should, if planted now, still be growing a century hence. Where trees are not abundant on one's grounds, it would be a capital plan not to limit the planting on this occasion to a single specimen, but to set out a mass, grove or row of trees in memory of our country's discoverer. Nearly all kinds of deciduous trees will be yet in leaf at the Columbus day date; then what is to be done? Simply strip off every leaf on the tree or trees to be transplanted; then there will be no more risk in moving on that date than to wait until after the time of natural leaf fall. Let all join in a universal Columbus arbor-day on the date named. Let school-children, of all others, be encouraged and assisted in planting Columbus trees in the school grounds. Let bodies of people, families and individuals engage in such planting. By this means the country would be made more beautiful and the memory of its great discoverer be the more vividly kept in mind by all its people.

A NURSERY IN THE FAR SOUTH.

THE discovery that wonderful things in tropical growth could be accomplished in Florida has stimulated planters greatly in that favored land; and, naturally, establishments have sprung up to supply them with their horticultural necessities. A number of creditable nurseries are found in the more southern states, but the one farthest south is that of Reasoner Brothers, at Oneco, near the Manatee river, on the Gulf coast of Florida. A visit this summer to this remarkable establishment proved so delightful that I want to tell AMERICAN GARDENING readers about it.

The Manatee river is more nearly an estuary of Tampa bay, and is a most beautiful stream, fringed as it is on both sides with luxuriant "hammocks" of the richest land, and dotted with productive "keys." This locality has become famed for the early vegetables produced, and large quantities of tomatoes, early beans and the like go forward each season. The steamers of the Plant Line patrol the river daily, gathering here and there what they can for shipment in bulk to the hungry north. At Port Tampa the cars are loaded at the steamer's side.

Though my visit to this region was in middle June, when the south experiences its hottest weather, and though it was preceded by a considerable drouth, I found the temperature by no means unendurable, and the tropical growth wonderful to behold.

The Royal Palm Nurseries, as the Messrs.

Reasoner name their establishment, were planted in 1883, and were the outgrowth of an earlier visit from his Illinois home by the late Pliny W. Reasoner, whose most untimely death in 1888 from yellow fever has been so deeply deplored by all who knew him. Mr. Reasoner, though young in years, was a skilled horticulturist, possessed of tremendous energy and great enthusiasm in regard to the

possibilities of Florida, and his death was purely a sacrifice on the altar of his adopted state; for the hard work done in unhealthy surroundings at the subtropical exposition at Jacksonville, and later at the Cincinnati exposition (where he went as commissioner for Florida), undoubtedly weakened him so that he fell an easy prey to the disease that left untouched those about him.

The premises of the nurseries include some 400 acres of rich upland "hammock." A striking feature at the very entrance of the place is the magnificent live oak, on which the sign manual of the nurseries has been tacked. It is 80 feet high, and covered with long festoons of the well-



GIANT LIVE-OAK IN THE ROYAL PALM NURSERIES.

known Florida moss (*Tillandsia usneoides*). But interest is on every hand; for at the very gateway stands a beautiful bamboo, which one can almost see growing! The clump is but five years old, yet it was more than 40 feet high at the time of my visit, and actually growing about a foot a day. It was flanked on both sides by several magnificent olive trees, while a rod off was a superb

specimen of the golden-striped bamboo, the delicate yellow wands of which waved in the sunlight as veritable rods of precious metal.

The object of the Messrs. Reasoner has been to test every tree or plant of economical or ornamental value to be found anywhere in the world, and they have consequently imported for trial whatever has been obtainable. Thus many rich growths have been found to be thoroughly well adapted to Florida conditions. All the obtainable tropical fruits are grown, and thorough tests have been made of many rare and hitherto unknown but valuable fruits. It was somewhat an experience to me, a Pennsylvanian who was accustomed to apples, peaches, pears and grapes as his mainstays, to pluck a pineapple—the most delicious fruit I have ever tasted, when eaten fresh—and then eat an orange direct from the tree; to have offered me bananas in a number of

But the greater interest, perhaps, centers about the ornamental and economical plants grown here. The sisal hemp has received great attention from the Messrs. Reasoner, and they have sold to the British West Indian governments many thousands of plants. The Florida people themselves have not yet wakened up to the great importance of this fibre plant.

An exquisitely beautiful new conifer from Australia is *Callitris robusta*, the original plant of which is now some five feet high, and growing rapidly. Another rare plant, *Phyllanthus emblica*, had a somewhat fern-like growth, the ends of the long, green branches being tipped pink and gold; I keenly regret that my camera could not bring away more than a memory of it.

Greenhouses are used for much young stock. They have, however, no glass, the roof being simply made up of rafters, over which light slats have been tacked. This

is sufficient protection from the occasional frosts, and in this partial shade plants too tender for the hot Floridian sun flourish. A windmill and an admirable system of tanks and piping enable growth to be maintained all about the grounds, when otherwise the drouth would prevent.

Time fails to even hint at the many beautiful things abounding all over the nurseries. Venturing into the dense tropical growth of one of the "hammocks," I passed there cannas growing as weeds, while rare water-plants were all about a little creek. Off to one side was a grove of bananas and pineapples, a "kodak" glimpse of which is presented. Looking



IN THE HOME FRUIT LOT AT ROYAL PALM NURSERIES.

varieties, grown on the place and served both out of hand and cooked, and then have lemonade made from wonderfully large limes plucked a few minutes before, followed up with a "Florida Favorite" watermelon! It required great conservatism and self-denial to avoid too hard a trial of a good, solid, Pennsylvania-Dutch digestive apparatus. The memory of those Hart's Choice bananas, scarcely larger than my finger, and of singularly refreshing and piquant taste, is with me yet.

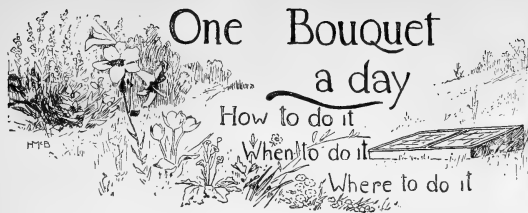
The Chinese strain of peaches is well represented here in several promising varieties, which have a flavor utterly distinct from that we are accustomed to in the north. Guavas, mangoes, coconuts and a dozen other tropical fruits were not ripe enough for tasting, which was doubtless fortunate for me.

another way, an experimental orange-grove of 50 or more varieties stood between my point of view and a planting of peaches and plums. Beyond this a wonderful patch of panratiums, with their immense flowers, was a bright blaze of color, and the rich, dogwood-like flowers of the bauhinia towered above the bright, glowing scarlet blossoms of the royal poinciana.

The trade of the Messrs. Reasoner extends all over the world. An accuracy and candor of description unusual to nursery catalogues has made theirs a work of much interest, and considering this and the character of their stock, I departed without wonder at the success of Reasoner Brothers, but with admiration for their pluck for working through so many disadvantages.

Pennsylvania.

J. HORACE McFARLAND.



MOVING INTO WINTER QUARTERS.

When the maples and beeches and birches, all the tree family and, seemingly, all the world, is in full dress for the autumn holiday pageant, their splendid raiment casting a glamour everywhere, it does seem rather like hard lines to "dig garden" in one's old clothes. But it is easy to find an errand to the woods, and as even a very small errand may occupy a large amount of time, the most conscientious gardener has a good excuse for lingering long beneath splendid leaf canopies in collecting the many spoils that may be transplanted to the home garden.

Some of the bright berries now ripening are as pretty as flowers for bouquets and breast-knots. It seems too bad to rob the birds of their winter feasting, but shrubs transplanted this time of year give little care and trouble, and grow off readily in spring. So when some time during the month you set young plants of deutzia, spiræa, lilac, daphne and weigelia, all fine for cutting, leave spaces in the border for any worthy wildlings which you may have in mind as obtainable in your woods. Barberries, bitter-sweet, *Euonymus Americanus* and snow-berries are common everywhere. Another pretty winter berry following an exquisite blossom on a dainty creeping evergreen vine is the partridge berry, *Mitchella repens*. It makes a beautiful edging for small baskets and dishes of short-stemmed flowers, and is bright and graceful anywhere. I see people try to grow it in baskets, which dry out quickly; it loves shade and moist atmosphere, such as may be given it beneath the leaves of rex begonias.

Andromeda Mariana has graceful sprays of lily-like bells that are borne freely in springtime, and on dry hillsides there are banks of sweet-fern with spicily-scented fern-like leaves borne on slender shrubby stems. The cunning pink buds and blossoms of the wild crab have great beauty and fragrance to recommend them. Move and transplant shrubs carefully, cutting back the tops to balance with the roots, which must be spread out naturally in deep mellow soil moderately enriched. Firm the soil well about them, and give them one good watering, and the hardy ones need no further care this season. The tender ones may be protected with evergreen boughs.

Hardy perennials will also claim attention during October. Clumps that have grown too large must be divided and reset, and it is convenient to order any new ones with bulbs for outdoor planting. *Astilbe Japonica* is beloved of all bouquet-makers for its feathery grace, and a wild plant much valued for this purpose is *Tiarella cordi-*

folia, our dainty little "foam-flower." Its stems of misty flowers overrun the rocks like foam in early spring, and all winter its root leaves gleam in gay patches of scarlet and yellow on barren, rocky hill sides. Harebells, hepaticas, mertensia, moss campion (*Silene acaulis*), and maiden-hair ferns all are pretty wild perennials.

Now for the tender plants that are to bloom all winter! Only thrifty growing ones, with many promises for buds, can be preferred for this high honor but arduous task. Sprawling ones, with bare branches that have flowered during summer, may be cut back and sent down to the cellar, or set away in some cool room or under the greenhouse benches for a long rest. You think first of roses. If there are some which have always grown in pots, and know nothing of root-freedom, you may persuade them to bloom during winter. The kitchen window is the best place for roses, because there the air is always warm and full of moisture. All the polyanthas are good pot roses; some other fine ones are Niphetos, Perle des Jardins, Agrippina, La France, and the old Sanguinea. The soil for potted roses must be rich and well drained, and extra deep, narrow pots are made specially for them. Geraniums, heliotropes, begonias, carnations, stevias, *Linum trigynum*, bouvardias, lemon verbena, agatheas, all the Paris daisies (white, blue and yellow), ferns and vines furnish a window well in winter and are good bouquet-timber. The scented-leaved geraniums are indispensable, and so also for green are smilax, climbing ferns, ivies and *Asparagus tenuissimus*. *Jasminum grandiflorum* and *J. gracillimum* are ideal plants both for window drapery and bouquets. Plants that are grown for their leaves will need repotting in rather large pots of rich well-drained soil; those that are to bloom plant in pots that seem small in proportion to the ball of roots.

It is important to bring flowers in early enough to accustom them to the close atmosphere of rooms before the fires are lighted, that the change may be more gradual from outdoor life. Stands for holding them are easily contrived. Window boxes, brackets and ledges are good, and the rudest attempts at tables and shelf-steps will soon be covered with vines, flowers and foliage if the plants are tended well.

Pits without artificial heat, in which some flowers grow all winter, are easily and cheaply constructed, and people whose eyes will not permit them to share light from the windows with their plants, will find plans for otherwise accommodating the blossoms on page 619.



INVITATION TO READERS.—We want short, practical notes on cultural methods and devices, and sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes implements, etc. Therefore, for any available article occupying a half-column or so of space, or for any sketch or photograph from which an acceptable engraving can be made, a year's subscription to this magazine will be given. Please always so specify when contributions are sent in under this offer.

I. LITTLE TWIGS.

AFTER HARD FROSTS clear up the lawn.

HARDY ROSES.—Plant them in autumn.

FOR AUTUMN BEAUTY, explore the woods; they are full of it.

HERBACEOUS PHLOXES will flower well in the greenhouse.

DAFFODILS grow well in uncultivated wild gardens or in lawn-sward.

THE LARGE BUSH LIMA BEANS were a complete success with us this year.

CARELESS LEAF-BURNING has badly injured the bark of many a fine tree growing near by.

BEAN POLES AND GARDEN STAKES.—Put them under shelter; they will do for use another year.

LARGE COLLECTIONS OF WILD-FLOWERS will be exhibited at the World's Fair by a number of the states.

PERENNIAL GAILLARDIAS will be stronger for wintering over if the flower-heads are picked off as soon as they wither.

STAKE ALL NEWLY-SET TREES.—This is always a good practice, and is of especial benefit to trees planted in autumn.

MOVING TIME FOR BULBS.—Hardy bulbs should go into the ground this month, and tender ones be taken out of it and stored away.

BULBS FOR THE WINDOW.—People who cannot grow hyacinths in the window in winter are not likely to succeed with any but metal plants.

THOMAS COOK, the famous originator of "personally conducted" tours, died recently in England. He was an enthusiastic florist, and also a rigid teetotaler.

FINE FRUIT.—A. J. Downing's old saying that "fine fruit is the most perfect union of the useful and beautiful known to the world," seems truer every autumn.

THE TULIP POPPY.—This novelty was planted on our grounds last spring. It is diminutive in flower and growth, much resembling the Duc Van Thol tulips.

A YOUNG PARAGON CHESTNUT TREE, planted on our grounds three years ago, is this season carrying 17 fine burs. This seems to us like a remarkable showing.

AZALEODENDRONS.—M. Emile Radigas, of France, has bestowed this name upon the new hybrids lately raised between *Azalea mollis* and some forms of the hardy rhododendrons.

ENGLISH WALNUT TREES.—In various parts of western New York these trees, such as we grew from seed gathered in New Jersey, have thus far proved themselves hardy.

LEMOINE GLADIOLUS.—I am surprised at Mr. Hallock's declaration that the Lemoine kinds do not open freely in water. They expand, with me, to the very last flower.—W. E. ENDICOTT, *Mass.*

DRIED SWEET-POTATOES.—Slice and dry them in the sun, says Prof. Massey. They dry easily, and in winter, when stewed, they have a natural flavor, and are better than pumpkins and squashes for pies.

THE NEW ONION-CULTURE.—Onions grown on the new plan have done well for us. All were marketed by Aug. 1, at \$1.20 per bushel, and the ground was planted with celery.—T. M. WHITE, *New Jersey.*

A PEACH TOMATO.—Editor E. S. Carman, of *The Rural New-Yorker*, reports, as one result of crossing tomatoes on his grounds, a variety of perfect form covered with a peach-like down. He thinks it may prove a valuable acquisition.

SWEET CORN cannot come upon the table too often to suit the average person. We always plant Evergreen about July 4, and just before frost cut down the stalks, still bearing ears, and store them in the barn. Thus we have a supply for a number of weeks after frost.—A. A.

THE VARIEGATED MAPLE.—Why not use *Acer negundo variegatum* for summer room-decoration? Dwarf standards or bushy plants may be potted in the fall, and, if kept in a cool greenhouse, will make fine plants by spring. When too large for pot-culture they may be planted out in the shrubbery border.

PUBLIC INSTRUCTION IN GARDENING.—The Hampshire County Council, England, is advertising for a public instructor in gardening, with a view of spreading information on this subject among the people. No one need apply who is regularly engaged elsewhere as a gardener. Efficient and exclusive service is what is wanted.

A FINE ANNUAL.—A mass of bloom that has given as much satisfaction as anything grown from seed on our

grounds for a long time consisted of the large rose-flowered candytuft, offered as a novelty last spring. It grows off readily if the seed is sown where it is to bloom; the only way, in fact, to grow candytuft in the garden.

CHOICE PERENNIALS.—The next time you order hardy herbaceous perennials, if you will include the following August bloomers in your list, we can assure you most gratifying results: *Veronica subsessilis*, *Chrysanthemum lacustre*, *Rudbeckia Newmanii*, *Gaillardia cristata*, and *G. Templeana*. They should be in every garden in America.

CLEOME, OR SPIDER-PLANT.—This odd and interesting plant, which is easily grown from seed, and produces clusters of flowers on the ends of all its branches, can be kept over for another season's bloom if it is potted in the fall. I have only tried it the second season, and it is finer than it was the first. I kept it in my conservatory with other plants.—MIRIAM PARKER, *Minn.*

TRY LOPHOSPERMUM SCANDENS, if you want a handsome strong-growing vine for outdoors in summer, or indoors in winter. Roots can be kept in the cellar in earth, if not wanted in the conservatory or living room through the winter. Planted out again in rich soil in a warm place, this lophospermum gives an abundance of beautiful pink flowers. It is grown from seed or cuttings.—MIRIAM PARKER, *Minn.*

II. THRIFTY SAPLINGS.

Perennial Calliopsis.—The plants come up here in the fall, and are pretty all winter when some parts of the garden are brown and bare. Early in March they begin to bloom, and from that time till frost are loaded with gay-colored yellow flowers on long, smooth stems. A dozen of them, with three or four Marechal Neil roses and a spray of *Asparagus tenuissimus*, is a pretty filling for a tall slim vase. This calliopsis, like the perennial gaillardia, must be kept free of seed-pods. Old stems, when they become unsightly, can be broken out, and new shoots will soon begin to bloom. The flowers are fine for corsage bouquets, as they last a long while, and are richer-looking for evening wear than most roses. Plants of perennial calliopsis form large clumps, and grow three or more feet high. The flowers stand high above the foliage. We have two forms of perennial calliopsis, one more dwarfish and not so deep in color, nor so fine after early spring as the one described. Which of these is called Golden Wave?—MARGARET CAMPBELL, *Louisiana*.

Petting Flowers.—One of my neighbors looks over the fence and asks: How do you make your plants bloom? They just keep going as if they liked to. Tell us your secret. It's no secret, I reply; a "stir" does it. Did you ever notice after a rain, how stiff the soil is? Then but little air can get down around the roots, and plants suffer. I take my hand-shaped weeder and gently push it around, pulling the earth toward the plant, so that none of the rootlets will be uncovered. Plants like coddling as much as babies, and need it, too. Working over these dear little garden pets is good for

any one in trouble. I know a widow that, not long after her husband's death, buried her baby. For a while we thought her mind would give way. She told me she missed the petting and care that she used to give her little one. Then I carried a lot of seedlings in, and asked, Would she please care for them. To oblige me, she began, and every day worked out in the blessed, soothing sunshine. It was wonderful how the color came back to her face, and how she began to take a quiet happiness in life. She said she found that stirring the soil was one secret in making plants grow. She believed, too, that there might be a "dirt cure" for sick minds and bodies, and that using the hoe was a better anodyne than could be bought at the drug store.—SISTER GRACIOUS.

Japanese Gardens.—Americans who have traveled in England look upon the English people as far surpassing our own people in their love for gardening and success in managing home-gardens. But the English, it seems, are ready to grant that the Japanese are ahead of them. In a recent issue of the *London Garden*, a writer remarks that in Japan every man, however poor he may be, or how small may be his home, strives to reserve some space, which in England would be relegated to the uses of a back yard, dust-bin and rubbish-heap, for laying out the traditional garden. In it will be found a miniature stream, flowing between rocks, crossed by one or more tiny stone bridges, and bordered by low pine and other trees, which are trained to bend and reach at abnormal angles over the shallow stream. Blossoming trees and shrubs fill up the space at intervals. The extensive gardens of the Mikado's palace at Tokio, together with some of the great parks, testify that the Japanese can also conceive and carry out grand gardening schemes.

An Evergreen Nook.—Some years ago the children brought home some little spruce and hemlock trees, and wanted them planted; so I helped set them out in a circle, spruce outside, hemlock within. They were set quite close together, and the inner circle was kept trimmed closely to force the hemlocks to branch thickly and close to the ground. The spruces were allowed to grow, and all the trees were kept well manured. Now they are quite large, and we find that we can grow inside this circle flowers that we could do nothing with in open ground exposed to the fury of our Canadian winds. Half-hardy lilies, roses, chrysanthemums, etc., bloom and thrive nicely here, the chrysanthemums being covered with blossoms until the ground is frozen. The snow drifts through the trees and piles up in a great mound within the circle, even when there is but little anywhere else. It does not melt until spring is well advanced, and thus affords protection to roots of plants. Next year we mean to plant here a root or two of grapes too tender to bear in the open ground. These we will put on the north side, facing the south, and we think they will ripen their fruit. Other roots and vines will be added by way of experiment, and good care given in order to find out what tender plants can be risked outdoors in our climate.—FLORENCE H., *Canada*.

Hoop-Iron Hoe.—The illustration shows a serviceable hoe, which any one with mechanical skill can easily make. On an old hoe-handle attach a piece of good strong hoop-iron, firmly bolting it. The cutting edges should be filed sharp.

The Black-Knot Law, passed at the last session of

the New York legislature, and now in force, covers the following points: "A tree infected by this disease is declared to be a nuisance, and the owner of such tree or trees is required to abate the nuisance.

It authorizes the supervisor of any town, or the mayor, to appoint, on the application of resident freeholders of the town, three commissioners, who shall be fruit-growers and residents of the town. It shall be the duty of these commissioners to examine any tree or trees in their town known to be, or suspected of being, affected by the disease, and to mark for destruction the part or parts found to be infected by the black-knot. If the tree is so badly affected that its total destruction is necessary, they are to mark it by girdling its trunk. They must then give notice to the owner, who is required within ten days of such notice to cut away and burn the part or parts thus marked, and in case of a girdled tree, to destroy it wholly, burning the affected parts. If he fails to do this within the specified time, the commissioners are to do it for him, and he renders himself liable to a fine not exceeding \$25, or to imprisonment not exceeding ten days, or both, in the discretion of the court. Any justice of the peace in the town has jurisdiction in the case. The commissioners are to receive each \$2 a day for the time actually spent in the discharge of their duties, and their necessary expenses. The owner of destroyed trees is debarr'd from recovering damages against any one destroying the infected trees or parts thereof."

Filling Vacancies in the Orchard.—As usually practiced, the filling of vacancies in orchards tends only to losses; loss of the cost of the trees, loss of the labor of setting, loss of the attention afterward paid them, and of the culture given. Losses are most marked in filling vacancies in orchards of large trees, because fruit-trees thus set seldom develop into productive, paying trees. The seeming vacancies in old orchards are really occupied by the rootlets or feeders of surrounding large trees, and often more fully occupied than the soil nearer to said large trees, as sunshine, rain, etc., reach the open spots best. Many orchardists think that roots which they do not see occupy no more ground than is covered by the tree-tops which they do see; hence, they manure and cultivate beneath the branches as far as they extend.

On closer investigation they would find the spaces beneath the tree's branches occupied by the main root-stems, while their rootlets or feeders are mostly far beyond the spread of the top. The universal practice is to set fruit-trees too close, but I know of one orchard where the trees were originally set 50 feet apart. At least half the setting died, leaving many of the trees 100 feet apart in the rows, yet the owner said he could not put his plow into a place in the orchard without cutting roots. A Milwaukee gardener once told me that he had followed the roots of strawberry plants four feet.—Z. C. F., Michigan.

Keeping Begonia-Tubers.—The advice generally given in regard to wintering begonia-tubers is that they be kept in the pots they grew in, at a temperature of about 50°. Those who advise this method must have found it successful; but, judging from my own experience, not all will find it so. Many wonder why their begonia-tubers make no show of starting in the spring. Upon examining them they find only a skin or shell filled with dust. Such was so frequently my experience, years ago, that I was in despair, and was often disposed never to try them again. However, I resolved upon one more attempt, and procured 100 cheap ones from Lemoine in November. They came packed in a box and surrounded with cotton. I kept them so until March, when they began to grow, and I believe I did not lose one. They were a poor lot, for I had ordered the cheapest tubers; but I believed that I had solved the problem of wintering them, and that all I had to do was to take the tubers out, clean them and pack them away dry. The next autumn I began to turn them out, and soon found that

some of them had been eaten into by some grub. A closer search showed that most of them contained one or more white larvae, one-third of an inch long, and that the holes in which these lay were partly filled with the dust which in former years I had supposed to be the result of dry rot. Since this discovery I take out the begonia-tubers in the fall and examine every one with care for the grub (the larvæ, I believe, of a fly of some kind), and then pack them away in boxes. It is a curious fact that tubers grown in the open ground have never been infested, and that certain species seem to be exempt from grubs even in pots.—W. E. ENDICOTT, Mass.



HOME-MADE
DIBBER.

Home-Made Dibber.—The dibber I use (see illustration) is made of thin spring-steel. It is about 7½ inches long, and 1¾ inches wide at the widest part. The handle may be like that of a chisel, or shorter and cylindrical, as large as the hand can conveniently grasp. It should be finished on the emery wheel.—CARL H. POTTER.

The Cultivation of Snowdrops.—One may almost venture to say that the less they are cultivated the better! By this I really mean to imply that on suitable soils the

snowdrop will grow anywhere; in hedges and orchards, and in woods and fields, as well as in gardens. The fact of its not requiring special culture, if other things are in its favor, is proved by the luxuriant way in which the snowdrop has become naturalized throughout England and Wales, in Scotland, and, in a lesser degree perhaps, in Ireland. Snowdrops look better, their flowers last longer clean and pure in color, and they frequently thrive much better in the solid grass-covered ground than on bare cultivated ground. In county Wicklow I have seen snowdrops 12 to 16 inches high in the lush grass of an unmown lawn, and at Straffan, county Kildare, the

Under the Trees.—The pretty nook illustrated below was taken from grounds overlooking the Hudson river, near Schenectady, N. Y. It tells its own story of the delights of such a shady spot on a sultry summer day. In autumn the stately trees are brilliant with gay foliage, and in winter, whether bare or sparkling with sleet, the delicate tracery of their twigs and the graceful upward sweep of their branches make a charming study.

Begonias and other House-Plants.—Last spring, in repotting a very thrifty begonia, I found that the roots had reached down to two inches of broken charcoal drainage, and wrapped themselves round and round the



A WOODY RETREAT NEAR A HOME ON THE HUDSON.

masses of *G. nivalis*, *G. plicatus*, and *G. nivalis grandis* under the spreading lime trees are remarkable features in February. Snowdrop bulbs are so cheap, and on most soils give so little trouble after they are once planted on grass near trees, that the wonder is they are not more generally grown. The best snowdrop of all for naturalization is *G. nivalis*, and its double and single varieties; *G. plicatus*, the "Crimean Snowdrop," also does well. *G. latifolius* forms good, bold clumps, and is very distinct in leafage, but it takes time to establish itself before it flowers freely.—*F. W. Burbidge*, in *Journal of Royal Horticultural Society*.

separate pieces. My begonias all do well in a compost of partly decayed leaves, silver sand and good garden soil. The sand should give a white appearance to the soil. The earth formed by decayed tan-bark is also excellent for begonias. I revived a drooping seedling begonia by potting it in a larger quantity of leaf-mold than I generally use. My tuberous-rooted begonias are growing finely in this mixture, the earth appearing black when watered. I water them very freely when growing, and, if the pots are small, fill the saucers once a day, after watering. Gloxinias also do well if watered freely under the leaves when growing. One small-leaved tuber-

ous-rooted begonia—a seedling—has utterly refused to rest since it was given to me, though it was then quite small. The tuber now measures three inches in diameter. The flowers are white, and with the delicately-cut leaves the plant forms a bouquet of itself.

In digging up a bed, facing north but somewhat sheltered by a fence, I found a very thrifty *Oxalis floribunda rosea*. As I did not plant any oxalises last spring, it must have sprung from a root left there last fall. The bed had been covered with leaves, and was, so far, well protected. If this free blooming oxalis could be used for a border-plant, and left out all winter, it might be made to add much to the beauty of small gardens or isolated flower-beds. *O. floribunda alba* is less hardy.—CELESTE.

Auld Lang Syne.

Lines on the Blossoming of a Wild-flower Brought from My Native Place.

What memories thou bring'st to me
Thou wee bit flower frae bairns o' Dec!
Thou mind'st me o' my early days,
When blithe I played about the breeze,
Where ilka spot flowers did adorn—
The daisy meek and sweet hawthorn.
But noo, like me, an exile here,
Far frae the land o' hills sae dear—
Oh! may ye thrive and winsome smile,
My langsome hours o' care beguile,
For there is nae here but yersel'
Aught o' my native isle can tell.
In words o' sound ye dinna speak,
The favor of the ear to seek;
Ye act by far a better part,
Ye touch the feelings o' the heart.
Leeze me on ye, ye bonnie flower,
I'm glad the seas ye e'er cam' ower;
An' thriving syne, sae fresh an' fair,
Wi' fragrant sweets ye fill the air!
Sae may we bairn fulfil our lot,
Yours be to grace this beily spot—
I, leal to our Creator's laws,
Prove faithful unto Truth's great cause.

—WILLIAM NISBET.

Fine Cactuses.—A *Phyllocactus latifrons* four years old, from a cutting, has just bloomed. It was a thing of beauty and a joy—for one night. Among my large collection of plants, some of them requiring much care, it is pleasant to have some sorts that only ask to be let alone. I set nearly all my varieties of cactuses outdoors during summer, the exceptions being *P. latifrons* and the true night-blooming cereus. I water them nearly every day, as they are in pots; then in the fall take them to the cellar, which is light and warm, watering them perhaps three or four times during winter; but they get dust-dry between times. I grafted Rat-Tail cactus and Crab cactus both on a prickly pear a year or more ago. Two slits were cut with a penknife in the prickly pear on opposite sides, just long enough to hold the cuttings, and about half an inch deep. A common brass pin thrust through the cuttings held them in place. Both grafts grew, but the "Rat-Tail" far outgrows the "Crab." They make up a comical looking plant and attract a good deal of attention.—MIRIAM PARKER, *Minn.*

Nymphæa tuberosa.—This superb species of water-

lily is now in full bloom. It is in every respect a giant compared with *N. odorata*, the plant being nearly twice as large and the leaves often one foot or more in diameter, while the pure white flowers are from five to eight inches in diameter, varying in size according to the size of the plant. *N. tuberosa* has beautiful flowers, which are as fragrant as those of *N. odorata*, but their odor is quite distinct. It seems strange to me that so much is said about *N. odorata* and so little about *N. tuberosa*. Certainly the latter is not a whit less beautiful than the former, and is far superior in size. Its large rhizomes bear many oblong tubers. The leaf-stems are much coarser than those of *N. odorata*, and are often elevated from six to ten inches above the water; while those of *N. odorata*, being slender and weak, always float upon the water. The color of the leaves is a bright, shining green; a pleasing contrast to *N. odorata*'s. This superb flower covers many of our Michigan lakes, and is often found growing close beside *N. odorata*. The best time to plant this water-lily, and, in fact, nearly all aquatics, is from June to September, although they can be moved later in the spring or fall.—W. A. BROTHERTON.

Plant Pools.—As the soil is enriched and improved by modern intensive farming, the crops are more luxuriant and the demand for water greater; so that some means of irrigation is a necessity. This is especially true in gardening under glass. Our farm contains 22 acres. When we moved here, five years ago, we found the water supply quite inadequate to the demand, and we built a windmill, placing the tank on the third floor of the back building. We also constructed a reservoir 40 feet in diameter, between the house and the barns, to receive the water from the roofs of all the buildings, into which the windmill pumps when the tank is full. Some of our neighbors were anxious to see how the reservoir in Jersey sand would hold water. We used the sand taken out for the bank of the pool, in order to get all the elevation practicable at little cost. When we had it shaped to our liking, we drew a few loads of water-proof clay from a pocket near, lined the pool, and had no difficulty in keeping the water in place. We laid two-inch terra-cotta pipes from the bottom of the pool in three directions. They were fitted with cork stoppers fixed to iron rods which stand above the surface, and are reached by a movable plank, one end of which rests on a post in the center of the pool, the other on the bank. We put into the pool thus made a few goldfish, which are increasing in numbers and can be sold; and planted in it white and pink water-lilies, the flowers of which sell readily. The bank is planted with magnolia, azalea, clethra, mallow, *Lobelia cardinalis*, and other beautiful or rare plants. As the water rises to the top of the bank during storms, and falls two or more feet when used from the reservoir, some plants, requiring uniform moisture, would suffer by the changes, so we made plank-boats for the pitcher-plants and they have the appearance of miniature floating islands. They move from side to side of the pool with the changing breezes, sometimes stopping with the nymphæas. In this way we bring together plants from

hillsides, marshes and waters for study and pleasure, that would require miles of travel and days of time to search out. We may also add to our botanical treasures glow-worms, golden beetles and other entomological gems to enliven the scene, and to delight the birds which come to drink and bathe. The alighting of a wild wood-duck last summer we regarded as a compliment to our skill in landscape-gardening. During the five months previous to last December a deficiency of over four inches in rainfall occurred, and, as the pump could only supply the house, we were obliged to draw upon the pool for our stock and plants. Others were compelled to draw water with teams.—R. BINGHAM.

A Pit for Wintering Plants.—It is a cause of considerable regret to many lovers of plants and flowers that at the end of each summer season, because they have no suitable place to keep them over winter, they are compelled either to take up tender plants out of the flower-beds and throw them away, or else leave them in the ground to be killed by frost. In order to winter my plants over without great expense for heating a house, I concluded to construct a pit for this purpose. An excavation about 5 feet deep and 10 feet long by 8 feet wide was made. It was lined on the inside with ordinary inch-board, and "banked-up" on the outside about 3 feet at the back and 1½ feet in front, giving the sashes an 18-inch slope to the south. For two years I have kept my plants in this pit without any artificial heat whatever. During cold nights common rough boards are placed over the sashes to serve the purpose of shutters. They keep out the cold, and the pit will retain the heat of a sunny day for a considerable time. The temperature of the pit seldom gets below 50°, and ordinarily would be nearer 60°. I keep in this pit quite a variety of plants, including several kinds of winter-blooming roses, geraniums, chrysanthemums, heliotropes, violets, cacti, coleus, fuchsias, etc. It is a fine place for hyacinths, tulips, freesias and almost any kinds of bulbs. By the time chrysanthemums have finished blooming, usually about February 14, mine being late varieties, bulbs are ready to begin blooming. We have rarely ever been without flowers from November until May. As soon as the pit was completed, I planted a Marchiel Niel rose in rich soil on the ground floor. The plant is now taking possession of the place, and has already given us a large number of fine buds. Last winter, while trying to raise some tender plants, I heated the pit with a small coal-oil stove. This kept up a temperature of about 60° at night, and the cost is very trifling. I have been amply repaid for it by the number of coleus, roses, etc., which I have propagated since I began using it. The slight expense incurred in heating the pit may also be more than covered by propagating a few varieties of

plants from cuttings, or raising some from seed and selling them in spring. A great number of ordinary garden plants take root readily from cuttings planted in pits, as the moist atmosphere seems to suit them well.—T., Kentucky.

A City Lily Tank.—In the diagram and photograph given on this page and the next some idea of the beauty and arrangement of our lily-tank, planned and started last year, is given. It was brigt with flowers and foliage from the last of July until the middle of October. The tank is 8 x 16 feet and 2½ feet deep. The sides and bottom are 4 inches thick, built of brick, and cemented inside. Over the tank I had constructed a three-quarter span-roof, the short span of wood and the long one of sashes. It is made in sections and can easily be removed. The lilies are grown in tubs, halves of kerosene-barrels and oil-casks. At the approach of cold weather the water is drawn off, and the tubs are moved up to one end, leaving space for the storage of chrysanthemums, cannas, caladiums, and other roots and half-hardy plants. By heaping seaweed around the sides and covering the sashes with straw mats, I kept frost out when the thermometer touched zero last winter. The tank is filled by means of a hose attached to the house supply-pipe, and water is allowed to run in when the hot-air pump is working, the overflow finding its way into the surrounding bed through small holes left in the top of the rear wall of the tank. This overflow is a very good feature; it keeps the bed always moist through a very dry season. The Japanese iris seemed to be especially benefited by it, for plants in this bed last gave magnificent flowers, while in another bed they scarcely bloomed at all. The soil used for all the

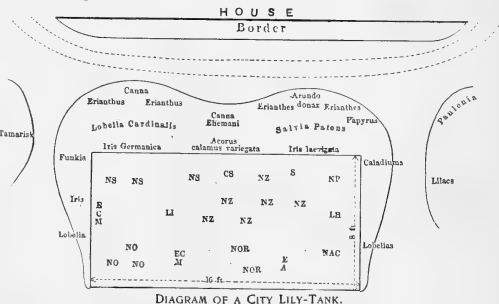


DIAGRAM OF A CITY LILY-TANK.

- EA *Eichhornia azurea.*
- ECM *Eichhornia crassipes major.*
- NS *Nelumbium speciosum.*
- NO *Nymphoea odorata.*
- NOR *Nymphoea rosea.*
- NAC *Nymphoea alba candidissima.*
- NP *Nymphoea pygmaea.*
- NZ *Nymphoea Zanzibarenstis, different colors.*
- CS *Cyperus strictus.*
- LI *Limonanthemum indicum.*
- LH *Limonanthemum Humboldtii.*
- S *Sagittaria.*

water-plants was composed of two-thirds well-rotted manure and leaf-mold and one-third ordinary garden soil. The most satisfactory plants for a small space are *Nymphoea alba candidissima* and the tiny *Nymphoea pygmaea*, both profuse bloomers through the whole season. The common pond-lily and its pink variety

water-plants was composed of two-thirds well-rotted manure and leaf-mold and one-third ordinary garden soil. The most satisfactory plants for a small space are *Nymphoea alba candidissima* and the tiny *Nymphoea pygmaea*, both profuse bloomers through the whole season. The common pond-lily and its pink variety

are attractive as to color and odor, but their season of blooming is short. Of course, no pond should be without the magnificent Egyptian lotus, each part of which, leaf, flower or seed-pod, would be sufficient to justify its presence. Plants of *Nymphaea Zanzibarensis*, blue, pink and purple, I procured in May from a local florist, as seedlings in two-inch pots, at six cents apiece. July 10 they were blooming in seven-inch pots, and continued to bloom until frost (they were kept under glass until July 1). This year I have put them in larger pots, and shall have larger blooms in proportion. Of floating plants, *Limnanthemum Indicum*, well named "water snowflake," is charming and easily grown. *Eichhornia crassipes* is too coarse and weedy for a small pond. The floating plants were started in shallow boxes and

cannot be planted. Let them run over the outhouses, cover the fences, and shade the porch. Train a choice grapevine up the south side of your barn, and when the luscious clusters of fruit are ripe, see if you regret the little work they have cost you. When long rows of currants begin to show their clear red or white berries, will any housewife among us all regret the time spent in setting the little cuttings, hoeing them, and keeping the worms under, which, by the way, is a simple job if attended to in time! A small investment in lily bulbs will give a greater amount of pleasure than the same money spent for anything else; and if the bed for them is well prepared in the beginning, the work of caring for them afterward is very light. Hardy phlox would come next on my list, closely followed by varieties of iris. Perhaps roses



A CITY LILY-TANK.

pots filled half with sand, half with loam, and raised within two inches of the surface of the water. The plants had to be kept back, or they would have over-run the whole pond. Such plants as cyperus, papyrus and sagittaria take up but little room, and can be set about in vacant spaces. Altogether, I found in this lily-tank a very handsome return for a small outlay of trouble and money, and shall be glad if the result of my experience induces any one to undertake the same experiment.—LYMAN C. JOSEPHS.

Beauty for Small Expense.—For busy people no flowers are of such service as hardy perennials. Once planted, they need but little care, and grow more beautifully each year. Vines are nature's drapery, and too many

should have headed the list, for when kinds that are suitable in your locality are selected, and properly pruned, mulched and enriched, nothing will better repay the care. Running roses are beautiful and easily grown. Set a post firmly in the ground, letting it come five feet above the surface. At the top nail two pieces, each four or five feet long, at right angles. At the foot of the post, in well-enriched earth, plant the roses, letting them run and riot at will. Wistaria will soon climb to the top of any common farmhouse. Honeysuckles will climb and cling lovingly around the porches and windows, and American ivy will cover any unsightly place with a coat of brilliant colors. These plants are all cheap. If I couldn't save eggs or butter enough to get a few roots

each spring, I would patch up my old every-day dress and wear it a while longer, or trim over my last year's hat and make it do me next summer, and in this way save enough money for a beginning with flowers. Try it, sisters.—FLORENCE H.

Botanical Nomenclature.—As an effort towards establishing permanency in botanical names, the following rules were adopted last August by the Botanical Club of the American Association for the Advancement of Science: *Resolved*, That the Paris code of 1867 be adopted, except where it conflicts with the following recommendations:

I. THE LAW OF PRIORITY.—Priority of publication is to be regarded as the fundamental principle of botanical nomenclature.

II. BEGINNING OF BOTANICAL NOMENCLATURE.—The botanical nomenclature of both genera and species is to begin with the publication of the first edition of Linnæus, "Species Plantarum," in 1753.

III. STABILITY OF SPECIFIC NAMES.—In the transfer of a species to a genus other than the one under which it was first published the original specific name is to be retained, unless it is identical with the generic name or with a specific name previously used in that genus.

IV. HOMONYMS.—The publication of a generic name or a binomial invalidates the use of the same name for any subsequently published genus or species respectively.

V. PUBLICATION OF GENERA.—Publication of a genus consists (1) in the distribution of a printed description of the genus named; (2) in the publication of the name of the genus and the citation of one or more previously published species as examples or types of the genus, with or without a diagnosis.

VI. PUBLICATION OF SPECIES.—Publication of a species consists (1) in the distribution of a printed description of the species named; (2) in the publishing of a binomial, with reference to a previously published species as a type.

VII. SIMILAR GENERIC NAMES.—Similar generic names are not to be rejected on account of slight differences, except in the spelling of the same word; for example, *Apios* and *Apium* are to be retained, but of *Epidendrum* and *Epidendron*, *Asterocarpus* and *Astrocarpus*, the latter is to be rejected.

VIII. CITATION OF AUTHORITIES.—In the case of a species which has been transferred from one genus to another, the original author must always be cited in parenthesis, followed by the author of the new binomial.

COMMENTS BY READERS.

[Readers are invited to contribute to this department. If your experience, observation, or well-founded opinion differs from that recorded in any recent article in this magazine, or if you can add anything of special interest to the statements of other writers, the Editor will welcome your contributions.]

Handling Vineyard Products.—A crate similar to a berry crate, with oblong quart boxes holding a pound to a pound and a quarter each of clusters, makes a package, either for near or distant market for grapes, which has given me better returns than the 8-pound grape basket; costing little more than the baskets to pack. The grapes are sold by the box generally, to better advantage to seller and satisfaction to buyer than by weight, and the handy size of the package often makes sales where none would be made by weight. Packed in that way, very tender grapes can be sent several hundred miles in fine order. For cooperation in shipping, selling, etc., probably no more perfect system is known than that devised by the "Chautauqua and Northeast Grape-growers' Union," which expects to ship from 2,500 to 3,000 carloads of grapes (chiefly Concord) this fall.—PROF. T. V. MUNSON, *Texas*.

The Girdled Elms that Would not Die.—(Page 367). I don't wonder at my friend Mr. Ragan's incredulity regarding the girdled elms. But the fact is, all his guesses and explanations are wide of the mark. The condition of things and the attendant results were precisely as I stated in the original article. My observations and notes were most carefully made, and all the more so because I knew how greatly the case differed from all others I had ever heard of, and how it would disturb certain well-settled theories and notions concerning the processes of vegetable growth. Mr. Ragan brushes aside my stubborn facts, and on that false basis says: "The explanation of the prolonged life of the elms is that they had either

interior folds of bark, or they had rebarked themselves, else they must inevitably have died, life slowly yielding to the drying and closing of the pores of the albumen." Not so! There was not a vestige of bark, or the ghost of a shred, to be found on this whole three feet of girdled space, which was outwardly as dry and dead as an ax-handle. There was nothing in the shape of a cambium bridge over the wounds in either of the trees. Nature was apparently satisfied with the internal mechanism of those sturdy tree-trunks, and fully confident of its ability to preserve life. So, instead of inevitable death, there was persistent and exuberant life. The other unprecedented fact, so far as I am aware, was the regular normal enlargement and growth of the entire trunk of each tree, both at the girdled point and below it, as well as above. In short, these elms went right on about their business as though nothing had happened. Only the saw which finally severed them from their roots was permitted to stop their career. My only regret is that I did not secure sections of the girdled wood, after the trees were felled, for the purpose of scientific examination, as I might easily have done had I been more vigilant. I ought also to have secured photographs of the growing trees. As a penalty for all this neglect, I must now stand as a target of doubt and incredulity. I have been asked to send sections of this wood to various points for examination by anxious and evidently skeptical scientists, and I have almost been ashamed to write that I could not comply with the request, for the above reason.—H. HENDRICKS.

Progress in Strawberry-Growing.—(Page 540). I find, among the few new varieties that I have fruited this year, the Beder Wood to be as early as Michel Early, and much more prolific. The first berries are larger, and foliage slightly affected with rust. It is the best early berry I know of. Parker Earle is a complete failure on my clay soil; foliage rusts badly and berries never mature. Yale and Saunders rust, and show no valuable points with me. Bubach 132 is unproductive. Stayman No. 2 is one of the best family berries I ever grew. It has healthy foliage, is very prolific of medium sized berries. It is very sour when it first colors, but is capable of resisting the effects of continued rains, and when fully ripe is the best we had out of ten varieties. It has a neck, and the calyx adheres very firmly to the stem, which makes it possible to hull the berries at the time they are picked, which is appreciated very much by the housewife. Gandy proved itself to be a good late berry of large size and excellent quality when fully ripe. If it were only more productive it would be one of the best for home use and market. On clay loam, and for a near market, I would recommend the following: Beder Wood, Haverland, Bubach, Eureka, Staymen No. 2, and Gandy. By keeping Eureka and Gandy well mulched, they can be kept back so as to come in about the time Beder Wood and Haverland are gone.—E.

H. CUSHMAN, *Ohio*.

Double Gladiolus.—Some time ago, in your notes on gladiolus (page 672 of Nov., 1891), you gave a cut of a double gladiolus (California, one of my seedlings). Since then I have noticed that you do not seem to be favorably inclined towards them. I now send you a photograph of a newer double seedling, and I think that you will agree with me that the form and general appearance is pleasing. The coloring is certainly unusually fine, being a rich salmon-scarlet, striped white with lighter throat. The plants of this new variety have the same sturdy growth as the one named California, growing with perfect uniformity about 2½ feet high, the blossoms in all cases being more or less double on every spike. Each spike has flowers on every side just the same as a hyacinth, and 1 to 4 side shoots from the main stalk are sent out before the first spike is out of bloom, the plants appearing like shortened pampas plumes in form.—LUTHER BURBANK.

Progressive Strawberry Growing.—(Page 540). It is astonishing how few of the highly-lauded kinds seem really to stand the test of cultivation in the ordinary way. It must be that under some peculiar circumstances and especial petting the good results are obtained which their introducers claim for them, and, when they are subjected

to the ordinary field treatment, many of them prove inferior to varieties already under cultivation. I do not feel prepared to condemn any of these newer kinds without further testing, but I may speak of several which have given me good satisfaction, and which I have chosen out of the testing plat for planting out on a larger scale. Bubach averages quite large and is fairly productive. It is not very firm, but stands the drouth well and brings a good price in market. Williams appears to be a hardy and productive kind. The berries are all of a large size and the quality is good. This strawberry, a cross between Crescent and Sharpless, originated in Ontario, somewhere near Brantford. Mr. Williams, after whom the berry was named, states that he gathered off 1¾ acres, 3,700 quarts of berries. When the size of the berries is considered, this is a large crop; Sharpless won't compare with it. In the vicinity of Brantford, where this berry has been grown, the strawberry-growers plant more largely of it than of any other kind. Saunders is another of the good varieties. It was originated by Mr. John Little, of Granton, Ontario, and was named by him after the director of the Central Experimental Farm, Ottawa. This variety compares favorably with the Bubach in size and fruitfulness. The fruit is large, conical, slightly flattened, with several depressions; color deep red,



DOUBLE GLADIOLUS. (Seedling by Luther Burbank.)

glossy; flesh the same; flavor sprightly and agreeable, in this respect excelling the Bubach; perfect blossom. In this last year I find that I could pick fruit of fair size from it after most other varieties were done. The Woolverton is another of Mr. Little's seedlings, and he has complimented me by giving it my name. I visited Mr. Little lately, and felt that it was a real compliment he

had given me. The berries are uniformly large-sized, surpassing any berry with which I am acquainted. I am inclined to think that this berry will really be a favorite with strawberry growers. In addition to these varieties I am planting the Haverland and Warfield. The Warfield came to me so highly recommended as an improved Wilson that I am testing it freely, but, so far, I have not seen any great advantage in it over the Wilson. The picking season was at one time a great bugbear, but lately I have found a good way of accomplishing this work. An Indian reserve, forty miles away, furnishes an abundant troop of squaws and Indians, and although many of the latter are lazy, the former are excellent at either picking or hoeing. They want little accommodation—an old shanty to sleep in, an old stove outside to make tea on, and a few other things, and they are ready for work. Some are pagans, and some are Christians. The latter are far the most manageable and pleasant to deal with, being perfectly honest and trustworthy. — L. WOOLVERTON, *Ontario*.

Copying Nature.—The valuable papers on arranging home grounds which have appeared in AMERICAN GARDENING from time to time were brought to the writer's mind very forcibly during a recent visit to Chicago, where a week was spent within a two-minute's walk of Lincoln Park. A daily stroll in the park was a matter of course. The park is still in its infancy in many respects, but a keen eye might pick up valuable hints. Frequent rains had made the grass a continuous carpet of richest green, and the people, being deprived of other parks by the great Exposition, resorted there in countless throngs, especially on Sundays. But what we wish to speak of is the unconscious hints they gave as to the way a great public playground or a small restful home should be arranged. Some excellent effects in carpet bedding, if anything of that sort ever is excellent, were to be seen; but they attracted only a passing interest from the crowds of all nationalities who, singly, in detached couples or in groups strolled here and there, or lounged about on the fresh grass. On the other hand, the beds of pansies, scattered without regard to orderly arrangement, brought their tribute of delighted "Oh's!" from the small and the great alike, from the white-haired Swede, the brown German and the swarthy French; all hovered over them and commented on their beauty. Nor was this all, for the display of lilacs on the carelessly arranged bushes, bearing their great clusters of white, lavender or purple, were the delight of all, to the utter neglect of the gingerbread work of the carpet-beds. The writer also noticed with pleasure that the trees bore the same testimony as the flowers. There are many places where the trees, magnificent specimens too, are in rows; and any tree in the row would shelter a small picnic; but not there were the loiterers to be found, even though no warning to "Keep off the grass" punctured the stroller's conscience. Oh, no; but go where a careless, irregular group of maples overhung the water or sheltered a bit of grass. The

warning sign was often present, but without avail. It was in such unconventional nooks that you would find the people who were resting; even the group of park laborers, with their noonday lunch, sought shelter, not always in the nearest place, but almost invariably in the place nearest to Nature. There they would sit, munching their coarse bread and cheese, with a bit of meat, gazing with eyes full of pleased content at the beauties about them. Resting against a boulder, book in hand, in a contented attitude, you would find the young lady, glancing up occasionally to let her eyes fall on a pleasant vista, here a bit of greensward, with its outlines broken by irregular groups of shrubbery; there a pair of lofty trees standing in an easy attitude with clasped hands; yonder a bit of water. Walk the park through day after day, and it was the same; wherever you found people resting, taking comfort, it was in one of these natural nooks, except on days when there were not enough of them to go round. No more powerful demonstration could have been given the writer than that thus unconsciously given by the people, that the way to make any spot attractive is to entirely discard all straight lines and angles, and in our planting and arranging to copy nature as far as in us lies. — D. W. FARNSWORTH, *Mich.*

Flowers for Perfume.—(Page 426).—Certainly the perfect garden should have both fragrance and brilliancy of color. But many of us who are approaching the "seer and yellow leaf" do miss the old-time favorites. Among them, what has become of the roses which used to grow in old gardens in Maryland and Virginia, called Sweet Monthly, and what are their proper names? There were two varieties, white and pale rose; and although many years have passed since I saw them, their fragrance has never been forgotten. I should like to add them to a small collection of over one hundred varieties, I now have, mostly those introduced of late years, but which contains a few old ones. Among them, Monthly cabbage or Madame Newman, a pink rose with the real rose perfume, a constant bloomer and hardy in this latitude. Then there were Felicite Perpetual and some Scotch roses, and a dwarf pink rose called Stanwell, a constant bloomer, and fragrant. All were well worthy a place in any collection, but are not listed in the gorgeous catalogues which come to us in such profusion every year. Among old-time hardy herbaceous plants was one which grew green stems four or five feet high, covered all summer with round, double, golden-yellow flowers, smaller than the perennial sunflower; its name I do not remember ever hearing, but am surprised that it has not been brought out as a novelty by some enterprising florist. I am glad to know that the old-time perennials are again finding favor. With plenty of these, and with hardy shrubs and roses, we can dispense with "horticultural embroidery," although a few geraniums do not come amiss, and some begonias for window plants, even though they do not possess the great charm of the rose, rich fragrance. — *Saint Louis*.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Abutilons.—Be sure to house all plants before frost. Prune as needed.

Annuals.—There may be some plants in the border of especial value for house-culture. Take them, up with a ball of earth, and pot them carefully.

Aspidistras may yet be increased by division. Use small pots and quite sandy soil.

Azaleas like a cool, airy place and perfect drainage. Water them carefully.

Begonias.—Dry off the tuberous-rooted ones and store them in a frost-proof place. To other flowering kinds give plenty of water, light and room. Rex begonias like a somewhat shady position, and moderate watering.

Bouvardias thrive well enough in a rather cool temperature. Usually 55 or 60 degrees suits them best, but even 50 degrees will suffice, only their flowers will be later.

Browallias.—Put potted plants in a light, cool place, and air them freely.

Bulbs.—Hardy kinds may be planted outdoors as long as the ground is not frozen, but the sooner the work is done the more satisfactory will be the results. To this class belong the hyacinth, tulip, narcissus, iris, crown-imperial, *Lilium longiflorum*, snowdrop, etc. Bulbs may now be started in pots for house-culture. Hyacinths are frequently grown in glasses, preferably in dark ones. They can be had of all seedsmen. Select solid, heavy bulbs, the single kinds being best and blooming earliest. Fill each glass with clear water to within $\frac{1}{8}$ of an inch of the bulb. Wrap the glasses in cloth or paper and set them in a cool dark closet, that the roots of the bulbs may develop like those of potted plants. When the roots begin to grow freely set the glasses in a light window, and add water as required to keep its surface $\frac{1}{8}$ of an inch below the bulb.

Caladiums.—After the first frost the leaves should be removed and the roots dug a few days later, dried and stored in a cool place.

Calceolarias.—Plants grown from seed may need repotting by this time. Keep them near the glass, water carefully, air freely, guard against insects, and thus encourage these and similar seedlings to make strong and healthy growth.

Cannas.—Treat as advised for caladiums. The roots keep best in dry sand.

Chrysanthemums now need plenty of room. Give them liquid manure twice a week until the flowers begin to color. Thin the buds of large-flowering kinds. During the flowering season the house should be kept moderately dry.

Chinese Primroses like moderate heat and a moderate supply of light and water. In the blooming season give them occasional doses of liquid manure.

Cinerarias grown from seed treat as directed for calceolarias.

Cyclamens, to be prepared for blooming, need a warm, light place.

Dahlias.—Remove the tops after frost, and a few days later dig, dry and store the roots. They keep well when treated like ordinary potatoes.

Ferns like a cool place.

General Directions for House-Plants.—Give air on all suitable occasions. Annuals lifted from the borders may now be used freely to enliven the window and conservatory. All lifted plants should be lightly sprinkled several times a day until they have fully recovered from the shock received. Gradually accustom all window-plants to the shade and close atmosphere by keeping them on the veranda or under a light shed as long as the weather will permit. When first taken in, put them in a moderately warm place.

General Greenhouse Management.—Fumigate the houses twice a week. Use the syringe freely for red spider. Remove scale and mealy-bugs by washing. On fine days open the ventilators to their fullest height. Avoid artificial heat as long as it can safely be done.

Geraniums.—Plants to be wintered over for spring must be cut back closely, then potted and stored in a good dry cellar. Geraniums that were kept from blooming up to this time are now in shape for giving an abundance of flowers. The ivy-leaved sorts are especially suited for house use.

Hanging Baskets.—Clean empty baskets and vases and store them away.

Heliotropes.—For free early bloom keep them in a temperature of from 55 to 60 degrees, and syringe them freely. During their period of rapid growth frequent doses of manure-water will be of benefit.

Hydrangeas.—To have a fine plant for house-use, pot a dormant *Hydrangea paniculata grandiflora* in good soil; cut it back close to some good buds, place it in a cool position, and afterwards bring it to light and warmth. Water and syringe as needed.

Lantanas.—Lift and pot plants for spring flowering.

Lawn Management.—Defective places may now be repaired by sodding. Fill in depressions and cover them with sods cut from an old pasture where free from bad weeds and coarse grasses. Cut the sods about a foot wide, three or four feet long, and two and three-quarter inches thick. Roll them up for better handling, lay them evenly, with close joints, filling under or cutting away the edges as needed to give an even surface.

Then beat them down firmly and smoothly. Get the borders in shape for another season, planting them freely with spring-flowering bulbs. Shrubs and lawn-trees may now be planted. Rake leaves off the lawn and other places, and store them for bedding-purposes, mulches, or winter protection. Many of the flowers now threatened by frost can be saved for several weeks longer by covering them lightly during the first few frosty nights. Be sure that the sheets, blankets, etc., used for this purpose do not touch the plants they are intended to protect, otherwise they will not save them.

Lilies.—Reset, if desired, at the end of this month, planting the bulbs six or more inches deep. Mulch with leaves or other litter.

Mignonette.—For early spring flowers sow seed in pots of light, rich soil, and keep them in a warm place.

Narcissus.—Plant at once, like other hardy bulbs.

Oleanders should go into winter-quarters. A dry, partially-lighted cellar is a good place for them.

Orchids, as a rule, now need less water and more air.

Oxalis.—Place the plants in a light, sunny position and water them freely.

Pansies.—Transplant from the seed-beds all seedlings recently started as soon as the second leaves appear, and set them in other well-prepared beds, two or three inches apart each way. Water them carefully.

Petunias.—Keep them near the glass, water them carefully, and shift as needed.

Poinsettias should be given a temperature of 60 or more degrees, and liquid manure once or twice a week.

Pomegranates.—Place them in a dry, light cellar, or in a glass-covered pit for wintering.

Requisites.—Haul sand, soil, manure, etc., that it may be on hand when needed.

Retinosporas and some other evergreens are liable to be injured by heavy snowfalls in winter. Tie them up by winding a string, fastened near the bottom, around the branches spirally, in such a way as to draw the leaves close together, and leave them in this shape until spring.

Roses.—Plants to be used for cut-flowers should be kept in a temperature of from 50 to 65 degrees at night, and syringed twice a day in bright weather. Bring into safe quarters the potted roses that were summered outdoors.

Shrubs for Forcing.—Spiræas, lilacs, daphnes, weigelas, deutzias, flowering-plums, kalmias, and similar shrubs wanted for forcing purposes may be potted by October 30.

Tigridias.—Lift the bulbs after sharp frost. Dry and place them in paper bags. Store them in a dry room, out of the reach of frost.

Tuberoses.—Lift plants that are still in bud or blooming, place them in pots and bring them into the house to flower there.

Violets.—Keep runners and weak shoots pinched off closely. Lift and pot plants for forcing by October 30.

Give them an airy place for another month or more, all the air possible during the winter, and pick off all decaying leaves.

II. GARDENING FOR TABLE AND MARKET.

Apples.—The crop for this year will probably be light, and it will pay people who have apples to sell to take extra care in picking and packing them. Use only clean barrels and sort the fruit well, packing each grade separately and marking it accordingly. Let no good fruit go to waste. Dry what can not be marketed otherwise. For winter-storage pick winter fruit when fully mature, handle it as carefully as you would eggs, leave it outdoors as long as safe from freezing, then put it in a cool cellar. For home use in spring try packing some fine apples in barrels or boxes of dry oats or cork-dust. Pine sawdust, if used as packing material, imparts a bad flavor to the fruit.

Asparagus.—Old plantations should now be cleaned off, and the tops removed at once. This is a good time to apply manure to the beds. For young plantations, which may be started now as well as in spring, select a warm soil and sunny exposure, and give each plant plenty of room. We like to set them in rows five feet apart and at least two feet apart in the rows.

Beets.—Harvest them before severe freezing, cut off the tops about an inch above the crowns, and store the roots in pits or in sand in the cellar. If left without covering beets will soon shrivel and become worthless.

Blackberries.—For propagation by means of root-cuttings, some time in this month select roots about as thick as a lead pencil, cut them into pieces two inches long, pack them in sand in flat boxes, and bury the boxes in some well-drained spot outdoors. In spring sow the roots rather thickly in furrows two inches deep and four feet apart. Keep the rows free from weeds.

Budded Trees.—Examine them carefully, and remove the bandages before they can do injury.

Cabbages.—The heads that will winter best are those just fully formed, not the over-ripe ones. For family use, bury an empty barrel in a well-drained spot, and fill it with good heads. Place a lot of dry leaves on top, and cover the barrel so that it will shed rain. Or, pile some cabbages in a corner of the barn floor and cover them with enough straw to prevent solid freezing.

Cabbage-Plants started from seed last month, prick out in coldframes, putting about 600 to the ordinary sash and setting them quite deep.

Cauliflowers.—Treat plants as advised for cabbage-plants.

Celery.—Storing for winter may begin toward the last of the month. Plants for this purpose need handling only, not earthing up like those blanched for immediate use. A frost-proof cellar with a damp bottom is a good place to store celery in winter. Leave some soil adhering to the roots, and place the plants upright upon the floor. Small lots of plants may be stored upon a layer of damp soil in boxes. Keep the roots moist and the tops dry.

Chicory.—Dig what is wanted for salad, and store it in sand in a dry cellar.

Cider for vinegar may now be made at any time when most convenient. If put into an old vinegar-barrel and kept in a warm room, it will soon turn into strong vinegar.

Currants.—Make cuttings and plant them in rows three feet apart and two inches apart in the row. Set them firmly so that the top eye will be just even with the surface. Mulch the rows with leaves or litter afterward.

Endive.—Blanch by gathering up the leaves and tying them lightly at the tips.

General Garden Management.—The only planting that can be done in open ground at this time is restricted to rhubarb, asparagus, and perhaps onion-sets. Begin to think about next year's planting, and to make arrangements for the manure that will be needed. Often you can purchase it now to good advantage, and haul it while the roads are yet good. Clean up and plow the ground when the crops are harvested.

Gooseberries.—Make and plant cuttings as directed for currants.

Grapes.—Rot seems to have taken a large part of this season's crop. On account of the general scarcity of fruits, with care in marketing, according to the hints given last month, the grape-grower may expect fair prices. All thin-skinned sorts, like Concord and Worden, should be sent to market as soon as ripe.

Grapes Under Glass.—After the fruit has ripened, withhold water for a while. Later, some dressings of bone and potash applied to the borders will be useful. Prune the vines when the crop is taken off.

Lemons and Oranges Under Glass.—Keep the trees clean by the free use of soap-suds. Apply manure-water occasionally.

Lettuce.—Plants to be wintered over should be set in frames like cabbage-plants.

Lettuce Under Glass.—Set out plants started in August for the early crop, giving each plant six or seven inches space each way. There is no need of putting on sashes, except in rough weather. Mulch the ground between the plants with tobacco-stems. This is an easy and sure way of keeping off greenfly.

Onions.—Plant sets of Extra Early Pearl, or some other hardy kind, in the same fashion as in early spring.

They are likely to winter well, and will give an early crop of fine bunching onions. For the north, fall sowing of onion-seed cannot be recommended.

Orchards.—Fertilizers, especially ashes, bone-meal, and potash salts, may now be applied to fruit-trees and plants of small fruits. Remove dead and diseased limbs from all trees. Young peach trees should have one-third of the new growth removed. After fruit has been picked gather up ladders and put the orchard to rights.

Parsley.—Lift some plants and set them in a cold-frame four or five inches apart, or in a box filled with good soil, and place in a light cellar or under a shed.

Pears.—Pick the winter sorts just before there is danger from freezing. Put them in a cool dark place, where they will neither mold nor shrivel. To hasten ripening, they can be brought into a warm room as wanted.

Rhubarb.—If plants are to be set or replanted this fall, enrich the ground with a superabundance of fine old stable-manure, and give each plant a few feet of space each way. In order to have fresh pie-plant in winter, dig up some of the roots and plant them in good soil in a barrel placed in the cellar.

Rhubarb Under Glass.—Dig up a quantity of roots and store them in a convenient place, to be on hand when wanted.

Spinach.—Cultivate and hoe as needed.

Squashes and Pumpkins should be gathered and stored in a cool, dry place before the least frost can touch them.

Strawberries.—At the south planting may yet be done. For the north we prefer spring planting.

Strawberries Under Glass.—When the pots become well filled with roots, shift the young plants into 6-inch pots and plunge them outdoors in sawdust or coal-ashes until November.

Sweet-Potatoes.—Dig them when ripe after the first frost. Cut off the vines, and turn the potatoes out with a potato-fork or plow. Handle them carefully to prevent bruising. Only sound, well-ripened roots are in proper condition to be wintered over.

Tools.—Gather up, paint and oil them, and put them in safe winter-quarters.

Turnips.—Keep them free from weeds, and harvest them before severe freezing weather.



CURRENT



Always Room at the Top.—There is plenty of room for the successful fruit-grower now, and always will be. There is no escape from overproduction and ruinous competition from every point, except through higher and better cultivation, less fruit and better fruit, quality rather than quantity. Some imagine the road to deliverance and more money lies in solving the question of distribution, transportation, etc., yet the relief obtainable in this direction would be but temporary at best, for if a profitable gap were opened, one good fruit season would fill it. These and other important questions, or the solving of them, regarding the marketing of products furnish no cure for unprofitable fruit-growing, nor for the poor methods unfortunately too prevalent. Raise fruit that readily catches the eye. Exercise care in picking, packing and marketing. Throw out every inferior specimen; poor stuff, that destroys the sale of the better, can be utilized by drying, evaporating or canning. Use the neatest and most presentable packages.—*Omaha Cultivator.*

Cutting Flowers.—Plants, to be at their best, should have the flowers cut as soon as they bloom, and this does not always mean full bloom. Roses should be cut when the buds throw the first petal back. Calendulas and sweet-peas, verbenas and the like, must be fully open to be desirable; but whatever they are, they must be gathered as soon as they are fully developed. Persons who regard it as a hardship to cut flowers from their gardens, as a rule never have great quantities of flowers. They leave the blooms to come to maturity, and, this process accomplished, the plant immediately begins to form seed-pods. The object of existence in plants is to grow seeds. When this is accomplished the mission of their growth is fulfilled. To remove the blossoms, never allowing seed-pods to form, is one secret of successful gardening—*New York Ledger.*

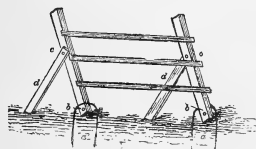
An Inexpensive Forcing-House.—A hothouse can be cheaply constructed by setting posts firmly in the ground, sheathing them on the outside, and covering this with siding. The posts should be cut off square at the height of four feet, and a 2x6-inch plank nailed on as a plate. For a narrow house, an even-span roof is preferable, but if the house is 18 or 20 feet wide, and is designed for forcing vegetables or flowers, the three-quarter span is generally used. A 1x4-inch ridge-board is placed at the height of eight feet, and sash-bars seven

feet long should be cut off at either end, so as to make good joints, and securely fastened in place. The glass should not be less than 12x18 inches, and may vary from that size to 18x24 inches, the size generally used being either 14 or 16 inches wide. The sash-bars should vary with the size of the glass, 1x2 inches being large enough for 12-inch glass, while 18-inch glass will need a sash-bar 1½x2½ inches. The glass may be either butted or slightly lapped, bedded in putty and fastened with wire brads or large zinc points. The best method of heating the house is by hot water in small pipes. The size of the heater must depend on the temperature at which the house is to be kept, the climate, construction of the house, etc. To warm a house 50x12 feet to 70° in zero weather would require about 200 square inches of grate surface, and from 25 to 40 square feet, according to its arrangement, of heating surface. For two houses the heater need not be quite twice as large. The piping should be of 1¼-inch wrought iron, with suitable feed and return-pipes. For a temperature of 45° in severe weather, 150 square feet of radiation would be ample for each house, while, if 70° is desired, 250 square feet would be none too much. For most purposes, the pipes should be placed beneath the side-benches, but it is sometimes desirable to have some of the pipes fastened to the sash-bars above the benches. If the under-bench system is adopted, a 1½-inch flow-pipe on each side of the house could carry the water to the farther end, and three 1¼-inch pipes, as returns, would make up the required surface for a temperature of 45°, or six returns would be sufficient for 70°. Hot water, with modern heaters and iron pipes, is 25 per cent. cheaper than steam, and in every way more satisfactory for greenhouse heating than any other methods that have been used.—*Prof. L. R. Taft, in American Agriculturist.*

Early Cherries.—Early Purple Guigne is probably the earliest of all cherries known in this country. It ripens a good while before May Duke, which, in this section, does not ripen in May, as Early Purple Guigne often does. Even in the present backward season the fruit of the latter variety was well colored by May 31, and fully ripe by June 4. Early Purple sells well in market, on account of its dark red, almost black, color. Loaded with fruit, as it has been this year, it presents a beautiful appearance. Closely following this variety in earliness is Belle d'Orleans, a yellowish red sort, also

a heart cherry. It is about a week later than Purple Guigne. Early Richmond, English Morello, Montmorency and Kentish are all pie-cherries. Their tart character and bushy, low growth fit them for a place in gardens which the larger-growing sweet sorts could not occupy.—*Joseph Mechan, in Practical Farmer.*

Trellis for Tender Grapes.—The illustration hardly



TRELLIS FOR TENDER GRAPES.

needs explanation; *a a* are posts set in the ground with enough space above to receive the bolts at *b b*. The props or braces *dd* are also bolted to the trellis at *c c*. In case it is desired to have the trellis stand upright, two more braces can be attached at *c c*.—*Exchange.*

Care in Marketing Fruit.—Peaches should be thoroughly matured, but not soft, when marketed. It is the besetting sin of most growers to pick fruit too green rather than too ripe. Before picking a peach look at the blossom end; if the green tint there has begun to turn white it is time to pluck it. Some varieties of peaches begin to color up long before they are fit to pick, and if shipped while thus immature and hard, will shrivel and be tasteless or bitter instead of ripening on the way. It is a good plan for those who are not experienced in the matter of gathering peaches to pick a few of the earliest sound ones and set them away in some cool place, where they may remain for the length of time they would probably occupy on the road if they had been shipped. By examination, the owner can then inform himself approximately as to the condition the peaches would have been found in by the consumer at the other end of the route, and govern himself accordingly. As a general rule, any variety of fruit will be ten days or two weeks in ripening all the fruits on any given tree or vine, and hence the fruit-bearing plant or tree should be gone over several times in picking, for its crop should not all be gathered at once, as may properly be done from a winter apple tree. But with all the care that may be taken by the grower, some of his employees will leave, at every picking, fruit that ought to have been gathered; and at the next gathering these will be too ripe, and must be carefully sorted out. They may be the nicest-looking specimens in the whole box, and it may be a good deal against the grain to throw them out; but if allowed to remain they are likely to become over-ripe and soft, if not actually rotten, and they will make a smeary place in the crate. After having tested, and seen my neighbors test, a great many devices for embellishment in packing fruit, I have come to the conclusion that no amount of sentimental display, such as putting roses, magnolia-leaves, or Cape jasmines over the fruit, or edging the crate with scalloped paper, will sell poor fruit. Nor do I believe that it will really help the sale of thoroughly good fruit packed in new, clean boxes. But thorough neatness and

cleanliness, the packing of a box with straight rows of fruit accurately sized, every one the same size as its neighbor, all laid in the same way and gently pressed down that it may not shake about, and especially a bright, new, clean package—all of these are of first importance. After all these points have been observed, then if the grower is disposed to lay on strips of scalloped paper or drop in some roses, this is well enough; but when tip-top returns come back from the merchant, set it down as certain that it was the crate, the package and the fruit itself that did the business, not the "ginger-bread work."—*S. Powers, in Ohio Farmer.*

Peach Trees in Pots.—Peach trees adapt themselves well to pot-culture, and may be grown in bush or pyramidal form, as in the illustration. This latter form, I

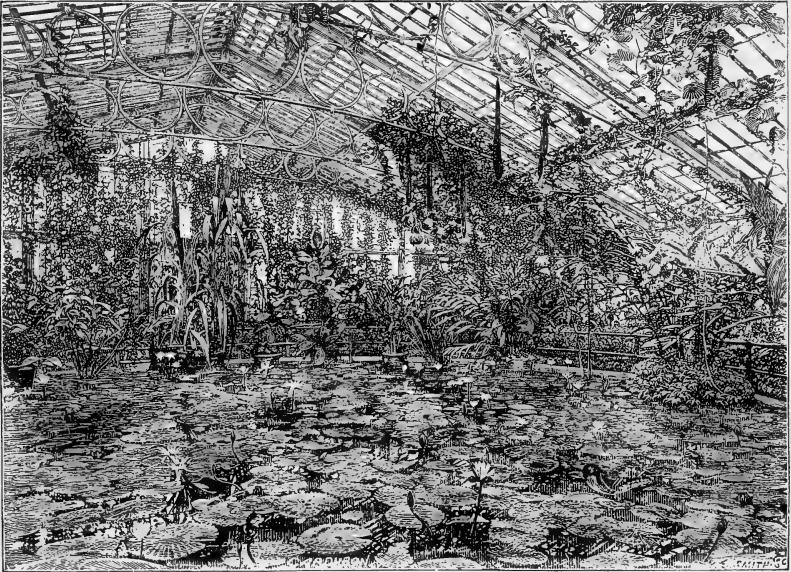


A PYRAMIDAL FRUIT TREE FRUITING IN A POT.

think, is the best for peaches in pots, as the trees seem then, if well managed, to be even in growth and well balanced in strength and bearing power. Such trees, placed among others planted out in the borders of an

orchard-house, are most ornamental and useful. The health and fertility of these pot-trees can be kept up by giving them, every season, some fresh food in the shape of a top-dressing of a rich compost formed of loam (if tenacious all the better,) and thoroughly decomposed stable-manure in equal parts. This operation should be performed about the last week in October, removing the surface soil, generally a network of fibrous roots, to a depth of 4 inches, and replacing it with fresh compost of the description just given. When the trees are in active growth and laden with fruit, clear manure-water may be freely given, and a copious daily washing with the syringe

water-lilies, is particularly good. Along with the gourds grow such fine-flowering creepers as *Solanum Wendlandii*, the best of all tropical solanums, passifloras, ipomœas, *Aristolochia elegans*, *A. ridicula*, *Clttoria ternata*, *Bignonia Tweediana*, *Beaumontia grandiflora* allamandas, etc. In tanks in the corners of the house are nelumbiums, *Cyperus papyrus*, *Amorphophallus campanulatus*, and other large and remarkable moisture-loving plants. We have counted over a hundred expanded flowers in this tank on a July morning at about eleven o'clock. Blue, purple, red, rose, white and yellow colors are among them. The gourds comprise luffas,



WATER-LILY HOUSE, KEW.

must be given to keep down red-spider—*Gardening Illustrated*.

Water-Lily House at Kew.—Nymphæas occupy the whole of a large circular tank in this house, with specimen plants of hedychioms, sugarcane, sagittaria, and clusia round the margin. The iron rail which encircles the tank is partly covered with the stems, leaves and flowers of *Batatas paniculata*, and the narrow shelves against the sides of the house are covered with soil one foot deep, in which a collection of tropical gourds is planted. The vines of the gourds are trained to wires running below the roof, and the effect of their large and sometimes bright-colored fruits, as they hang over the

including the Sooly Qua (*L. Egyptiaca*), which has fruits five feet long, and which are shown in the engraving; lagenarias, such as *L. gigantea* and *L. vulgaris*, *Cucurbita maxima*, *Cucumis Sikkimensis*, snake and adder gourds (*trichosanthes*), the wax-gourd, and numerous other kinds. The house was built in 1853. Its dimensions are 44 feet square, with a porch on the south side. The roof is a span, about 20 feet high in the middle, and the whole of the framework is of iron, resting on a thick stone base. It is an extremely light, and at the same time a strong and elegant structure. The tank is circular, 36 feet in diameter and 2 feet deep, with a leaden bottom. Two rows of hot-water pipes run through

the water, and there are six rows of 4-inch pipes all around the sides of the house. The nymphæas are grown in large pots, except *N. Zanzibarensis*, which is planted in a circular brick bed in the center of the tank. The water is kept at a temperature of about 70° Fahr. throughout the summer. In very bright weather, in the middle of the day, the house is shaded with thin canvas blinds. These are, roughly,



WILD CARROT (*Daucus carota*).

are being inoculated with some of the rapidity of the age, —*J. N. Gerard, in Garden and Forest.*

The Cultivated Mulleins.—The mulleins in cultivation are, for the most part, of only biennial duration. They are somewhat unsatisfactory plants to deal with on account of this, and also on account of their extreme susceptibility to cross-fertilization. It is almost impossible to keep them true to name when a collection is grown; indeed, the only way to do this is to grow one or two species only in a garden, and these far away from each other. A great many of the species and varieties are enhanced by crossing, and groups of a mixed lot of

the essential conditions which produce this really delightful display of moisture-loving tropical vegetation.—*Gardener's Chronicle.*

The Wild

Carrot.—This pest of our meadows and fields is a biennial from 2 to 4 feet high, and resembles a carrot in many respects. Our common carrot is this plant naturalized; but the wild species has become a great nuisance.

Hand-pulling

and destroying the weed as fast as it produces flowers will be effective. Cutting out the roots well below the surface should also be successful.—*Farmer's Advocate.*

Annual Roses.—It now appears that the rose has been added to the list of plants which may be treated as annuals. Seeds of a variety, under the name remount *Rosa polyantha*, received from a French seedsman early in the year, were sown January 10. They germinated rapidly in greenhouse warmth, and, after being picked out, were grown in a pan on a shelf in the coolhouse. They are now small plants from 2 to 3 inches high, and every shoot is apparently carrying a bud. The first flowers opened April 9, just three months after the seeds were sown. The flowers are coming in considerable variety, white and pink mostly, single and semi-double, an inch or more in diameter. At present they are charming little plants, with small stems and light-green foliage. With their prolific flowering habit and rapid growth they can scarcely fail to prove useful and attractive garden plants. The rose having developed a precocious habit, we may, perhaps, be favored with even finer forms than this remount *polyantha*. It would seem that flowers



VERBASCUM PHOENICEUM.

these hybrids are at once interesting and beautiful. The stately flower-stems and large, showy, yellow blooms of the species allied to *thapsus* mark them as wild-garden

flowers, and where the soil is rich and stiffish no better or showier plants can be grown. In the rockery we find them quite indispensable, and encourage rather than prevent their seeding among mixed shrubs, etc., in the vicinity of the rock-garden. They are also good border-plants, and rarely fail to reproduce themselves freely from self-sown seed. *Verbascum phanicum* is a perennial species, and one of the very best for mixed borders in small gardens. It is very variable, there being white, violet, lilac, rose, deep violet, and purple-flowered varieties. It continues flowering from May to August, and when grown well is a very striking plant. It is a native of southern Europe.—*The Garden.*

Ranunculus Cortusæfolius.—It is not unusual for very much attention to be given to buttercups, unless they happen to be double, or a native of some other country than Britain. Some leaves and cut-flowers of the species here illustrated were lately exhibited at Westminster, and created interest by their handsome appearance. The species was originally introduced to this country in 1826. Its native home is in the Canary and Madeira Islands, consequently we can hardly expect it to be perfectly hardy in this country, as plants coming from those islands usually require greenhouse treatment to bring them safely through our changeable and sometimes severe winters. In warm soils and sheltered positions some growers may, however, be able to keep it alive in the open air. It would be well, however, to preserve seeds, if any are matured upon the plants, to provide against contingencies. Those exhibited had been grown in pots and kept in a greenhouse temperature. The lower leaves were large, handsome, nearly orbicular, shallow-lobed, toothed, and, like the stems, thinly hairy. The large, bright yellow flowers measured from 2 to 2½ inches across, and were borne in branching, terminal cymes.—*Gardening World.*

The Violet-Cress.—*Ionopsidium acaule* is one of the most charming early little spring annuals we possess. It has for many years been a general favorite for rockeries

and old crumbling walls, where it makes itself quite at home, and in a few years takes full possession. It forms dense tufted rosettes from 1 to 2 inches high, with innumerable kidney-shaped leaves and an abundance of pale, violet-colored flowers. It is a hardy annual in the true sense of the term, seedlings springing up in all directions where plants have seeded the previous year. It is a very welcome weed in the rockery; the plants fill all the crevices, and rarely get in the way of other dwarf-growing Alpine plants. It sows itself with such certainty as to possess all the advantages of a true perennial. Along rough stone-edged pathways, on rough stone steps, old brick walls, or any place that will give a plant a foothold, the violet-cress may be grown with singular



RANUNCULUS CORTUSÆFOLIUS. (Two-thirds natural size.)

effect. The autumn-sown seeds produce plants which flower early in spring, and plants from spring and early summer-sown seeds flower throughout summer and autumn. This cress is also largely used for early greenhouse work, either sown thinly or pricked out into pots of a suitable size, half a dozen or more tufts in each. It is a native of Portugal, and belongs to the crucifers.—*The Garden.*

French Horticulture at the World's Fair.—

Our neighbors are going to do them-

selves great credit in horticulture at the Chicago World's Fair next year, it would appear. A cablegram has been received from the French Commission asking that it be allowed to do, and bear the expenses of, the "whioe decoration of the spaces surrounding the Horticultural and the Woman's buildings." This generous offer, doubtless, will be accepted, if it does not interfere with plans too far advanced to be changed. The French are world-renowned as artistic landscape-gardeners, and it is believed that they would hardly have made the offer referred to unless they intend to make a display of surpassing beauty. The Commission asked also for 60,000 square feet for the French horticultural exhibit. British horticulturists must look to their laurels; but there is little doubt that if a combined effort were made they would not be eclipsed.—*Journal of Horticulture.*

Early-flowering Gladioluses.—These are very valuable, either for warm borders or for growing in pots. The earliest to bloom in the open ground is *Byzantinus*, which is a very hardy variety, producing large, rich purple flowers. The height of the flower-stems varies with the quality of the soil in which they grow. In rich, deep, well-drained positions they may reach a height of 30 inches. In every case a warm, dry border should be selected for them. The variety *Rosy Gem*, here figured, is excellent for pots or the border. It grows and flowers as well in pots as in the open ground; the same treatment serves for both situations. In warm situations and when planted near a wall, this gladiolus is hardy enough to stand the winter, but is so impatient of resting that it frequently begins to grow again in autumn, and then, if not protected, a severe winter will injure it. To save all risk from frost, it is best to lift these early-flowering gladioluses in September, and spread out the corms on the floor of a dry loft or shed. This is the only satisfactory way of retarding them. I find that whether in the soil or not, they start January 1 or soon afterward; they should therefore be attended to about that time. Those required to flower in pots may have eight corms put in a 6-inch pot, and grown in a cool greenhouse or pit. Those to be planted out should be potted in $4\frac{1}{2}$ -inch pots, six corms in each, and placed in a coldframe; about April 30 they may be planted out where they are to flower. I find these gladioluses to be wonderfully useful as cut-flowers, and they may be cultivated with very little trouble.

—*Gardening Illustrated.*

Shakespeare as a Gardener.—We know that Shakespeare was a hearty lover of nature, and a close and careful observer of her phenomena. If he gathers us a garland of spring flowers, as Perdita does in the *Winter's Tale*, they are really flowers of the springtime, and not, as some poets would make them, the growth of every month from May to October. His pictures of rural objects and occupations are those of a man familiar with the minutest details of agriculture and horticulture. Many of his metaphors and illustrations drawn from these sources are such as no superficial knowledge could have suggested. Take this from *Troilus and Cressida*, for example:

"As knots, by the conflux of meeting sap,
Infest the sound pine, and divert his grain
Tortive and errant from his course of growth."

Only a practical gardener would know that the twisted branches and ugly knots often found on old trees are sometimes the result of improper pruning. In *Richard II.* there is a detailed comparison of the care of a garden or orchard to the government of a state:

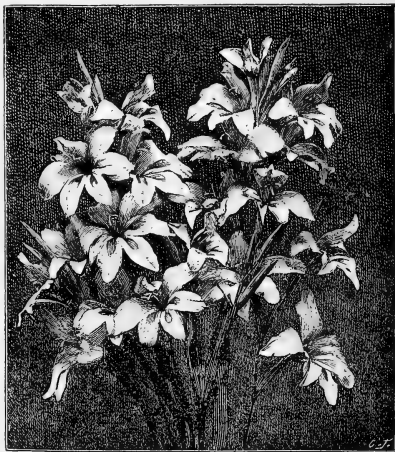
"Go, bind thou up yon dangling apricocks,
Which, like unruly children, make their sire
Stoop with oppression of their prodigal weight;
Give some suppittance to the bending twigs.
Go, then, and, like an executioner,
Cut off the heads of the too-fast-growing sprays,
That look too lofty in our commonwealth:
All must be even in our government."

Of bad grafting we have a suggestion in *Richard III.*, where Buckingham sneers at the young princes as "royal stock graft with ignoble plants."

There is no more admirable statement of art in the production of new varieties of flowers than we have in the *Winter's Tale*. Perdita tells Polixenes that she does not like the "carnations and streaked gillyvors" (gillyflowers) which "some call nature's bastards." Polixenes asks her why, and she replies:

"For I have heard it said
There is an art which, in their piddness, shares
With great creating nature."

Artless herself, she cannot endure the idea of artificiality



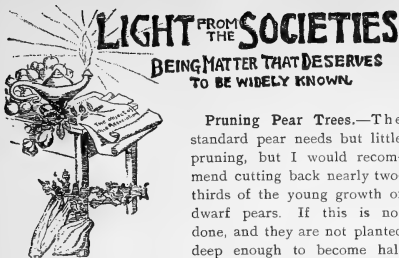
GLADIOLUS, ROSY GEM.

even in the development of a flower. The reply of Polixenes is a complete defence of horticultural art:

"Say, there be;
Yet nature is made better by no mean
But nature makes that mean; so over art,
Which you say adds to nature, is an art
That nature makes. You see, sweet maid, we wed
A gentle scion to the wildest stock,
And make conceive a bark of baser kind
By bud of nobler race. This is an art
Which does mend nature—change it rather—but
The art itself is nature."

Could a scientific writer enunciate and illustrate the truth more clearly or more concisely?

It would take too much space to cite Shakespeare's illusions to manuring, weeding, the effects of blights, frosts, noxious insects and other enemies of the gardener and farmer, all of which show the same minute and practical acquaintance with the subject, nowhere better illustrated than in Friar Laurence's long soliloquy in *Romeo and Juliet*—"R." in *Popular Science Monthly*.



standards, they will become top-heavy and tip over.—*Michigan State Hort. Society.*

Raspberry Lore.—It is a curious fact that the raspberry canes grown latest in the fall stand the winter better than those of earlier growth. Gregg should be pruned down to 18 inches in height. If an old patch of raspberries is to be destroyed, a good plan to increase the size of the fruit is to cut away all the new wood as fast as it forms; this throws all the strength of the plant into the fruit. But the plan is more successful when practiced on canes grown in orchards than on those growing in the sun.—*Grand River Valley Hort. Society.*

A New Insect Pest.—At the last meeting of the Wisconsin State Horticultural Society Wm. Toole exhibited specimens of the *Ithycerus curculionoides*. It belongs to the same order as the plum curculio and apple gouger, and is one of the largest representatives of the family. The insect is gray in color, having upon each wing-cover four white lines, interrupted by black dots. Its length, when the snout is extended, is about $\frac{5}{8}$ of an inch. It is a voracious feeder, and strips leaves from trees by cutting off the leaf-stalk; it also eats the bark from young shoots. Where they infest large trees, the insects might be captured by jarring trees under which a sheet has been spread.

Cultivation of Insect Diseases.—Considerable attention has been given by Professor Forbes and others to the contagious diseases to which some of our insect enemies have shown themselves to be quite liable. These diseases have at times assumed an epidemic character, and have proved highly beneficial in arresting serious and widespread ravages. Experiments have lately been made in Minnesota and Kansas to utilize a fungous disease with which the chinch-bug has been recently attacked in some of the western states, for the timely taking off of healthy bugs in other districts. In Kansas numbers of diseased bugs were collected and, confined with apparently healthy ones, readily communicated their malady to them. Diseased bugs were distributed at various points along the railroads of the state and other principal lines of travel. It is claimed that in almost every one of these localities the disease subsequently made its appearance, and it is believed that it was conveyed and quite largely extended through this distribution.—*Dr. J. A. Lintner, N. Y. State Agricultural Society.*

An English Fruit-Grower's Views on Marketing.—As most of the fruit grown is consigned to salesmen, I would try and discover some one who bears the character of honest dealing, and trust him. Do not dodge about from one to another; this often has led to getting "out of the frying-pan into the fire." If the fruit be honestly packed, giving good measure, customers soon discover this, and inquire for the goods, with the result that full market-price is obtained with little difficulty. I find it to be a good plan, as a rule, to have a continuous supply of the same kind of fruit. In sending, say 100 bushels of apples of one kind to market, I would not send them all at once, but begin with 15 or 20 bushels, increasing the quantity as the customers seemed to appreciate them. On the other hand, do not send a small quantity of a large number of sorts, which is very bewildering to the salesman, who finds such consignments a great nuisance. Let all fruit be in marketable condition when sent, or it will probably be left for days or weeks before finding a purchaser, and then only at a low price, alike unsatisfactory to the salesman and the grower. One great advantage of the fruit from abroad is this, "that when placed upon the market it is fit for immediate use," which seems to suit the circumstances of most buyers, who say, "we do not want fruit to keep, we want it to sell." We must, therefore, try and supply not only the article they want, but supply it also in the condition in which they require it.—*G. Hammond, before the British Fruit-Growers' Association.*

Chestnut-Culture.—The chestnut is one of the most valuable of our American nut-trees. It thrives equally well on either poor or rich soil. While its home is on the sandy ridge, it does well in our clay bottoms. Most nurserymen keep chestnut-trees for sale; we, however, went to the woods and dug up trees from two to three inches in diameter, topped them eight feet high, and set them as you would a sugar-tree. They bore the third year from setting, and have borne regularly since. In transplanting them from the forest to places where they are more exposed to the sun, the bark is liable to blister on the south side of the trunk, and should be shaded by boxing. The borer is never found on the north or shady side of the tree, and by shading the side of the trees exposed to the midday sun we protect them from blistering and the borer. This is true of all trees subject to attacks from the borer. Chestnuts differ greatly in variety. While at Woodbury, this fall, Mr. Terry showed me a tree that for years has been noted for the great size of its chestnuts. The tree is now on the decline, but although this was a very dry fall, its nuts were the largest I have seen, at least twice the size of ordinary chestnuts. Usually there are from one to three chestnuts to the burr, yet I saw another tree near Woodbury that had from three to six, and some burrs contained as many as eight good-sized nuts. The American chestnut is sweeter than foreign sorts, and our nurserymen should propagate our best and largest varieties.—*L. A. Freeman, Kentucky Horticultural Society.*

The Ideal Tree.—Trees grown according to my ideal would have a trunk about three feet long, according to

variety, with a central stem never clipped at the top, and two lower branches on opposite sides of the trunk, one not nearer to the other than 8 or 12 inches, and a third branch about the same distance above the second. This will so divide the growth that the top will balance itself, and there will be no forks to split down if the branches that start out nearly at right angles to the trunk have been chosen for the formation of the top. Such trees look ungainly while young, and would be the last a customer would select; if received, the first thing he would be likely to do would be to trim them up, not realizing that as they grow larger, the limbs come nearer together by their enlarged diameter. The trunk will also shorten by growth from the outside of the branches.—*J. B. Mitchell, Northern Iowa Hort. Society.*

World's Fair Notes.—Notwithstanding the wet season, the Horticultural Department is making rapid progress. Rains have somewhat retarded the outdoor work. A fine specimen of night-blooming cereus, fully 12 feet high, was received from Mrs. A. C. Hurd, of Illinois. Mr. Thorpe would like to obtain a dozen or more such specimens, so as to be able to make a feature of them. One of the courts of the horticultural building will be devoted to a display of aquatics. The show promises to have a very extensive and complete collection of orchids. Special preparations are being made by orchid-growers to have such varieties represented in bloom during the months of the fair as ordinarily would be in flower in midwinter and early spring. A few shipments are already in, and will be cared for and treated by the department. The list includes a lot of *Cypripedium Chamberlainianum* and *Cattleya Mendelli*; also, a small collection of such varieties as *Chysis bracteescens* and *C. aurea*, *Brassia verrucosa*, *Brassavola glauca*, *Lælia anceps*, *L. abida*, *Lycaste Deppei*, *Barkeria elegans*, *oncidiums*, *odontoglossums*, *epidendrums*, and many others.—*Society of American Florists.*

Rose Diseases.—Quite an exhaustive paper on this subject was presented by Prof. Byron D. Halstead before the Society of American Florists at the Washington meeting, from which we make extracts:

The Black-spot.—Rose-foliage, when attacked by this disease, soon develops the characteristic black spots, and the leaves elsewhere become pale, and shortly fall to the ground. As a result rose-houses badly infested with the black-spot show but few leaves and fewer blooms. Experiments with this fungus have been carried on sufficiently by the New Jersey station to warrant the assertion that it can be controlled by the proper use of fungicides. The black-spot may be held in check by the carbonate of copper compound; using three ounces of the carbonate of copper, one quart of ammonia, and 50 gallons of water. The spraying should be done once a week, using a hose and a nozzle that gives a fine spray. The point should be to wet every part of the plant and yet not drench it. If many leaves have fallen from the plant they should be gathered up and burned. As with many other diseases, some roses are more liable to the black-spot

than others. When possible, it is wise to grow those least susceptible to the disease.

Powdery Mildew of the Rose.—One of the oldest troubles of the rose-grower is the mildew. This develops very suddenly upon the foliage in the greenhouse or outside of it, giving the leaves a powdery appearance, and causing them to become more or less misshapen. In a mild form the foliage may be only mealy, but frequently the surface becomes uneven and the whole leaf twisted. If left unheeded, the enemy will ruin the plants attacked, and knowing this, remedy has been found and long applied in the shape of sulphur in one form or another. Prof. Maynard, of the Massachusetts Experiment Station, finds that a small kerosene-stove is the most convenient for this purpose; and the sulphur, by means of it, is boiled in a kettle for two or three hours twice a week, the house being closed during the operation. The only precaution is to use no more heat than is sufficient to boil the sulphur, for should it catch fire it might injure the plants.

John N. May's way to get rid of the mildew is to close the house about 8 o'clock in the morning, run the temperature up to 75°, then with a bellows fill the house full of sulphur, let the house remain closed until it reaches 85° to 90°, then let air in gradually. A constant circulation of air is likewise recommended for roses at all times. Potassium sulphide, one ounce to two gallons of water, sprayed upon the plants, has proved an effective remedy. Gardeners, from long experience, have come to the belief that rose-mildew is induced by a weak condition of the plant, resulting from partial starvation, irregular or excessive watering, and undue exposure to draughts of cold air.

Downy Mildew of Rose.—Some rose-growers are troubled with a second form of mildew, which differs in many ways from the one just mentioned. It is less easy to detect, and being more deeply seated, may do greater harm before it is detected than the powdery mildew. It is likewise less easy to eradicate, because it thrives within the substance, while the spænthica feeds superficially. The *Peronospora sparsa* is a close relative of many serious mildews, as those of the grape, onion, lettuce, spinach, and the rot of the sweet-potato. The treatment for this is the same as for the anthracnose.

Rose-Rust.—The genuine rust of the rose, similar to the rust of wheat, oats and other grains, is not common in our section of the country upon indoor roses. It is not unlikely that it may become a pest here, as it now is in California and other states of the Union. Those who are familiar with the rust of the blackberry need no further words of general description. It causes even the canes to become blistered, knotted and otherwise distorted, the whole being covered with a mass of orange-colored spores. Cut and burn all affected parts.

Rose-Anthracnose.—Many sick rose-plants that have been sent to me for inspection have exhibited only one species of fungous disease, namely a glæsporium. When a rose is badly infested with this fungus the leaves are small and pale and the canes die at the tips; sometimes

the stems may be dead for a foot or more from the extremity; not infrequently one branch will be dead clear to its base, and sometimes two or more are thus destroyed. The dead twigs show pimples quite evenly distributed over the surface, and from some a minute, often curved, horn of a reddish color protrudes. When such stems are placed in a moist chamber, the whole decaying surface becomes closely covered with numerous almost brick-red masses of spores, and the disease spreads rapidly through the adjoining parts of the twigs that seemed healthy when placed in the moist chamber. In four days from the time spores were introduced into sterilized sections of rose-twigs in the test-tubes, the whole lot of twigs would be covered with the spore-masses. This anthracnose appears to be new, in that it has not before been studied microscopically.

Eel-Worms.—One of the leading reasons for many complaints made by rose-growers during the last year is a microscopic worm that works principally in and at rose-roots. These worms are in outline like an ordinary eel, and under the microscope are seen in almost constant motion. They cause an enlargement of certain portions of the roots, and by means of these galls or knots are easily detected with the naked eye when a plant is removed from the soil and carefully washed of the adhering earth. To guard against infection, the roots of roses should be examined closely for the galls when beds are set. All galled roses should be excluded. The worms may come in with the earth, as they infest many kinds of plants. Soil that has not been used for growing plants in the garden is not necessarily free from the worms. They may also be taken with the manure that is used. Cold in excess will probably destroy the worms, and a high temperature is inimical to them. Growers might make the experiment of heating the soil of a small portion of the bed before setting the plants, and satisfy themselves if such a treatment would pay.

The eel-worms are doing much harm to our roses. When they are once in a plant there is no known way of driving them out. It is possible that some substance may yet be discovered that, put on the soil, while not injuring the roses, may kill worms not already in the plants. Lime has been thus used with favorable results. Sprinkle the lime upon the surface of the bed, or better, mix it with the soil; and each watering will tend to bring it in contact with the tender bodies of the worms. It is not unlikely that some fertilizer compounds may be formed that at the same time they furnish food for the plants will deal a death-blow to nematodes. Kainit may thus prove an efficient remedy, and it only remains for some enterprising rosarian to take the matter in hand and demonstrate the truth or falsehood lurking in the suggestion. It is easy to obtain and apply; the amount to use must be determined by trial. All that has been said regarding the habits of the rose eel-worm applies equally well to worms which infest the roots of the violet, coleus, lantana, bouvardia, geranium, etc. The treatment will vary with the nature of the plant.

Fruit Sulphuring.—At the June meeting of the California State Horticultural Society, at San Francisco, Leonard Coates stated that sulphuring fruit in the drying processes is all wrong, and will prove as hurtful to the industry as doctoring with deleterious spirits and coloring stuffs has proved to the foreign wine-trade. Tests prove that the pure and natural qualities of fruits have been injured in the sulphuring process, that the rich flavor of the fruit has been destroyed, and that while the white healthy color has been preserved, the taste of the fruit has been nearly destroyed. The point was made that producers of dried fruit for the market are catering to the dollars and cents side of the question, while sacrificing California's credit and fame as the producer of pure and healthful fruits.

Some Hints to Nurserymen.—P. J. Berckmans, President of the the American Pomological Society, in a talk to the nurserymen assembled at their recent meeting, said that rather than to be ever on the alert for new things, "novelties," etc., nurserymen should be missionaries, to disseminate among the people of the country the gospel of horticultural knowledge and experience that is being wrought out by the pomological and horticultural societies. The nurseryman should have a knowledge of the fruits and plants best adapted to every section of the country where he is to do business. Even in Georgia there are four different sections or zones. The best trees and plants of the mountain country of northwest Georgia are not suited to central Georgia; the coast country is still different, while in southern Georgia can be grown many semi-tropical fruits and plants. The successful, honest nurseryman should know these things, and work and act accordingly. To do good to the public is to do good to the nursery trade. As to protection to the originators of new fruits, the speaker had little faith in the copyright plan. You can mark the tree, plant or vine, but not the product. The best plan he knows of is the subscription plan. Do not sell any plants till a certain specified number have been subscribed for.

The Florists at Washington.—Probably the largest and best meeting which the Society of American Florists ever held was the convention at Washington, beginning August 16th, and lasting four days. The delegations from various parts of the country began to arrive late Monday afternoon, and they were greeted enthusiastically by the florists of Washington, who, from first to last, spared no pains to make the convention a success. Some of the florists' trains, especially from New York, were elaborately decked out with flowers, and they created no little surprise upon their arrival. The convention was held on G street, in the National Rifles' Armory, a hall which proved to be unusually well adapted to the purpose. It is easy of access from all parts of the city, and it was quiet and pleasant throughout. Several innovations were apparent in the management of the convention, the chief one being the abandonment of hotel headquarters and the consolidation of the entire administration, exhibition and convention in one building. This no doubt

had much to do with maintaining a uniformly good attendance, as the attention of the florists was not distracted by dismembered attractions. The exhibition, which was below the assembly hall, was closed during convention hours, and this, also, focussed the attention upon the general transactions. It was a feature of the convention that the attendance upon general sessions remained good, notwithstanding the many attractions which Washington offers to the visitor. The contestants for next year's convention were two, Milwaukee and St. Louis, the latter place being the choice of the members by a vote of 186 to 147. The officers for the ensuing year are: Wm. R. Smith, Washington, president; Professor William Trelease, St. Louis, vice president; W. J. Stewart, Boston, secretary; Myron A. Hunt, Terre Haute, Indiana, treasurer.

President Dean's address emphasized at some length the importance of a technical education for the florist, and urged the establishment of a florists' school, although no definite plans for such an institution were presented. John Saul, of Washington, in a paper on "Why Insects Infest Plants," took the ground that only the weak or unhealthy plants are liable to attack, and that the remedy or preventive for insect nuisances, therefore, is the maintenance of more vigorous plants. This notion was strongly combated by others, who held that while weak plants may more readily succumb to insect injuries than others, all plants are liable to attack. Paul Pierson, of Scarborough, N. Y., read an essay upon the propagation of roses, and a paper prepared by John Reck, of Bridgeport, Conn., urged the growing of Holland bulbs in America, both for the purpose of lessening the price of them, and to prevent the sending of so much money out the country. William Falconer made a review of new plants, not so complete as his like paper last year.

Other important papers on the programme were "Fungous and Other Rose Troubles," by Professor Halsted; "Hints on Hybridizing and the Improvement of Plants," by Richard Bragg; "Flowers for Holiday Demands," by Henry Young; "Floriculture for Children as a Means of Increasing and Diffusing a Knowledge and Love for Flowers," by Robert Farquhar. A committee, consisting of J. Horace McFarland, J. C. Vaughan and P. O'Mara, was appointed to memorialize the Postmaster General for a uniform pound rate of postage on catalogues—a most important reform.

The business auxiliary societies—Hail Association, Protective Association and Telegraph Delivery Association—all showed healthy signs of growth and usefulness. Measures were put on foot to organize an American rose society, and it is probable that its life will begin under most favorable circumstances.

The Carnation Society selected Pittsburg as the next place of meeting in February, and the amendment proposed at the Buffalo meeting, to change the date of the annual meeting from February to December, was lost. The Chrysanthemum Society decided that names could not be registered in advance of the production or exhibition of a new variety.

Several excursions were made, the first one being to John R. McLean's country place, within the Washington city limits, and the last a trip down the Potomac on Friday to historic Mount Vernon. Very many of the florists also visited the beautiful Soldiers' Home, with its delightful surroundings. All were well managed and largely attended.

Most of the florists also visited Strauss' great establishment, on the Bladensburg road, Wednesday afternoon, upon the invitation of the Herendeen Manufacturing Company, of Geneva, N. Y. Strauss' establishment is probably the largest in America, there being 160,000 square feet of ground covered with glass, most of which is devoted to cut roses. Here a bountiful lunch was set for the visitors.

The National Gardener's Club, which had done so much for the pleasure of the guests, presented each visitor with a complete guide-book to the city, and in every way looked after their comfort.

The exhibition was the most successful ever held by the society, and by far the best managed. The exhibits were attractive and well managed, and included not only the usual florists' requisites, but some good plants. Pitcher & Mauda showed a new iris, and some rare cypripediums. Wm. K. Harris had especially well-formed plants of *Ficus elastica*, one of his specialties. J. W. Elliott exhibited superb tuberous begonias in flower, of the Griffin strain, and a superior grade of young palms was the specialty of several florists. The heater men were out in force, as well as the greenhouse construction firms. D. B. Long, of Buffalo, had on exhibition his volumes of photographs for florists, of various designs, most of which are artistic and pleasing.



AS THAT QUEYRONETH



MUCH SHALL LEARN MUCH
BACON.

QUESTIONS

ASKED AND ANSWERED.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following. Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write on only one side of the paper.

QUERIES.

3075. **Quince-Leaf Diseases.**—Why do the leaves on our young quince trees become spotted with brown and fall off? An abundance of salt, lime and wood ashes has been applied to the trees.—E. McF., Pa.

3076. **Storing Apples for Winter.**—Please describe some good methods.—W. N. M., Ohio.

3077. **Downy Mildew of Grapes.**—Leaves on vines in different parts of the vineyard turn yellow, and the fruit does not develop as well as on sound vines. What is the disease, and how can it be cured?—W. M. H., Ont.

3078. **Trellis for Grapes.**—On page 426 of AMERICAN GARDENING is given a device for a grape-trellis. Can the upper wire as well as the lower one be slackened by means of it in the fall?—M. L. S., Pa.

3079. **Dwarf Plum Trees.**—My nurseryman sent me dwarf instead of standard plum trees. How should they be pruned?—J. M., Maine.

3080. **New York Fruit-Growers' Association.**—If in existence, what is its address?—W. H. H.

3081. **Blackberries and Raspberries from Root-Cuttings.**—When should they be made, in fall or spring? If in fall, how early is it safe to make them?—C. G. A.

3082. **Raspberries for Illinois Prairie.**—What are the best varieties, both of black and yellow raspberries, to grow for home use in prairie-soil in the latitude of Chicago?—L. B. C., Ills.

3083. **Fertilizers for Raspberries.**—What is the best fertilizer for raspberries, and what is the best time to apply it on well-underdrained clay soil. I have an abundance of half-rotted sawdust, some leached ashes, and barnyard manure. Would you recommend air-slaked lime?—L. E. S., Ohio.

3084. **Soil for Lettuce-Fencing.**—Why and how often should the soil be renewed?—W. J. W., Pa.

3085. **Onions Blighting.**—What is the cause of my Prize-takers dying down before they have reached full size?—J. W. K., Ohio.

3086. **Cellar for Vegetables.**—Is a cemented cellar good for keeping vegetables?—J. E. A., Mass.

3087. **Water in Well Colored.**—What can be done with a newly-dug well, the water in which smells bad and turns brownish when boiling?—J. E. A., Mass.

3088. **Remedy for Striped Cucumber Beetle.**—I use frames over the hills, and thus keep the beetles off until the vines begin to run. Then the bugs settle on the hills, and the young grubs soon reduce the plants to withered vegetation. Have tried bone-dust, ashes, kerosene emulsion, etc., without effect.—P. B. J., N. Y.

3089. **Asparagus Chicory.**—How is it cultivated?—Mrs. F. E. S., Washington.

3090. **Growing Cannas from Seed.**—How should the seed be treated to make it germinate promptly?—A. L. W., Iowa.

3091. **Managing Palms and Cycads.**—What soil and care do they require? Can they be transplanted while young and growing?

3092. **Chinese Sacred Lily.**—Is it hardy in New York state? How should it be treated?

3093. **Cinnamon-Vine.**—Is it hardy here? What treatment does it require?—W. H. H., N. Y.

3094. **About Pinks.**—What distance apart should strong-growing pinks be planted if they are to remain in the house all season? Does it pay better to run pinks until August, or to take them out after Memorial Day, and fill up with other stuff? If so, what is best to fill up with?—E. G. B., Boston.

3095. **Black Knotty Growth on Oak.**—It appears in winter and spring on a young, thrifty oak, almost disappearing again in summer? Is it dangerous to other trees?—I. W. M., Mass.

3096. **Hawthorn from Seed.**—How should the berries be treated? Should I plant seeds in the house, or in open ground?—E. D. M., Mass.

3097. **Moss on Lawn.**—Our lawn was mowed last fall, and seeded with white clover and blue-grass in April. It is doing well, except in spots, where the ground is covered with a fine mossy-looking substance. Have used the hose freely. Have I used it too much?—Wm. S. R., N. J.

3098. **Hardy Hydrangeas from Cuttings.**—When must I take cuttings of *Hydrangea paniculata grandiflora*, and how must I treat them?—A. L. C., Md.

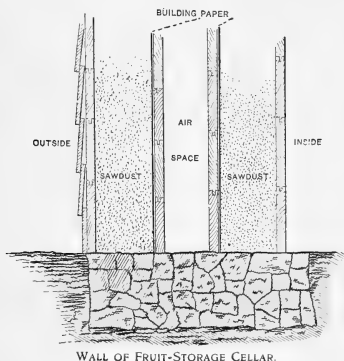
3099. **Aphis on Chrysanthemums.**—Please give remedy for them.—H. M., Brooklyn.

3100. **Amaryllis and Crinum.**—What temperature do they require when at rest in winter? What treatment does *Amaryllis autica* require for bloom and for wintering?—W. A. W., Iowa.

REPLIES.

2920. **Fruit-Storage Cellar.**—The building can be made any size or form desired, provided you secure protection against freezing, and perfect ventilation. In localities where the winter temperature is apt to fall to 35° below zero, such a building must be very carefully constructed, and I think the following plans would answer the purpose: The foundation should be of stone, two feet thick. Set 2x4 joists, 10 feet high for one story, two feet apart upon the foundation walls. Line up each side of the joists with good matched boards, and paper the same with building-paper. This will leave an air-chamber four inches wide in the center of the wall. On each side of this nail 2x6 plank and cover it with siding on the outside, but with matched boards on the inside, filling the 6-inch space with sawdust slightly packed. For the roof use 2x10 plank ceiled on both sides, and the space filled with sawdust. The outside of the roof must be covered with waterproof roofing. There should be two doors, one to open inward and the other outward, and they must be made thick, so that the resistance to heat or cold

will be about the same here as on the sides and ends. If windows are used, four sashes, about 2 or 3 inches apart and closely fitted, will be required. Now for ven-



tilation. If the floor is high, so that water will not stay on it, I would leave a hole under the wall within a foot of the corner at each end. Build it up one foot above ground, and cover it securely in such a manner as to be easy of access to open or close, as necessity may require. Then in the center of the roof leave a hole, say 12 inches square, protected as you would the ventilator in an ice-house. The hole can be fitted with a door, either to swing or slide. This system will give perfect ventilation. Unless the temperature inside should be above 35°, the outside ventilators should not be open. This plan will answer well in summer or winter. Any carpenter ought to be able to get a good idea of the building from this description.—J. HEAGERTY, *N. Y.*

2999. **Hydrangea-Culture.**—The plant when left to itself is free-branching, and every branch produces a cluster of bloom in summer. If you wish flower-clusters of the largest possible size, trim the plant to one stem; but a well-proportioned plant with spreading branches is much more beautiful. Our hydrangeas are kept in the cellar during winter; in spring, as soon as growth starts, they are brought out, carefully reset in rich loam, and given an abundance of water. As the heat of summer increases, they are shaded somewhat during part of the day. Soon the buds begin to develop, and liquid stimulants are given. Hydrangeas are easily propagated. Four young sprouts that had developed only a few leaves were accidentally broken from a plant this spring. They were placed in soil and kept watered, and every one has developed into a fine plant.—W. H. YEOMANS, *Conn.*

3011. **Huckleberry-Plants from Seed.**—I have raised a great many by the following method: I cut the berries in two, and then, scooping out the seeds with the point of my knife, dropped them into a tumbler of water and stirred them rapidly with a spoon to separate them

from the pulp. When separated, I dipped them, three or four at a time, from the tumbler and dropped them upon the earth I had prepared in pots or boxes to receive them. No special soil was found necessary. The seeds were lightly covered, and by the middle of October had germinated. The seedlings were kept growing in the boxes or pots for about a year, then set out in the garden. I have raised a great many huckleberry-plants to the bearing stage, but as they did not give any better berries than those growing wild nearby, I rooted them all up long ago. I think that the most promising species for experiment is the dangleberry (*Gaylussacia frondosa*), which varies somewhat in the wild state, and comes into use after most other small fruits.—W. E. ENDICOTT.

3014. **Downing Mulberry Dying.**—Cutting back half the new growth in the fall would not kill the tree, nor, so long as it stands in well-drained ground, would wet weather. Possibly it winter-killed.

3016. **Grape Not Fruiting.**—The seedling grape which the inquirer reports as flowering but never fruiting is probably a male vine. If it is a male vine, it may be known by having only staminate flowers, as shown in fig. 1. If it is a pistillate vine, the flowers will be like those shown in fig. 2, in which the pistil is well developed, but the stamens very short and declining. Such a vine will bear little or no fruit unless other vines having male flowers or erect stamens opening at the same time stand near, when it will bear abundantly. The Lindley, Brighton and Moyer are vines of this class. Vines like the Concord, Ives, Delaware, and most varieties in cultivation, have perfect or hermaphrodite flowers, with both pistil and stamens well developed, like those shown in fig. 3. Such vines will produce well when growing alone; yet even they appear to do better when other long-stamened varieties, especially males, flowering at the same time, grow nearby. If the seedling vine is a male, it can be grafted near the ground with a good bearing variety early in spring, and will produce vine enough to make a full crop



BLOSSOMS OF GRAPE-VINE.

the next year. I have grafts in my vineyard, put in last March, when the sap flowed freely at every cut, that now are an inch in diameter at the base, and have fine spreading tops, aggregating from 40 to 60 or more feet of vine.—T. V. MUNSON.

3021. **Apple-Tree Blight.**—The disease which affects the inquirer's trees, and which, in the latter part of June and July, "makes them look as if singed by fire," may be the apple-rust, a species of *reestelia*, or the scab (*Fusicladium dentriticum*). The former appears as bright yellow rust, on young leaves and fruit. One of the stages of this fungus is the cedar-apple found on red cedars and junipers. To prevent it, destroy cedars and junipers, hawthorns, wild apples, etc., in the vicinity of the orchard. Scab appears as brown or blackish spots on leaves and fruit. Spraying with fungicides in June and July is recommended.

3044. **Culture of Hothouse Plants.**—The yellow jessamine grows well if planted in a rich, light, sandy soil, given plenty of water when in a growing condition, and kept in a sunny location. Pomegranates like the same soil and similar treatment in summer, but should be wintered in a dry, frost-proof cellar, and have their roots kept dry. In spring report them, cutting back at least two-thirds. Passifloras do well in soil of loam and leaf-mold or turfy matter, with plenty of root-room. The banana likes a light, open soil, a good deal of water, a good-sized pot, and should have a sheltered place; otherwise its leaves will be injured by winds.—E. E. R.

3059. **Mixed-Pickle Making.**—The following is my recipe: Take from 3 to 5 quarts of small cucumbers, 2 quarts of cauliflower, 1 quart of small onions, same quantity each of green tomatoes, ground cherries and string-beans, 1 bunch of celery stalks cut fine, some green and ripe peppers, and some Brussels sprouts. Put all these ingredients in salt water over night. Cook the beans and onions separately until tender, and steam the cauliflower, green peppers, tomatoes and Brussels sprouts. Next make a dressing of 3 quarts of vinegar, 2 cups of brown sugar, 1 cup of flour, 16 tablespoonfuls of ground mustard, 5 tablespoonfuls of white mustard-seed, some celery-seed, 2 tablespoonfuls of turmeric. Let the dressing come to the boiling-point, and pour it over the pickles; heat all together and seal. The turmeric can be procured at the druggist's, and it gives the pickles that golden-orange color so desirable. For private use the material can be added to, but the dressing must be kept in the same proportion.—MRS. JOHN GALL-LARD, *Eric County, Pa.*

3066. **Switzer Apple.**—This is probably worth trying in Wisconsin. The pomologist of the Department of Agriculture describes it as follows: "Among the apples which have been imported from Russia this is one which seems to have good qualities for the north. The tree is very hardy and not subject to blight, as are some others. It bears abundantly. In size the fruit is medium, $2\frac{1}{2} \times 3$ inches; shape round, conical, regular; surface smooth; color brilliant crimson, with purplish stripes and splashes over a whitish ground; dots medium-light gray, scattering; basin shallow, narrow, abrupt, ribbed; eye closed; calyx-tube deep and wide; cavity wide, shallow, irregular; stem long, slender; core medium-sized, open; seeds numerous, plump, dark brown; flesh white, tender, not heavy; flavor quite tart; quality fair; season November to December in northern Vermont and New York."

3068. **Seed of Hardy Orange.**—We are not aware that seed of *Limonum trifoliatum* have as yet been offered by our seedsmen, but think it will probably be catalogued next season. Look up the leading seed-catalogues. Perhaps some of our readers may be able to tell us of a source of supply.

3069. **Strawberry Patch After Fruiting.** The best way of treating a strawberry-patch after fruiting, if it is to be kept for another season, is to cut all growth short

with a mowing-machine, and then when the "hay" has become dry enough, to set fire to it. Afterwards a furrow should be plowed away from the row on each side, leaving only a narrow strip of plants. This narrow strip of plants may be cleared of weeds, etc., with the hoe, and the vines then allowed to run and spread. A top-dressing of fine manure, especially of old poultry-manure, may be given on the freshly plowed surface next to each row. The young runners will readily root and grow there. If the patch is excessively weedy, the runners may be brought together to root in a strip midway between the old rows, and the latter be afterward plowed up. On the whole, however, we consider it better to fruit a patch but one year, and to set meanwhile a new patch for the following year. The best crops are almost invariably grown on new beds.

3070. **Starting a Blackberry Patch.**—Blackberry suckers may be taken up and planted for a new bed in either fall or spring, but we would greatly prefer root-cuttings. These may be made in fall and planted just where they are wanted to grow, in drills six or eight feet apart and two or three inches deep. It is much better, however, to cut up the roots in fall, pack them with sand in shallow boxes, bury them outdoors in a well-drained spot, and plant them out thickly in nursery-rows in spring. Keep them well cultivated, and plant them out for a permanent patch in the fall or spring following.

3071. **Rasberries for Home Use.**—Try Hansell and Marlboro.

3072. **Cultivating the Orchard.**—A few inches of well-stirred surface will be all-sufficient. No need of going very deep, unless as a sort of root-pruning, and for the purpose of checking over-rampant wood-growth.

3073. **Mariana Plum Cuttings.**—Use the mature shoots of this year's growth, and treat them exactly as you would currant cuttings. The sooner you put them in, in the fall, the better will be your chance of success.

3074. **Who Sells Nut-Trees?**—The addresses of leading nurserymen who sell nut trees (and almost all of them do) can be found at the proper season in our advertising columns. Write, for instance, to Wm. Parry, Parry, N. J.

3075. **Quince Leaf-Disease.**—This probably is the leaf-brown (*Entomosporium maculatum*), which appears as dark spots on the leaves and finally causes them to fall. We can suggest no remedy.

3076. **Storing Apples for Winter.**—In a well-drained spot dig a trench about half as deep as the diameter of the barrel in which you store your apples and barely as wide. Cover the barrel with the earth taken from the trench. Any number of barrels may occupy the trench, end to end, in the order of keeping quality. From three to four inches of clayey loam is far better than a thicker covering, even when the thermometer falls to 20 degrees below zero. This thickness is easily broken with any iron implement, and the barrel may be rolled to the cellar, or better, if safe from pilferers, left in the ground, to be

emptied as wanted. Experiments will show a crispness and freshness in apples kept in this way that is very appreciable. I have seen the inside of barrels bristling with needles of ice, and the fruit unfrozen. Apples are thus kept until April, May, or even June.—D. J. WALLER.

3077. **Downy Mildew of Grapes.**—The disease appears to be the downy mildew. It may be first noticed as small frost-like patches on the lower surface of the leaves, and later in yellowish discolorations of the upper surface, also in a dry rot of the berries. Wash the vines in early spring, while yet dormant, with strong copper or iron-sulphate solutions, and spray frequently until late in July with some of the approved fungicides.

3078. **Trellis for Grapes.**—Both upper and lower wire may be adjusted in the manner shown on page 426.

3079. **Dwarf Plum Trees.**—Trim your trees in the ordinary way. Cutting back was certainly *not* the cause of death of the two trees. Your trees are standards, and you can grow them as such.

3080. **New York Fruit-Growers' Association.**—The only N. Y. state association of this kind is the Western New York Horticultural Society, which meets in Rochester annually in January. Its president is W. C. Barry, Rochester, N. Y.

3081. **Blackberries and Raspberries from Root-Cuttings.**—You can make these cuttings from now on until the ground freezes. Prof. Bailey, in "The Nursery Book," published by The Rural Publishing Company, New York, says: "Roots from one-fourth to three-eighths in diameter are selected for the purpose. The roots are dug in the fall, cut into pieces an inch or two long, and stored until early spring. They may be buried in boxes of sand, after the manner of stratified seeds, or stored in a cool cellar; callusing proceeds most rapidly in a cellar. The pieces are planted horizontally an inch or two deep, in loose, rich soil. It is best to put them into a frame and give them slight bottom-heat, although they will grow if planted in the open ground in April or May, but the plants will make much less growth the first season. When the variety is scarce, shorter and slenderer pieces of root may be used, but these demand bottom-heat. The heat in the frames is usually supplied by manure, or the heat of the sun under glass may be sufficient. In these frames the cuttings can be started in the north late in March, or some six or eight weeks before the plants can be set outdoors without protection. When the weather has become somewhat settled, the plants may be set out, and by fall they will be two or three feet high."

3083. **Fertilizers for Raspberries.**—You have good material in "an abundance of half-rotted sawdust, leached wood-ashes and barnyard-manure." The leached wood-ashes, in themselves, are a most excellent manure for all sorts of small fruits, and, under average circumstances, are complete in themselves for the purpose. Your cold, stiff clay soil may be benefited by loosening up with organic manures and vegetable matter. The half-rotted sawdust will be just the thing. Compost it

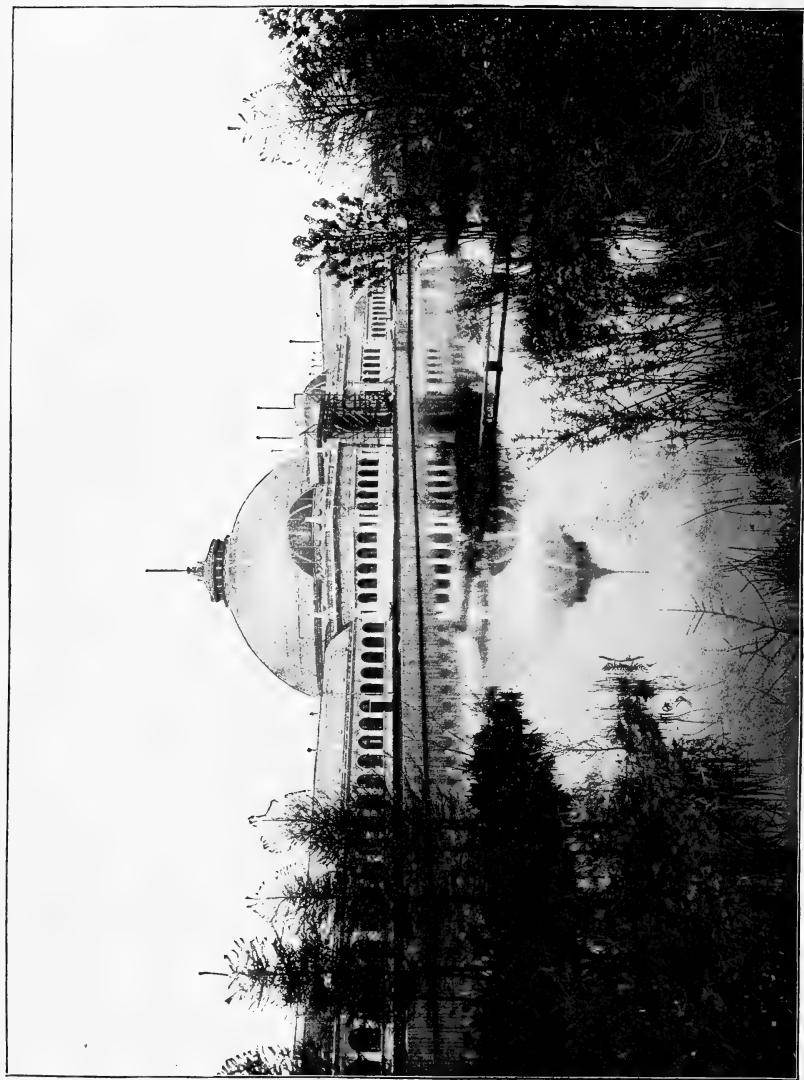
with the wood-ashes, and then apply it liberally. The ashes contain lime, hence the dressing of air-slaked lime may be omitted. Barnyard-manure also is a good thing to apply, but if you have plenty of the other ingredients named, you can save this for other crops.

3084. **Soil for Lettuce-Forcing.** You should use new soil every year. Why? To prevent the attacks and spread of that formidable enemy of lettuce under glass, the mildew. The growers of forced vegetables cannot be too careful in protecting their crops against fungous diseases. The principle of strict rotation applies as forcibly so crops under glass as to those outdoors, and where we cannot change the crops we must change the soil.

3085. **Onions Blighting.**—Onion-blight or rust, which is due to a fungus (*peronospera*), has often seriously affected our onion crop, or parts of it. Our crop this year is probably reduced one-half on this account. We have tried various fungicides, but thus far without avail. By the time the bulbs are half grown, or less, the leaves begin to turn yellow, and die from the top downward, putting a stop to the further growth of the bulb. The only thing we could suggest is strict rotation, and we shall follow it more closely hereafter. If you see the least sign of rust in a field this year, abandon it for onion-growing for a few years. To be safe, always select for onion-growing an uninfected piece of ground at some distance from where onions were grown the season before.

3086. **Cellar for Vegetables.**—A cemented cellar, if frost-proof and not too dry, is a good place for keeping vegetables, provided it is not under the dwelling-house. On sanitary grounds we do not recommend storing large quantities of fruits and vegetables under the living-rooms, but would prefer barn cellars or pits for such purposes.

3088. **Remedy for Striped Cucumber-Beetle.**—We know of no absolute protection from the attacks of this insect. Usually the plants can be saved from destruction or serious injury by applications of land-plaster, bone-dust, or almost any other dust-like material. When, as is sometimes the case, the beetles appear in large numbers, they may destroy the young plants in spite of such applications. Paris green is a promising remedy, and if a little lime is added to the Paris-green water, the foliage will not be injured. Apply it in a fine spray, taking care to reach the lower side of the leaves. There are spraying-nozzles now made for that particular purpose. Our favorite method of keeping off the beetles and killing the maggots, if there are any at the roots, is to cover the ground around the plants on each hill with an inch or more of tobacco-dust. Soaking the ground near the roots with a solution of saltpeter, lime-water or tobacco-tea is also likely to give relief from the maggots. They have seldom given us serious trouble, however. The great enemy to melon-vines, in our experience, is the melon-leaf blight, and it is possible that this may cause much of the mischief which you attribute to the maggots.



THE HORTICULTURAL BUILDING, WORLD'S FAIR, CHICAGO. WOODED ISLAND IN THE FOREGROUND.

American Gardening

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No. 11

A GARDEN IN HONOLULU.

GLIMPSSES OF OUTDOOR LIFE ON THE SANDWICH ISLANDS.



OUR house in Honolulu was of generous dimensions. It stood midway of the garden, facing Nunann avenue and looking off toward Punch Bowl crater, in the rear. Fifty feet from the house, straight across the front yard, ran a rivulet of clear water, coming from further up the valley and making haste toward the sea. This little stream was an unfailling delight; for at least 200 feet, the space between the two gardens on either side, it was a possession all one's own, and its melodious murmur and beneficent influence were never wanting. It refreshed the whole little domain, was a playmate for the children, and, while it was free to enter and leave as it pleased, chose to loiter and give its services every day in the year.

Along the low banks of our rivulet the vegetation grew little more luxuriantly than it did elsewhere, for everywhere it was abundant enough, the almost daily afternoon showers that came down the valley supplying sufficient moisture to keep the entire garden green and flourishing. Yet at one spot near the water there was something like a tangle, which became a favorite resort. Here were two or three date-palms that the birds affected, and close at hand a clump of cocoanut trees grew. I used to long to climb these slim trunks as the natives do—and, indeed I might with some practice have done so, for the trees were not very tall or straight—but I contented myself with ingloriously shying missiles at their tops whenever I wanted a nut. Various other tropical growths—a thicket of bamboos, some low bushes and a few mango trees—were not far away. Our horses were very fond of the mangoes, and whenever allowed their freedom in the front yard, made straight for the trees, under which there was generally a windfall of the fruit.

A traveler's tree was one of the curiosities of the place. This is all profile, the flat surface of a tree, as if it had been crushed like a flower within the leaves of a

book. Our specimen was of no great height, but whether these strange trees attain to lofty stature I do not know; certainly they are only expected to point the way horizontally. Many other kinds and forms of plant-life were all about us, more than I could name or remember; but, fortunately, this particular garden of our content was not over-crowded, as were our neighbors' premises. The tendency in houses is to fill rooms with a rich repletion of furniture. Nature is so prodigal that she displays a like propensity outdoors, although she never violates good taste. There was not a stifling profusion of flowers on our grounds, but a wealth of green grass, green leaves and native bloom.

This was true of the front yard. The back yard, it must be confessed, presented a different appearance. While one-half of our domain was a model of elegance without artificiality, the natural growth of the other half showed every inclination to run riot. All the plants, and they were legion, reveled in wanton luxuriance. Trees, bushes, shrubs and weeds followed their own sweet will, which was to scramble all over each other, and throw everything into confusion. The entire half acre, especially in the corners, was a dense jungle of heavy undergrowth, and was left as a hopeless case to itself and the hens. I could not find that the jungle was at all unhealthy, and when the weather was cool it was a pleasant retreat enough; much such a spot as one may see back of an old farm house—half forest, half kitchen-garden. The birds took delight in the place, building their nests there unmolested, and resorted thither on all occasions.

Adjoining this half-acre was the little paddock, or run, in which the horses were turned. This was a decided contrast to the jungle, being almost bare of trees, though by no means unattractive in appearance, for its sward was always green, and it was fringed about with rows of tall bushes. The barns and outbuildings were near the paddock. They were not the generous quarters which

domestic animals of colder latitudes know, but still were of a fair size, and cool, the chief consideration in this tropic zone.

A stone's throw from these buildings were the taro patches, on lower ground, and here the native women occasionally came for that favorite vegetable. Still beyond, across the stream, lay a bit of woodland, a field or two, and then the sides of the Punch Bowl began to rise with gradual slope, until the rim of the crater seemed to form a level summit. I never tired of looking off at this singular mountain; its coloring, or the beautiful, soft blending of dark and light tints upon it always soothed the eye. One is never long in the near vicinity of an extinct volcano without longing to climb up and peer down into the center of the earth; but in this case the exterior view of the mountain was sufficient. To gaze upon it as one looks upon an untroubled sea was a real and perpetual pleasure.

Our little Eden did not lack for serpentine forms. Centipedes were to be found under every upturned board, but the chickens pounced upon these at once.

Scorpions lurked in unexpected places, but they could be circumvented. The little ants, however, and some wretched insects that got into our books, were pests that greatly disturbed our peace. Mosquitoes could be kept out of the house, and flies never obtained possession.

Days here in Honolulu were halcyon almost all the year; indeed, there was too much sameness and sweetness about them. One longed for a change, a violent storm, a mighty wind, the pelting of the rain; yea, even for the bursting forth of our neighbor, the volcano. But we did have at times, in the cooler season, long periods of rainy weather, when the moaning breeze sighed about the house like an unhappy spirit, when water dripped from the eaves and pattered upon the roof, when the trees whipped their long branches and flapped their heavy leaves against each other, and when the garden was dark and cheerless. When the sun broke forth again everything was glistening and jubilant, and we had, in miniature, a picture of spring in northern lands, where nature, with a joyous outburst, suddenly wakes and sets streams leaping and birds caroling.

M.

TASTE AND TACT IN ARRANGING ORNAMENTAL GROUNDS—XXV.

A SMALL OVAL PARK—A HOME MADE BEAUTIFUL.



Y

A LITTLE Soldiers' Monument Park, lying near to the railroad station at Watertown, N. Y., is familiar not only to residents and visitors of this pretty county-seat of Jefferson county, but also to multitudes of people who, passing through the town, catch cheering and refreshing glimpses of its bright bit of greenery from the hot, crowded, dusty railway trains as they rush by. When journeying through the town the writer has often noticed the trim little area, always to enjoy it.

Concerning this park, a reader sends us an entertaining letter; also, a diagram of the little oval plat. He admits that in passing by the park he is always charmed by its neatness and refreshing appearance, lying, as it does, in the midst of stone pavements and solid business blocks; but he wonders whether to eyes accustomed to fine landscape gardening, the plan of the grounds would seem good or complete, and asks for suggestions for improving it.

In figure 1, a plan of the park as it now is, the soldiers' monument occupies the central portion of the oval, being located apparently on a circular mound of grass within the edge of a stone walk about four feet wide. This circular walk unites at two points with the main walk, which extends between the grass-plat and the street-curb, around the entire oval. The two end plats are entirely covered with grass, save where a round flower-bed occupies the center of each. From this plan it will be seen that the union of the central circular walk with the outside oval one leaves four sharp points of sward,

that detract materially from the otherwise pleasant appearance of the park. Other objections to the arrangement are, that the flower-beds are not located for the best effect, and that the park could be rendered more attractive in every way by locating here and there groups of bold-growing shrubs.

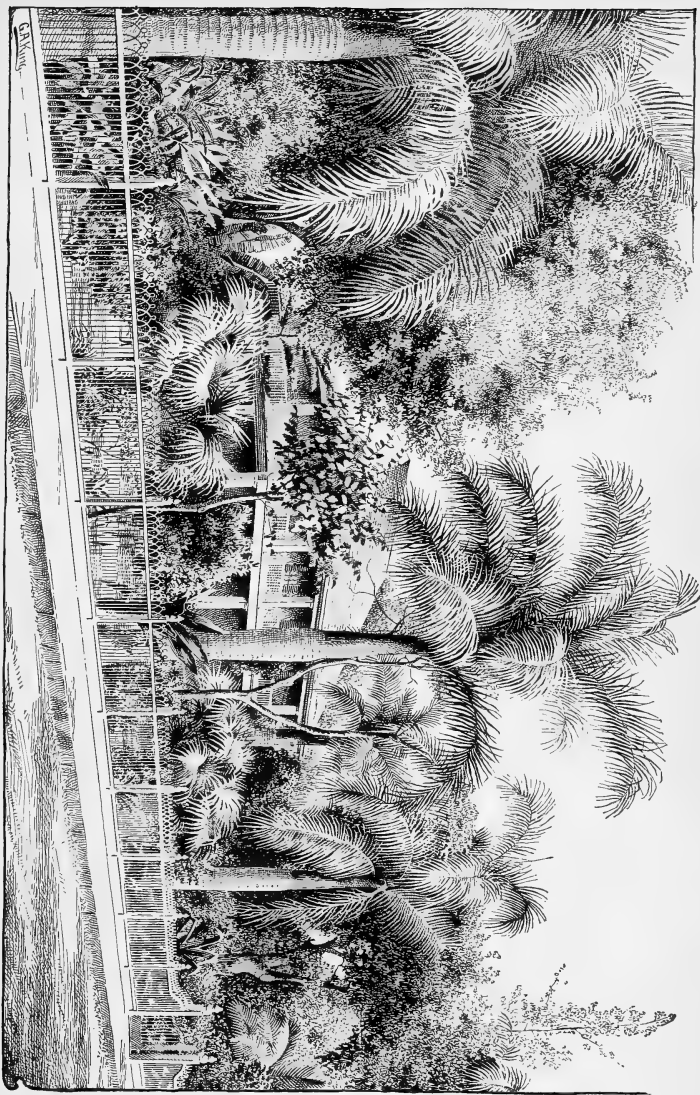
In figure 2 are set forth some changes suggested for the park. The connections between the central and the outer walk are here made in such a way as to leave rounded corners at the walk junctions, and open spaces wide enough to accommodate a large settee on each side of the monument. Shrubs have been introduced in groups of irregular outline, in order to relieve the formal circle and oval, which constitute the main features of the plan. With a view to keeping the center of the park open, these groups were located beyond the circle, and if the flower-beds are continued, which we think desirable, we suggest that they be located near the ends of the grass plats.

Some hardy shrubs better suited to the park than the tender ones that of late years have been grown there are, weigalias, calycanthus, privet, bush-honeysuckle, forsythias, snowberry and Japan snowball.

A FINE PLACE TASTEFULLY PLANTED.

From central New York another reader of AMERICAN GARDENING sends us a diagram of the grounds shown in figure 3, and the following letter:

"I enclose a plan of my grounds, and entrust entirely to you the selection of trees and shrubs for them, their arrangement for best effects in colors of foliage, etc. The temperature here sometimes drops to 20° below zero or lower, and the prevailing winds are



A GARDEN IN HONOLULU.

northwest. The lawn is open except where marked on the plat. The soil is heavy loam. The vegetable-garden, not shown on the plat, is situated on the bank of the river, at the southeast corner of the lot. The grape-ry is on the terrace opposite the garden and below the greenhouse. The house stands nearly in the center of the lot, and our reception-room, library and living-room are on the eastern side. The barn should be hidden by some kind of growth."

The grounds treated heretofore in our serial have, most of them, presented a geometrical array of sharp angles and straight lines, the bristling effects of which we diligently strove to overcome. In figure 3 this fault is not apparent, for here irregular curves and outlines seem to prevail. Therefore, as shown in figure 4, changes have been made only to improve the curves of the drives and to introduce on the grounds effective groups of ornamental trees, shrubs, etc.

In the front yard we wished to give more character to the drive on the right-hand side of the grounds, and to break the regularity of curve in the drive that bounds the front lawn. This was accomplished by carrying that part of the drive just inside the west entrance a little to the left at first, then bringing it round to the barn by a bold double curve. A four-fold gain was secured by this course.

(1) The objectionable regularity in the shape of the front lawn, as seen in figure 3, was overcome. A plat of this kind never looks so well when two curves leading toward the house are of the same form as when there is variety in the shape of the approaches. (2) By bending the right-hand drive considerably to the left within the west entrance, a bold lawn plat, that can be heavily planted, is secured between the drive and orchard, to the west, imparting much strength to the garden effect, at a point where the original (fig. 3) is particularly weak, and unsatisfactory to the owner. (3) The carriage-drive between the barn, the house and the left-hand entrance is as conveniently direct in figure 4 as it is roundabout in figure 3. (4) The several walks of the grounds adapt

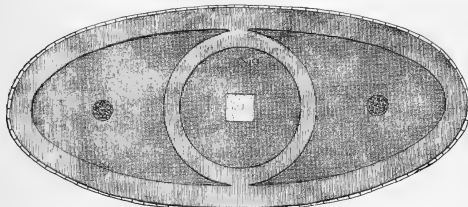


FIG. 1.—MONUMENT PARK, WATERTOWN, N. Y. (See page 642).

themselves more gracefully to the drive-system of the new design than to the old. Observe, for instance, what a pretty junction is revealed in figure 4, at the point where the walk extends back from the drive at the branch nearest the barn, and compare it with the junction at the same point in figure 3.

In considering the planting of the place, and also how its existing woody parts were to be treated, special attention was given the forest lying to the rear of the house, here cutting off the view of the river from the windows. It is often quite as necessary to know what to cut away in existing wood-growths, as to know where and what to

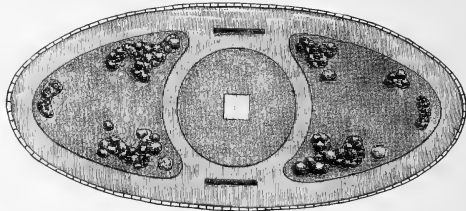


FIG. 2.—SUGGESTIONS FOR IMPROVING FIG. 1 (See page 642.)

plant in vacant grounds. In the present case both conditions must be dealt with. That relating to the forest may be disposed of by the simple course of opening up, from the house back, a complete vista extending through to the river. The outlines of the clearing are left quite irregular, while here and there a few of the handsomer trees, if allowed to remain, will give the opening a park-like aspect after a good coat of grass covers the ground.

The planting suggested for the nearly vacant areas on the front and sides of the house is mainly a liberal use of trees, with flowering shrubs and other materials brought in freely, thus completely embellishing the place. Beginning with plat A (figure 4), to the east of the house, the central one of the three large beds of irregular outline might be devoted to hardy roses, including hybrid perpetuals, moss, yellow and June roses, for the center, with polyantha and other of the hardier monthly roses next the margin. The bed lying north of the roses might contain hardy shrubs of the following kinds, arranging them somewhat in the order here named from south to north: Deutzias, including the dwarf gracilis and taller kinds of the scabra and crenata class, mock-oranges in variety, Ledebour's honeysuckle, Judas-tree or redbud, ring-leaved willow, flowering almond in several colors, double-flowering plum, and altheas in assortment. The shrubs standing outside of this bed toward the street could include Persian lilacs. Four trees, might also be planted in this plat—two American elms and two Norway maples.

Plat B, laying, as it does in a very conspicuous position, might be planted for rich effect as follows: Beginning at the end toward the house, there might be located first a small bed filled in the spring with crocuses and tulips, to be followed by tender bedding plants. The two small trees just beyond, toward the street, should be a specimen each of Young's weeping birch and *Magnolia speciosa*. Nearly opposite, across the

drive, another magnolia might be set in plat A. The large group of shrubs surrounding a seat, together with the two smaller beds across the walk from the seat, would look well if planted with red-twigged dogwood, lilac, smoke-tree, calycanthus, forsythia, wiegelia in assortment, and European, Japan, Canadian and purple-leaved barberries. Farther along on this plat, near the drive,

ing elm, sugar, or rock-maple, Wier's cut-leaved maple, European linden and white-leaved linden, scarlet oak, River's blood-leaved beech and the English elm. The irregularly-shaped clump located in this plat, near to the right of the carriage-drive, might be composed of dwarf-growing spruce trees, viz: Gregory's dwarf spruce, the conical spruce, Alcock's blue spruce, and the dwarf white

spruce. South of this bed, two specimens of Nordmann silver fir would look well. We think that a bed of eulalias located in this plat near the west carriage-drive, at a point almost midway between the street and the junction, in front of plat E, would produce quite a pleasing effect.

Plat D is to be planted with large masses of growth, using evergreens freely toward the street, in order to shut out the prevailing northwest winds. The evergreens recommended for this purpose are, Norway spruce, white spruce, dwarf black spruce (in a clump by itself away from the main group), Austrian or black pine, white pine, dwarf mugho pine (located toward the margin of the group), savin juniper, Siberian, golden and globe-headed arbor-vitæ, Colorado blue spruce and Irish juniper. The large group in this plat, lying nearer the barn, might be planted with trees of somewhat stronger habit and freer branching growth, as European larch, Scotch pine, oak, the double-flowered and red-flowered horse-chestnut, double-flowering cherry, red or slippery elm, Huntington elm, and English oak. Toward the margin nearest the drive, some smaller-growing trees, like golden oak, rosemary-leaved willow, large-flowering dogwood and showy mespilus would be effective. The mass in the junction-bend of this plat should consist of free-growing shrubs and trees, in the following order: Two pyramidal birches centrally in the mass, calycanthus, privets, blood-leaved plums (*Prunus pissardii*), variegated-leaved cornelian cherry, and Japan quince.

In the bend directly opposite, in plat E, we would like to see located a heavy clump of *Hydrangea paniculata grandiflora*. In the direction of the house from this mass are shown two cut-leaved weeping birches; in front of them, toward the drive, is a mass of *Mahonia aquifolia*. In figure 3, the trees standing in somewhat regular order between the house and windmill are plum trees, seven of which are allowed to remain in the new design.

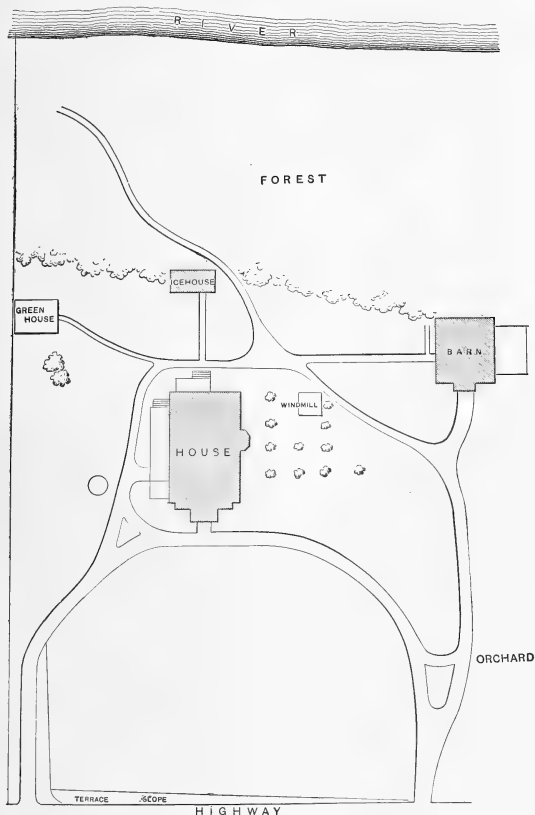


FIG. 3.—DIAGRAM OF GROUNDS HAVING A FRONTAGE OF 280 FEET ON THE HIGHWAY.

an elm tree might be set. Near the foot-path entrance to the grounds several groups of shrubs are shown; these should be planted freely with silver-leaved corchorus, *Cornus elegantissima variegata*, and Japanese viburnum (*V. plicatum*).

For the trees scattered throughout the margin of plat C, the following sorts are suggested: Camperdown weep-

Other trees for the vicinity of the windmill might be the American elm, common horse-chestnut, the European white birch and the tooth-leaved weeping poplar. The small clump of shrubs directly in the rear of the windmill might consist of the flowering currants in assortment.

The two large clumps of shrubbery on each side of the walk between plats E and F, where it joins the front drive, might be planted, the one to the east with red-twigged dogwood, tamarisk, *Viburnum rugosum*, golden elder, calycanthus, Josika's lilac, cut-leaved elder and waxberries; the one opposite with ailantus, *Paulownia imperialis*, golden catalpa, bladder-senna, aralias (including the Japanese), purple-leaved filberts, etc. The large mass near the barn in plat F might be appropriately planted with strong-growing trees and shrubs, in order to screen the stable from the residence. For this place we would include the Carolina poplar, golden poplar, golden catalpa, purple-leaved birch, ash-leaved spiræa, royal willow and Venetian sumach. A group at the windmill crossing might consist of oleasters, white fringe and clethrass.

The various groups in plats H and I, directly back of the house, we would plant with spiræas in large variety, mock-orange, Japan quince, ornamental elders, etc., devoting a mass to each kind of shrub. A few elms or other forest trees might also be located in this division.

The group between the house and the greenhouse plant with oleasters, mock-oranges, Japan maples and hardy azaleas; the beds in the vicinity of the greenhouse with hardy perennials, including a large mass of peonies and tender summer flowers. Flowering vines in variety can be planted about the front and side veranda-pillars. If the reader suggests that shrubbery has been used too freely for the front yard, we answer that this was done keeping in mind the fact that the rear of the place is thickly occupied with giant forest trees, needing the contrast so provided.

We Americans are fortunate in having so many handsome hardy native trees and shrubs for ornamental planting about our homes and public parks. Our forests are all great nurseries, from which we may select the finest stock to be found anywhere in the world, with no

fear of its proving inadaptably to our climate, or of the nurseryman's harrowing bill. Nay, more; if we will but have eyes to see, the great mother-gardener everywhere gives us lessons in practical planting. She shows us what soils and situations her beautiful nurslings like best; she groups them, scatters them, grows them as specimens here and there; shows us a multitude of fairy-like effects

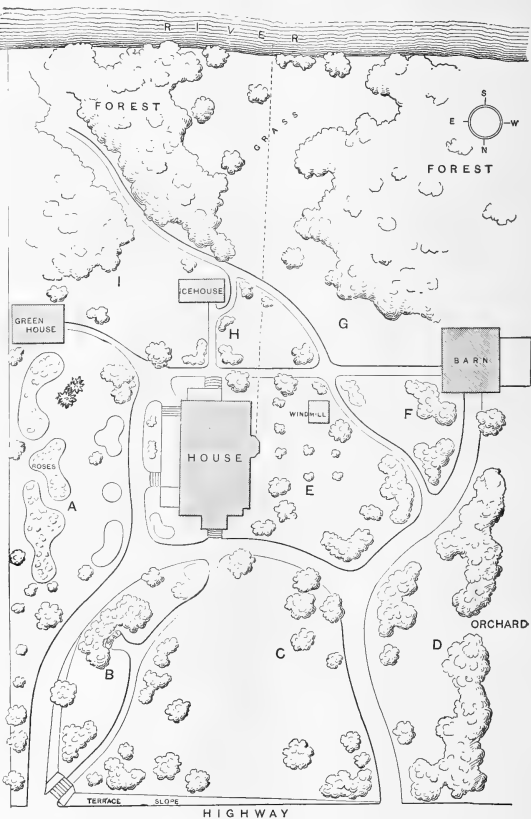


FIG. 4.—IMPROVEMENTS SUGGESTED FOR FIG. 3.

in the light, mingled foliage of flower-fringed borders; or awes us with the sombre grandeur of her wide-spread masses of giant forest trees. We catch our finest bits of inspiration in landscape art from the open plan-book of forests and meadows, and the more closely we study them the wider and nobler will be the sweep of horticulture.



A MASS OF YOUNG EVERGREENS AT WOODBANKS

INDELIBLE GARDENING.

PLANT EVERGREENS FOR HEALTH AS WELL AS FOR BEAUTY.

PEOPLE who visit the Adirondacks and other forest fastnesses for pleasure, rest or health are never better pleased than when they can camp near a mass of beautiful and aromatic balsam trees. This is not only because the handsome, perfectly straight, spire-topped trees load the atmosphere with a pleasant odor, but because the resinous odor has a well-founded reputation for healthfulness. Indeed, it is now held by some of our best physicians that the balsam-fir contributes much ozone to the atmosphere. So you will find that health-seekers in the woods will pass pines, hemlocks and spruces in order to take up their abode among balsams. Not content with enjoying the odor of the trees during vacation-time, every visitor to the woods is sure to prepare and carry home for future enjoyment a pillow filled with balsam foliage and tender bark. Such pillows are for a long time deliciously fragrant, and are supposed to give out much of the regular health-giving property of a balsam forest.

Now, if the balsam-fir is such a beautiful, healthful and generally well appreciated tree, why not plant it oftener

about our homes? West of the editor's residence, in the line of the prevailing winds, he three years ago planted, as one part of a large mass of evergreens, half a dozen thrifty young trees of this species of fir. They have grown rapidly, as the tree always does in ornamental planting if it receives anything like fair treatment, and are now about the height of a man, nearly four feet through at the base, and bushy and vigorous throughout. There is not a more attractive conifer on the grounds today than this balsam-fir; its delightful, deep green hue is softened and lighted by the silvery lining of the leaves, and its odor, here as elsewhere, is enjoyable, healthful and abiding. In years to come we expect to derive much pleasure from these trees, and we urge others to plant them near their homes.

Ah, yes! We expected it—that old chestnut about this tree's unfitness for ornamental planting because, in time, it becomes rare or thin in foliage near the ground. This objection is unjust and insufficient. There is not among evergreens, any more than among people, a single subject that retains the full and peculiar beauty of youth

in old age. The balsam's tendency to lack verdure near the ground may be overcome by nipping out a part of the leader in the young growth every year or two, thus concentrating the growth further down. Or, if planted somewhat back of a mass of dwarf evergreens, its bare trunk will be hidden, and all the beauty of its strikingly straight trunk, delicately-tapered top and deep green, resinous foliage will be shown to such advantage as to claim for this balsam a first place in any collection of evergreens. When one has good-sized home-grounds, there is no need of traveling great distances to wild forests in order to obtain the benefits and enjoy the beauty of masses of balsam-fir trees. Let us make them companions of our homes.

Such masses of evergreens as we have prescribed for the balsam-fir are effective when planted with any fine species. On page 647 is shown a view taken from a

photograph of a portion of the evergreen masses at Woodbanks. The object in presenting it is, principally, to show how evergreens may be grown in a border, the surface of which is kept clean and well cultivated, and yet the monotonous aspect of such a border be broken by planting some evergreens of the same kinds in the lawn outside the border in such a way as to have it appear that those outside are a mere continuation of the mass within the border. Such irregular fringes to bold-growing masses of evergreens are always found in nature. They are like the soft blending which artists use between high lights and dark shadows in a picture.

As winter comes on those of us whose homes are sheltered by such evergreen masses may hug ourselves in self-gratulation, and pity less fortunate neighbors as blizzards sweep by. It is interesting, too, to watch the snow pile itself in fantastic masses upon the boughs.

HORTICULTURE AT THE WORLD'S FAIR.

THE BUILDINGS, GROUNDS AND PLANTS.



UNLIKE the Government building, which Mrs. Van Rensselaer pronounced "as ugly as it is big," the Horticultural building for the World's Fair is as beautiful as it is big. That this is saying a good deal is made plain when we consider its dimensions, its length being 1,000 feet, and its extreme width 250 feet, while the great dome surmounting the central pavilion is 187 feet in diameter and 113 feet high.

Viewed from any point it is one of the most satisfying of this group of splendid buildings; a delight to the eye as a whole and in detail. The frontispiece shows the front of the Horticultural building, which faces eastward on the lagoon and that fairyland, known in World's Fair geography as the "Wooded Island," because here it was, happily, possible to preserve a part of the indigenous growth of oaks which, at the time the fair was located, covered about half of the unimproved part of Jackson Park; so that some of the trees that looked on during the Fort Dearborn massacre will witness the scenes that mark this new epoch.

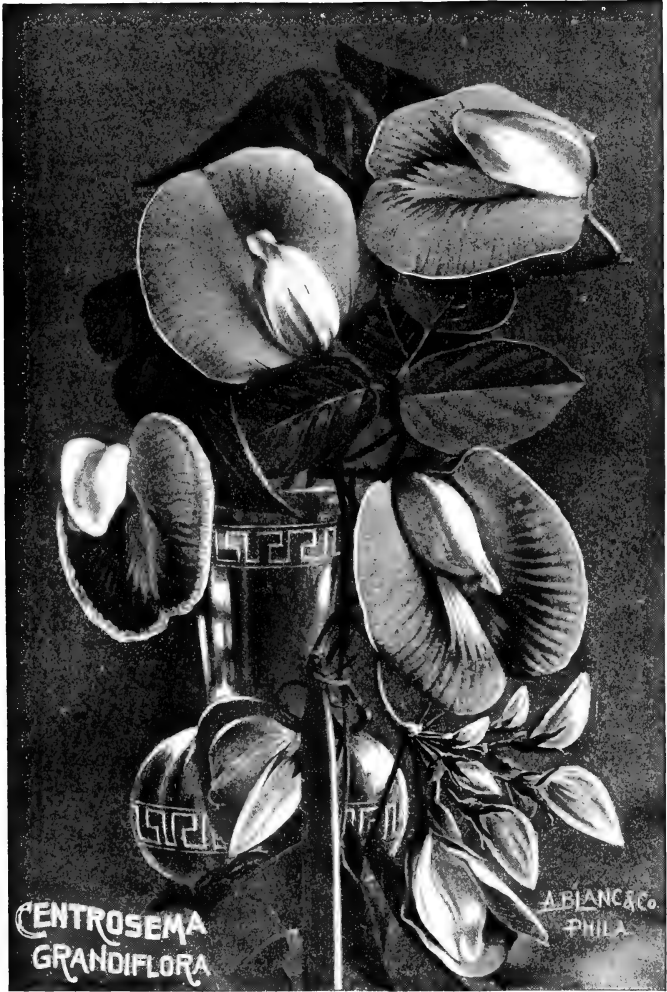
West of the building, across wide, graveled promenades, grassy lawns and beds of bright flowers, stands the Horticultural annex. The middle part, with its well-grown Japanese hop-vines, grown from seed started in May and now (Sept.) in full bloom, is occupied by the offices, and is quite pleasing; but the interior is far more interesting to the florist. There in their "greenrooms" the plants are decking themselves for their appearance in public, and each seems trying to outstrip its neighbor in the race for favor. Doubtless the gentle murmuring one hears is made by plant-voices whispering together, as young creatures will, of that happy time when they are to make their début.

The Chief of Floriculture is a busy man; the long summer days have been all too short, yet they have been

made the most of, and the results make a fine showing. Just now the interest centers in the 2,000 box-grown plants used in decorating the Manufactures building for the dedicatory ceremonies. About two acres of floor space will be occupied by the floral decorations; for this purpose 30 or 40 carloads of choice, large, tropical and semi-tropical plants have been donated, by public-spirited men of wealth, from private conservatories all over the country. Among these fine specimens are immense palms, tree-ferns and bamboos, Indian and Chinese. They will be used in the Horticultural building during the Fair, many of them on the strange mountain now forming under the great dome, of which I hope to tell you later, when it takes a photographable shape; also, of the equally strange cave beneath the mountain.

The 2,000 boxed plants, grown from seed started last spring, make an attractive exhibit of which the conspicuous characteristic, aside from beauty, is an evenness of growth that cannot fail to be remarked by the veteran novice. Next is noted the good effects produced by growing two varieties of a genus side by side. The result has something of the piquancy of charming twin sisters, one a blonde, the other a brunette, bearing that elusive resemblance to each other that is called "family likeness"; the contrast is pleasing, the resemblance perplexing, and the whole make-up fascinating.

Among blossoming plants to be used in the Manufactures building at the dedication are 250 mammoth African marigolds and 200 each of *Salvia splendens*, cassias, single dahlias and chrysanthemums. The remainder is made up of decorative plants, including two exceedingly graceful varieties of eucalyptus and two of static, a plant which the chief thinks should be more generally grown. There are several varieties of coleus, even richer in color effects, because of their velvety texture, than the flowering plants, and they in turn are eclipsed in delicacy by those aristocrats among foliage-



(See Page 650.)

plants, the peerless fancy-leaved caladiums, their pedigree shown by heraldic markings upon the leaves.

Here are great quantities of caladiums, musas and yuccas; the ferocious look of a house full of Spanish daggers being modified by the stately stems of drooping, creamy bells crowning their spiky trunks; and last, but far removed from least in interest and beauty, are two varieties of solanum, one with great tufts of light green foliage, against which the second forms a fret-work screen of deeply-cut, dark green leaves. Back of all these plants rises a mass of the broad, richly-colored leaves of the great Abyssinian banana. The whole assemblage, with the sunlight filtering through it, makes a feast of color and form for all eyes that can see.

THE BLOSSOMING OF A WORLD'S FAIR NIGHT-BLOOMING CERESUS.

"Figs from thistles" would seem a fitting chapter-head for the event, for surely it would have been hard to imagine a plant apparently less likely to furnish such an array of beauty than this ungainly, thorny cereus-plant. The time for the crowning effort of that odd plant-life was approaching, and the god-father of the coming flowers was on the *qui vive*; and small wonder, for to stand sponsor to 45 children at one time must be looked upon as an event, particularly when, as in this case, they are all girls—they must have been girls, for they were all "fair blossoms," and such titles are not for mere boys.

The queer-looking plant kept us long waiting; it did not like the touch of fall frosts in the night air, and de-

layed unfolding those precious petals as long as possible. However, the evening came when its trembling buds, instinct with the life furnished through the unpromising stems, began to open before our eyes; first one, then another, then in pairs, and in trios, until the whole plant was starred with magnificent blossoms from the base to the plant's fitting crown of three great flowers, one measuring nearly 15 inches in diameter. The perfume spilled by them over the few witnesses present steeped our senses, and the flash-light photographs we came to perpetrate were almost forgotten, or the operators, feeling the pity of it, longed to stay their hands. Truly, at the time such obtusiveness seemed almost a sacrilege, and one fancied hearing a soft murmur of dissent from the flowers themselves, as if one should say: "Just see these mundane creatures flashing their nineteenth-century lights into the inmost recesses of the blossom of a night, thinking, perhaps, to learn its way of making perfume, much as their writers are said to try to throw flash-lights into the secret souls of mortals, the better to trace and describe the convolutions of their thoughts."

The mortals present felt the silent rebuke, and after we had folded our tripods and silently stolen away, glad in our hearts that the moon-beams were not very bright, there rose a still, small rustling, and from the sylvan island, from the water-lilies on the lagoon, over the lawns and yellow sands, flocked the World's Fair fairies, to dance about that wonderful spectral monument of fast-fading flowers, the creatures of the hour.

FANNY COPLEY SEAVEY.



A DÉBUTANTE FOR THE COMING WINTER.

CENTROSEMA GRANDIFLORA, INTRODUCED BY A. BLANC.



NEW FLOWERS, like new faces, quickly catch the eye, on account of their novelty. If they happen to be beautiful and readily adaptable to culture, they add fresh zest and pleasure to the life of every whole-souled gardener. If the dear, old-fashioned plants are valued because of associations, the new ones, as strangers, have a strong claim upon our hospitality. Many old and neglected plants are really valuable, and prove eminently satisfactory; but, after all, it cannot be denied that one which is absolutely new to cultivation, and at the same time one of the very best in actual merit, is decidedly

more desirable. During the last few seasons I have had the opportunity of watching the growth and development of a new ornamental climber of rare and exquisite beauty. This plant, *Centrosema grandiflora*, is a protégé of A. Blanc, of Philadelphia, and is to be offered for sale for the first time the coming winter. It is a hardy perennial, but from seeds sown in April plants grow off rapidly, and bloom freely early in June.

The flowers are inversely pea-shaped, and are quite large, many of them being two and a half inches in diameter. In color they run through all shades from rosy violet to a reddish purple. Through the center of each flower runs a broad, feathered band of white, and the large buds and outside surface of the flowers be-

ing also white, at a little distance one plant appears to bear blossoms of several different colors at one time. Occasionally we find a centrosema with pure white flowers, or with petals broadly margined and feathered with white.

A most attractive feature of this plant is the way in which the flowers look you in the face. Every imaginative person sees faces in the pansy, and the centrosema is even more suggestive. Therefore, "Look at Me" would not be a bad name for it. The blossoms are produced in great abundance, sometimes from six to eight in a cluster.

The foliage of the centrosema is graceful and delightfully fragrant. The stems are slender, curving and twining over any support with the utmost grace. They are not much larger than good-sized knitting-needles, but they often climb to the height of six or eight feet.

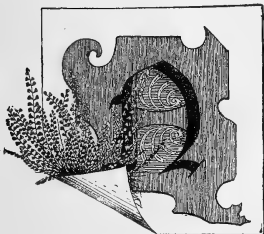
I predict for this plant large sales and great popularity, and anticipate for it, when once the florists take it in hand, as great a variety and delicacy of coloring as we find in the sweet-pea. It is well adapted for many gardening purposes, blooms until frost, and if potted will no doubt flower freely in the house.

New Jersey.

WM. F. BASSETT.

SKETCHES FROM FERN-LIFE

AT HOME AND ABROAD.



NATURE'S favorite lace-pattern is the fern, and like an extravagant beauty, she often decks herself richly with it. These laces are not always fine and cobwebby. In the jungles of Australia and the islands of the southern seas, where the strangest forms of tropical vegeta-

tion are produced, and explorers find gigantic types of orders which in a temperate climate are represented by modest herbs, there are whole forests of ferns that tower aloft with tree-like trunks and spread their clustered fronds on high in rivalry of the palms. Yet these majestic plants are generated exactly as other ferns—from germs of a single cell—and make their growth in the same manner, by developing new fronds at the summit of the stock. These young fronds are rolled in the bud like the young, vernal growth of our own familiar species. Moreover, the pillared trunk of these palm-like tree-ferns represents an upright form of the prostrate

stock, more or less extended, which forms the hard and woody base of many ferns—in fact, of most. It answers obviously enough to the strong, thick stump of Clayton's flowering fern, or the stout, ascending stock of most aspidiums, and equally, though the analogy seems remote, to the scaly rootstock of the polypodium, the slender creeping stems of the marsh-fern, and some others.



FIG. 1.—FRUITING LOBE OF *DICKSONIA*. The trunk of *Dicksonia arborescens*, the most beautiful of tree-ferns, covered with rows of uniform projections curving outward—bases of stalks from which the fronds have fallen away—resembles in effect a sculptured

column, and supports a canopy of broad, green fronds of the loveliest form imaginable. We need not depend entirely on imagination, however, to give us a conception of their beauty; we have a perfect representative of the genus in our common "hay-scented fern," *Dicksonia pilosiuscula* (*D. punctilobula* of Kunze), illustrated by figs. 1, 2 and 3.

This fern abounds in moist woods and low, shaded places. When full grown, it is generally two or three feet in height. Its broad fronds taper to a point, are twice divided (the segments of the pinnae being deeply cut in lobes), and these again incised. As the texture of the frond is delicate and its color a soft, light green, fading to ivory-white, the lace-like effect produced by such minute division and subdivision is exquisite. Imagine a circle of such fronds eight or ten times enlarged, arranged in umbrella-fashion at the top of a carved and fluted column as large as the bole of a palm tree, and you have a fairly accurate idea of tree-ferns of the genus *dicksonia*, which may, perhaps, be regarded as the culmination of beauty in the vegetable kingdom.



FIG. 2.—MIDDLE PINNA OF *DICKSONIA PILOSIUSCULA*.

Any one possessing a magnifying-glass of considerable power may find interest and pleasure in studying the peculiar leaf structure of the ferns, and the various modes in which their fructification is accomplished. The veining of the fronds will be a point especially noted in making such minute examinations, the clusters of spore-cases of whatever shape, and the membrane (called the indusium) by which they are often covered in their early stage, being attached to the tip or other portion of the smaller

veins, which are not usually apparent without a lens. Some ferns, however, are so thin and delicate that a very pretty view of the system of veining may be obtained by holding their fronds in front of a strong light. Growing

without seed, fruiting without flowers, and bearing their strange fruitage, not on branches but on their leafy growth, we cannot but regard these graceful plants as something of a puzzle—"nature's lovely paradox"—at least until maturer knowledge has revealed the secret of their singular germination. They have a charm of mystery which fascinates the mind, while the beauty of their form enchants the eye.

Our American dicksonia reveals its close relationship to the tree-ferns by the manner of fruiting peculiar to the genus. To make this apparent, it is necessary to apply the lens, the fruit-dots being very small. On

FIG. 3.—TIP OF DICKSONIA FROND.

the apex of a little vein, at each lobe of the cleft pinnule, is a curious indusium in the shape of a cup, filled to the brim with microscopic sporangia. A tooth of the frond, turned over, supports the tiny cup, which is open at the top, and by its position on the frond is turned nearly upside down. The spore-cases, however, cannot fall out, for they are attached to a globular receptacle raised on the end of the vein and enclosed for security in this odd indusium, the whole forming a kind of "cup-and-ball" arrangement, such as may be seen on a larger scale in the seed-pods of many flowering plants. The

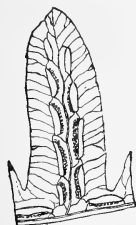


FIG. 4.—FRUITING LOBE OF WOODWARDIA.

A very interesting large fern is the woodwardia, or chain-fern, so called from the appearance of the rows of oblong fruit-dots on each side of the mid-ribs of the pinnae. These are connected in links by short veins, but in July, when the spores are ripe, they run together in a confluent line,

and the likeness to a chain is not so apparent. This fern grows in swamps and wet places, and attains about the same height as the dicksonia—two or three feet. It is



FIG. 5.—WOODWARDIA VIRGINICA. (Lower pinnae showing fruitage.)

not, however, so common as the latter, especially at the north, the genus woodwardia being inclined to favor a warmer climate. The species illustrated, *Woodwardia virginica* (figs. 4 and 5), may be found not infrequently in the New England states, another rarer species, *W. angustifolia* (*W. onocleoides* of Willdenow), also occurring in a few localities.

Among the most widely distributed and the loveliest of



FIG. 6.—ASPLENIUM RUTA-MURARIA (WALL-RUE.)

North American ferns are the two species of cypopteris, or "bladder-ferns," so named because the indusium or membranaceous covering of the fruit-dots is somewhat

inflated, though it really resembles a hood more than a sac or bladder. These ferns appear quite early in the spring, growing in close tufts, and are found in shaded ravines and rocky places everywhere. Their delicate fronds, two or three times divided, form feathery masses of green so light and airy in effect that we are surprised, on a near inspection, to see what a weight of fruitage they bear.

At maturity the entire under side of fertile fronds is brown with ripened sporangia.

Cystopteris fragilis (fig. 7), the more common of the two species, is a small fern, its foliated part seldom exceeding seven or eight inches in length, but borne on a slender stalk fully as long, which holds the graceful frond well up to view. As denoted by its name, it is very frail, and is known in some sections as the "brittle fern."

The sister species, *C.*

bulbifera, has a narrow, elongated frond, often two or more feet in length, and trailing on the ground as it grows. Tiny bulbs are sometimes formed along the underside of its central rib and on the mid-veins of the main divisions, hence the appellation describing it as *bulbiferus*; but these bulbs are frequently wanting.

In the genus *Asplenium*, the medicinal spleenworts, there are some beautiful small ferns, not so well known as the larger species, being rather rare or local in their range. The rarest and the smallest of all is the charming little "wall-rue," *Asplenium Ruta-muraria* (fig. 6), which grows only from 2 to 4 inches tall. This fern is very scarce, and occurs in widely separated sections of

country, being occasionally found on limestone ledges from Vermont and Massachusetts far westward. It seems to be most frequent in the mountains of Pennsylvania.

More plentiful, but still not common, save here and there in some favored location, is the "maidenhair spleenwort," *Asplenium trichomanes* (fig. 8), a dainty fern, with fronds only half an inch wide, and, at the most, but 7 or 8 inches long. This, too, is a rock-loving species, and revels in moisture, making its home on damp, moss-grown ledges, and draping the walls of cool grottoes or the wet brinks of cascades and waterfalls. Its frond somewhat resembles the branches of an adiantum.

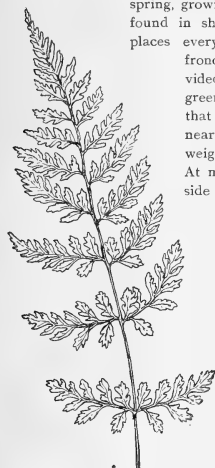


FIG. 7.—CYSTOPTERIS FRAGILIS,
(Without the stalk.)

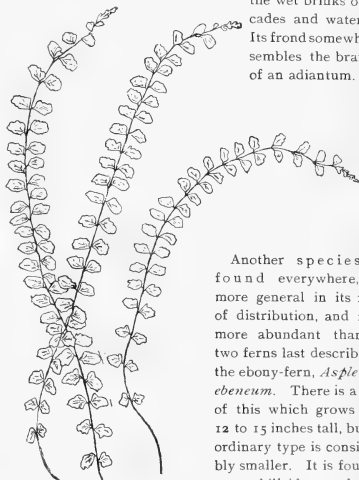


FIG. 8.—ASPENIUM TRICHOMANES.

Another species not found everywhere, but more general in its range of distribution, and much more abundant than the two ferns last described, is the ebony-fern, *Asplenium ebeneum*. There is a form of this which grows from 12 to 15 inches tall, but the ordinary type is considerably smaller. It is found in open, hillside woods, and may often be seen along fences and rocky roadsides. It has an upright, narrow frond, with a polished black stalk and rachis, and is rather stiff in its habit of growth, but it is unusual in form and quaintly pretty. See fig. 9, on the next page.

Connecticut.

FRANCES WILSON

A GOLDEN SHRUBBERY

OF BRIGHT-LEAVED PLANTS



THE most attractive feature of our home, near the banks of the Potomac, in West Virginia, is a grove of grand old oaks, a few magnificent tulip-trees as large as the oaks, and several picturesque tupelos, or sour gums, that are especially beautiful in autumn. These old giants

are slowly dying out. Down by the front gate there was, a few years ago, a hundred yards or more of vacant space covered with level greensward.

In the spring of 1889 we became interested in land-

scape-gardening, and determined to appropriate this spot for a shrubbery. A number of golden-leaved plants, sent us that year by a firm that advertised 50 desirable shrubs for a certain sum, determined the character of the new undertaking, which has since borne the name of the "golden shrubbery."

This mass of shrubbery is hidden from view by the rising ground between it and the house. Walking down either of the two driveways which wind through the grove, one comes upon the yellow-leaved group as a final surprise. The stone wall which bounds it on the south

and west is covered with Virginia creeper and the yellow Austrian Brier rose. On the east it is bounded by a large bitter-nut hickory, whose foliage turns a lively yellow, and is retained until late in the fall. Around this tree we have a circular rustic seat, where one may rest and enjoy the charming view.

Next to the hickory, and doing well in the partial shade, is a group of five golden-leaved spiræas. They grow rapidly, rewarding us richly for the small share of attention they receive, which consists in mowing the luxuriant blue-grass around them occasionally, and mulching their roots with it in dry weather, working the ground around them twice in a season, and giving them an annual top-dressing of manure. We have never watered them, even in drought, as we are our own gardeners, and have very little time to bestow upon our numerous shrubby pets. Beyond the spiræas, and backed by the gray of the stone wall, is a group of half a dozen golden syringas and some purple-leaved hazels. These syringas do not grow so rapidly as the spiræas, and will not attain a very large size. The chief charm of the golden spiræas is the coloring of the foliage, especially when the tiny leaflets uncurl in early spring. They are then a most exquisite shade of orange, and on a clear day have a translucent, sunny expression that makes them remarkably beautiful. In September they gradually lose their yellow tints, and become green at the time when green leaves usually turn golden. Many spiræas do best in partial shade, and are useful for planting in the neighborhood of trees.

A Japan corchorus with double flowers looking at a distance like tiny oranges, is the next shrub in our collection. It is very satisfactory at all seasons of the year. The bright, green stems are showy in winter, the leaves are sent out early in spring, the plant grows rapidly and gracefully, with half-weeping habit, and is always in bloom from April to the middle of November. I know few shrubs that rival it for staying qualities. Its near neighbor is the little variegated corchorus, with white leaf-margin, of much more delicate growth, and single blooms more sparsely produced than those of its relative. I am not fond of many variegated shrubs, but this graceful little plant has quite won my heart.

We have now reached the southwestern corner of the shrubbery, and here we come upon a large group of golden-leaved elders, which are now six feet in height. I know no shrub which can outstrip an elder when it takes a start in a skyward direction.

For the sake of contrast, we have planted a few purple-leaved shrubs in this enclosure, and, for its rich green, a large group of *Berberis Thunbergii*. Five

of these charming shrubs surround a thriving *Koeleruteria*—one of the choicest of small trees. Though but six feet in height, this one bloomed in July, and is especially valued because its golden blossoms are displayed in that few-flowered and sultry month. The foliage is a sunny, light green, and very appropriate for our golden shrubbery. Late in the fall pretty seed-pods cling to the branches, and the fall coloring of the tree is rich and effective. The *Koeleruteria* seems of such easy culture, and in every way so desirable, that I am much surprised at its rarity.

The drive-way bounds the shrubbery on the north, and here we have a *Forsythia viridissima*, two or three dog-

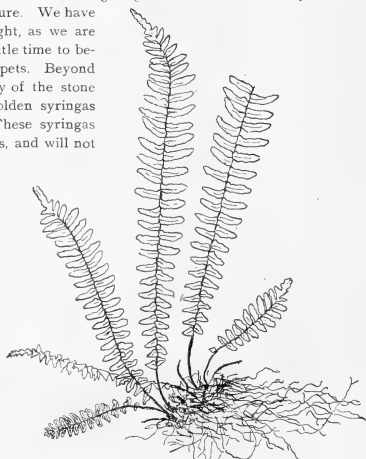


FIG. 9. ASPLENIUM EBENEUM. (See page 653)

woods, a witch-hazel, a *Prunus Pissardii*, a tree-lilac, a mahonia, some andromedas, and several other choice plants. These are not all yellow-flowered, but are introduced for the sake of toning down more pronounced coloring, and for contrast. I would not advise the use of many golden-leaved or variegated plants, nor would I have made such a collection as ours of my own free will. But when these shrubs were sent they seemed too fine to throw away, and I cannot deny that their effect is good, grouped as they are with so many green-leaved shrubs, and set in such rich turf as only the blue-grass, that richest and most velvety of all grasses, can afford.

Hypericum aureum was one of the prettiest plants that bloomed for us last season. This cheerful and charming plant was covered in August with rich yellow flowers that lasted a long while, and were well displayed against the dark leaves of a fine *Berberis Thunbergii*. The common name of all the hypericums is St. John's-wort. *H. aureum* grows wild in a number of southern states, its golden blossoms brightening many dreary, waste places.

These are the principal features of our golden shrubbery. It is in a conspicuous position, just at the entrance to the grove, and becomes more interesting every season. Other shrubberies scattered about, and giving character to our pleasure-grounds, are called the "white garden," the "thorn group," the "ladies' walk," and the "rose garden"; the latter surrounds the house. Of these I should be glad to speak another time.

West Virginia.

DANSKE DANDRIDGE.

TWO MEMBERS OF THE AMPELOPSIS FAMILY.

VIRGINIA CREEPER AND BOSTON IVY.



THE Virginia creeper, *Ampelopsis quinquefolia*, so brilliantly beautiful in woods and gardens until late in autumn, is used for adornment in a variety of ways. Indeed, it is a question whether this hardy, rampant-growing vine cannot in most cases be employed with finer effect away

from buildings than against them. There are objections to its use for covering painted wooden houses or verandas, in its inviting decay and refusing to cling readily; while if employed on brick and stone residences, it invites the English sparrow in a way not tending to increase our esteem for that cheerful little town-bird. For covering rough or backyard buildings, such as barns, ice-houses and sties, as well as walls and fences, it is most admirable for here various objections that may be raised to its use about the house or veranda can readily be overlooked.

The Virginia creeper is best known as a beautiful building-draper, but we illustrate some other uses for which it is finely adapted. Fig. 1 shows a simple, vine-covered column, formed by planting ampelopsis at the base of a dead tree stump. If such a stump is lacking, any section of tree-trunk that is covered with bark for the vine's roots to strike into will answer the purpose, if set in the earth about four feet deep. The advantage of the stump is, that until their decay its roots brace it erectly, and the erectness of such a column has much to do with its beauty.

The soil about the roots of the stump must be made very rich with old manure, using as much as a bushel for each four vines set, and incorporating it well with the earth. From three to five roots of ampelopsis should be set at equal distances about the base of the stump. Strong plants set in such soil in spring should cover the stump to the height of 15 feet the first season. One special merit of this vine is that it produces fine effects in a very short time. A column such as is illustrated imparts a stately, dignified effect to a garden, and to produce it is one of the easiest exploits in gardening.

Fig. 2 shows the use of the Virginia creeper for festooning trees on the lawn. Festoons of this character are always pleasing, and are easily produced where there are clear tree-trunks of some height, say 10 feet or up-

wards, and not more than 40 feet apart. It is rarely that we see such attempts at introducing garlands of green in garden ornamentation, but we can assure our readers of their beauty, both from an individual and a landscape point of view. Still the excessive use of the festoon must be guarded against. In planting the Virginia creeper for this purpose, the same course may be pursued as in planting for a column, excepting that from one to three strong vines, set at each tree, in well-manured soil, will suffice.



FIG. 2. FESTOONS OF VIRGINIA CREEPER BETWEEN TREES.

The support for the garlands between the trees should be heavy galvanized wire. This should not encircle the trees, but be attached to a band of iron so formed that it can expand from one side, adapting itself to the growth of the tree.

One of the finest uses to which the Virginia creeper can be put is the formation of screens in a garden where these are needed. Fig. 3 shows a screen separating the back yard and stable from the street, in the case of a home situated on a street corner, the view being from the side street. The opening through the screen in the form of an archway represents the approach to the stable. For the support of the vines forming the screen, nothing is better than coarse galvanized-wire netting, the kind in extensive use for fine fence-making. If this material is not convenient, then ordinary galvanized fence-wire, extended about five inches apart horizontally from post to post, with some perpendicular wires reaching from bottom to top, a foot or more apart and attached to the cross ones, will answer. The posts of such a screen should be not more than 8 feet apart, while 6 feet apart would be better. Assuming that the screen need be so high as 12 or 15 feet, if posts of such a length above ground are not readily procurable, then scantling can be spiked or bolted against ordinary posts, to give the proper height. When finished, the framework should have a scantling extending lengthwise along the top of the uprights to secure shapeliness in the upper part of the screen.

Vines that are to cover the screen should be set about



FIG. 1.—PILLAR OF VIRGINIA CREEPER ON LAWN.

two feet apart, in soil enriched as for the column, and in a few seasons they will form a wall of green 12 feet in height. Such a screen will present a lively, picturesque appearance for many years, with almost no care beyond that involved in getting it started. The soil about the roots of the plants should be kept clear of obnoxious growth, a proper course being to have the grass of the lawn come up quite against the vines. If the hose be turned upon the plants frequently during seasons of drouth, their growth would be much finer and stronger.

Screens or dividing lines of Virginia creeper can be made of any height or breadth. Their use in

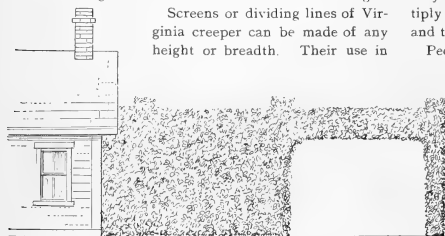


FIG. 3.—SCREEN AND ARCHWAY OF VIRGINIA CREEPER.

place of hedges in gardens is well worthy of consideration. They develop much more quickly, and are cared for with less trouble than hedges. They are also devoid of the air of stiffness which, to the minds of many, is a great objection to close-clipped hedges.

AMPELOPSIS VEITCHII.

The Boston ivy is unexcelled for covering stone, brick or rough wooden walls, and will also readily attach itself to trunks of rough-barked trees like the American elm, cedar, etc. This beautiful creeping vine is entirely free from insects, and is said by all whose walls are covered with it to have a decidedly cooling effect on the interior of the house. There are many fine specimens of this lovely ivy to be seen on private dwellings and churches in the city of Brooklyn. Rev. Dr. Talmage has lost no time in setting this useful plant around his recently constructed, magnificent tabernacle. The edifice is built of rough-faced brick with brownstone trimmings—just what the ampelopsis delights to cling to.

This ampelopsis is of easy culture. It can be grown from cuttings taken from ripened wood early in April, cut in lengths of seven inches, and set five inches deep in a prepared border of deep loam in the open ground. It can also be increased by seeds, started outdoors the first week in May; seed that matured the preceding fall is best. Prepare a bed of light, sandy loam around the wall or object that the ivy is to cover. Sow three seeds together, half an inch deep and about a foot apart in the row, and give water gently when the surface shows indications of dryness. If the situation be in a sunny exposure, shake a light layer of salt hay or loose straw over the whole seed-bed, allowing it to remain on till the seeds sprout and form their first leaves. The shading

should then be removed, and the seedlings fully exposed to the sunlight. All the attention the young plants need is to keep them clear of weeds and the surface of the bed loose. With such attention they will make a growth of from two to three feet the first season, and double their length each year following. Four years ago I started seeds of the ivy as above mentioned; to-day some of the vines are 60 feet high, covering the trunk and limbs of a large American elm, and thus forming a very handsome object. This is the simplest way to multiply the ampelopsis, as there is little or no care involved, and the cost of stock is a mere nothing.

People who own greenhouses can grow strong plants more quickly, as the seeds of ampelopsis may be started in autumn or winter in a box two inches deep, filled with sandy loam. Sow them about their own depth, and place the box in a gentle heat—say 60 or 70 degrees by day, and 8 or 10 degrees less at night. Plants started in this manner, if transplanted two or three inches apart in similar boxes, and grown on until time of planting in the open ground, will make fine, strong, healthy specimens. Remember that though old vines are perfectly hardy, in this tender condition young plants should be gradually exposed to outdoor temperature before setting them out—say May 15. Those who do not care to take the trouble of starting ampelopsis from seeds can buy good plants from florists at reasonable rates. Select healthy plants eight or ten inches long; these will more readily attach themselves to objects they are to cover than larger plants.

Many people say that vines on the walls of dwellings cause dampness inside, but this I cannot believe. The shade of the Boston ivy keeps the sun from heating so intensely the bricks or stone walls of houses in cities, and if landlords would plant it about their houses to ward off the hot sun's rays in the scorching months of July and August, they would be doing a great deal to comfort their tenants, who are much oppressed with the summer heat. This ivy is very accommodating in its habit. It sheds all its leaves in November, allowing the sun to shine with all its might on house walls through the cold, dreary winter, again taking on a beautiful mantle of green foliage in May.

It may be interesting to know that this ivy is closely allied to the grape family, hence its name, ampelopsis. Its specific name, Veitchii, is after James Veitch, a celebrated horticulturist of London, England, who first introduced it into London from Japan in 1868. It is commonly known as "Japan ivy" and "Boston ivy," the latter name from being so extensively used in beautifying suburban homes in the vicinity of Boston. The Boston ivy differs in appearance from its relative, the Virginia creeper, in having three-lobed instead of five-divided leaves, and in climbing by means of root-like clingers all along its stems, instead of by flat discs at the ends of the tendrils. There are other species of ampelopsis, inferior to these, and presenting no special claims to attention.

Brooklyn.

JOHN A. BOYLE.

GRAPES IN CHAUTAUQUA.

NOTES FROM THE FORESTVILLE HORTICULTURAL INSTITUTE.

THE CHAUTAUQUA grape-belt is only about four miles wide, but it extends along the south shore of lake Erie from Angola westward to Erie, Pennsylvania—a distance of 50 miles. Forestville, New York, is at the eastern end of the belt, but the grape-fever is as prevalent here as in the heart of the district. The grape is driving out all other crops, not even apples being excepted, and it seems quite probable that all available lands will soon be covered with vineyards.

The grape-growers about Forestville believe in clean cultivation. No weeds are allowed to grow in the vineyards, even in fall. The vines are trained upon a modified horizontal-arm system. One stem is allowed to grow nearly to the lower wire, and from this, on either side, an arm is carried along the wire. These arms are not tied to the wire, but twisted around it two or three times, and thus securely held in place. Each arm is allowed to bear from two to four canes only; the rest are cut away. The plants are set about eight feet apart in the rows, but some growers have the arms only two or three feet long. These arms are not renewed for years.

The problem of shipping grapes to the best advantage is one to which the Chautauqua grape-growers have given much attention. During the last few years various organizations have sprung up, but they have now all been merged into the one formed in the fall of 1891. It is known as the Chautauqua and Northeast Grape Union. Fully 90 per cent. of the growers in the district belong to it. The advantages claimed for the union are that the fruit can be shipped to market cheaper and quicker than formerly. The union has a general salesman, whose duty it is to distribute fruit to the best advantage, and a general inspector, who examines it before it is shipped. Grapes which do not come up to the required standard of excellence are rejected. All the fruit is sold under the trademark of the union, but in addition the grower is obliged to put his name and address upon each basket, so that if inferior fruit is discovered, either by the retailer or consumer, it can be traced to its source. The growers also require every packer to put his number upon each basket, and thus the entire history of any basket can be easily traced. Such a system should be productive of excellent results.

The Concord is still the favorite grape, and fully 95 per cent. of the plants now set are of this variety. Wine grapes are but little grown. During the Farmers' Institute, held at Forestville September 22 and 23, in a tent provided for the purpose, were exhibited 62 different kinds of grapes, the plates being filled with unusually fine specimens of all the varieties. Norton's Virginia (fig. 1), not often seen here, was especially fine. Figs. 2 and 3,

the Catawba and Niagara, give a fair idea of the character of the grapes produced in this region. The leading exhibitors were L. Roesch, S. S. Crissey, Hubbard & Co., of Fredonia; H. B. Clothier, J. J. Keyes, from Hanover; Henry Smith, and the Messrs. Hamlet & Morrison, from Sheridan.

A number of valuable papers were read at this institute; we give below condensed notes from some of them:

EVOLUTION OF AMERICAN GRAPES.

Professor Bailey, of Cornell University, gave a historical and philosophical sketch of American grapes, the leading points of which follow: "The evolution of our cultivated American grapes is interesting, because it may be said to have arisen under pressure. The standards of excellence in grapes are high. They are the European standards—the outgrowth of centuries of careful cultiva-



FIG. 1.—NORTON'S VIRGINIA.

tion of a fruit which is essentially a dessert fruit and a source of wine. In recent years, as grape-growers have come to understand that our grapes are wholly different in stamp from those of the old world, European standards are in large measure forgotten, but in the early days of

our grape-growing they were almost universally adopted. But even now, what is the meaning of the term 'vinous flavor,' as applied to our grapes, if it is not a comparison with the European or wine-grape? And why do we almost instinctively try to improve the flavor of our grapes by crossing them with foreign blood? Is not the growing American wine-industry a direct competition with the product of the European vine? The standard of quality in American grapes is that which flavors the history of Europe. This high standard has had a marked influence upon American varieties, and is one reason for the great improvement of our native grapes.

"Attempts to cultivate the European grape in the open

air in all the northern and central states have always resulted in failure, although the attempts have been numerous. Only within the last 25 years have we discovered that this failure is largely due to the phylloxera and the powdery mildew—enemies which are native to America, but which do little harm to native grapes. The failure of the foreign grapes drew attention to the wild ones, and the Cape or Alexander grape, which gained prominence about a century ago, was the first of our natives which attracted the attention of vignerons. Not the excellence of the Alexander, but the fact that it would thrive while foreign kinds would not, commended it. It proved a failure for wine, however, and it was not until John Adlum picked up a wilding on the Catawba river early in this century that American grape-culture may be said to have begun. This was the Catawba grape. Subsequently there appeared

Isabella and Diana, and our grape-culture had received a distinct impetus. In 1853 the Concord appeared, and this incident, more than any other single fact, has greatly extended the cultivation of the grape in this country. So far our grapes were pure offspring of the fox-grape, or *Vitis labrusca*, of the eastern states; or if the Catawba has some foreign blood, it is a purely accidental mixture.

"At this time definite attempts were being made to introduce foreign qualities into our hardy but harsh natives. John Fisk Allen, of Massachusetts, showed the first hybrid before the Massachusetts Horticultural

Society in 1854. His grape, which is known as Allen's Hybrid, was a cross between Isabella and the foreign Golden Chasselas. About this time, also, E. S. Rogers, of Roxbury, Massachusetts, was making experiments in the same direction, and his 13 grapes have gained a wide reputation. These grapes are crosses between the wild *labrusca* of New England and selected varieties of the European grape. They all combine excellence of flavor with large size and attractive appearance, but none of them have become popular market grapes, because some weakness is present in each one. The introduction of the foreign or *Vitis vinifera* blood, therefore, was not successful in the production of profitable varieties.

"But the attempt to add *vinifera* virtues to American grapes did not end with the phenomenal labors of Rogers. J. H. Ricketts, a shoemaker of Newburgh, New York, soon took up the work, following largely the lines of his predecessor, except that his American parents were taken from among our best named varieties, as Concord, Delaware, Iona and Clinton. Twenty-eight of Ricketts' have been named; of these, 27 possess American blood, the Welcome being wholly European. These varieties, as a whole, are of remarkably high quality, and it is not too much to say that they constitute the most marked example of the refinement of American grapes. Every variety, like those of Rogers, affords an instructive

lesson in the blending of parentages, but like Rogers', too, they are not market grapes. With the high quality of *vinifera* we have, also, its weaknesses and disadvantages, and most of these remarkable varieties are already lost to cultivation. Adelaide, El Dorado, Highland, Jefferson and Lady Washington have Concord blood, and the last is interesting because one of its parents was the old Allen's Hybrid; but even these have place with amateurs, not with market growers.

"It is not improbable that there may exist among our multitude of hybrids some prizes which have been over-



FIG. 2.—CATAWBA.

looked; for many of them have not been named or introduced, and some of the named varieties have not been thoroughly tested. But it is certainly true that, as a whole, the introduction of the vinifera blood through artificial hybridization has not been a success. This, after all, is not strange. It is the rule in the vegetable kingdom that violent hybridizations give unsatisfactory results, and any hybridization between the eastern American species and *Vitis vinifera* must be regarded as violent. In fact, primary hybridizations between native species have rarely given profitable results. This is well illustrated in Jacob Rommel's seedlings of *labrusca* and the common wild *Vitis riparia*, or river-bank grape. His varieties are characterized by great vigor, productiveness and hardness, but they lack flavor and size of berry. His named sorts are Amber, Beauty, Black Delaware, Elvira, Etta, Faith, Montefiore, Pearl, Transparent and Wilding. If the violence of the cross is responsible for some of the weaknesses in all these hybrids, it would seem to follow that secondary hybridizations would give better results. And in this direction—crossing the best pure native sorts with hybrids of various degrees of attenuation—I look for ultimate success in fusing vinifera characteristics into American grapes. Ricketts' failure in this direction was due to the selection of weak parents, such as the Delaware and Iona. His Golden Gem, which is a union of these two varieties, is of unusually high quality but very difficult to grow; and this weakness is to be expected from parents which are themselves more or less weak.

"Perhaps the most signal successes which have yet come from the introduction of dilute vinifera blood appear in Moore's Diamond, a product of Concord fertilized by Iona, and in the Brighton, also one of Moore's grapes, a cross between Concord and Diana-Hamburg. T. V. Munson, of Texas, whose experiments in American grapes exceed those of any other investigator, both in extent and importance, is following this method with apparent success. In union with other grapes he has used one of Rogers' hybrids—the Lindley—with most gratifying results.

"But hybridizing is not to be looked upon as the only, if even as the chief, means of improving our grapes. It is well known that nature discourages hybridization or violent crossing, while she encourages crosses of a mild type, as between different strains or varieties of the same species. These minor crosses impart new vigor and virility to the offspring, and they often afford a sure but very gradual means of directly improving the salient characters of a variety. I should look for good results if a cross were made between Concords from widely separated localities, even if the offspring should itself prove to be true Concord, for such unions usually give

plants that outdo the parents in growth and productiveness. Crossing between varieties of one species should give a fair proportion of profitable results. This is well shown in the Niagara, which is a cross between Concord and Cassady, both *labrusca*.

"Much depends upon immediate parentage. A strong, virile variety that adapts itself to a great range of conditions may be expected to give more satisfactory and uniform results than one which has obvious points of weakness, and does not adapt itself to various environments. We turn instinctively to the Concord, for this is preeminently the strongest type of American grape. No other grape has given us such a famous brood. There are nearly or quite 50 named pure seedlings of it, among which are such varieties as Worden, Moore Early, Eaton, Hayes, Cambridge, Rockland, Cottage, Colerain, Esther, Lady, Pocklington and Victoria,



FIG. 3.—NIAGARA.

These run through deep, black-purple to red and white, and all of them possess many strong points, especially in vigor and productiveness. As one parent of hybrids and crosses, Concord has given us Niagara, Moore Diamond, Brighton, Lady Washington, Jefferson, Conqueror and others. It has been said that Concord blood has run out, but in the presence of such a family as this, some members of which are very recent, I am forced to conclude that it is the most desirable single stock upon which to breed, or from which to take pure seedlings.

"About 300 varieties of grapes have been named and more or less disseminated in eastern America. Of these,

over one-third are pure labruscas, nearly one-third are hybrids, about one-fifteenth are aestivalis and one-fifteenth riparia, the remainder being of unknown origin. Of the hybrids, over half contain foreign blood. It is interesting to note in the lists which I have before me that four-fifths of our standard market grapes belong to the pure labrusca class and that there is not one market hybrid which is known to be a primary hybrid.

"It is impossible to draw many definite conclusions from the present state of our viticulture as to the most promising means of improving our grapes, but it appears safe to say that satisfactory results are not to be expected, as a rule, from primary hybridizations, and that a considerable attenuation of the specific blood in one or both parents is essential to the best results; that while most of the former attempts to introduce vinifera blood have been only partially successful, there is every promise of satisfactory results in the future by using hybrids which are already in existence; that crossing between different pure stocks, or varieties of the same native species, gives promise of excellent results; and that the employment of the most profitable and virile stocks, either as parents of pure seedlings or as parties to hybridization, as the Concord, is one of the first requisites of success."

SOME POINTS IN GRAPE-GROWING.

George C. Snow, of Pen Yan, spoke upon various points concerning marketing and the management of vineyards. As the grape is essentially a desert-fruit, it is imperative that the fruit be packed honestly and

neatly for market. Especially avoid shipping soiled or dirty grapes, for if the fruit needs to be washed the consumer patronizes another grower in his next purchase. The dirt often comes from the baskets. All cobwebs and dust should be taken from baskets before packing. Store the baskets bottom-side up to avoid dust. Use only the brightest packages. Bleached-wood baskets, holding five and nine pounds, are probably the best. These should be stored in a dark place to keep them white. Mr. Snow thinks that a spring-crate holding from four to six baskets will eventually be used.

As a general thing, summer pruning and pinching, beyond breaking out superfluous canes, is not advisable, because not necessary. Pinching-in the ends of canes causes a lateral growth, which is not desirable.

Nowadays we must leave rather more foliage than we need, in order to provide for the losses occasioned by fungi, which, even when vineyards are sprayed, often curtail the leaf surface considerably. All summer pruning and thinning should be done very early; late pruning is always useless.

Mr. Snow emphasized the importance of looking after varieties with native parentage, and said that, in his experience, those which contain European blood are not trustworthy. Soil, location and exposure are important factors in the vineyard, and it is not true that "any good corn-land is good grape-land." The importance of thorough spraying was also emphasized. Profitable grape-culture now demands it.

Cornell University.

E. G. LODEMAN.

THE TULIP-CRAZE OF HOLLAND.



LOWERS and plants have long served as the emblems of nations, families, and even individuals; they have entwined our history, linking to it many beautiful legends and myths, besides some interesting events that have actually occurred. Thus we have gradu-

ally associated the lotus with Egypt, the stately palm with Judea, the olive and laurel with Greece and Rome. The rose reminds us of England, and the thistle and lily recall exciting incidents which made them the national emblems of Scotland and France respectively. Yet, among all the plants which have gained place in history, only one ever threatened the prosperity of a nation.

If we could have walked through the streets of Amsterdam, Holland, in the spring of 1634, we should have seen in gardens surrounding the palaces of the nobility immense beds of tulips. On the broad window-sills and numerous balconies of the citizens' massive, old-fashioned houses the showy flowers were to be found; and if we could have turned into the byways and lanes, still the little Persian plant would have looked at us from the windows. Tulips grew in gold and silver pots, in tins, and even in old wooden shoes; for in this year the people of Holland were seized with a craze such as the world

had never seen before. "All Holland," says one writer, "was but an immense tulip-bed. Rich and poor, young and old, all were eager to obtain costly bulbs. Men sold their possessions and invested everything in the plant. No family was too poor to have its flower. Tulip-fairs were held and prizes offered for the best specimens, which afterward sold for wonderful prices. One famous bulb, the 'Semper Augustus,' sold for £400, a carriage and two horses; another, the 'Cæsar,' for £1,200."

Comical stories concerning this craze are not lacking. One is told of a northern sailor who returned from a long voyage just when the craze was at its height. Passing into a merchant's counting-house, he saw on a table a valuable tulip-bulb, which he supposed was an onion. Thinking how well it would season some herring which he had bought for his dinner, he quietly slipped it into his pocket, and went away rejoicing. His joy did not last long, however. The owner soon discovered his loss, and quickly traced the theft to the sailor, for whom he immediately instituted a search. The sailor was at last discovered, just as he was finishing his dinner of mild-flavored onion and herring. It was a royal feast, but the poor sailor had to spend six months in jail to pay for it.

Within a few weeks after the mania broke out, and when it was evident that it was increasing instead of

decreasing, a few of the wise, old burgomasters who had not been carried away by the craze earnestly petitioned the government of Holland to take measures to avert the disaster which they felt must inevitably follow when at last a reaction should set in. But all efforts of these men were in vain; perhaps the government was itself carried away, like most of its people, for nothing was done, and things were left to take their own course.

At last the reaction set in, and tulip prices were suddenly lowered. Next day many of the more prudent owners, seeing what was to come, put their whole stock on the market, hoping to sell it before prices should go

down with a rush. This only made matters worse. The increase in supply, of course, lowered prices, and prices went down far faster than they had gone up. Hundreds of people, at least well-to-do, and some of them rich, found themselves ruined, and the mania ended as suddenly as it had begun. But despite the fact that this bright flower brought so much sorrow to Holland, it is still a favorite there, and long rows of the bright red and yellow blossoms border the walks in all the gardens during the tulip season, appearing well suited to the picturesque dwellings to which they lead.

ERNEST LAWTON.

GREENHOUSES AND GREENHOUSE-WORK.

NOTES ON FORCING VEGETABLES.



DURING three seasons the Ohio Experiment Station has carried on vegetable forcing in two greenhouses heated by hot water, each 20x100 feet. The houses run north and south, the north ends being close against the office building. The glass used is 16x24 inches, laid in putty and lapped. Both houses are heated with hot water, but piped differently. In the east house the pipes are underneath the benches, and in the west house above them. The west house is more exposed than the east, which puts the overhead system of heating somewhat at a disadvantage. The slight difference noted in the temperature of the houses is occasioned chiefly by unequal exposure. The tendency of plants to grow spindling is somewhat greater in the house piped overhead than in the other, but the difference is by no means marked.

The crops grown in the two houses have been lettuce, radishes, cucumbers, tomatoes, mushrooms, asparagus and pie-plant. The evidence obtained from observations made upon the growth of these crops has been almost wholly negative, with the exception of mushrooms, which do better in the over-piped than in the under-piped house. The case might be quite different with other crops.

Some experiments made by the Hatch station, of the Massachusetts Agricultural college, show a greater loss of heat and a less uniform distribution of it in the over-piped than in the under-piped house. The results obtained there are decidedly in favor of under-piping, but our observations, as well as those of private growers, indicate that there are exceptions to the rule.

A combination of the two methods has been used with good results, and is to be recommended, especially where mushrooms are grown under the benches. In this case the flow-pipes should be placed over the middle bench and the return-pipes under the side benches. The pipes may be placed under the benches without detriment to such crops as asparagus, pie-plant and dandelion.

FERTILIZERS IN THE GREENHOUSE.

A rich compost is usually employed by gardeners in greenhouses and hotbeds, and the same plan has been

followed in our own work. The question is often asked, "Can compounds containing nitrogen be used with profit in connection with a compost of this character?" Cotton-seed meal, linseed meal, sulphate of ammonia and nitrate of soda were used; the last named was applied upon different plots, both at the time of planting and at different stages of the growth of the crops. In solution it was applied also upon other plots at successive periods. The scope of the experiment was extended so as to include sulphate of potash and superphosphate made from bone-black, and combinations similar to those used in field experiments were also employed. The quantity of fertilizers used upon a given area in the greenhouse was fully double the amount employed in outdoor work of this character, but not sufficient to injure the plants. No special effect from the use of any fertilizer could be detected; the plots were as uniform as though the same treatment had been given to all. The crops grown were lettuce, radishes and tomatoes.

The soil used in this experiment was a clay loam. To fit such a soil for use in the greenhouse, the best method is to compost it with stable-manure, and such is the course generally followed by gardeners. The case would be different with a sandy soil, as the addition of stable-manure, in order to make it friable and to prevent packing, is not so essential as with clay. Less stable-manure would be needed with a sandy soil than with clay, and the deficiency in plant-food could be made up with commercial fertilizers, no doubt with profit. We have taken the conditions as we find them in most gardens and greenhouses, and the verdict of our experiment is that under such circumstances, and with the crops grown in this experiment, there is likely to be no profit arising from the use of the commercial fertilizers named.

SUB-IRRIGATION IN THE GREENHOUSE.

Sub-irrigation was begun in the greenhouses in 1890, in order to test the theory that frequent watering induces rot in lettuce. After the lettuce-plants were transplanted the second and last time, no water was applied to the foliage nor to the surface of the soil, but all water that was required by the plants was supplied from below.

Two beds, one in each house, were fitted up for the purpose. The middle portion of the bed was floored with matched flooring laid in whitelead so as to be water-tight. The ends and sides were also made water-tight. In the bottom of these beds, or benches, three-inch tiles were laid $2\frac{1}{2}$ feet apart, and so arranged that water could be supplied to each row of tiles as desired. A six-inch layer of soil was then placed on the benches, covering the tiles out of sight.

Three crops of lettuce and one of tomatoes were grown in each of these beds. The effect of the treatment upon the lettuce-rot was by no means decided, there being possibly a little difference in favor of sub-irrigated beds. The disease was not very troublesome in either case, and further trial is necessary before anything can be affirmed on this point.

The effect of sub-irrigation upon the growth of both lettuce and radishes was remarkable, but on tomatoes it was less noticeable; upon cucumbers it was decidedly beneficial. The first crop of lettuce on the sub-irrigated bed was 30 per cent. heavier than the crop on the bed treated in the ordinary manner. There was a still greater difference in the second crop, the gain being about 50 per cent. in favor of sub-irrigation. Sub-irrigated radishes came to marketable size earlier and were larger than those grown by the ordinary method. The difference in earliness was more marked than in total weight. Nearly half of the sub-irrigated radishes were marketed before any of the others were ready to pull. Long radishes were benefited more than the turnip-rooted sorts.

When greenhouse beds are properly arranged for sub-irrigation, watering is less laborious than by the old method, as it need not be done so frequently, nor with the same care. The amount of water required is as easily determined by the condition of the soil and appearance of the plants as in the ordinary method of watering.

THE WATER-BENCH.

This is simply a water-tight bench, so named to distinguish it from the soil-bench, and may be constructed on the same plan as the benches used for sub-irrigation, except that for convenience the sides ought not to be more than two inches high. This bench may be of any dimensions, and in any part of the house. It will not usually be found necessary to devote any more space to the water-bench than is required for seed recently sown, and young plants in flats, nor is it needful to have the bench located in the best part of the house. Perhaps the best plan is to construct a water-bench in a part of the house that is to be devoted to young plants, and immediately underneath the first bench put in another of the same dimensions. The second or lower bench can be used for germinating seeds, and little or no light is required. It should be a foot or more below the bottom of the upper bench, so as to give room to pass flats in and out easily.

The use of these water-benches is to water seed just sown and young plants recently transplanted, without the application of water to the surface of the soil. Seeds

are sown in flats containing two inches of soil; these flats are then transferred to the water-bench, and watered by means of sub-irrigation, which is accomplished by letting into the water-bench sufficient water to soak the soil in the flats quite thoroughly, but not enough to make it mortar-like or pasty. Small plants are transplanted into flats and treated in the same manner.

The flats in which seeds are sown may be kept in the lower water-bench until the seeds germinate and the young plants appear, but if kept in a dark place much longer than this, injury would, of course, result. In the upper water-bench young plants may be kept as long as desired, and watered by sub-irrigation as often as need be. This method of watering is satisfactory, and saves labor. The soil can be thoroughly and evenly watered in this manner, and there is no danger of washing out seed, or knocking over young plants. The method is especially applicable to small and delicate seeds.

Out of doors in the summer time we have used successfully a simple shallow vat for watering strawberry-plants in pots and for germinating seed. When surface watering is practiced, it is quite a difficult matter to germinate seeds successfully in summer time, but by this plan success is complete.

CROPS SUITABLE FOR FORCING.

A great variety of garden-crops may be grown in the greenhouse, but the question to be considered first of all is, what crops will pay best for forcing? The markets determine this question largely, hence we find that crops which pay well in one locality may not in another.

Lettuce of the non-heading class, such as Grand Rapids and Simpson, is the most profitable crop for forcing here, with the possible exception of mushrooms. Two crops of lettuce are taken from the beds, followed by tomatoes, with lettuce between the rows. The houses are thus occupied by tomatoes late in the season, when lettuce cannot be grown with profit. The prices received for tomatoes here late in spring and early in summer are nearly equal to those that can be obtained in midwinter, but even if such were not the case, it is better to keep the houses occupied as long as possible. Cucumbers can be grown instead of tomatoes, but are less profitable. Radishes are fairly profitable, the turnip-rooted sorts more so than the long kinds, because of the shorter time required to grow them. Beans can be grown successfully, but are only fairly remunerative. Cauliflower does not pay at the prices that can be obtained here. The space under any of the benches can be used for forcing asparagus, pie-plant and dandelion, at any time during the winter. The prices obtainable for these crops do not make them very profitable, but the entire space can be thus utilized to good advantage. Mushrooms can be grown under benches where there are no pipes. This crop is very profitable when well managed.

Vegetable-growing in greenhouses is an undeveloped industry in this state, and its possibilities are great. Not only may greenhouses take the place of hot-beds to a great extent, but they serve to lengthen the season, and

make it possible to grow crops that could not well be grown otherwise. Still, we would admonish all who think of embarking in the business to make haste slowly, and study their markets carefully. No greater mistake can be made than to produce something that is not wanted in the market, or is out of season for that market, or that must be sold at too high a price for the consumers in the locality.

CALENDAR OF OPERATIONS.

September.—A small sowing of lettuce-seed should be made about the middle of the month. Manure should be secured for mushrooms.

October.—A second small sowing of lettuce should be made early in the month, and the first sowing transplanted. Mushroom-beds may be prepared this month. Near the end of the month, when the lettuce is transplanted into permanent beds, a sowing of turnip-rooted radishes may be made.

November.—Early in the month the second sowing of lettuce will need to be transplanted, and toward the end of the month should be put into the permanent bed, at which time radishes should again be sown. About the middle of the month a large sowing of lettuce for the main crop should be made.

December.—Tomato-seed for greenhouse crops should be sown December 15, and a little later lettuce transplanted.

January.—Lettuce-seed, for plants to be set in hot-

beds and between tomatoes in the greenhouse, should be sown early in the month, and the previous sowing transplanted. Transplant tomato and lettuce-plants about the middle or toward the last of the month. Asparagus-roots, pie-plant and dandelion may be put in under the benches any time during this month or next.

February.—Onion-seed for plants to set outdoors may be sown in flats any time during the month, preferably about February 13. Seed for early tomatoes and cabbages for outdoor planting should be sown the latter part of the month.

March.—About March 15 tomato-plants may be set into permanent beds with lettuce-plants between, and the hot-beds filled with lettuce-plants. Radish-seed may be sown, both in greenhouse and in hotbeds.

April.—Celery-seed may be sown in flats. If not ready to plant out, onions in flats should be transferred to coldframes.

May, June, July and August.—Nothing can be done in the greenhouse during these months, except to gather the tomato crop, but preparations should be made early in the season for the winter's work. Suitable bench-soil must be prepared by composting sod and stable-manure, or in the absence of sod, good garden soil may be used, or even leaf-mold. A rich, friable compost is required for successful work in the greenhouse, and it should be ready for use in due season.—Prof. W. J. Green, in *Bulletin of the Ohio Experiment Station.*

THE WINDOW-GARDEN.

SOME SEASONABLE NOTES ON HOUSE-PLANT CULTURE.



POSITION.—Other conditions being equal, the sunniest position that rooms afford should be given to house-plants. It is true that flowerless plants, or those practically so in cultivation, like the ferns, palms, ivies, dracænas, etc., can dispense with direct sunshine to an extent that would never answer for flowering kinds; but even these will retain their proper color and vigor better if given some sunlight than if kept in a darkened window. On this account, it is a good plan, when plants cannot have considerable sunlight, to treat them to it occasionally for an hour or two, by changing them to a lighter window.

All house-plants do better for being not too close to registers or stoves. One of the most successful plant-collections we have ever known was situated in one end of a large hall that received heat indirectly. Doors from heated rooms opened into it, as well as the outer door from the vestibule, admitting fresh air; and these conditions, together with excellent southern light, made it an admirable place for pot-plants. It is better to have air, like heat, reach the window-collection not too directly in winter. Cold draughts invariably do much injury to plants exposed to them. One reason why

plants usually do well in the windows of a kitchen is because the air of this room is more permeated by fresh air from outside through oft-opened doors, than is that of other rooms.

If the place where your plants are located is cooler than the hothouse from which they were purchased, water them with tepid water for a time. A suitable temperature for the majority of house-plants is from 45 to 65 degrees at night; the higher heat being suited to what are classed in catalogues as hothouse plants, the lower to greenhouse plants.

EXTENT OF COLLECTION.—It is bad policy, especially for beginners, to start the season with too large a collection. Begin with easily grown plants, and proceed to more fastidious ones by degrees. It is a mistake to crowd the space for plants unduly. Let each specimen stand nearly or quite clear from all others even if it be at the cost of throwing out some plants. Half a dozen fine, vigorous, uncrowded plants are much more satisfactory than three times as many crowded, and, as a consequence, ill-shaped and unhealthy ones.

WATERING.—No detail of house-plant management is more important than that of watering. If you cannot appreciate this, visit the commercial plant-grower's houses, and see the trouble taken there to provide just

the right amount of water to each plant. In the first place, the plantsman sees to it that every plant in his charge has drainage provided in the pot, so that any excess of water can quickly escape. Then he watches his collection hourly, and at the first signs of dryness among the plants down comes a shower from his hose or pot. He applies water with a bold dash—that is, when a plant needs water at all, he gives it enough to saturate the soil thoroughly. These are points which the amateur should also observe. The very keystone of success lies in judicious watering.

NOURISHMENT.—At the beginning of the season, be sure that each plant has a suitable soil. If the stock comes from an intelligent florist, he will see to this; but every amateur plant-grower should have on hand a supply of potting-mold, for use when plants are lifted from the garden, and in case repotting is needed. This mold may be had for a small price from regular plant-growers. In buying it, be sure to ask for the best article obtainable.

In addition to good soil, some stimulant will be needed for the plants. Liquid manure, used in a diluted form, so as to have the color of weak tea, and any of the con-

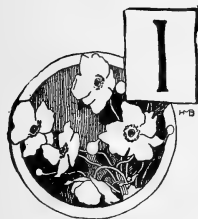
centrated plant-foods, are useful; growers of market-plants bring large and beautiful specimens to the flowering stage without repotting. Liquid manure may be applied in place of pure water; the concentrated fertilizers can be dusted on the surface of the soil, and their strength will be carried down to the plant's roots by the water. Both stimulants must not be given at the same time.

REPOTTING.—Amateurs, as a rule, repot too often, and keep their plants in too large pots. It is of no use to give a plant fresh soil before its roots have pretty well occupied the old. There is a proper time to repot, and that is when the ball of earth is well surrounded by roots, a state that can be determined by tipping the plant out of the pot.

PATIENCE.—One can expect no real success with window-plants by a haphazard course of treatment—now bestowing an excess of care, now neglecting them. It is the constant, daily attendance upon their wants that insures success. The best plant-grower is sure to be one who has the capacity for observing minute details in plant-requirements, doing all that is necessary for them, and doing no more.

BITS OF EXPERIENCE AND PROPHECY

GATHERED AT WOODBANKS DURING THE YEAR.



IMPROVED CANNAS.—Tuberous begonias, gladioluses and the French cannas all bloom at nearly the same season, and after a careful comparison of the beauties and merits of these plants, we predict that the latter will, in time, be even more popular than improved forms of gladioluses and begonias. Of course we are now speaking of the recently improved varieties of

French cannas, such as Madame Crozy, Alphonse Bonnier, Star of 1891, and not of the common seedlings of this strain, which have attracted considerable notice for several years.

For the sake of comparing the two flowers, we show on pages 665 and 666 an outline of a flower of gladiolus, and a flower each of Madame Crozy and Alphonse Bonnier. All are of natural size, and from blooms picked on our grounds August 12. The plants bearing these flowers were set in the open border May 25, without first being started in artificial heat, and since that time have received only ordinary culture.

That the new cannas are larger than common gladiolus flowers will be at once perceived. Like the gladiolus, the blooms appear in a spike, but a gladiolus bulb usually furnishes only one strong spike of flowers, lasting but a short time, while a single tuber of these new cannas will produce a succession of flower-spikes from July until

frost. The plant from a gladiolus bulb is often single-stalked, and, apart from the flowers, is an insignificant affair, while from a canna tuber spring from six to a dozen shoots, each clothed with a number of broad leaves a foot or more in length. During the blooming season the larger shoots are topped by one or more spikes of bloom, each comprising about a score of flowers. Being several feet across, cannas are handsome, stately plants aside from their bloom, but every good-sized shoot is sure to flower, and on every spike from four to nine flowers are open at once. When one spike of flowers fade another follows it on the same stem, some stems producing three or more spikes during a season. The flowers of the canna do not present the regularity of arrangement noted in those of the gladiolus, and this we think is another point in their favor.

The new cannas thus are seen to meet the demand for a bright, handsome bedding plant that blooms all summer, more after the style of the scarlet geranium than of the gladiolus, the chief charge against which is its short blooming season. In striking and tropical effects the geranium, of course, cannot compare with the canna, and—a point of great importance to the amateur who has no greenhouse—the stock of tubers can be wintered in any frost-proof cellar as easily as potatoes, and planted directly in the open ground in May. At Woodbanks we grow a hundred or more canna tubers of various kinds each year, and never think of starting them in heat.

A chief merit of the new cannas we have tried is that they are as hardy and healthy as we could wish, requiring not a particle of nursing or petting to enable them to

grow and look their best, and these are novel qualities for a novelty.

Madame Crozy.—For elegance of bloom this canna takes the lead. The flowers are deep vermillion red, bordered with delicate lines of gold, that give the flower a peculiarly rich appearance. If one wandered amid a wilderness of fine cannas all in bloom, *Madame Crozy* would be singled out with special exclamations of admiration. The plant is robust in growth, and proved last season to be one of the earliest and most constant bloomers among all the cannas on our grounds. These good points have made it popular for conservatory decoration and cut-flower growing under glass.

Alphonse Bonnier has an intensely brilliant crimson color, and so is darker than the last, without the golden border. It is hard to decide which of these two plants

nas, this is a remarkable variety. It deserves cultivation among the best sorts on account of its large, oval, soft green leaves, resembling those of the banana, and its showy spikes of large carmine flowers. The plant is of strong and robust habit.

WINTERING CANNA TUBERS.—After the frosts have browned the foliage, we dig canna tubers, cut away the tops and pack the roots in boxes of dry earth, which are kept in the cellar until spring. In order to bring all the cannas into flower earlier, and thus lengthen their season of attractiveness, the tubers may be started in a hotbed or greenhouse in the spring; but a very satisfactory course is simply to take them from the boxes and plant them in the open ground about the time the Japan quince flowers.

POPPIES WITH BLOTCHED PETALS.—*Umbrosium* and



ALPHONSE BONNIER CANNA COMPARED WITH GLADIOLUS.

should have precedence. *Madame Crozy* has the most beautiful flower, but *Alphonse Bonnier* is freer flowering and more robust in growth.

Star of 1891 was sent out several years ago. It is distinct from the two varieties above named, dwarfer in growth, and does not flower so freely. The blooms are bright scarlet and slightly mottled. It is said to possess considerable merit as a pot plant for spring forcing, to sell when in bloom.

Geoffrey St. Hillaire.—This variety has been in cultivation for several years, and is, perhaps, the best of the dark-leaved, improved cannas. The flowers are a light salmon color and of large size; the leaves are of a rich, dark maroon with a metallic lustre.

Ehemanni.—Although not among the newest of can-

Danebrog, two annual poppies that bloomed for us this year, seem worth noting, because of their blotched petals and irregular form. *Umbrosium* is deep scarlet, with a large jet-black spot near the base of each petal. Usually the flowers are four-petaled, but there is a tendency toward eight petals, and where this number is found, the four inner petals are very narrow and the spots proportionally small. *Danebrog* is a lighter scarlet than the one described, and the blotches on its petals are pure white. In this variety the petals incline to be fringed.

SPRING VERSUS FALL SEEDING FOR THE LAWN.—Our usual experience in lawn-making has been in the line of spring seeding, but a year ago we had a plat of considerable size ready to convert into a lawn in September, and concluded to try seeding at that time. We reasoned that

by getting a good catch from September sowing, the grass would grow off readily in spring, crowding out all the annual weeds that are sure to infest spring-sown grass, and making a sod that by early summer would look as smooth and velvety as that on any old lawn. But the fall-sowing in this instance proved a complete failure. This was due to the drouth, mild though it was, which occurred here in the fall of 1891. Wheat sown at the same date was not injured by the drouth, but this was owing to the difference in covering; the wheat was covered with an inch or more of soil, while the finer grass-seed was sown on the surface and rolled in. From a wheat-grower's standpoint there was no drouth to speak of; from our standpoint we readily drew the lesson that it only takes a slight drouth to injure autumn or any lawn-seeding. Hereafter we shall be more loth than ever to risk losing valuable lawn-seed by sowing it in fall. We are convinced that the best time to sow lawn-grass seed is early in spring. Preparations can be made in fall and if the seed is sown on a frozen surface in March, such a thing as the seeds failing to germinate is almost impossible. April sowings, even, are sure of enough spring rains to almost wholly remove any risk of failure. We do not wish to encourage the deferring of lawn-seeding until May when possible to do it earlier, yet when we have made sowings as late as that month in the north we have usually had fair success, but the stand is less even than from earlier sowings. One year when we sowed a half-acre lawn as late as June 2, showers fell so favorably afterwards that the seeding was a perfect success, and by August the lawn was smooth and green from seed sown two months before. In order not to encourage laggards, let it be stated that this experience was very exceptional. The risk from late spring sowing is not only the probability of insufficient moisture to germinate the seeds that lie on the surface, but a high temperature is less favorable to the growth of grass-seed than is cold weather.

PENDULOUS TREES.—Our nurserymen do not, as a rule, train or graft the so-called weeping trees high enough. This is owing, perhaps, to the fact that the needs of the matured tree are less kept in mind than the appearance of the young tree as sold from the nursery. Take, for instance, the well-known Kilmarnock willow; while this

should never be grafted less than 5 or 5½ feet high, having future development in view, yet we fancy that as a young tree at selling time it is believed to please the buyer's eye better if grafted a foot lower than the height indicated, as it looks more stocky, and buyers like a stocky tree. But this idea is wrong concerning trees of the class named. While trees of ordinary habit grow up and up, so that low forms can later be corrected, those of pendent form are fixed as to the point of branching, and grow down instead of up.

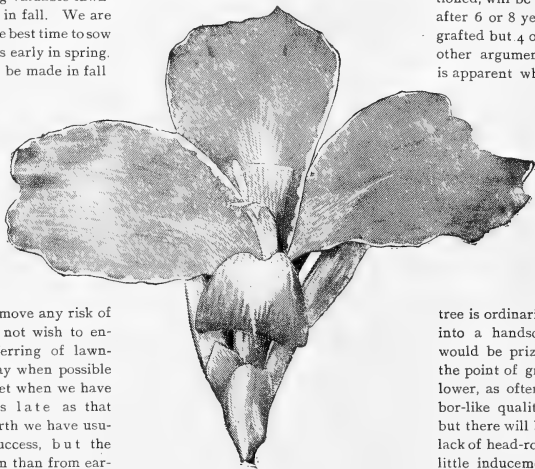
The objection to low grafting of pendulous trees comes in here: A few years after setting any of the rapid-growing kinds, the branches touch the ground and either draggle on the surface, or else must be trimmed away, destroying much of their beauty. Besides this, a Kilmarnock willow, for instance, will not be as well proportioned, will be too low for its width, after 6 or 8 years' growth, if it be grafted but 4 or 4½ feet high. Another argument for high grafting is apparent when we consider the

value of a weeping tree as an arbor. In the case of the Camperdown weeping elm, the weeping ash, the weeping poplar, or even the Kilmarnock willow, if grafting be done 7 or 8 feet high, the

tree is ordinarily certain to develop into a handsome arbor, such as would be prized on any lawn. If the point of grafting is 2 or 3 feet lower, as often is the case, the arbor-like qualities may be present, but there will be such a lamentable lack of head-room that there will be little inducement to sit underneath such trees.

ONION-CULTURE, OLD OR NEW.—

For the sake of comparison, we planted last spring, in the old way, beside our transplanted White Victorias and Prizetakers, a little patch containing a row each of 25 different varieties of onions. Blight made its appearance in August, and killed the promising Prizetakers when less than half grown, consequently the "new onion-culture" was not so satisfactory as expected or hoped for earlier in the season, the yield being at the acre-rate of a scant 400 bushels; yet the crop paid for all labor and expense, and gave a net profit of something like \$60 an acre. This does not take into account some of the culls yet on hand, or the onions consumed or kept for winter use by two families. The blight reduced the yield more than half, but it resulted in our harvesting and marketing the crop from four to six weeks earlier than in ordinary seasons,



MADAME CROZY CANNA.

and probably secured us higher prices than we would have obtained otherwise. The bulk of the Pritzetaker crop was shipped in the same crates described and illustrated in the January number of this magazine. They hold a little less than a bushel each, and sold at \$1. The small specimens were sorted out and shipped in barrels. They sold as "Danvers Yellow," at from 80 to 90 cents a bushel, but might have brought more had they been marketed more promptly.

The White Victorias have been a disappointment to us this season. They proved to be flat onions, and not very large. Perhaps we did not get the true variety, as our Victorias of last year were round and fair-looking onions. In yield and attractive appearance they are far below the Pritzetaker.

In anticipation of an enormous crop of onions this year, and in view of the higher prices often reported for white over yellow and red onions, we had rejoiced in early summer over the fact that we had planted only a limited area with this vegetable, and that a good share of this was in white onions. Notwithstanding the immense sale of onion-seed last winter, and the unprecedentedly heavy planting of onion bulbs last spring, the crop seems to be quite short, as indicated by the unusually large prices being paid for onions now. Yet in the Buffalo markets there has been hardly any sale for large white onions this fall; and we see that we have made mistakes in our estimates in several directions.

Our onions grown by the old method were a flat failure, although they had really the best part of the ground, and this was well prepared, and seed was sown as early as the season and soil conditions permitted. The blight, which found the transplanted onions of considerable size, struck down the seedling onions when they had hardly begun to make bulbs. Consequently, the crop consists of a lot of small bulbs of little value. We find that uniformity in size and appearance is one of the chief advantages of the new onion-culture, and unevenness and small size of a large number of onions (unless the crop is thoroughly thinned quite early in the season) one of the greatest disadvantages of the old one.

The following varieties of onions gave us fairly good bulbs, and yielded best among the 25 sorts grown directly from seed: Spanish King, Pritzetaker, Yellow Danvers, Large Yellow Puget Sound.

This season's experience in handling onions again prompts us to emphasize the necessity of having the crop perfectly dry before putting it in barrels. Even then it is not safe to leave it in tight barrels for any length of time. The onions are liable to sweat and begin a new growth, which would soon spoil them for sale. We run no risk by putting well-cured bulbs up in our slatted, open crates; but we take good care to leave onions intended for shipment in barrels spread out thinly on a dry and airy floor until the time of shipment.

Once we were in favor of planting the same piece of land in onions year after year for an indefinite period. Since the advent of the blight we have changed our mind. It made its appearance last year, later in the

season, affecting only a portion of the patch. We should have taken warning in time, and chosen a piece of ground remote from that then in use, for onion-growing this year. We must now abandon the field, for the blight would be quite likely to kill the onions on the same piece of ground, or on one near it, next year. We have no remedy for this blight, and know no preventive except rotation. As we cannot hope to conquer the enemy, there is nothing left for us to do but to run away from it.

PEAR AND APPLE CROPS.—Pears are a paying crop in Niagara county. The Bartlett is the leading variety, and here does well even under neglect, while paying enormous profits under high cultivation. We have, in earlier notes from the grounds, mentioned the Bartlett orchard of our neighbor, John Hopkins. This orchard, containing less than two acres, but being rather closely planted, is probably the best-paying piece of farm land in the county. The crop—at least all that remained after the windfalls had been disposed of in the local (Niagara Falls) market at good prices—was sold to a canning establishment for exactly \$1,600. In 1891 the fruit from the same trees was sold (for the first time in years) at less than \$1,000; in 1890 it brought \$2,700, and in 1889 as much or more than this year. This is a remarkable record. Every Bartlett orchard in this vicinity yields good returns to its owner, yet we know of none which, for profit, will compare with Mr. Hopkins' two acres.

The reason is not far to seek, and the story bears repeating. Mr. Hopkins has learned the value of manure and clean cultivation. Other pear orchards in this vicinity are either in sod or cropped with grain, etc., and they are seldom manured. Mr. Hopkins manures his two acres heavily every year with old compost, keeps the ground between the trees free from all growth, and the surface mellow and clean by the frequent use of the harrow during spring and early summer. A few trees standing off to one side alone were left in sod, and they show the effects of this neglect by refusing to give the large yields and the unusually fine fruit found on the trees under cultivation, being content to bear the moderate crops of the neighborhood. Notwithstanding heavy dressings of barnyard manure, blight has never appeared to any alarming extent in this orchard. Here is an impressive lesson on the value of high culture, yet it has thus far failed to make an impression upon the non-receptive, average grower.

Years ago, one of our progressive fruit-growers planted an orchard of Clapp Favorite, anticipating higher prices for it than for the Bartlett, on account of its earliness and fine appearance. He has discovered, to his sorrow, however, that Clapp Favorite stands no chance against Bartlett as a market pear. Everybody wants the latter for canning, as it has a flavor and whiteness of its own that especially fits it for this purpose. Clapp Favorite must be picked quite a while before it is ripe, else it will surely rot from the core by the time it gets into the consumer's hands.

Ellwanger & Barry, of Rochester, New York, frequently speak a good word for the Anjou. This is a

good pear; we like it for family use, but it would be folly to plant it for market in this vicinity, when we have such a good sort as Bartlett. Anjou, like Duchess, grows enormously large. To judge from the bearing tree on our grounds, it is a strong grower, having remarkably healthy foliage. It bears every year, too, but only moderate—even small—crops. If we could manage to gather all pears growing on the tree, and sell them at a fair price, this would still be an unprofitable variety. We cannot secure more than half the crop on an average. The pears grow to such large size, and become so heavy during September, that the strong winds, which seldom fail to come in that month, blow off a large portion of the crop, if not the whole of it, as they did this season, long before the fruit is mature enough to be ripened in the house for market or family use.

The apple crop in this section is a complete failure.

We have not seen a perfect apple here this year, and the few scattering specimens on the trees are diminutive, scabby, misshapen and worthless. The Baldwin, however, seems to represent the most dismal failure of them all. Trees in especially protected situations bore a crop of good fruit last year. On our grounds is a young Baldwin orchard of several acres. The trees are vigorous, of bearing age, and have had fairly good treatment, including heavy manuring. They bore a heavy crop in 1888, but have not yielded a bushel of fruit since, this being the fourth year of their complete barrenness. Is it worth while to have these trees cumber the ground any longer? What a difference in the proceeds from a Baldwin apple orchard and a Bartlett pear orchard! In the light of this experience, we should not wonder if people were soon struck with the Bartlett pear "craze," and should begin to grub out their apple orchards.

EXPERIMENTS IN FORCING AND CROSSING TOMATOES.

NOTES FROM CORNELL UNIVERSITY AND THE RURAL GROUNDS.



EARLY all forced plants are subject to many diseases and annoyances, arising from the fact that the enemies, as well as the hosts, are protected by the congenial and equable conditions of the glasshouse. The tomato is rapidly becoming an important winter crop

and its enemies are, therefore, coming into prominence. Two of these troubles—the winter blight and root-gall—are so obscure in their methods that growers often fail to recognize them until the crop is ruined; and as they already appear to be widespread in the north, it has been thought best to call attention to them.

I. WINTER BLIGHT.—The most serious disease of forced tomatoes which I have yet encountered is what,

and it was thought that they were simply worn out. In some of our experiments it became necessary to carry about a dozen plants over the summer, and these were introduced into the house when the forcing season opened last October. From this stock the trouble again spread, and in six or eight weeks it had become serious, and there was no longer any doubt that we were contending with a specific disease.

This blight attacks the leaves. The first indication of the trouble is a dwarfing and slight fading of the leaves, and the appearance of more or less ill-defined yellowish spots or splashes. These spots soon become dark, or almost black, and the leaf curls and becomes stiff, the edges drawing downward and giving the plant a wilted appearance. This condition of the leaf is well shown in

fig. 1. The spots grow larger, until they often become an eighth of an inch across, or even more, and are finally more or less translucent. This injury to the foliage causes the plant to dwindle, and the stems become small and hard. Fruit production is lessened, or if the disease appears before flowers are formed, no fruit whatever may set. In two or three instances, in which young plants were attacked, the disease killed the plant outright, but a diseased plant ordinarily lives throughout the winter, a constant disappointment to its owner, but always inspiring the vain hope that greater age or

better care may overcome the difficulty. Fig. 2 is a graphic illustration of the appearance of the disease. The box contains four plants, one of which is healthy and three diseased. The small plant in the rear died before it reached full stature. It is not known that this disease

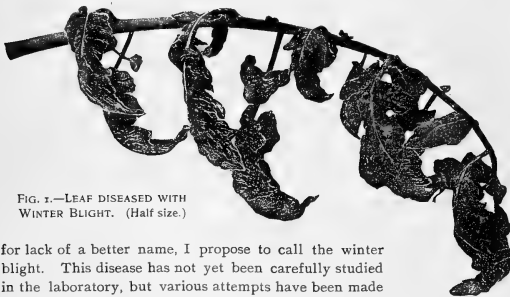


FIG. 1.—LEAF DISEASED WITH WINTER BLIGHT. (Half size.)

for lack of a better name, I propose to call the winter blight. This disease has not yet been carefully studied in the laboratory, but various attempts have been made to check it; and as it is likely to prove a serious disease, the attention of both growers and experimenters should be called to it. It first appeared in our houses in the winter of 1890-91, when about a dozen plants were somewhat affected. At this time the trouble was not regarded as specific; the plants were old and had borne one crop,

attacks the fruit. Fruit-rot appeared on some of the plants, but it was apparently the same as that which attacks outdoor plantations.

It soon appeared probable that the disease is bacterial in origin, and it was at first thought that it is identical with the bacterial potato-blight, and that our plants had originally contracted the disease from soil taken from an infested potato-field; but T. J. Burrill, of the University of Illinois, holds that the trouble is probably not the same as the potato-disease. It was then thought that the disease might be identical with the southern tomato-blight described by B. D. Halsted in Bulletin 19 of the Mississippi experiment station. Specimens were sent him, and it was found that the two are distinct, both in external appearance and in the character of the organism, the germ of the southern blight being a bacterium, while this is a micrococcus.

Professor W. R. Dudley, who has made some preliminary examinations of the diseased plants, says: "I find a species of micrococcus present in limited numbers in the cells of tomato-leaves; in those which were blanched, indicating the earlier stages of this disease, in those blackened by its later development, and also in the diseased fruits. Moreover, the external aspect of this disease—the blackening or blighting of portions of the plants—is such as characterizes diseases occasioned by bacteria in other plants. Nevertheless, the preliminary cultures made did not give any results supporting this theory.

"From microscopic examination of a considerable number of leaves from various sources, and observations in relation to this disease, on winter-grown tomatoes elsewhere, I think that no injurious effects of bacteria will appear, if houses are kept clean, properly heated and ventilated, so that the vitality of the plants will not be impaired, and also if the houses are renovated at intervals."

Various treatments have been tried upon this disease. Our first attempt was thorough spraying with ammoniacal carbonate of copper, but our efforts, although carefully made at intervals, were unsuccessful. It was then thought that treatment of the soil in which new plants were set might be effective, and as our crop was grown in boxes—as in fig. 2—the experiment was easily tried.

All our experiments, however, simply lead us to the conclusion that the best treatment for this winter blight is to remove all diseased plants at once, and if it becomes serious, to remove all the plants and soil in the house and start anew. They emphasize, also, the great importance of starting with new plants and fresh soil every fall. And all our experience thus far has shown that the disease is fatal to success in tomato-forcing, for we lost our crop in an endeavor to treat it.

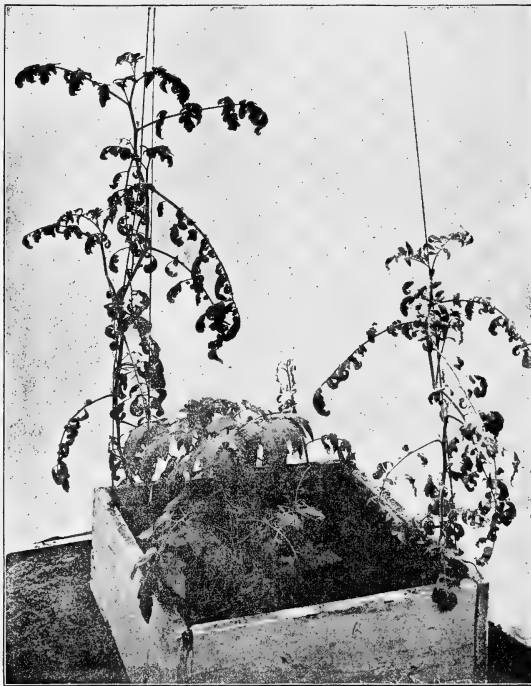


FIG. 2.—THE WINTER BLIGHT. (A healthy plant in front.)

2. COMMON BLIGHT (*Cladosporium fulvum*).—The blight oftenest associated with the forcing of tomatoes appears as cinnamon-brown spots on the under surfaces of the leaves, as indicated by the dot-shaped portions of the leaflet in fig. 3. Fortunately, this fungus is rarely serious. We have had no experience with it, but I see it occasionally in tomato-houses. It is apt to appear in late winter or early spring, often not until the winter crop is nearly harvested. In such cases, the burning of

old plants as soon as the last fruit is off will be the best treatment. If it appears earlier, however, spraying with ammoniacal carbonate of copper is to be recommended.

3. ROOT-GALL.—Nematode injuries of roots have received much study of late, and the attention of growers has been called to them in bulletins and in the press. But there are still very few horticulturists who are aware of the extent to which they infest our greenhouses. Many common plants, as geraniums, begonias and coleus, are subject to their attacks, and the diseased plant—or the soil in which it grew—is often dumped into the dirt-bin, where it propagates the trouble. In the southern states the nematodes are serious enemies to many plants in the field, even to trees, but in the north they confine their attention mostly to indoor plants. This indicates that severe frost is fatal to them, and suggests a remedy in the freezing of houses which are seriously attacked, when this can be done to advantage, as between the crops of winter tomatoes. Nematodes are very minute animals belonging to the true worms, and allied to the trichinæ. These nematodes are a serious menace to tomato-growing under glass. They attack the roots, causing the formation of galls, as in fig. 4. The injury to the root is often much greater than that shown in the illustration. Sometimes the whole root is swollen into one ragged, shapeless mass, strongly reminding one of the club-root of cabbage. The trouble is likely to be worst in those plants which are carried over from the preceding winter. In general appearance, plants injured by root-galls are very like those attacked by the winter-blight already described, save that the leaves do not show a spotted discoloration. The plants become weak and stop growing, and the leaves curl and become yellow and dry, much as if the plant were suffering for water.

The treatment for this disease is to remove the plants and soil, thoroughly wash the benches or boxes with lye, and begin anew. But it would be a great saving of time and expense if the soil could be treated, between the crops, with some material which would destroy the nematodes. This was tried in a small way. Five boxes, each containing four diseased plants, were selected for treatment December 11, 1891. The plants were removed and the soil was treated as follows: (1.) One-third pound of concentrated commercial lye dissolved in a pail of water. (2.) Two pounds of salt in a pail of water. (3.) One pound of quick-lime in a pail of water. (4.) Four tablespoonfuls of bisulphide of carbon poured into holes, which were quickly closed. (5.) The box placed outdoors and allowed to freeze solid.

Clean young plants were set in these boxes after the lapse of four or five days, and the boxes were placed side by side in the tomato-house. One or two of the plants died in the soil treated with lye, and the places were refilled, while three settings had to be made in No. 2, because of the great amount of salt in the soil. Between

each setting the salt was washed out by heavy watering. When the plants were removed, six months afterwards, it was found that all contained galls except those in boxes 2 and 5—those salted and frozen—but upon these no galls whatever could be found. The results were definite and satisfactory, but the experiment was too limited to warrant any general conclusions. They inspire the hope, however, that soils can be treated for nematodes between the forced crops of tomatoes.—L. H. Bailey, in *Cornell University Bulletin*.

NOTES FROM THE RURAL GROUNDS.

CROSSING TOMATOES.—The mode of crossing tomatoes is the same as that of crossing potatoes, as the generative



FIG. 3. COMMON BLIGHT OF TOMATO. (*Cladosporium fulvum*).

organs are much the same in form and arrangement. While, however, it is easy to cross tomatoes because the anthers generally yield more or less pollen, it is difficult to cross potatoes because, in this climate at any rate, the anthers rarely develop pollen.

Tomatoes sometimes cross naturally. There can be little doubt of it. Hence it is that, now and then, a plant of a given variety bears fruit quite different in color and form from the type; or leaves of a different color size or incisions. So, too, the habit of plants may differ from the compact form of the "tree-tomato" to the wide-spreading habit of the varieties now in the market, and it is to such variations—not to artificial crossing—that we are indebted for the Acme, Favorite, Perfection, Optimus, Paragon, and other kinds chiefly in demand at the present time. Professor E. S. Goff gave us a cross between the tree-tomato and the Alpha, and the writer has crossed this cross, but no valuable sort has yet been obtained from it. Professor Bailey has hybridized the currant tomato (*Lycopersicon pimpinellifolium*) with the common tomato (*L. esculentum*). Further crosses and selections may lead to nobody knows or may guess what. The writer's work in this line during the past three years leads him to infer that the favorite kinds of the future will depend upon artificially crossing the best varieties of to-day; by continued careful selection; and then by further crossing the progeny.

If we examine a tomato-flower we shall see that the

stamens (five or more in number) are joined together above, forming a little cone surrounding the style. In the immature flower the head of the pistil (stigma) is below the top of this cone of anthers. Later the pistil lengthens, pushing the stigma through. As the stamens dehisce (open) on their inner surfaces, beginning at the apex, the stigma receives the pollen and fertilization of the ovary follows. If, therefore, we want to cross one flower with another, we must remove this whorl of anthers while green, protect the stigma by tissue paper or something of the kind from other pollen than that we desire to apply, until the stigma is ripe or receptive; then remove the covering and apply the foreign pollen, again protecting it until fruit has set. Our way is to gather flowers from the plant that is to be the male parent, and by the use of a toothpick, or even a pin, scratch out the pollen from the anthers through the line of dehiscence upwards, and apply it to the stigma of the emasculated flower that is to be the mother. Thus performed, artificial crossing is easy enough.

When the stigma begins to ripen it often reaches the top of the stamen-tube, or even beyond it, before receiving pollen from the anthers beneath. Any insect having gathered pollen from flowers of other plants would unavoidably touch the stigma of the next flower visited, and thus cause a cross between them. It is not known that tomato-flowers secrete honey; the writer has rarely seen insects visiting them. Since, too, the stamens do not usually bear much pollen, it is reasonable to suppose that self-fertilization is the rule. Occasionally, however, we find so considerable a quantity of pollen that it might easily be wafted from one flower to another by a timely breeze.

From time to time a new tomato has been introduced, with the claim that it was the result of a cross. This need not be doubted. We do not, however, know of any systematic crossing having been carried on until lately; and we do know that the best kinds of to-day are not the results of artificial crossing. Mr. Livingston's varieties, or selections from them, which have long held the first place in the market, were the outcome of selection only, as he himself freely admits. The results of THE RURAL NEW-YORKER'S work in tomato-crossing during the past three seasons is so encouraging that it will be hopefully and vigorously continued.

TUBER-BEARING TOMATOES.—It occurred to the writer

last year that the tomato might possibly be induced to become a tuber-bearing plant. He reasoned that the tomato-berry or fruit is structurally the same as the potato-berry or fruit; that the wild potato bears very small and few tubers, while it bears quantities of fruit; that cultivation alone has reversed this, causing a maximum amount of tubers and a minimum amount of fruit. Accordingly, several tomato-plants set out last May were disbudded as soon as the buds appeared. The plants have

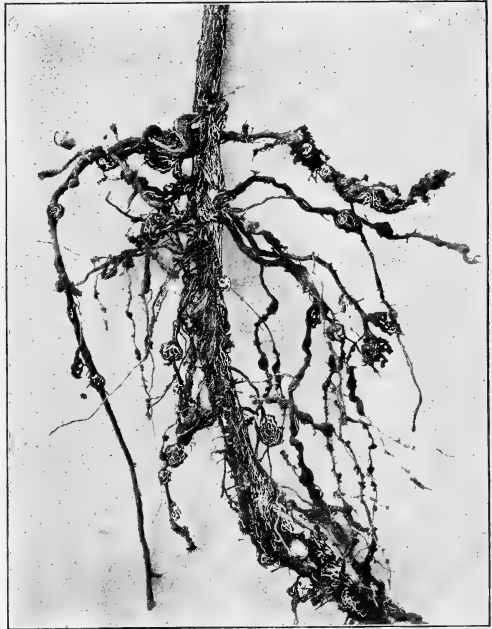


FIG. 4.—TOMATO ROOT-GALL.

grown to twice the usual size of those allowed to bloom and bear fruit. The effect of this experiment on the roots is not yet known. Probably such plants will have to be propagated by cuttings through several or many seasons, never allowing them to bloom, before it can be definitely decided whether the tomato may or may not be forced into a tuber-bearing plant. The suggestion is offered to our station-experimenters for what it may be worth.

A FLOWER PRIEST OF THE BOGS AND MARSHES.

"Jack-in-the-Pulpit
Preaches to day;
Come hear what his reverence
Rises to say,
In his queer little pulpit
This fine Sabbath day."

—WHITTIER.

TO THE delighted readers of a certain department in *St. Nicholas*, Jack-in-the-Pulpit dispenses wisdom every month, and all who will seek out the little hermit-missionary down among the lush grasses bordering the boggy places where he makes his home will find him equally kind. Whittier's quaint little poem has well described him, for

"Green is his pulpit,
Green are his bands,"

And the canopy above him is richly striped with black, brown and green. Doubtless Whittier well knew when himself a "barefoot boy with cheeks of tan" all about

"Where the whitest lilies blow,
Where the freshest berries grow,
Where the groundnut trails its vine,
Where the wood-grape's clusters shine;"

and stood with bare toes sinking unheeded into the warm, oozy, black earth, while he held this curious arum flower in his small brown palm and peered at it with sharp, bright, boyish eyes, for Whittier was born a naturalist, or he could never have been such a true poet of nature.

In order to see a Jack-in-the-Pulpit flower, William Hamilton Gibson's "Sharp Eyes" are necessary, for Jack is either so exceedingly modest or so sensitive to heat that, besides his striped canopy, he has taller tri-parted leaves spread out between him and the sun. The knob-like root beneath him is very acrid and bitter, so that if Whittier set his sharp, white teeth into it in eager curiosity or search for knowledge when a boy, he must have made a wry face.

The spathe-canopy is a rich green when it first unfolds, and all the markings are white; but as it grows older the tints change and deepen until we have an oddy-marked flower that glistens, when spread out in the sun, with many of the changing colors one sees on a dragon-fly's gauzy wing. After this spathe has withered, and hangs like a furled flag about Jack in his old age, few people expect to see an after-glow more beautiful than the plant's blossom; but soon the green berries that formed the preacher's pedestal begin to brighten, and when he topples off, a spadix covered with gleaming scarlet ber-

ries shines as a memorial of his ministry among the grasses. "Berry nubbins," I have heard children call them, and truly this club of thickly set berries adhering closely to one common stem, resembles nothing so much as a small red nubbin of Indian corn, with this exception, that the surface of the berries is shining and waxen. They retain their beauty and remain unwithered a long while. I have some in a basket of grasses, all cut a year ago, and the berries are as bright as when I gathered them one cold November day.

Like every well-known flower that is dear to the heart



JACK-IN-THE-PULPIT. (*Arisema triphyllum*.)

of the great public, Jack-in-the-Pulpit has many common names, "Indian turnip" being perhaps the worst.

Learned botanical folk call him *Arisæma triphyllum*: sub rosa, this is not much better, with the exception that it does not savor of vulgarity. Our flower's relationship to the queenly calla is perceived at once by the family likeness, but I suspect, too, that he has some poor kin, among the lot a wild cabbage, of which we will not speak.

I have seen the arisæma planted in damp garden corners, in rockeries, and where it would catch the mist from fountains. In all these places it seems to grow well, and at all times of the year, there is something bright, curious or attractive about the plant. But when the root is set in too rich soil, all the beauty of the strangely painted blossom becomes lost in odd contortions.

Now, when the north winds begin to blow and "November's sky is gray and drear," the frost pencils that paint the arum berries red blanch its leaves to soft, white, silken tapestries, that rustle and drape themselves like fine gauze about the red, gleaming berries. Is this a new

surprise or a shroud? Howbeit, Jack's sermon is almost finished for the year.

"So much for the preacher,
The sermon comes next;
Shall we tell how he preached it,
And where was his text?
Alas, like too many
Grown-up folk who worship
In man-bulld churches today,
We heard not the preacher
Expound or discuss;
We looked at the people
And they looked at us;
We saw all their dresses,
Their colors and shapes,
The trim of their bonnets,
The cut of their capes;
We heard the wind-organ,
The bee and the bird,
But from Jack-in-the-Pulpit
We heard not a word."

N. C.

L. GREENLEE.

THE CORNELL CHERRY OR DOGWOOD.

NATIVE AND FOREIGN SPECIES.

THE SPECIES known as *Cornus florida* is, perhaps, the most interesting of all the dogwoods. It is said that forests on the American side of the Gulf of Mexico, "in May, are white with its large, conspicuous flowers, sometimes occupying tracts of many acres exclusively, covering them with an almost unvaried whiteness before the leaves of the trees are put forth." In the colder climate of New England it blooms a month later, and is found only in isolated clumps or singly, among other shrubs or trees, the snowy whiteness of its flowers contrasting well with the surrounding green.

One would be likely to take the large, spreading involucre of the cornus for the flower, and the tiny florets for a collection of stamens; but each perfect flower has a calyx composed of four tiny segments, four oblong petals and four stamens, with a slender style and flat stigma. The involucre is also in four parts, which are inversely heart-shaped, and notched at the end. The little florets ripen into a bunch of bright scarlet berries, rendering the shrub nearly as conspicuous an object in October and November as it was in springtime. The young branches are marked with irregular, longitudinal lines; the leaves are ovate and opposite—only in *C. alternifolia* do we find them alternate. But even this is not a genuine departure from the rule, as some of them are imperfectly whorled and mixed with those which are opposite. Not being aware of this peculiarity at one time, I found some difficulty in analyzing a specimen. This departure from certain set rules often mystifies the young botanist; therefore, too much can scarcely be said in favor of close observation.

The branches of *C. alternifolia* spread from the top, making a somewhat flattened summit. The bark is greenish, with warty streaks, and the leaves are oval and

hoary beneath. The flowers are buff-colored, small, and arranged in irregular cymes. Its purple berries give to this variety the name of purple-fruited cornel.

C. paniculata, or the panicked cornel, has white berries succeeding small, pure white flowers in many convex cymes. This shrub grows perhaps ten feet high, and is found in low woodlands, or thickets upon river banks.

The cornel known as the red osier takes its name from its smooth, slender branches, which are always red in winter. It grows in clumps in wet places, and, I suppose, receives its specific name, *stolonifera*, from the fact that it multiplies freely from subterranean suckers or stolons, from which erect stems shoot up. The flowers are white, and followed by blue berries.

C. sericea, the silky cornel, is sometimes called by its Indian name of *kinnikinnik*. It has purplish, spreading branches, with red shoots, ovate leaves silky beneath, yellowish flowers and bright blue berries. *C. stricta* is found only in the southern states. It, also, has blue berries, and the flower-anthers are of the same shade.

We must not forget our low cornel, or bunch-berry, *C. canadensis*. It cannot be called a shrub, however, as its height seldom exceeds eight inches. Wilson Fogg, in his "A Year among the Trees" says "it may be compared to a flower-cut off with a single whorl of leaves, and then inserted in the ground. You might suppose that the large tree cornel was buried, and that these little whorls, with their flowers, were peeping up through the ground from the branches beneath. At some distance they are easily mistaken for wood anemones, though on closer examination no resemblance is apparent. The flowers are very showy and attractive in pastures and woods, and produce in autumn a round and compact cluster of scarlet berries, which are palatable and wholesome."

The branch of *Cornus Kousa* illustrated below was drawn from a shrub recently exhibited by the Messrs. J. Veitch & Sons, and honored with a first-class certificate. The picture is taken, by permission, from *Gardening World*. The plant was originally introduced from Japan in 1847, under the name of *Benthamia Japonica*, and although not so well-known as *B. fragifera*, it is probably the hardier of the two. The genus has long since been merged in that of *Cornus*. The specific name *Kousa* is doubtless of Japanese origin. In its native habitats, the mountains of Kiusin and Nippon, this shrub is found at elevations between 2,000 and 4,000 feet. In England it flowers in June. The shoots terminate in

a capitate inflorescence surrounded by four large large, ovate, white bracts, the whole of which to the uneducated eye appears like a single flower. The little roundish pieces in the center are all separate flowers, which are followed by fruits that grow together in a mass resembling a strawberry, as in *Benthamia fragifera*. The fruits of *Cornus Kousa* are yellowish red. The leaves are ovate, and drawn out to a long, slender point. Their arrangement is somewhat peculiar. The stem ends in a single inflorescence, on each side of which is a leaf. A short shoot arises from the axil of each of the latter and bears a single pair of leaves, so that six of the latter are arranged round each inflorescence.—S. E. KENNEDY, R. I.



CORNUS KOUSA.

AN ELEGY FOR WHITTIER.

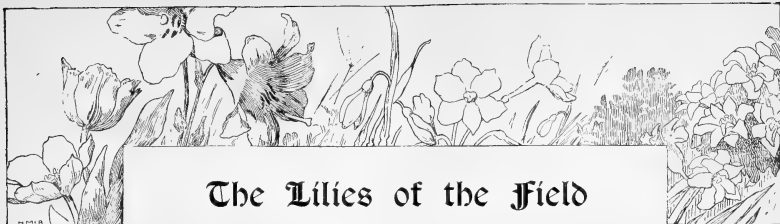
In vain for him the buds shall burst their shield,
And chestnut-leaves their tiny tents unfold;
In vain the early violets dot the field:
His heart is cold.

The rose no more shall meet his ardent gaze,
Like tender blushes of the maiden June,
Nor summer birds repeat for him their lays—
He bears no tune.

Full-breasted Autumn, for the lusty throng
The harvest-feast shall spread with liberal hand;
But he no more shall join their harvest-song,
Nor understand.

When the faint pulsings of the earth shall cease,
And on her naked form the shroud be spread,
He, like the snow-bound world, shall rest in peace,
For he is dead.

—WALTER STORRS BIGELOW.



The Lilies of the Field

PLANTED FOR SPRING BLOOM.

After October 20 in this latitude, the summer bedding-plants will no longer be an ornament to the garden. Old ones should be pulled up, and the long, or straggly ones chopped up and put away to mix with leaves for the protection of the bulbs during winter months. After the bedding-plants are taken off, the beds are raked over and covered with about 4 inches of thoroughly decomposed stable-manure and spaded in to the depth of 6 or 7 inches. If the fertilizer is placed at that depth, the bulbs will do better, and great care must be taken to mix it all through the soil, as leaving it in heaps here and there through the beds will cause the bulbs to grow unevenly.

After spading, the beds are left rough for a week or more, to allow the soil to sweeten up and foul air to pass off. They are then neatly raked over and marked for the reception of the bulbs. I plant hyacinths three inches below the surface of the bed and five inches apart; tulips two inches deep and four inches apart; crocuses one inch deep and three inches apart.

When the bulbs are all planted, let the beds remain uncovered until the ground is well frozen. This prevents rats, mice and moles from burrowing in the beds, which they often do without the owner becoming aware of it until he discovers his loss. I have followed this precautionary practice for years, and have always succeeded in keeping these troublesome little animals out of the beds. Many people insist on covering the beds immediately after planting, and there is just where they invite failure. Let it be understood that it is not altogether cold that we must guard against, but more the sudden thawing and freezing, which is highly injurious to the bulbs. When the beds are frozen, they should be covered over to the depth of four inches with leaves, straw, salt-hay or sawdust, and the covering left on until the second week of March. Then, as it thaws out, the covering can be removed by degrees. Through the winter it is well to see that whatever material we have used for protecting the bulbs is not blown off by strong winds; in such cases the beds need more covering. Should this point be neglected, the bulbs will send up weak and feeble flowers.

BULBS FOR VASES.

Thousands of vases standing upon lawns remain empty all winter. They might be filled at small cost with either hyacinths or tulips, and thus add a charm and cheerfulness to the home in early spring. In planting vases with bulbs, be sure they have perfect drainage. Let there be openings sufficiently large to allow a free escape of water

at the bottoms of the vases. Over these openings place two or three inches of broken crockery or charcoal, and next a layer of moss or shavings, to keep the soil from clogging the drainage, in which case the earth in the vase would soon become sour, and the bulbs diseased.

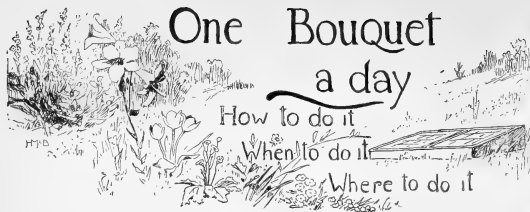
Soil for bulbs to be grown in vases should consist of equal parts of thoroughly decomposed horse-manure, turfy loam and fresh-water sand. The bulbs can be planted two or three inches apart, so as to form a good, solid mass of bloom. Protect the vases with four inches of clean straw, put some bagging over the straw to keep it in place, and tie it neatly around the stems of your vases. Uncover the vases at the time recommended for uncovering the beds. When the bulbs are in bloom they need water at least twice a week. Be sure to soak the soil thoroughly, as the plants, when in flower, delight in plenty of moisture at the roots. They will also need staking. Galvanized wire of sufficient strength to keep the flower-stalks in place is much neater and better than sticks, and will last for years, if put away carefully when the bulbs are out of bloom.

When bulbs in the vases have ceased flowering they can be taken up, placed in some shaded spot, and lightly covered with soil. If no such spot is convenient, plant them in a sunny one and shake a little straw over them, taking care that it does not lie heavily atop. After a rain it should be shaken up to admit air and prevent rotting. When their leaves have all dried up, clean the bulbs off nicely, place them in bags or boxes and set them in some cool, airy place until needed again for planting in the fall.

Careful attention to details in bulb-culture will always repay the gardener. Dutch bulbs need not "run out" in our American soil and climate, if we tend them carefully and sensibly. Indeed, commercial bulb-growing is being undertaken in a number of the southern Atlantic states, and glowing reports of success come from the bulb-farms there. Some of these localities probably will soon be as famous for fine tulips, hyacinths and narcissus as Long Island is for superior gladioluses. It is argued that our home-grown bulbs are less subject to disease than imported ones, that there is little climatic change to bewilder them and impede their growth, they can be sold at more popular prices, and are as solid and heavy as those that come from old Holland. What is there that we cannot do better, or grow better in America than anywhere else, if we only try?

Brooklyn.

JOHN A. BOYLE.



FLOWERS FOR THANKSGIVING.

Thanksgiving Day ought to mean much to gardening folk, and their very biggest and bonniest bouquets be placed upon the Thanksgiving dinner-tables. After all the scrambling to get tender plants into the house before frost, the storing of roots in frost-proof places, the pruning and planting and protecting to be done outdoors, the gardener well deserves to be feasted, and should give thanks—that it is all over for the year.

PLANT-HARDHOOD.

We crowd too many plants under shelter that, if rightly planted and well protected, might live over winter outdoors. Professor Massey's notes, in Questions Asked and Answered, tells how easily this is done in the south, and it seems that even up in cold Maine, carnations and English ivy, two favorites for all sorts of bouquet and basket-work, thrive under such treatment. This is what a practical Maine gardener says:

"Many plants not usually considered hardy may be wintered out in Maine, if they are only set in the right place. This is on the north side of a building, where the winter sun will not start them into premature growth. In Portland, and even north of here in Canada, the English ivy will live in the ground all winter with such a position, and with a few evergreen boughs to further protect it. Carnations that have been in the ground all summer, and have not yet bloomed, will usually winter well in this climate with some protection of leaves and boughs, and so often will old plants. Though these old plants may appear to be dead in the spring, if cut back within an inch of the ground they will send up new shoots in a week or two, and grow and blossom, though they will not be so vigorous as those young plants that kept all their leaves alive."—D. LAWRENCE, *Maine*.

VERBENAS FOR THE WINDOW.

I never fancied the verberna for a window plant. It is apt to be too sprawling, and in my hands does not bear leaves or flowers enough to be very ornamental, though in beds on the floor of the greenhouse I have had it in bloom nearly all winter. But the verberna lasts quite a while after cutting, and is so bright and pretty for low dishes of flowers or flat bouquets that it should have a good trial, and it seems that this same Maine correspondent has been more successful with it than I have:

"Chrysanthemums and cosmos will supply plenty of flowers for Thanksgiving Day, and numbers of other plants in the window will then be bright with bloom, but we

must look ahead. October last or November first is a good time to prepare verbenas for early spring blossoms. Last fall we filled a window-box with earth, took cuttings from verberna-plants that in summer had borne the finest blossoms, and inserted them in the earth, pressing it firmly about their stems. This box was placed on a piazza on the southwest side of the house. Not much watering was required, the temperature being so cold, and by the time freezing weather came more than half of the cuttings had rooted. Each one was given a 2½ or 3-inch inch pot and set in a south window close to the glass, so close, indeed, that the frost sometimes glued their leaves to the panes. Here they spent the winter, save for the time occupied by their weekly bath, and one or two temporary retirements to a table on nights when the mercury went below zero. In March they began to bloom, and such large and bright flowers are seldom seen in an outdoor bed."—D. LAWRENCE, *Maine*.

GRASSES.

Have we anything prettier or daintier in the plant world than grasses? Their slender, feathery stems and plumes add fairly-like grace to any arrangement of flowers, toning down with a mist of pale green, pink and brown tints any too gay combinations. Many people grow fine grasses in their borders, but few think of growing them in windows, to mix with cut-flowers in winter. They are humble unexacting tenants, and have been persecuted so long that with the surprise of cultivation they stretch up into eager growth. It is better to grow them in 5 or 6-inch pots by themselves, to preclude their old habit of poaching. As they grow tall, if they bend too much, four light, long twigs set by each plant, with a thread about the top, will keep them in order. *Agrostis nebulosa* and *pulchella*, *Brixa maxima* and *minor* and some species of *lagurus* and *bromus* are fine for this purpose. Or, suppose you take up any pretty, tall-growing grasses with feathery heads that you find outdoors this fall, and try growing them in the window.

BULBS AGAIN.

We gardeners could not keep house without bulbs; there is always something to do to them or with them. In "Lilies-of-the-Field," Mr. Boyle tells how to plant them outdoors for spring bloom, and this reminds us that it is time to bring potted ones from the cellar up into light and start their buds for Christmas bloom. Roman hyacinths and freesias are sure holiday bloomers.



INVITATION TO READERS.—We want short, practical notes on cultural methods and devices, and sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc. Therefore, for any available article occupying a half-column or so of space, or for any sketch or photograph from which an acceptable engraving can be made, a year's subscription to this magazine will be given. Please always so specify when contributions are sent in under this offer.

I. LITTLE TWIGS.

PROTECT tender and half-hardy plants.

PTERIS SERRULATA is a fine fern for the window.

ASPARAGUS-BEDS.—Coat them heavily with manure.

TRADES-UNIONS AMONG GARDENERS.—Practically there are none.

THE BLANCHE FERRY SWEET PEA deserves all its popularity.

THE MANILA HEMP-PLANT likes soil composed of decayed vegetable matter.

PROPAGATING RHODODENDRONS is no fit task for an amateur. Buy them.

THE TREE FORM does not suit shrubs like the common lilac, snowball, etc.

PLANTS TO GROW UNDER TREES.—Do not overlook trilliums and hepaticas.

TREE-FROGS.—An English gardener keeps them in his greenhouse as insect destroyers.

CONIFERS are mountain rather than valley trees; they do best in drained soil.

WILD FRUIT.—It is reported, on good authority, that 60,000 bushels of huckleberries are used annually in New York.

CHRYSANTHEMUM SHOWS.—Publicenthusiasm will wax warm over them this month, and it really seems quite justifiable.

EFFECTS IN AUTUMN FOLIAGE, as well as in spring and summer bloom, should be studied while planting trees and shrubs.

SALPIGLOSSIS AND SCABIOSA are two handsome old favorites that are very unjustly neglected now-a-days. They are annuals of easy culture.

MONBRETIAS.—These early fall-blooming bulbous plants also fail to receive due attention. They impart warm and delicate touches of scarlet to the border.

CANTERBURY BELLS with six or seven points at the edge are much larger and handsomer than the old five-pointed ones. Why cannot florists give us a fixed strain of this sort?—ADELE.

POWDERED LIME has been tried as a preservative for fruits and vegetables, apparently with the best of success. Simply stratify the lime and the articles to be preserved.

THE FRUIT INDUSTRY OF CALIFORNIA.—There are in this state 17,649,765 fruit-trees, not counting those of the orange and lemon groves. The area devoted to grapes extends over 168,364 acres.

A WOMAN LANDSCAPIST.—England can boast of a woman, a Miss Wilkinson, who is a most successful landscape gardener. Her services are in steady demand by private parties who wish to have parks and gardens laid out.

CLEMATIS DAVIDIANA.—Do people who like porcelain-blue hyacinths know what a pretty plant this is? Such odd clumps of blossoms and buds, and so many of them, and they are sweet as the four-o'clocks!—ADELE.

COPPER LABELS.—They are made from very thin sheets of metal, and can be written upon with a pointed piece of wood or pencil, leaving the name permanent. These labels are much valued by some of our practical gardeners.

SUMMER BLOOM FROM LILY-OF-THE-VALLEY.—Messrs. Strauss & Co., of Washington, D. C., retard lily-of-the-valley roots by the cold process, and bring the plants into bloom in summer. They expect to handle half a million pips for summer bloom the coming season.

THE REQUIREMENTS OF PRUNING vary somewhat, according to the kind of tree; we prefer low training for all trees. The pruning should be done each year, so that no necessity may arise for cutting large limbs. Keep the head of the tree well balanced, cutting limbs which may be superfluous.—LUTHER BURBANK.

AN ENGLISH WAY OF KEEPING FRUIT.—Thoroughly dry a quantity of sawdust. Roll up sound, perfect fruit—bunches of ripe grapes, tomatoes, etc.—in paper, and pack it in boxes, filling spaces with the sawdust. Then wrap the box in newspapers, and keep it in a dry, cool room.

FALL BLOOM FROM ROSES ON MANETTI STOCK.—An English rose-grower points out that hybrid perpetual roses budded on manetti stock give less bloom in au-

turn than those budded on briar stock or on their own vigorous, as manetti stock ripens so early that a late growth vigorous enough to incite fall bloom is seldom obtained.

CANNING GRAPES.—Crush, scald and rub the ripe fruit through a sieve. This saves all the substance of the fruit that is good, and it will keep as well as jelly. Use sugar, and finish cooking the same as for jelly. Jelly made of half-ripened grapes is an excellent addition to mince-pies, but is too sour for other uses.—ADELE.

SUIT PLANTING TO THE CLIMATE.—In my judgment the cardinal principle in planting our gardens and lawns is to secure the best selections of indigenous plants, shrubs and trees, or such as may readily adapt themselves to our latitude and to their surroundings, else our cultivation may cost too much, and prove no culture at all in the end. For a cold climate select hardy plants.—EDWIN WILLITS.

TO KILL APHIDES ON 'MUMS.—Bring some tobacco-stems from a factory, crowd them tightly into some deep vessel, and fill it with water. Let the stems soak for 10 or 12 hours, and then spray the liquid upon your chrysanthemums. It will kill the flies every time, and the plants will not be troubled with them again. This tobacco-tea is also a remedy for the green aphid that infests roses.—H. R. RIDGEMAN, *Ind.*

NEW SWEET-POTATOES.—Gen. Grant is well worth trying in the north. It is of large size and fine quality, cooks dry, and is extra early. The vines grow stocky, but do not run over the ground, like other varieties. They grow well where Nansemonds and Jerseys are a failure. The Early Golden Yam also does well in the north. I have raised some of first-class quality that weighed three pounds apiece.—MAYFLOWER, *Ohio.*

SELLING PRODUCE AT HOME.—In most cases it is a mistake to sell produce from the garden cheaper than from the market. We make regular trips to market, and have regular hours to prepare the load, so that it is done systematically and at little expense. Usually, when purchasers come to the garden the help is employed at other work, which must be left waiting until a few cents' worth of this or that has been gathered, at greater cost than that of the vegetables sold.—E. BRAYTON.

FALL-SOWN PHLOX DRUMMONDII.—Some new ground, a sandy loam never before planted, was at my disposal; and late in the fall, after it had been fertilized, spaded and raked smooth, I sowed it with *Phlox Drummondii* in crosswise rows. The plants appeared as soon as the ground began to grow warm in spring, and soon completely hid the brush laid between the rows as a support. This bed was a mass of bright color long before plants from spring-sown seed were large enough to bloom.—ADELE.

HARLEQUIN BUGS.—Prof. Comstock is quoted in *The Rural New-Yorker* as saying that the harlequin bug, so troublesome on cabbage here, has not been successfully attacked by any insecticide. In my experience here, I have found that kerosene emulsion will destroy some of the bugs and drive the remainder away, and if

persistently used will prove effective in protecting the plants. In a late period of growth I would not use it, but depend upon hand-picking, for the insects are less numerous later in the season, and there might be disagreeable remains of the emulsion left upon the harvested crop.—W. F. MASSEY, *N. C.*

WOODBANKS, as all regular readers of *AMERICAN GARDENING KNOW*, is the home of the editor, and is located at La Salle, on the Niagara, in New York state. On its 13 acres grows one of the most extensive collections of hardy trees, shrubs and plants to be found in America. During two weeks recently spent among the Adirondacks, the editor did not discover more than 20 growths, not including mosses, lichens and fungi, that were not represented on his own grounds. Twelve of the most attractive of the 20 sorts were conveyed to Woodbanks and planted there.

II. THRIFTY SAPPLINGS.

Gardening, the just-started paper, owned by J. C. Vaughan, W. Atlee Burpee and other seedsmen, is a very pretty sheet, and does full justice to the well-known practical ability of its editor, Wm. Falconer. It is under the same business management that has made the trade paper, *The American Florist*, a success. It is a great pity, however, that such a sheet could not be run without any trade connections. However, all these papers, run directly or indirectly in the interests of seedsmen and nurserymen—*Mayflower*, *Vick's Monthly*, *Gardening*, *Floral Guide*, *Success With Flowers*, etc.—help to spread a love of gardening among the people, and so are productive of ultimate good.

Trellis for Dewberries.—I take stakes two or three feet long, and drive them into the ground about half their length, three feet apart, and across the dewberry rows. Scantlings (2x1½ inches is large enough) 10 or 12



TRELLIS FOR DEWBERRY-VINES.

feet long are nailed along the tops of the posts, and cross-pieces about two feet apart are nailed upon these. Any light material will do for the trellises. Train the vines over them and put straw underneath to keep the weeds down.—T. CHALMERS FURNAS, *Ind.*

When Doctors Disagree.—One of the peculiar things about horticulture is the way in which authorities in any department will differ in their choice of best plants of a certain class. For instance, at the recent florists' convention two able rosarians were asked to name the "12 best" monthly or everblooming roses. The gentlemen reside in nearly the same latitude, one of them in New York state, the other in Indiana. But three varieties of roses were named in both lists—Agrip-

pina, Malmaison and Clothilde Soupert. Without doubt each expert would have endorsed as good all the roses on the other's list, but he could not include them among the "12 best."

Outdoor Roses.—Plant roses in the richest bed you have. You can hardly give them too much decayed vegetable and animal fertilizer, or keep them too clean of weeds and insects. If thoroughly watered just before blooming time with whale-oil soap dissolved in lukewarm water, insects will give little trouble. Give the plants also, once a week, a pot full of warm water in which a tablespoonful of nitrate of soda has been dissolved. Keep full-blown roses picked off, as they exhaust the plants. Roses may be set in fall in climates having mild winters. Protect them during winter by pegging down and covering them with straw, leaves, evergreen boughs or soil.—S. S. STORY.

Tree Expert and Lawyer.—Some time since a witness in court was testifying as to the value of certain trees on some land to be taken for park purposes, and the following dialogue occurred:

Cross-Examining Lawyer—You say the tree is seven feet in circumference at four feet from the ground. Now, why do you not give the diameter—a smaller-sounding figure?

Tree Expert—I can't measure through a tree, but I can measure around it.

Lawyer—Why do you take all measurements at four feet from the ground?

Expert—To keep the knees of my pantaloons clean.

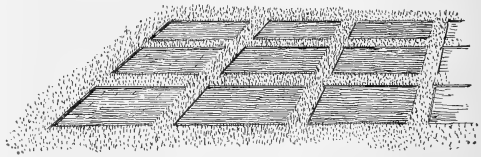
Protection for Young Trees.—We have tried many plans to keep rabbits and insects from injuring young fruit-trees, but the best thing yet is tarred paper. We buy the paper as it is prepared for roofing, and cut it into strips about six inches wide by two feet long. It is easily and quickly wrapped about the trees, and is secured with wire or strings. The offensive smell of tar drives insects away, and they will not get between the tree and the wrappings, as when rags and veneering are used. We wrapped 35 acres of trees in this way, and the paper has now been on two years. This is certainly worth a trial.—H. R. FRIEDGEN, *Ind.*

Old and New Phloxes.—This year I tried, for the first time, the star-shaped and fringed phloxes, about which so much has been written. A pleasant surprise awaited me when they came into bloom. The colors could not exceed in brilliancy the old *P. Drummondii*, but they were quite as fine, only a few being in any sense dull or dingy, and the shapes were exceedingly odd and pretty. Some were much like the old sorts, except a delicate notching of the edge of the petals; others were neat stars, and still others had so little surface of petals that they reminded me of an umbrella-frame with the cover off, but to the varied arrangement of colors I cannot do justice. Try them yourselves.—ELDER'S WIFE.

Gathering Forest Leaves.—We are frequently advised to collect leaves when damp. This is all right when they are to be used as a mulch for hotbeds, but

for bedding for animals the dryer the leaves are the better, and it is very easy to collect them when dry, if sugar-barrels are used to pack them in. Take as many barrels as will stand upright in the wagon, place them on the ground beside the leaf-pile, and pack the leaves in them by getting in atop and tramping down their contents. In this way a wagon can be made to hold as many dry leaves as damp ones, and it is easy to remove the barrels from it, dumping the leaves just where you want them. Straw is scarce and expensive here, so damaged salt-hay is generally used for bedding. This answers for the purpose tolerably well, but dry leaves are better, as they pack down closer, are less apt to burn in the manure, and are more valuable as a fertilizer.—W. F. BASSETT, *N. J.*

Economical Sodding.—To obtain sufficient sod of suitable quality for covering terrace-slopes or small blocks that for any reason cannot well be seeded, is often a difficult matter. In the accompanying illustration we show how a surface of sod may be used to good advantage over a larger area than its real measure-



ECONOMICAL SODDING.

ment represents. This is done by laying the sods, cut in strips from 6 to 10 inches wide, in lines and cross-lines, and after filling the spaces wide, in lines and cross-lines, and after filling the spaces with good soil, sowing these spaces with grass-seed. Should the catch of seed for any reason be poor, the sod of the strips will tend to spread over the spaces between them, and failure to obtain a good sward within a reasonable time is almost out of the question. On the other hand, if one needs sod and has no place from which to cut it except the lawn, by taking up blocks of sod, leaving strips and cross-strips, and treating the surface as described above, the bare places left are soon covered with green.

Points in Judging the Pecan.—Perhaps we should make a distinction between pecans for home use and for market. For home use we may have sorts for which we have a personal fancy. If the nuts are for the trade, we must cater to the public taste. All agree that the commercial pecan must be large. The large ones are always more salable; besides, a tree can carry a larger crop of large nuts than a tree of the same size could carry of small nuts. The shell should be moderately thin, but not so thin that wet weather at the ripening season would cause it to burst, letting the meat swell out very much as the albumen of a cracked egg does in a kettle of hot water. The shape should be regular and attractive, the color light, with enough dark marking to give a pleasing contrast, and the shell well filled with delicate meat, easily separable from it.—B. M. YOUNG, *Louisiana.*

Flower-Gardens in the Forest.—It has just been my privilege to visit a clearing in the woods where the yellow (false) foxglove is still flourishing finely. On one clump the branches, capped with graceful buds and bells, reached a height of five feet. Clusters of bush-clover, with minute, purplish-red blossoms set like gems in dense tufts of tiny leaves, grow here also. At any time of the year some floral treasure may be found in this clearing. There is no protection for such lovely places from encroaching forces. We enjoy them to-day; to-morrow they may be gone, but there is a suggestion of what is possible in the future of forestry. Of what inestimable value are such places to communities? They are veritable "God's acres" where humanity can come out from the shadows of walls, and realize occasionally its heirship to the "earth and the fulness thereof." What studies of natural life are here! What laboratories of science!—KATE CLEMENT, *N. J.*

California Fruit in England.—We cannot but admire the enterprise of our Pacific growers in pushing out to capture the markets of the world. August 21 the arrival of a consignment of California fruit created a flutter in the Covent Garden market of London, England. The shipment comprised 2,000 packages of peaches, nectarines, plums and pears. It arrived in superb condition, having been carried in cold chambers, kept at 45 degrees of temperature. The entire lot, when put up at auction, brought excellent prices. The London papers state that nothing was left to be desired, either in size or quality of the fruit, to which fruit-growers of eastern United States would add that such judgment is certainly based on an English standard of quality, for it is well known hereabouts that California fruit is decidedly lacking in richness of flavor. However, this Pacific-coast fruit left an excellent impression on the palates of London, and the first consignment was followed by others, and the shipping will be continued until the end of the season. It is expected that these California fruits will enter into strong competition in the English market with those from French orchards.

Michigan Flora.—The Michigan Board of Agriculture has published a flora of the state. An interesting fact brought out by this is the peculiar richness of Michigan in trees and shrubs. According to the count of the careful compilers, there are in the state 69 species of indigenous trees and 3 exotics which have escaped from cultivation; 150 native shrubs and 5 exotics spread from cultivation, making a total of 220 indigenous woody plants and 8 naturalized exotics. To comprehend the real active importance of such a showing, attention is directed to the fact that Great Britain and Ireland, with an area more than twice that of Michigan, have but 10 species of native trees, while in all Europe there are only 85 native species.

A Profitable City Garden.—My city garden consists of one-sixth of an acre of land. The soil is heavy and hard to work. We grow such crops as we can handle easily, preferring to buy our corn and coarse-growing vegetables. Our first crops are radishes and lettuce, followed by kidney-wax beans, and later by White Plume

celery, so that altogether we take off three crops. Where we grow cucumbers as a second crop we get but two crops. The cucumbers, pay better than the beans, but not quite so well as the celery. To date, August 25, four rows of cucumbers occupying 16x120 feet of land, have brought \$21.80, and we have 25 gallons of small pickles in brine. The first specimens brought 60 cents a dozen; now they are 10 cents a dozen. The beans, in rows 2 feet apart, brought \$1.25 a row. This ground is now in celery. The figures given are from actual sales at wholesale, as we do not care for the retail trade. Besides this, we use from this garden all the vegetables we need for a family of seven. Being gathered in early morning, our vegetables reach consumers in good condition. They were earlier than any in the market. We could not account for it until we thought of the electric lights on three corners of our block. One crop—our radishes and lettuce—is five days earlier than other people's. This is an important item in sales. We irrigate, of course, using the city water. Fertilizers, so far, have cost us nothing, manure from the city stables being hauled to our lot. This will not last long, as farmers are taking the manure, and the stables need not haul it away. We turn the water on the manure as soon as it is dumped, and irrigate with the liquid manure, making the quickest-acting fertilizer we can get; the results are astonishing. We consider a net annual profit of \$50 in cash from this one-sixth of an acre as quite a small one. With careful management it can be made to average \$100. Does it pay? Yes, but don't take this as a basis for large operations.—E. BRAYTON, *Colo.*

Late Potatoes.—Their was great complaint this season that potatoes of the early crop rotted after being bedded for sprouting for the late crop. Our own were not so affected, but in the eastern part of the state the deluges of rain during intensely hot weather caused heavy losses. From a little experiment this season, I am inclined to think that potatoes of the previous season can easily be kept for the late planting. I have kept potatoes grown in late autumn of 1891 until the first week in August, entirely unshriveled and just starting sturdy, short sprouts. These were planted for comparison with the seed of the present year's crop. It may be that the remarkable keeping quality of these late-grown potatoes, will make them not only the best seed for the early crop, but for the late crop also. All my experience heretofore in growing a second crop from seed of the same season seemed to indicate that the seed should not be cut. I, therefore, in my bulletin insisted upon this point. Several of our growers wrote to me, disagreeing with me upon this point, and therefore, in bedding my seed-potatoes this summer I cut part of them, and left the others uncut. Those that were cut all sprouted in time for planting August 15, while of those uncut many failed to sprout. While one experiment in an unusual season will not reverse the experience of several seasons, I shall continue to experiment in this line.—W. F. MASSEY.

Shade Trees and Winds.—It is not difficult to make a selection of shade-trees for the street or lawn pleasing

to the eye; but I should be glad to learn what trees, in addition to other good qualities, have, like the oak of the fable, the merit of bending to the wind instead of breaking. We require trees of reasonably quick growth, for shade as well as protection from hot summer winds. Our street is exposed to the full force of the southwest winds, and after seeing the growth of several years destroyed by successive storms, I am desirous of planting something that may eventually serve this purpose. Our beautiful American linden, with its dense burden of foliage, was robbed of all its branches one at a time, until only the trunk remains. The same fate overtook *Catalpa speciosa*, except that only the root remains, and sends up several shoots making an ornamental shrub. The soft maples were neatly decapitated, and a young elm was bent to the ground. The only thing that grows and grows, and bids defiance to the winds, is a cottonwood which planted itself in front of the house, and being allowed to stand while slower-growing trees were coming on, now overtops the house, and I cannot see why it should not be thought worthy of a place it so well fills. The proper pruning of shade-trees baffles me. If they are trimmed to a head too early, they become top-heavy; if untrimmed, much growth is lost when the lower branches are finally removed. If the branches are too long, the wind tears them; if cut back, they become too dense for the stems.

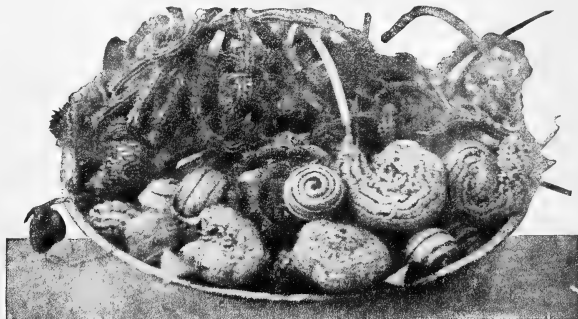
—MIRA HIRSHEY, Iowa.

Gardening for Fun.—In these days, when so great effort is being expended to do away with worms and their kind, it seems strange that anyone should grow plants for the sole reason that their pods resemble worms and snails; yet such plants are grown, and the resemblance is great, as the accompanying engraving will testify. This is not an attractive dish, I fancy, to most of us, but I grew its contents, in imitation of French gardeners. These plants are grown for no other reason than that they are curious, and for the inimitable pleasure of dropping them into your wife's soup, or laying them beside her plate at dinner time! At least, these are the only uses yet recorded for them. But they are interesting plants, nevertheless. They set a-going a whole series of speculations as to how and why these pods ever came to imitate crawling things so closely. It would be interesting to know if birds mistake them for worms, and thereby scatter the seeds, or if the curls and wrinkles are only so many means of catching hold of passing animals. These plants are of several kinds, all belonging to the pea family. Three kinds are shown in the accompanying cupful. The round, snail-like speci-

mens are *Medicago scutellata*, and they are technically known as Snails. The larger and fatter worms are *Scorpiurus vermiculatus*, and the small, slender ones, which have crawled to the top of the cup, are *Scorpiurus subvillosus*: these two are appropriately called Caterpillars or Worms.—L. H. B.

Smyrna Figs.—The opinion is widely prevalent that the true "Smyrna fig" cannot be produced, except by the aid of the blastophaga insect. We have tried for years to get the true Smyrna fig, and have almost come to the conclusion that there is no such fig, and that the name is simply a collection one, applied to all figs shipped from Smyrna. To test the matter, I am growing a large number of figs from seed of the imported Smyrna figs, and though some years will probably elapse before fruit can be expected upon them, I hope to have an opportunity to ascertain whether its production is absolutely dependent upon "caprification," as it is called. If the Smyrna fig is a distinct species, it is rather strange that all efforts to get it have failed. I have had fig-cuttings marked "Smyrna" sent to me from the Agricultural Department, but they are all white figs of Italian varieties. Has any one in the United States a Smyrna fig that is evidently distinct? If so, I would like to get it.—W. F. MASSEY, N. C.

The Fig in the Northern States.—Henry Poffard, who lives on the Canadian side of Niagara river, near where it empties its waters into Ontario lake, grows figs



A DISH OF "WORMS."

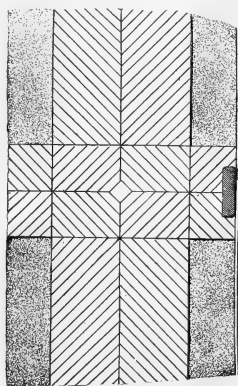
in the open air. One of the bushes which we saw in his garden had a diameter of about 12 feet, and about the same height. Of course he lays the trees down upon the ground every fall, and keeps them covered with soil or litter until spring. Old wood that has grown too large to bend easily, is annually cut out, and only the younger canes retained for another season's fruiting. For most northern locations, however, we would prefer to grow the bushes in tubs. A writer in *Table Talk* expresses wonder why the fig is not more cultivated in this way in the northern states, as it requires only about the same treat-

ment as the oleander. "My fig trees," says this writer, "are grown in tubs, and kept trimmed to a height of 5 or 6 feet, just so as to allow their being carried through a door. I keep them in the dark, cold cellar, where they can stand a light freeze, but not a hard one. A cellar that will keep vegetables will have just the right temperature for figs. I water the trees freely when putting them away in the fall; they will not need more than one or two waterings during the winter, and require no other care. They should be removed from the cellar, early in the spring, to some protected place in the open air, before the fruit begins to form, or the change will cause the fruit to fall, and it will be six weeks before another crop will grow. The fruit matures in August, and the yield is abundant. The fig is a most refreshing fruit, particularly for breakfast, during the hot months. Remove the outer skin, which is easily peeled off with the fingers. Do not cut the fruit, but bring it to the table whole, and serve it with sugar and cream."

Danger of too Much Branching.—President Dean, in his address before the recent convention of American florists, touched upon the danger of forming too many special societies, and thereby weakening the parent and main society of American florists. Commenting upon the existence of successful chrysanthemum and carnation societies, he said that there was soon to be organized a rose society, with possibly an orchid society, and at the rate of advance being made there may soon be added a palm and a fern society. If these societies were conducted as branches of the main society, although having distinct organizations, and made reports annually to the main society, there would seem to be great usefulness before them. Individuals can accomplish more as specialists in a particular field than when they attempt to compass many fields, and the same is true of society work. But all members of the parent associations are interested directly or indirectly in the work as specialists in their profession, hence the necessity that the tie between the general society and the special societies should be a close and firm one.

Vineyard Notes from Michigan.—Residing, as I do, within walking distance of Mr. Woodruff's place (originator of the "Woodruff's Red" and other grapes), I find much to interest and instruct in studying his collection. The early part of the present season was marked by a two months' down-pour of rain, disastrous to the fruit crop. In Mr. Woodruff's experimental vineyard, his riparias, Black Pearl, Janesville, etc., were attacked by mildew of the fruit, Janesville also by anthracnose, which destroyed about every cluster. Niagara succumbed to anthracnose and black and brown-rot, while a row of young Delawares showed perfect health, as did also Colerain, Green Mountain, Jewell, Moyer, Witt, Owosso and Ulster. These vines were all of two summers' growth and some of them bore fruit this season. Jewell is a slow grower, but shows great productiveness; its clusters are compact and handsome, not heavier than Delaware's, but with berries a little larger. Moyer showed stronger growth, not quite so many and

smaller clusters, only half a dozen berries in some of them, but its berries were decidedly larger than Delawares. Jewell and Moyer are both good to eat as soon as they show color, the Jewell being pulpy and of very fine flavor. Mr. Woodruff has a variety not yet introduced, which he calls "Nina." It is a dark red grape when fully ripe, and is eatable and sweet as early as Moyer and Jewell, but much larger than either; it is very hardy, healthy and productive. The fruit of these three varieties proved palatable the last week in August, when Moore's Early, growing alongside, puckered one's mouth.



ORNAMENTAL BOARD WALK.

Owosso, not yet ripe, looks at present like Agawam in size, shape and color of berry, but its cluster, though loose, is not ragged, like Agawam's and it is a strong grower and very productive. It is also much healthier and harder than Agawam, and seems to me to merit extensive trial.

I am much pleased, so far, with Mr. Munson's Brilliant, of

which I have three vines two years planted in my yard. It promises, with me, to be all that its originator claims for it. It is a strong, healthy grower, and is this season ripening up a few beautiful clusters, compact and heavy, a little darker than Delaware, pure, rich and fine in flavor. This grape promises to be as early as Brighton, and showed no sign of rot when Lindley and Brighton, on one side, were slightly attacked by black-rot, and Niagara, on the other side, by both brown and black-rot. Mr. Munson informed me that it has endured a temperature of 27° below zero in Missouri—H. PURFIELD.

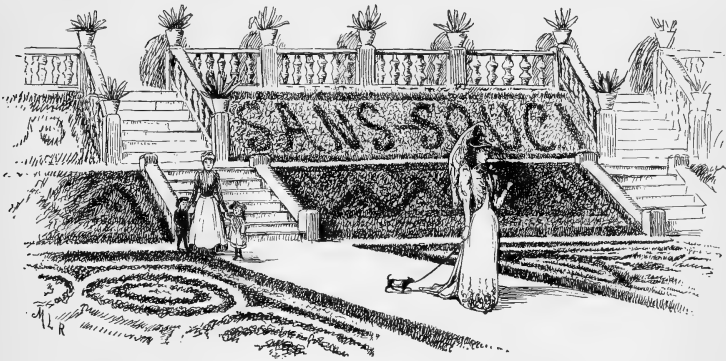
Ornamental Board Walk.—The above sketch shows the manner in which a walk constructed of 1¾-inch wooden slats 6 inches wide can be laid more ornamentally than the usual plank walk. The walk is to be laid on stringers running lengthwise, placed near the ends of the pieces. Where there is a crossing, with the part worked out as shown in the engraving, which represents the crossing of a house-walk and street side-walk the stringers must be varied somewhat, but there is no difficulty in this. One point should always be observed in laying a plank walk in which the pieces run crosswise; namely, to have the stringers so near the ends of the pieces that when the walk gets old and loose there will be no danger, if one steps near the end of a piece, that

it will fly up because of the weight falling on it outside the stringer.

Mailing Catalogues in Bulk.—The society of American Florists showed commendable spirit in their recent convention, in having a committee appointed to press AMERICAN GARDENING'S suggestion on the attention of the United States Post Office Department. This committee, consisting of J. C. Vaughan, of Chicago; Patrick O'Mara, of New York; and J. Horace McFarland, of Harrisburg, are expected to join a similar committee appointed by the American Nurserymen's Association last spring, in drawing up a memorial to be presented to the Postmaster General for submission to Congress, in order to obtain a bulk rate of postage on catalogues similar to that now applying to periodicals. This is a movement that should at once command wide endorsement from thinking people. Waking up, as

Horticulture at the World's Fair.—The display of horticultural products promises to be "bewildering in extent." The Horticultural building is 998 feet long, and has an extreme width of 250 feet. Its plan is a central pavilion, with two end pavilions, each connected with it by front and rear curtains, forming two interior courts, each 88 by 270 feet. Surmounting the central pavilion is a beautifully proportioned dome, 187 feet in diameter and 113 feet high. The preparations for the exhibit are already far advanced. Over 500,000 transplanted shrubs and plants, of many species, are now growing in the exposition grounds, and the number is rapidly increasing.

The floricultural exhibit will not be concentrated in one place. In the front curtains of the building will appear the greenhouse and hothouse plants—a very large variety, and many rare and beautiful specimens. There, too, will be a display of orchids numbering high into the



AN ARTIFICIAL GARDEN.

the American people are, to the evils of divesting our territory injuriously of forests, any movement having in view the wider dissemination of instructive catalogues of trees, plants and seeds should meet with all judicious encouragement. The catalogues of nurserymen and florists act as constant spurs toward increased planting. Many a land-owner can trace his act, in converting a farm from a barren, desert-like spot into a well-wooded tract, directly to the influence of catalogues. It should be recognized that horticultural catalogues, as they are issued in America, are almost without exception valuable works of information on planting, and as disseminators of education they, as well as periodicals, are entitled to be carried by the mails in the cheapest and most convenient form. Numbers of people have imbibed their first lessons in successful tree and seed-planting from catalogues. Their effect on the beauty, healthfulness and comfort of our land is inestimable. By all means let the postage on these planting guides be reduced to one or two cents a pound, and be paid for in bulk, instead of requiring the fixing of stamps upon them separately.

thousands. Beneath the great dome will be arranged the largest tropical plants obtainable, including Japanese and Chinese bamboos 75 to 80 feet high, palms 30 to 40 feet high, and tree-ferns 15 feet or more in height. There will also be a miniature mountain covered with tropical plants. In a cave within will be tried experiments of growing plants by electric light and of growing them by the aid of electric currents passed through the soil. The "wooded island," or as more properly named, perhaps, the flowery island, will be one of the most beautiful and attractive spots at the exposition. It embraces between 15 and 16 acres, and has been turned over almost entirely to the horticultural department for its exhibits. There, literally speaking, will be acres and acres of flowers of brightest and most varied hues and pleasing perfume. Little groves of trees, clumps of shrubbery, and sinuous walks will relieve the gorgeous monotony of this floral display. On the north end of the island Japan will build its strange antique temple, and surround it with the choicest plants and flowers of the island realm of the Mikado.

The display of fruits in the rear curtains of the Horticultural building will be immense, and will embrace the cultivated fruits of the whole world. The wine and raisin exhibit will also probably be immense. Thirty-three foreign countries have applied for space for the display of wines.

The Two Gardens.—The artist has admirably touched off in the two pictures presented on this page and the next the difference between the artificial and the natural in landscape-art. It will hardly be necessary to say that the true object of a garden is to secure homefulness. What a contrast between the carpet-beds, carpentry and masonry in one picture and the clustered joys in the other! Our mothers made their vegetable and flower-gardens to coincide; that is, they saw the beauty there was in cabbage and carraway as well as in roses and nasturtiums. The children were expected not only

or a suit of clothes, is to be used. The grandest flowers anybody ever grew were children. Any one who grows roses and does not grow his own children is a blunderer. But I have seen people fussing away at their flowers, while their children were sent off to be trained by others. Won't you sit down and read and feel the contrast between these two pictures? The darlings, with their flowers and teacups are going to make real motherly creatures, and nice wives by and by. In the other picture, you have incipient aristocrats on the road to degeneration. Of course, the artist gives us extreme cases, but do not fail to understand that midway there are thousands who are doing very silly work in gardening. The hint is here: just develop what nature suggests, and you will have a true garden.

Many people seem to consider gardening a strange and mysterious process. They buy books on landscape gar-



A NATURAL GARDEN.

to help weed but to help enjoy such gardens. But you see the difference. In our fancy French garden a hired nurse leads the children about, while the wife (not mother) leads a dog. I have studied the bulbs in the other picture, and am not quite sure whether they are onions or gladioluses. But what a capital idea to make a table of one of our 40-pound cabbages! Still there are hosts of people who covet these artificial gardens, with stone walls, and vases, and red and yellow ribbons.

I suppose the idea the artist intends to convey is this: Your grounds, like your house, should grow out of your own soul. You should grow a house and its accompaniments as a crab grows its shell. It should express you; it should tell what you are, what you think, what you feel, what you love. You should not make it all at once; above all, not let somebody else come and make it for you. Let it grow as you grow. A garden, like a body

dening, and make a great study of it; or they write for information about trees and shrubs, and walks and arbors and plats, to some old gardener who is too busy to be bothered in this way. I get, perhaps, twenty such letters a year, and the answer to each one is just the same: Cut your cloth to your person. Look at your land, and see what its general contour is. Don't try to make it over; just take advantage of what you have. Don't cut down everything, grade off knolls, spoil every pretty variation you have, and then set a lot of trees that will need thirty years to make them of any account. Just let nature tell you how she likes things, and you go in as under steward to help her.—E. P. POWELL.

Hellebores or Christmas Rose.—The pure and beautiful flowers of the Christmas rose have, perhaps, no equal in their season. There are several good varieties of *Helleborus niger*, but best of all is certainly the one

known as *H. maximus* or *altifolius*. This large-flowered variety bears its leaves and flowers on much longer stalks than the ordinary kind, and is admirable for cut-flower uses. Both this and other kinds will be much whiter when grown under glass than when exposed to all the inclemencies of the winter. The leaves, when protected against the injurious influence of bright and cold mornings, will preserve their freshness, and thus form an appropriate background for the flowers. A cool, shady frame just kept above freezing is the best place in which to grow these plants. If grown there in a mixture of well-manured, fibrous loam and leaf-mold, and shaded on bright days, the flowers will be well developed, fine in texture, and pure white. On rainy days, the glass should be kept on, as, also, in very cold weather, but otherwise protection at night is sufficient. Christmas roses can be forced to good advantage, but it must be remembered that they will not stand excessive heat or too dry air. Forty degrees is about right for them, and a light sprinkling overhead on bright mornings will serve to freshen the foliage and develop the flowers. For forcing, it is best to set plants in large pots early in autumn, and keep them in a cool, shaded greenhouse until they flower. The plants can then be used for house-decoration, and, under ordinary circumstances, will keep in perfection many weeks. *H. colchicus*, *H. Olympicus*, and all varieties of *H. orientalis*, especially *H. antiquorum* and *H. guttatus*, are also admirably adapted for forcing, and will flower somewhat later; forming beautiful substitutes for the Christmas rose later in winter.—N. J. Ross.

Making the Window Gay.—I am a busy woman, and must choose for my window-plants those that will stand more or less neglect. As plants resent being taken from hothouses to cool ones, I find it better to purchase from a cool greenhouse. Grouping and selection depend upon individual tastes, of course. I like to plant in each pot of ivy a tall *Begonia rubra*; it will thrive and send out scarlet clusters of bloom all among the ivy leaves. *Begonias*, as a rule, are good house-plants, if the windows are not too sunny. The rex varieties do not thrive well if crowded by other plants, but if given plenty of room they spread out their fine leaves in glorious array. Cactuses are great standbys, as they will submit to being set in any out-of-the-way corner until February, and need little water until then. When brought to light and given water oftener, they will soon bud. Take out about an inch of earth from the top of cactus pots and fill in with well-decayed fertilizer; this will advance the cactus blooms, and cause them to be larger. Three constant blooming plants are primulas, cyclamens and *Impatiens sultani*, the Zanzibar balsam. The bright pink blossoms of the latter enliven the window all winter, besides keeping the plant "a thing of beauty" throughout the summer. For baskets and brackets, oxalis, kenilworth creeper, tradescantias and othonna all are good. Then, if you have a fern or two, some pink or white bouvardias, and palms for odd corners where there is light in the room, your sitting-room ought to be gay and

bright all winter. Lovely ornaments for brackets or tables can be made by filling with water some pretty glass or china jars and inserting therein cuttings of ivy or tradescantia. They will grow all winter, and can be enlivened with a rose or pink occasionally, when required. Get a few hyacinths, tulips, and other common bulbs, pot them in small pots and leave them in the dark till well up, then bring them to the light a few at a time, and you will always have a bright bit of color among your plants. Of course, all plants want care, but not half so much as is usually supposed. They ought never to become dry enough to wilt, nor yet be deluged with water. Every plant does not need water every day. You will soon find out which are the thirsty ones. Do not keep turning plants all the time; they grow up scraggly. Where two or three grow well together, let them alone, and don't fuss over them too much. Keep the foliage clean with a hand-sprinkler, which makes little mess if you have an oil-cloth under your stand.—M. L. P., Brooklyn.

Whittier and Tennyson.—Richer harvests than those of fruit and grain are gathered in every year by a keen sickle that does not always wait for the autumn ripening. Ninety-one garnered from among our loved and famous folk a rich, full sheaf, but left no gaps more widely and sincerely mourned, upon both sides of the ocean, than those so lately filled by Whittier and Tennyson.

The lives of the two singers seem to have been as different as their songs. Whittier's early life was spent in a New England village, at farm-work, shoemaking and "schooling," and later his fancy set in rhyme Quaker history, Indian superstition, stirring war songs, and all the beauty that only a beauty-loving eye can detect in nature. New England can count scholars and philosophers among her poets, but none of them ever came so near to her rugged old heart as the simple, plain, sweet, strong man, who, as a "bare-foot boy," studied nature among her hills, breathing the pure, invigorating air of her country life into his soul, and breathing it out again in the pure music of verse that was never obscured by the least shading of pedantry. Amid the pomp and glitter of the English court its chosen poet, in walk and conversation, as well as in rhyme and theme, must ever support the dignity of the laurel wreath. Perhaps the bright songs, the merry jests and the simple, natural, rippling verse which delight us so in Whittier's poetry might have seemed out of place from one in the long line of poets that handed the laurel down from Edmund Spenser and "rare Ben. Johnson." Certainly some of the subjects which Whittier has handled with inimitable grace must have seemed clumsy in Tennyson's hands. Imagine the poet-laureate of England singing about a pumpkin! Yet Whittier's poem is a pretty, graceful bit of jest and imagery, and this is one reason why he is so dear to all classes of people: because he found nothing in any phase of home-life too homely to set to music. More than all our other poets, he has given to common, everyday life an ennobling touch and interpretation. Upright, patriotic and talented, he seems to have had the rare

good fortune of remaining unsophisticated in life, manners and verse. There are few such poems as these in the rich legacy that Tennyson has left us. "The Goose" is rather a clumsy attempt at wit or burlesque, and his descriptions of nature, though they may be grand enough to awe us with their beauty, do not draw us to seek such spots or make us love them. Sweet as some of his poems are, even we unskilled critics with no fine crucibles, can see that he knew better how to deal with morbid sentiment and "Light Brigades" than with beauty in nature. The much admired sonnet in Maud, despite its charm, seems artificial, and we do not care to "come into the garden" with Maud at all; the *Lotos Eaters* is drowsy and cynical, as doubtless such a poem should be, but it "leaves a bad taste in the mouth." "May Queen" is simpler, brighter and more natural in style. "Flower in the Crannied Wall" and "The Eagle" are two exquisite fragments. "Enoch Arden" is the sweetest and purest of all Tennyson's romances, and "The Brook" is worthy of even Whittier.

But the two poets were both great in ways so different that we compare them only for the sake of contrast. American gardens sent flowers to Tennyson's grave, and some of our great men were there to do him honor. We are told that Westminster Abbey could not hold the crowd which thronged about to see his body laid beside Browning's, and that the wreaths and flowers which came to his burial from gardens and historic places all over the world could not all find place near the coffin, but lay in great fragrant heaps to the amount of several wagon-loads on the floor of the Jerusalem Chamber. Our poet's burial befitted him equally well; more love and less pomp attended it, though perhaps not a less

crowd, and he was laid nearer to the great heart of nature that he loved so well.

In "The First Flowers" we find the lines:

"Earth's rocky tablets bear forever
The dint of rain and small bird's track;
Who knows but that my idle verses
May leave some trace by Merrimack!"

And the valley of the Merrimac is already becoming classic ground, to which good Americans make pilgrimages.

Whittier has surely broadened and beautified the world for naturalists, botanists, farmers and gardeners. "Maud Müller," "Among the Hills," "Snowbound" and "Tent on the Beach" bring out clearly all the simple dignity and happiness of rural life. "The Corn Song" and "An Autumn Festival" might be sung at every husking-bee. One feels the beauty and truth in "The Frost Spirit" keenly this time o' year, and the "Last Walk in Autumn" is admired and quoted as much as any poem of Whittier's. "The Mayflower" and "The Palm Tree" present striking and sharply contrasting pictures of northern and tropical life, and here is a Thanksgiving song that every New England gardener might sing this month over his pumpkin pie:

"O Painter of the fruits and flowers!
We thank thee for thy wise design
Whereby these human hands of ours
In nature's garden work with thine.

And thanks that from our daily need,
The joy of simple faith is born;
That he who smites the summer weed,
May trust thee for the autumn corn.

Give fools their gold and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a field or trains a flower,
Or plants a tree is more than all."

COMMENTS BY READERS.

[Readers are invited to contribute to this department. If your experience, observation, or well-founded opinion differs from that recorded in any recent article in this magazine, or if you can add anything of special interest to the statements of other writers the Editor will welcome your contributions.]

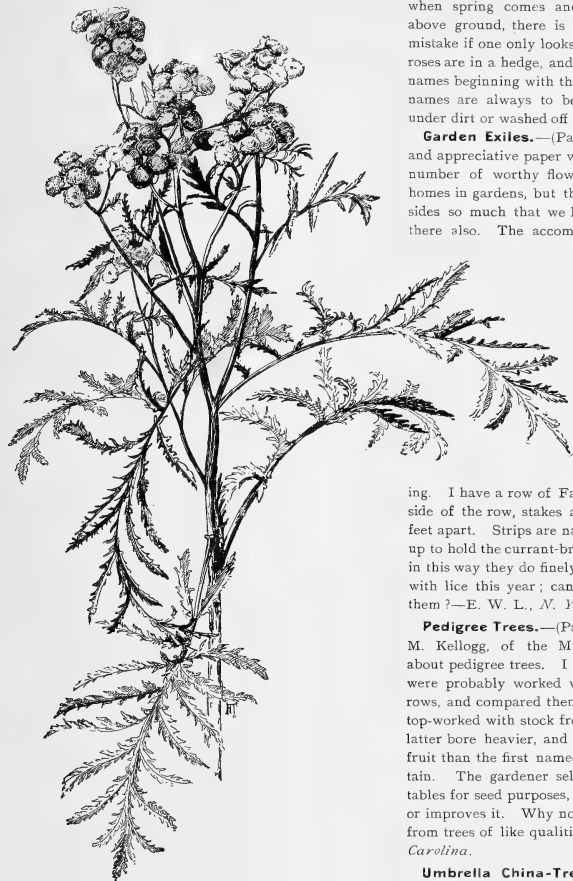
Citrus Trifoliata.—(Page 497.) Permit me to thank W. F. Massey for advice in regard to *Citrus trifoliata*, viz.: to pinch off the ends of the green shoots to induce early ripening. Its roots will evidently stand the winters of south-eastern Michigan, and, as it will as evidently stand an indefinite amount of abuse and neglect, it may anywhere in the northern states be enjoyed as a pot plant, at least. It is with me almost entirely exempt from insect pests, and is perfectly healthy.—H. PURFIELD, Michigan.

Citrus Trifoliata as a Hedge-Plant.—(Page 497.) I am much interested in what W. F. Massey says about *Citrus trifoliata*. My experience with it as a hedge-plant is very satisfactory. I have my whole orchard and nursery surrounded with it. The hedge is now six feet high, and makes an impenetrable barrier to thieves, cattle and hogs. I am told that a hedge of the *Citrus trifoliata* will last 500 years or more. By the time my fence rots down, the hedge will be large enough to take its

place. I have set the plants a foot apart, close to the fence, and cultivate them only on one side. They do not occupy as much space as the Osage orange or Cherokee rose. I cut them back when two years old, and use the wood for cuttings. I find that cuttings set in September will strike root readily. It is not advisable to plant the cuttings where you want the hedge; plant them in nursery rows. This will afford a better opportunity to give them good cultivation. When rooted, set them along the fence, and keep them clear of weeds for two or three years; after this no more cultivation will be required. I have had very little success with imported seed of *C. trifoliata*; not ten per cent of such seed germinated. You must import the fruit in order to get the seed fresh. I will soon have as much seed as I want, as my four-year-old trees are now full of fruit.—J. L. NORMAND, Louisiana.

Elm Tree in a Low Spot.—(Page 492.) I believe some one inquired awhile ago if the ground could be

filled up around a tree without killing the tree. A handsome, large elm on our place originally stood in a little hollow, with a small bog at its base. A few years ago this place was filled up, the depth of earth put in



A SPRIG OF TANSY.

around the trunk of the tree being about $2\frac{1}{2}$ feet. The elm is now thriving even better than before the low place was filled.—DORA LAWRENCE.

Plant-Labels.—(Page 575.) I often see questions as to what kind of tags are best for marking plants. I have found maps of flower-beds or orchards better than

labels of any kind. For beds containing spring-flowering bulbs, lilies, etc., my map is on the scale of one inch to a foot; for larger plants, one inch to a yard. Then each bulb or perennial plant is marked on the map, and when spring comes and a lily delays its appearance above ground, there is no danger of digging it up by mistake if one only looks at the map before spading. My roses are in a hedge, and the map here is simply a list of names beginning with that of the left-hand rose. These names are always to be found, and are never buried under dirt or washed off by rains.—D. L.

Garden Exiles.—(Page 467.) Miss Bergen's pretty and appreciative paper will, no doubt, help to restore a number of worthy flower and herb-exiles to their old homes in gardens, but these outcasts brighten our waysides so much that we hope they will continue to grow there also. The accompanying graceful drawing of a sprig of tansy was unintentionally omitted from the article on "Bouncing Bet and Her Friends," in the August issue.

Fay Currant.—(Page 447.)

I do not consider "the downward sprawling tendency of the Fay currant a decided objection to it." One might as well complain of the tendency of grapes to climb, and need a trellis, or of the Champion of England pea to need bush-

ing. I have a row of Fay currant-bushes, and on either side of the row, stakes about three feet long driven six feet apart. Strips are nailed to the stakes high enough up to hold the currant-branches off the ground. Treated in this way they do finely. My bushes are badly affected with lice this year; can anyone give me a remedy for them?—E. W. L., *N. Y.*

Pedigree Trees.—(Page 570.) I fully agree with R. M. Kellogg, of the Michigan Horticultural Society, about pedigree trees. I have seen here apple trees that were probably worked with stock from trees in nursery rows, and compared them with trees that I knew to be top-worked with stock from thrifty fruiting trees. The latter bore heavier, and in some cases, earlier crops of fruit than the first named, whose parentage was uncertain. The gardener selects thrifty, well-matured vegetables for seed purposes, and either keeps up the variety or improves it. Why not take grafting or budding stock from trees of like qualities?—CHAS. C. LINDLEY, *North Carolina.*

Umbrella China-Trees.—(Page 561.) Among the ornaments of our Raleigh lawns none are more attractive than umbrella China-trees. Not far from my residence is one about 15 feet high. Its umbrella-shaped head, fully 30 feet in diameter, makes a perfect arbor. I think these trees will stand more frost than Mr. Falconer supposes, for one morning last winter the mercury ran as low as 16° above zero, yet there was no sign of any injury to the trees. Though apparently the same species

as the ordinary *Melia Azedarach*, they are so well fixed a variety as to come invariably true from seed. The fine foliage and handsome, sweet flowers make this variety well worthy of conservatory culture in the north. I have known the ordinary form of the China-tree to stand a zero temperature.—W. F. MASSEY.

Simple insect-catcher.—(Page 607.) The drawing annexed should have appeared in last month's issue in



connection with the notes from the editor's grounds. The merit of this device is that it is easily made from a waste newspaper, and held under trees and shrubs when gathering caterpillars from trees or colonies. When the insects are gathered the holder can be folded in from the end, and the insects destroyed by treading on them.

Tea-culture in the Carolinas.—(Page 196.) Noting what Mr. Saunders says in regard to tea-culture in the Carolinas, and his intimation that our rainfall is deficient, I would ask if 55 to 60 inches of rainfall in this latitude is not as good as 90 on the equator. The fact is annually becoming more evident that tea of extra-fine quality and in paying quantity can and is being grown in the Carolinas. Furthermore, the negro laborers of the south, trained in the cotton-fields, make better tea-pickers than the coolies of India. They receive more for their labor than do the coolies, but they work harder and lose less time. If Dr. Shepherd, of South Carolina, could be induced to give the readers of AMERICAN GARDENING his experience in tea-manufacture this season, his notes would be of great interest to many readers.—W. F. MASSEY, N. C.

Nesting-Sites.—(Page 421.) The similarity in the nests of birds of the same species is not restricted to form, material and manner of building, but extends, within certain limits, to their location also, and though they may be found in different kinds of trees, the surroundings are nearly always similar. Of course, some individuals may violate general rules of position to a greater or lesser extent, but most species of birds prefer particular kinds of trees for nesting purposes. During the last few years I have been noting bird's nests and the trees in which they were built, and give below a summary of my notes:

Mourning Dove (Zenaidura), 31 nests; 8 in live-oak, 8 in hack-berry, 6 in peach, 5 in mesquite, 3 in post-oak trees, and one on the top of a rail fence.

Scissor-tailed Fly-catcher (Milvulus), 35 nests; 27 in hack-berry, 3 in live-oak, 2 in plum, 1 in peach, 1 in willow, and one on a beam in the grand stand at the baseball grounds.

Orchard-Oriole (Icterus), 34 nests; 16 in hack-berry, 14 in mesquite, 3 in live-oak, and one in plum.

Bronzed Grackle (Quiscalus), 36 nests; 18 in post-oak, 8 in elm, 7 in willow, and 3 in live-oak.

Western-lark Sparrow (Chondestes), 23 nests; 6 in hack-berry, 5 in chaparral (*Berberis trifoliata*), 3 in cedar, 2 in scrub-oak, 2 in elm, and 5 on the ground.

Cardinal (Cardinalis), 20 nests; 5 in elm, 5 in mesquite, 4 in post-oak, 3 in cedar, and 3 in stretchberry vines.

Painted Bunting (Passerina), 23 nests; 12 in mesquite, 6 in hack-berry, 3 in scrub-oak, and 2 in post-oak.

Bell's Vireo, 34 nests; 24 in mesquite, 6 in hack-berry, 2 in elm, 1 in weeping-willow and 1 fastened to the upright stem in a dense cluster of blood-weed. This nest contained one egg, and was deserted.

Mocking-Bird (Mimus), 29 nests; 5 in elm, 4 in live-oak, 3 in mesquite, 3 in hack-berry, 3 in chaparral, 3 in yucca, 2 in cedar, 2 in gum, 1 in the corner of a rail fence, and one in a cactus (*opuntia*).

In all but one species the nests, with the exception of one or two unusual instances, had nearly the same type of surroundings. This single exception, the mocking-bird, shows more individuality in its choice of nesting-sites than any other bird I know.—J. H. TALLCHET.

The Strawberry Aftermath.—(Page 540.) My strawberry notes for 1892 are not so full as usual, for my gardens were not in the usual good order, owing to a necessity for plowing out old beds a year sooner than I intended. I still hold to Mrs. Cleveland as one of the best of the later sorts; it ought not to drop out of sight. We have had a rush of new sorts crowding each other out before any are fairly tested. Pearl is another berry that should be retained. This and Mrs. Cleveland are as fine in foliage as in fruit; both are finely colored berries, and of good flavor. We certainly have been hasty in letting Lida drop off our lists of prime sorts. The berry is very large, of excellent flavor, and a heavy cropper. Parker Earle is, with me, the only sort that has rusted. I cannot give up Bubach and Haverland yet. The former rarely fails to meet all the requirements of a good berry. Haverland in wet seasons is soft and flavorless, but it has some wonderfully good points. Of the very old sorts I keep only two, Sharpless and Cumberland. These I expect to cultivate for many another year. Cumberland never fails to do the fair thing by us. It is handsome, good and large. For a home berry it is as good a sort as we have. Of new strawberries that have not yet fruited, Standard makes only moderate growth, Barton fine, Leader moderate, Beverly fine, Gillespie fine. I believe all of these are worth planting. Yale is not a wonderful berry in any respect, but I have quite a liking for it. Gypsy I retain for its superb quality; it is only of moderate size. Crawford I keep because it is above the average in quality and generally large. The main point we need to note in strawberry-culture is that it is uniformly successful only when we prepare for irrigation during drouths.—E. P. POWELL, N. Y.

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Achimenes.—Place them in a dry situation with a temperature of about 50° F.

Agapanthus umbellatus may be stored in a cool, light cellar. Keep it only moist enough to prevent the leaves from shriveling.

Amaryllis.—Keep the bulbs quite dry, especially the deciduous kinds. Evergreen sorts should have just water enough to keep their leaves fresh.

Ardisias.—The showy red berries make this a pretty house-plant. If kept in a temperature of from 40° to 50° and guarded against frost, the berries will stay on the plants from one fruiting season till another.

Astilbe japonicas.—Start plants for early bloom.

Azaleas.—Keep plants at rest only moderately moist. For early bloom, place them in the warmest part of the house; for late bloom, in the cooler part.

Begonias.—If winter bloom is desired, give plenty of air and light. The more rugged, strong-growing kinds seem well fitted to withstand without injury the heat and dust of the ordinary living-room. Give them a light, porous soil.

Bermuda Easter Lilies.—Start bulbs at once, if flowers are wanted for church decoration next April.

Boydiers.—Clear off all dead plants, but do not forget to mark herbaceous perennials with little stakes, so that they can be found easily in the spring when the beds are dug over, otherwise many of the smaller ones may be lost. Transplant flowering shrubs and rooted suckers.

Bulbs.—Fall bulbs, such as tulips, lilies, etc., may be planted as long as the ground remains unfrozen. Have the soil well and deeply spaded and properly enriched, and plant them in groups or lines, according to taste. Label the varieties.

Buxus.—Divide and reset the shrubs before winter, if desirable. Plant them deeply, firming the soil well.

Cactus.—For watering plants, use quite warm water, pouring it on the soil, not on the leaves.

Callas are just what you want in the winter house-garden. For best results, supply the earth liberally with fertilizer, in the shape of well-rotted cow-manure. Provide well-drained pots, so that the liberal supplies of hot water given may readily pass off.

Camellias.—For early flowering, plants should be selected that were started into growth, their wood ripened, and their buds well-set, early in the season. Give only a slight rise of temperature, as camellias cannot bear much heat. Plenty of atmospheric moisture must also be given, otherwise the buds are to drop off.

Cape Jasmynes.—Place them in the cellar, and keep them dormant until February or March. Then bring them into light, and start them into growth by the gradual and always moderate application of water. These plants need a light soil in well-drained pots.

Carnations.—Keep them in a cool place for winter blooming. Try the new Marguerites.

Chinese Primroses.—Fine specimens may be grown in a shaded place. They will do well in a west or north window. Keep in a cool temperature.

Chrysanthemums.—Ventilate them freely in mild weather, but more especially when dry. The main object should be to keep the plants as cool as possible, and when artificial heat becomes necessary no more should be given than will induce a gentle circulation of air, aided by a small space of top ventilation to expel dampness.

Cuttings.—Pot them as soon as rooted.

Cyclamens make fine winter bloomers. Give them occasional doses of liquid manure, and keep them in a cool window, having some sun, until the plants are ready to bloom. After that they should not stand in the direct sunlight.

Dahlias.—Store the cured tubers under the greenhouse benches, or in some other reasonably dry and frost-proof place.

Deutzias.—Pot the plants to be forced for early spring bloom. Good flowers may be had about two months after the plants are brought into heat.

Earth-worms are not longed for in the soil of potted plants. They live on nutriment which is needed for the flowers. You can easily kill them by watering the soil with caustic lime-water.

Ferneries.—Give the plants proper room to grow. Ferneries require only a little care, and are beautiful ornaments for the house.

Forget-Me-Nots.—Put some good clumps in six-inch pots, and store them in a coldpit until the holidays, when they may be brought into heat.

Freesia refracta alba is a fine bulb for winter bloom. The flowers remain perfect a long time, and are especially good for cutting. Put about five or six bulbs in a five-inch pot, as the bulbs are small. They do not need to be set in the dark to form roots, but may be placed directly in the window. Be careful about watering too much at first, until roots are well started.

Funkias like to be planted in a moist soil and rather shaded location.

General Greenhouse Management.—Remove dead leaves, old flower-stalks and diseased or superfluous branches. Guard against over-watering. Be sure that all plants have proper drainage. Keep the glass surface clean and free from whitewash and dust. As a precaution against green-fly and other insects, mulch the soil between the plants with moistened tobacco-stems. The standard remedy is burning a half-pound of tobacco-stems to each 500 feet of glass weekly; but steaming tobacco-stems, or keeping tobacco-tea in little troughs on the heating pipes, are just as effective remedies. Callas,

amaryllis, fuchsias, geraniums and many other plants bloom much better if a little root-bound. When you first pot young plants, avoid having the soil too strong. Many plants have been killed by being put into soil stronger than they could stand. The desire to have plants grow quickly is often the cause of this. Have good, porous soil for the first potting, then when the plant requires shifting give stronger soil.

Geraniums.—Keep them near the glass and rather dry.

Heliotropes.—Encourage new growth in order to secure plenty of bloom. Never allow the plants to become root-bound. Give them a warm place, otherwise they will not bloom well.

House-Plant Management.—Give all plants plenty of air during this month, selecting the warmest hours of the day, say from 11 until 3 o'clock, for opening the windows. Take the chill off water before using it on plants, and guard against over-watering. Many plants, like the heliotropes, require a good deal of sunshine to bloom well; others need a certain amount of it, but do not like too much of its extreme heat during the middle of the day, as the geranium. The entire stock should be given an occasional cleaning. Dust and impurities on leaves and stems may be sponged off daily. Avoid extremes of temperature. Prune freely all soft-wooded plants that were lifted, to promote health and beauty. Bulbs of all kinds may still be planted for window flowering, but don't forget to put them in the dark for a few weeks before setting them in the window.

Hydrangeas.—Keep them dormant in the cellar, giving but little water.

Ivy.—The English ivy likes a rich soil and shady location. Keep the leaves clean by frequent sponging.

Ivy-leaved Geranium.—For fall bloom, use rather small pots. Unless root-bound, this plant will not flower profusely.

Lawn Management.—There will be no further use for the lawn-mower. Thin places on the lawn can be materially improved, and the whole lawn benefited for another season, by applying a good top-dressing of fine compost, or perhaps a coat of wood-ashes and bone-meal, or complete fertilizer. Use these manures as freely as your purse will allow, to the extent of a ton of high-grade fertilizer to the acre, or other manures in proportion. Collect and burn all rubbish. Stake and tie small trees and plants likely to be injured by high winds. Collect the dry leaves; they will come handy as mulches, or as absorbents in the stable. Apply a good coat of compost to the borders planted with bulbs.

Lilies-of-the Valley.—For early flowering, bring plants into heat by the end of the month.

Mahonias and other large-leaved evergreen shrubs are subject to injury by sun-scald and wind. Set evergreen boughs around them, especially on the windward and the sunny sides, and secure them by tying.

Mignonette.—If plants are desired for winter and spring bloom, sow seed in pots.

Mulching shrubs, herbaceous perennials, etc., is a good practice. Leaves are first-class mulching material, but they should be held in place by the trimmings of

shrubs and trees. Use no material for mulching that is liable to invite mice.

Narcissus.—This is one of the sweetest and loveliest of spring flowers. Plant bulbs among and under shrubbery, and leave them undisturbed for some years.

Oleanders.—Store in the cellar.

Olea fragrans.—This evergreen shrub from China is a good subject for house-culture. Its small, white flowers are quite fragrant.

Palms, for best success, require deep pots containing good rich soil, thorough drainage, plenty of water, a shady location and frequent syringing over the leaves. Scrub off the scale insect whenever found, by means of a small, stiff brush.

Plants for Shade.—The following will do for a sunless window: Begonias, fuchsias, primroses, violets, callas, lilies-of-the-valley, ferns, palms, Kenilworth-ivies, etc.

Poinsettias.—The earlier ones may be kept pretty warm till the bracts are fully developed, after which they may be placed in the conservatory, or in an intermediate and well-lighted house, where they will last in good condition for a long time, provided they are well attended to in the matter of watering and not subjected to cold draughts in ventilating. Later ones should be kept as near the light as possible, to prevent them from getting drawn or turned to one side. The poinsettia likes a soil composed of loam and peat. After it has shed its leaves it requires a period of rest, and therefore should be kept almost dry. It is propagated by cuttings, which require strong heat to root them.

Pruning.—The general rule to be followed in pruning most shrubs is, to remove old wood rather than new, as the latter is most productive of bloom. In pruning hardy roses, which may be done after November 15, thin the heads out well, leaving no weak or unhealthy growth. Moderate growers should be pruned closely.

Roses.—Hardy kinds may yet be planted in open ground. Fibrous loam, well-rotted turf, etc., is best for them. After planting, apply a good mulch of manure. The more tender sorts in the border may be laid down for winter protection. Another good plan is to surround the rose-bed with wire-netting, and to fill up inside with leaves, placing some boughs on top.

Stakes and similar requisites gather up carefully, and store in a safe place for another season's use.

Street-Trees.—These, and all others that are subject to injury by animals, etc., protect by a guard of wire-screen, or lath and wire.

Sweet-Peas, mignonette, candytuft, larkspur, and other hardy annuals may be sown outdoors for early spring bloom.

Tuberoses.—Store the bulbs in a dry, cool, frost-proof place.

Verbenas.—The plants recently started from cuttings like a cool situation near the glass, and plenty of air in all cool weather. Guard against green-fly.

Wall-Flowers make fine, fragrant plants for winter bloom, and may be grown in a cool room. They like plenty of water.

II. GARDENING FOR TABLE AND MARKET.

Apples.—The crop seems to be short this season. Whoever has good apples should gather them carefully, and market them in good shape; they are sure to bring a good price. There is every reason to believe that evaporated apples and cider-vinegar are not abundant. Here we have only a small crop of gnarly, scabby fruit. It should be gathered and turned into vinegar. We look for a big apple crop next year. Feed the trees now.

Asparagus.—A heavy application of rich compost to the beds will pay well. For forcing under glass later on, strong plants of some age should be procured, and stored where they will be convenient when wanted.

Beets.—They keep best in pits. Some may be kept in the cellar for use during winter, but cover them with sand or sods to prevent shriveling.

Blackberries.—Cut away the old wood and ratchet the roots. Tender sorts should be laid down and lightly covered with soil at the tips.

Carrots.—Treat as advised for beets.

Celery.—Dig up the stalks, leaving the roots on, and stand them close together in a narrow trench, tops just even with the ground-level. Gradually cover them with boards, earth and manure. Another way is to set them upright upon the floor of a damp cellar or root-house, keeping the roots moist and the tops dry. Celery can stand some frost, but not exposure to less than 22° Fahr. The stalks intended for use before Christmas, may in most localities be left outdoors, to be used as wanted. Should cold weather set in early, they will need covering in some way.

Currants.—Cut away old wood. Make cuttings, if still wanted, and either pack them in sand or moss in the cellar, or plant out at once.

Garden Management.—Clean up the garden, plow, and otherwise prepare for the next season. Look up the needed manure supply in time. We want good old compost, not fresh stable-manure, for immediate application. Often good compost may be found at almost nominal prices in one's own vicinity.

Gooseberries.—Treat as advised for currants.

Grapes.—Pruning is in order. Do not be afraid to cut close. More grapes are lost from lack of pruning than by the use of the knife. If there are any tender varieties, lay them down and cover them from the weather. Then take time to give the trellis a coat of paint, if it needs it. Painting once in two or three years is cheaper than renewing it in eight or ten years. If the wood is strong and healthy, the prunings may be used for cuttings. Make them 8 or 10 inches long, pack them in bundles, and bury them in sand or sawdust in the cellar.

Greenhouses.—Have you a greenhouse for forcing vegetables, at least for family use? If not, why not? It would be a great convenience, and profitable in more than one way. Hotbeds, in cold climates, are not trustworthy things to start very early in the season. A greenhouse is always ready.

Hotbeds.—Gather, repair, repaint, and store the sashes.

Keeping Grapes.—Gather as soon as ripe; remove all immature and imperfect berries; carefully pack in shallow baskets, and carry them into a dry storage-room or cellar, where the temperature will remain only a few degrees above freezing. If moisture collects on the fruit, give sufficient ventilation to remove it. Keep the room dark as well as cool. Some varieties keep much better than others; those with rather thick skins and firm pulp are usually the best for long keeping. Half-ripened or frosted fruit will not keep well under the most favorable conditions. Vergennes is one of the best keeping grapes.

Lettuce.—The plants in forcing-pits need plenty of ventilation. Guard against mildew and greenfly.

Mushrooms.—Beds may now be made under the greenhouse benches, in a warm shed, or in the cellar. Guard against extremes of moisture and drouth.

Orchard Management.—Young trees should have a mound of earth raised around the stem as a support, and protection against mice, etc. Small and lately planted trees must have stakes set beside them, and be tied to the stakes with a broad band. Apple and pear trees may yet be planted. Trim superfluous or unhealthy wood out of the old orchards.

Raspberries.—Treat as advised for blackberries.

Rhubarb.—Store plants for forcing, as directed for asparagus.

Spinage.—Cover the beds lightly with leaves or litter before winter sets in.

Squashes.—The storing and keeping of winter squashes has proved a difficult task with many. According to Dr. Hoskins, the best place to keep a few Hubbards is in a corner of some warm room. In this way, if they are ripe, unbruised and sound, and with the stems on, you can keep them until it is time to plant the seed. But they must be quite ripe when stored, and free from bruise or scratch. Harvest them in a wheelbarrow, lined with a heavy horse-blanket. You can hardly keep a squash too dry, and if you scratch or bruise one, don't try to keep it. As well try to keep a cracked egg. Those who make a business of squash-growing build warm houses, with shelves for the squashes, and keep the houses uniform in temperature by means of stoves at both ends. The temperature should not go below 50°. The cellar is the very worst place you can find to keep squashes, as it is important to keep the air both warm and dry.

Strawberries.—Soon it will be time to mulch the beds. Provide marsh-hay, or other coarse litter, free from weed-seeds, and when the ground has frozen an inch or so, spread it all over the surface thinly and evenly.

Tools.—Examine the stock on hand, and place it in good repair, ready for use in the spring. Tools will last longer, and look better, if given a good coat of paint or linseed oil at least once a year.

Vineries.—In early houses prune the vines at once, and give the houses a thorough cleaning with hot water and soft-soap. Exotic grapes are sweet and luscious, and much more easily grown, even in coldhouses, than most people imagine. The subject will be fully treated in the next issue of AMERICAN GARDENING.

CURRENT GARDEN LORE GATHERED WORLD-WIDE.



Apples vs. Intemperance.—The latest cure for drunkenness is to eat apples. Let a man eat enough apples to become seriously affected by the arsenic left from spraying, and he will certainly have no reason to get drunk.—*Rural New-Yorker*.

Forced Garden Stuff is Worth its Price.—The gardener who raises early stuff by working with glass is surely entitled to all his produce will bring. If anybody is able and willing to pay him a dollar a quart for his strawberries forced under glass, it is perfectly right and proper that he should take it.—*Gleanings in Bee Culture*.

Danger to City Trees.—Probably the most injurious gas accompanying smoke from coal and rock-oil is sulphurous acid. It has been shown to injure plants if the air contains but one part in 50,000. More recent experiments make it certain that even one part in a million is harmful. From the well-known abundance of sulphur in American soft coal and crude petroleum, there can be no reasonable doubt that in cities it occurs in sufficient amount to largely account for the destruction of trees.—*Prof. Arthur's Report*.

The Rockery to the Rear.—No special paths are needed about flower or shrub groups. Rock-work is seldom satisfactory, and it is only appropriate in a retired portion of the grounds. Piles of shells, rocks and scoræ in the front yard are sadly out of place. Heap them in some back-yard shady corner, and you will find great delight in transplanting among them from woods and meadows an assortment of hepaticas, spring-beauties, bloodroot, trilliums, bellworts, phloxes and ferns.—*Prof. W. J. Beal, Mich. Ex. Station*.

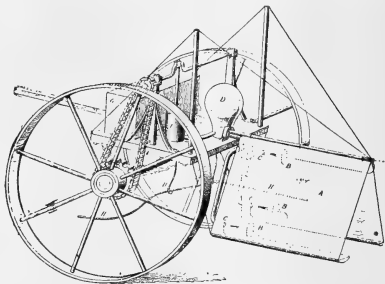
Fruit-Growers and Express Companies.—One of the greatest drawbacks which the grape-growers of Florida must overcome is the exorbitant express rates on their fruit to New York. The express companies charge four cents a pound to New York from Moultrie, Florida; this, of course, takes a great deal of profit from the growers.—*Fruit Trade Journal*.

California Dried Fruit.—There should be more attention paid to drying fruit in such a way as to keep it free from dust and insect larvæ, and to putting it up in neat and convenient packages. If our dried fruit could be warranted to carry over into another season, eastern dealers would take hold of it with more confidence, and

prices would rule better. Excessive sulphuring and open-air drying are methods which might be abandoned with much benefit.—*Los Angeles Times*.

Early Beets and Radishes for Profit.—Break the ground in fall and manure it well. Throw the soil in ridges 4 feet wide with a large turning plow. This will leave deep furrows between the ridges, and all surplus water will find its way into them. The warmest soil should be selected, and in spring these ridges can be worked from four to five days earlier than soil not ridged. Manure the land again in the spring, line off rows 10 inches apart, and sow beets and radishes alternately. As soon as the plants are up, sprinkle ashes thickly over the beds. Planted in this way, the radishes can be sold before the beets need room. I dispose of them when an inch in diameter. Beets should be sold when two inches in diameter. In pulling the first for market, take out those which will leave needed room for the others to grow.—*Farm and Home*.

Proposed New Spraying-Machine.—The *Mark Lane Express* proposes the device shown for spraying potato-vines with Bordeaux mixture. Present machines, it says, are not entirely successful, because the spray is not protected from the wind, which blows it to one side,

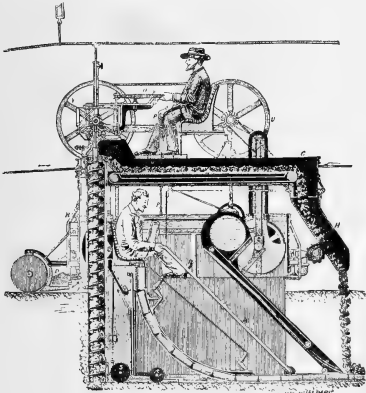


MACHINE FOR SPRAYING BORDEAUX MIXTURE.

so that frequently some vines are not touched at all, while others are completely drenched. Again, but one side of the vine is sprayed, the other being neglected because it rests on or near the ground. For these reasons

a machine is wanted that will deliver the spray *under cover*, so that the wind will not disturb it, and also one that will raise up the vines, and thus permit the spray to reach all sides. The results are thought to be reached in the machine here illustrated. A is a hood or roof which passes *over* the row. The spray is driven out through B B B, *inside* this roof, so that it must fall upon the vines. C C C are nozzles. D is an air-chamber for regulating the stream, making a force-pump. E is the pump, with F, a chain for driving it. G is the tank for carrying the mixture. H H are curved rods of iron or wood for elevating and holding up all "down" vines under the roof until the spray has reached them. These rods reach under and lift up the vines, which otherwise would have only their upper sides wet with the mixture. —*Rural New-Yorker*.

Machine for Laying Drainage-Pipe.—The laying of drainage-pipe is generally effected in three operations, viz., digging the trench, putting the pipes in place by hand, and covering them with earth. The machine rep-



MACHINE FOR LAYING DRAIN-PIPE.

resented here is designed to perform these various operations at the same time, and with the aid of two men only. It consists of a frame, A, mounted upon wheels, which rest directly upon the ground; or, by preference, upon rails, that are taken up and laid again in front in measure as the work progresses. This frame supports another one, B, which carries the tool designed to excavate the trench, and which is nothing else than an endless screw with cutting edges, arranged vertically. This screw is protected laterally by two plates that support the earth and prevent it from falling into the trench before the pipes have been laid. In the part of the screw that projects above the level of the earth, a third plate, placed in front, prevents the earth accumulated upon the spirals from falling upon the ground. This plate is not fixed, but is held against the screw by a lever, E, and a

counterpoise, so that if the screw brings up a large stone, the latter can enter the passage-way thus formed. The motion forward, as well as the motion of the screw, is produced by a cable winding over a wheel, U, and ending at a stationary engine placed at one end of the field. The starting or stopping is affected through a lever, P, placed within reach of the hand of the two operators. In measure as the machine moves forward, the operator at the lower part puts pipes into the curved cylinder which extends to the bottom of the machine, and the pipes are thus laid upon the ground, one after the other. The earth, on reaching the upper extremity of the screw, is emptied upon an endless cloth in the box, G, whence it falls into the passage, H, which may be inclined to the right or left, so that the earth may be made to drop upon the pipes, or be deposited to the right or left of the trench. In order to prevent the earth from entering the joints of the pipes, the joints are covered with a band of paper, led to them by a guide seen at the back of the machine. It may happen that the screw in its operation will meet with excavations deeper than the trench that it is desired to form, and that consequently the pipes may be insufficiently supported at such points. In order to remedy such a difficulty, there is arranged immediately behind the screw a drum, S, which bears constantly upon the ground, and against which abuts the extremity of the rod of a valve closing a box of sand. When the drum enters an excavation the valve-rod, actuated by a spring, lowers, and the valve leaves its seat and allows of the passage of a certain quantity of sand, which falls into a vertical chute situated behind the drum, and fills the excavation. A second roller, T, equalizes this layer of sand, and the bottom of the trench is thus made perfectly level. —*Les Inventions Nouvelles*.

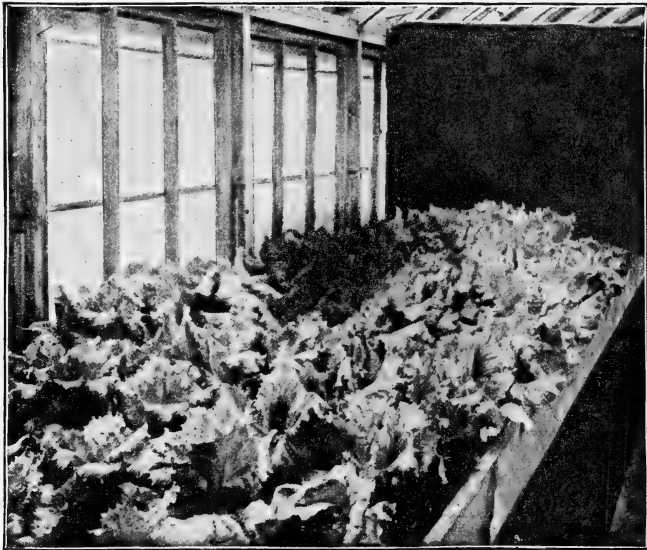
Steam Heating.—All our experience emphasizes the greater value of steam, but we do not condemn hot water. Steam is certainly better for our conditions, and superior for very large houses where the fall is slight, for most forcing-houses, and for all establishments which are likely to be often modified and extended. For conservatory purposes, for straight runs and small houses, it is perhaps equalled—possibly surpassed in some instances—by hot water. Steam overcomes obstacles, as elbows and angles and obstructions, better than hot water. It travels faster and farther. Crooked runs with little fall are great difficulties in hot-water heating. Steam can be varied more quickly than hot water. On the other hand, steam is as steady as hot water, under proper management, and it requires no more attention. Plants thrive as well under steam-heat as under hot-water heat. —*Prof. L. H. Bailey, in Cornell Bulletin 41*.

Forcing Lettuce.—Lettuce-forcing is one of the most satisfactory and profitable enterprises for the winter months. There is nothing difficult or complex about the operation. The illustration shows a bench of Black-seeded Simpson lettuce. The seed was sown in the greenhouse December 11, in boxes 17 x 21 inches and 2½ inches deep. The soil used for this purpose was thoroughly pulverized and put through a fine sieve. After

filling the boxes, and sowing either broadcast or in rows, fine soil was sifted over the seeds, burying them about one-fourth of an inch, and firmed with a small block. Most of the seeds had vegetated by December 13 and 14. Water was applied sparingly until the young plants were pricked out into the same kind of boxes January 13, setting them in rows $1\frac{1}{2}$ inches apart. At this transplanting, about an inch of old manure was placed in the bottom of each box, and then it was filled with good leaf-mold. The plants grew rapidly, and by February 5 we had good-sized specimens for the bench. The greenhouse bench is three feet in width, and by erecting side-boards we made it nine inches deep. A layer of rotten manure, measuring about three inches in depth, was placed in the bottom, and covered with good soil mixed with one-third of its bulk of rotten manure.

to the ground in spring, before growth commences. This results in the growth of vigorous young shoots, and it is these young canes which bear fruit the same summer, ripening it toward the close of July, through August, and even at times in September. As the new canes do not all start to grow at the same time, they reach the bearing stage at different periods, and this is why the ripening of the fruit is scattered over a considerable period of time. It is not impossible to get other raspberries to bear in the same way, but they do not perform their work so thoroughly as Catawissa.—*Joseph Mehan, in Practical Farmer.*

Edelweiss.—The edelweiss has been hunted from one point of refuge to another among the Alps, till it has been almost exterminated in its native home. One of the most beautiful and quaint of mountain flowers is con-



A BENCH OF LETTUCE.

The plants were set seven inches apart. Our photograph was taken April 1, and April 9 we cut the crop for market. Houses for forcing purposes should be 20 or 22 feet wide, constructed with the glass very close to the benches, so that the plants will receive a large amount of sunlight, which is essential for healthy and rapid growth of plants.—*Bulletin Tennessee Agricultural Experiment Station.*

A Fall-Bearing Raspberry.—Catawissa is a very good fall-bearing raspberry. It has a natural tendency toward fruiting at that season. Its canes are cut off close

demned to extinction because tourists in Switzerland consider themselves bound by fashion to wear a couple of dried specimens in their hats or send them home gummed to a card. In one or two of the cantons the government has interfered to save the persecuted plant, and set a fine on plucking its beautiful, fluffy, white flowers. The edelweiss does not submit readily to cultivation in gardens. It will, indeed, grow when planted in a rockery, but degenerates early, the flowers assuming a green hue in place of snowy white, and the petals losing their curious wool.—*Horticultural Times.*

A Hole for Rubbish.—"There is a deal of satisfaction in a rubbish-hole," said an old lady whose premises were neat as wax. "I never throw such house-wastes



TRADESCANTIA REGINA.

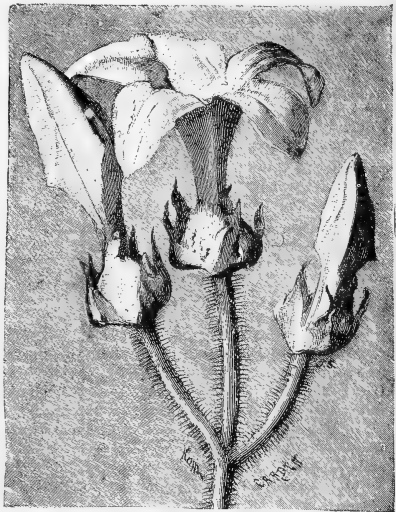
as old shoes, tins, feathers, broken crockery, etc., in my back yard, nor allow them to be dumped in the streets, but bury them out of sight forever. And this is the way I manage: A hole is dug in an out-of-the-way corner, about 2 feet deep, 2 wide and 3 long; this lasts my family of five for six months. When apparently full it is well tramped down and leveled up with soil from a new hole. A tree or shrub growing near one of these deposits soon shows by its vigor that it has found hidden treasure."—*N. Y. Tribune.*

Substitute for Canada Ashes.—The carbonates and phosphates of potash, magnesia and lime constitute the entire agricultural value of ashes. Can we, then, provide 110 pounds of potash, 39 of phosphoric acid and 1,220 of carbonate of lime in fine condition in some other form cheaper than ashes? An application in the late fall of 20 bushels of burned oyster-shell lime (40 pounds to the bushel), at 12 cents a bushel, would supply as much lime as a ton of ashes at a cost of \$2.40; 500 pounds of cotton-hull ashes in addition would cost \$8.75, and supply as much or more potash than a ton of Canada ashes, and very considerably more phosphoric acid. The weight of these two things would be 1,300 pounds, as against 2,000 pounds of Canada ashes, which involves a saving in cartage; the cost, \$11.15, a little less than Canada ashes cost on the average. The comparison is here made with ashes of excellent quality. With ashes of lower grade, which are more common in our markets to-day, the showing for the substitute would be much more favorable.—*Bulletin of Connecticut Exp. Station.*

A New Tradescantia.—A new tradescantia made its first appearance in England at Temple Show last

season. The leaves are lanceolate, arranged in two ranks upon stiffish ascending or arching branches, and vary in length from six inches upward. The central portion of each leaf is dark olive green, more or less marked with grey spots and lines, and while quite young this portion is shaded with purple and rose. On each side of this is a broad, irregular silver-grey band, and along the margin is another olive-green band variously marked and striated transversely with grey. The native home of the plant is in central Peru, from whence it was introduced in 1890 by the Messrs. Linden. It thrives well under stove-treatment, but whether it will succeed in a greenhouse remains to be proved; the probabilities are against it. The habit of the plant is very neat, quite different from that of the common and well-known trailing species, and it is well adapted for pot-culture.—*Gardening World.*

Large-Flowering Schubertia.—The accompanying illustration shows the character of the blossoms of this



SCHUBERTIA GRANDIFLORA.

climber from the Argentine Republic. The blooms are funnel-shaped, more of an ivory-white than pure-white,

and have a fragrance that is at once characteristic and distinct. It is peculiarly aromatic and nutty, not sickly, like that of the stephanotis and tuberose. We seem here to have a dangerous rival to the stephanotis, beautiful as that climber is, for this schubertia is just as free in growth, making shoots of great length in a single season, and bearing clusters of from eight to ten flowers. The schubertia has two flaws, however; the unpleasant odor of the leaves when bruised, and its abundance of reddish-brown hairs. But its advantages outweigh its disadvantages, and it seems to be only a matter of time when the plant will become a general favorite. Although often described as a green-house plant, it requires an intermediate temperature to bring out its full character. When seen in perfection its elegance and informality render it attractive, while all appreciate the nutty fragrance of its stephanotis-like flowers.—*Gardening Illustrated*.

Grass of Parnassus.—

This is an extremely interesting and pretty little genus of bog-plants, chief amongst which is the subject of the illustration, *Parnassia palustris*, a native of Britain. On marshy land or in bogs in the rock-garden it is a most charming flower, and is by no means an uncommon plant in gardens. When cultivated the fine effect it gives is really surprising. We find that a sandy-peat soil answers well for all plants of this species. They are readily raised from seed, and most of them may be increased by divisions. *P. asarifolia* is an extremely pretty plant, with larger flowers than the British species. The flowers are large, white and produced in summer. *P. Caroliniana*, from the North American swamps, has large, white flowers netted with green or purple lines, and when growing well is very effective. *P. fimbriata*, with large fringed flowers, is the most beautiful of the North American forms, and is well worth special care. The leaves are curiously hollowed out near the base. *P. nubicola*, introduced a few years ago from the Himalayas, is a fine robust species with large white or straw-colored flowers. The leaves are elliptical. *P. palustris*, the common grass of Parnassus, has white flowers and cordate, stem-clasping leaves. It is one of the freest bloomers and, in our opinion, the best of the genus for culture in an ordinary artificial bog.—*The Garden*.



GRASS OF PARNASSUS. (*Parnassia palustris*.)

Water-Plants in Japanese Gardens.—“The Japanese garden contains no large growths. It is paved with blue pebbles, and its center is occupied by a pondlet, a miniature lake fringed with rare plants, and containing a tiny island. Here and there at the edge of the pond, and almost level with the water, are placed large flat stones, on which one may either stand or squat, to watch the lacustrine population or to tend the water-plants. There are beautiful water-lilies with bright green leaf, disks floating oilily upon the surface, and many lotus plants of two kinds, those which bear pink and those which bear pure white flowers. There are iris plants growing along the bank, of which the blossoms are prismatic violet, and there are various ornamental grasses and ferns and mosses. But the pond is essentially a lotus pond; the lotus plants make its greatest charm. It is a delight to watch every phase of their marvelous growth, from the first unrolling of the leaf to the fall of the last flower. On rainy days especially the lotus plants are worth observing. Their great, cup-shaped leaves, swaying high above the pond, catch the rain and hold it awhile; but always after the water in the leaf reaches a certain level the stem bends, and empties the leaf with a loud splash, then straightens again. Rain-water upon a lotus leaf is a favorite subject with Japanese metal-workers, and metal-work only can reproduce the effect, for the motion and color of water moving upon the green, oleaginous surface are exactly those of quicksilver.”—*Atlantic Monthly*.

The Parapee Palm.—The Parapee palm (*Guiltema speciosa*) is cultivated by the Indian aborigines of the Guianas for its fruit, which they use largely as food. They plant it about their settlements, and, where it is found apparently wild in the forests, examination will show that such situations were formerly occupied by the Indians. In some seasons the fruit is produced without seeds, while in others it contains seeds, the variation occurring in the fruit of the same trees. When boiled or roasted it has something of the taste of a dry, mealy potato. It is palatable and nutritious. The fruits, which are about the size of a pigeon's egg, are borne in bunches of from forty to sixty. There are two or three bearing seasons in a year.—*Garden and Forest*.



LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES
TO BE WIDELY KNOWN

The Influence of Forests in protecting the water supply is well illustrated in the case of Greece. In ancient days she possessed 7,500,000 acres of forest. To-day she has hardly 2,000,000 acres, and the scarcity of water, and other injurious climatic effects are traceable to the destruction of the trees.

Distance Between Grape-Vines.—In a paper on grape-growing, read before the Western Michigan Horticultural Society, A. H. Smith gave the results of planting vines at different distances. Delawares planted 6 by 8 feet produced 8 pounds of fruit to the vine; at 8 by 8 feet they gave 9 pounds to the vine; and in rows 20 feet apart, 8 feet apart in the rows, 19 pounds to the vine.

The Green Mountain Grape.—A joint meeting of the Connecticut State Board of Agriculture and State Pomological Society was held September 1, on the grounds of Stephen Hoyt's Sons, the introducers of the Green Mountain grape. The center of attraction, of course, was a vineyard of this fine variety. It is on heavy clay land, with a northeast exposure, and yet here were found long rows of four-year-old vines, loaded down with great, double-shouldered bunches of delicious, sweet, ripe grapes, when no other good variety had begun to ripen. Experts expressed the opinion that it was the best early market or family grape that has yet been offered.

Sheep in the Orchard.—J. S. Woodward stated, at a recent horticultural meeting, that he always made a sheep-pasture of his orchard, and the sheep made the best insecticides he ever had. He would advise keeping 100 sheep on every 10 acres of orchard. Give them plenty of linseed meal and bran, which will make them ravenous for apples. Although he has not plowed his orchard in 14 years, it is in excellent condition.

Blight-Proof Pears.—At the last meeting of the American Pomological Society, Prof. Burrill suggested that attempts be made to develop blight-proof pears, by growing seedlings from sorts that appear to be comparatively exempt from the disease, such as Seckel, Angoulême, Anjou, Winter Nélis, Clairgeau and others. First of all, we should try to ascertain which of the many varieties now in cultivation escape the attacks of disease most frequently. In propagating scab-proof varieties, the difficulty will be greater, since there is not much freedom from the disease.

Peach Yellows; Try Again.—In many localities formerly famous for their fine peach crops, few trees may now be seen. The growers have become discouraged, after losing their orchards from attacks of the yellows. The old orchards are gone, and it is not thought worth while to set new ones. Mr. Morrill, in answer to the question whether it be safe to reset peach trees on the

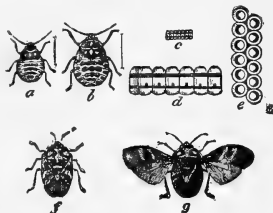
same land where a diseased orchard had been recently pulled up, stated before the Michigan State Horticultural Society, that the safety of this procedure has been demonstrated in Michigan to a certainty. He is not afraid to pull up a diseased orchard one year, and set another lot of trees the next.

Birds and the Law.—Many of the laws enacted by our legislatures for the purpose of protecting native birds do more harm than good. An instance of this was stated at a meeting of the Massachusetts Horticultural Society, during discussions on native birds. Under what was called the "Scalp Act," \$150,000 was drawn from the public treasury in bounties for the destruction of wild-cats, foxes, minks, weasels and other animals; but an investigation proved that at least \$80,000 was paid for destroying beneficial animals. Bare-faced frauds were shown, and bounties were paid for the heads of common domestic fowls, partridges and cuckoos, and the officers were made to believe that the heads of English sparrows were the heads of blood-thirsty hawks and owls.

Sod-Forming Plants.—Among plants that can be used to cover the ground beneath trees where grass will not grow are *Herniaria glabra* and *Veronica repens*. The first is a moss-like, creeping plant, which covers the ground in a very short time, and surpasses a grass-sward in beauty. A strip of ground was planted in April with 100 such plants, and in less than two months the entire surface was closely covered. A very cold winter followed, and the plants were tinged slightly brown, but by April were again charmingly green. They will thrive in any soil, in the open sun or in the shade. *Veronica repens* has somewhat larger leaves, of shining green and generally the same characteristics as *H. glabra*. A graveyard planted with it in August was completely covered by fall, and, with a slight protection during the winter, was brighter and fresher than the mounds covered with myrtle and ivy. The special feature of this plant is that in May it is completely covered with light blue flowers, borne low on the plant-stems.—*Association of American Cemetery Superintendents.*

Worthy of Imitation.—As a result of reading AMERICAN GARDENING'S account of the successful flower-shows held in the west, I have organized a horticultural society at Wayne, a suburban town of 2,000 inhabitants, 14 miles from Philadelphia. Wayne was founded by Messrs. Drexel and Childs, and is the most popular town near Philadelphia. Probably nine-tenths of the people own their homes, with the result that all properties are kept in excellent condition. There is great rivalry between owners of adjoining lands as to who shall have the finest lawn or garden. This led me to believe that a horticultural society would be popular, and I was right, judging from the way that invitations to organize were accepted. The society was only formed about ten days ago, but many applications for membership have already come in. The executive committee will soon meet to formulate plans to promote the culture of flowers and make arrangements for holding exhibitions next spring and fall. I shall be pleased to report the result.—CHRISTOPHER FALLON, Philadelphia.

The Harlequin Cabbage-Bug.—No crop in the southern states is more subject to attacks of injurious insects than is the cabbage crop. Here we have all the insects that attack the cabbage in the north, and many other destructive species unknown in northern states. Hence to bring a southern cabbage crop to maturity requires almost constant attention. Cabbages in coldframes are attacked by the cabbage-plusia (*Plusia brassicae*) and aphid (*Aphis brassicae*), while in the field, these species, together with the imported and native cabbage-worms (*Pieris rapae* and *protodice*), the zebra cabbage-worm (*Mamestra picta*), the cabbage ever-gertis (*E. rimosalis*), and others, have full sway. If, perchance, the



HARLEQUIN CABBAGE-BUG—AFTER RILEY.

cabbages should survive the attack of these enemies, the harlequin cabbage-bug (*Murgantia histrionica*, *Hahn*), finishes the work of destruction before the cabbages have formed heads. This bug is a native of a southern climate, probably Central America or Mexico. It was first reported, within the limits of the United States, in Texas in 1866. Since this date it has been gradually spreading northward, and is now well distributed throughout the southern states, extending as far north as southern Illinois and Maryland. While essentially a southern species, in a short time it will probably be common in the northern states.

Description.—The harlequin cabbage-bug insect receives its common name from the reddish yellow markings upon its body. The mature insect measures about two-fifths of an inch in length and one-third in breadth. Its general color is black, but the thorax and wing-cases bear yellowish red markings, while the under surface of the body is white and yellow. The various stages of this insect are shown in the accompanying figure, *f* and *g*, representing the mature forms. The pupa, shown at *b*, differs from the mature form in being smaller, without wings, and with four-jointed antennæ, while in the imago the antennæ are five-jointed. The larva, shown at *a*, is much smaller than the pupa and of a more yellowish color. The eggs resemble miniature barrels both in shape and markings. They are laid upon the underside of leaves in a double row, as shown at *e*. As a rule there are 12 eggs in a mass, but there are sometimes as many as 27, in which case they are arranged cylindrically. The length of time required for the eggs to hatch varies from less than 24 hours to 5 days. When hatched, the young bugs wander about for a few hours, but soon insert their beaks in the leaves. They increase in size rapidly, reaching maturity, as a rule, in about three weeks, the length of time required for growth depending somewhat upon the food-plant and meteorological conditions.

The number of broods hatched during a season depends upon the abundance of a suitable food-plant, and varies greatly. If cabbages were grown throughout the summer in the southern states, there would doubtless be six or even seven broods during a season, but as a rule there are not more than four broods a season in the southern states, and probably only two in the more northern states, where this insect abounds. The fourth brood is produced upon fall cabbages, during September and October. If a plant is attacked by large numbers of these insects, it soon begins to die at the top, the outer leaves turn brown, then black, and finally die.

Remedies.—As is the case with the majority of our most destructive insects, many remedies have from time to time been recommended for this species. The most successful one has been the Irishman's remedy for mosquitoes—to catch and kill them. Hand-picking for the majority of our insects is only to be practiced as a last resort. In the case of the harlequin cabbage-bug, the task, even when done in the early spring, is almost an endless one. Hot water has been recommended; but, while efficient, until some practical method of applying the hot water in the field is found, this remedy cannot be a success. Applications of lime have not given success. For almost all hemipterous insects, kerosene emulsion has proved to be an excellent remedy. But however excellent this may be for most of the haustellate insects, it is of little practical value in the case of the harlequin cabbage-bug. The exoskeleton or body-wall of the insect seems to be harder, and to contain more chitine than the other hemipterous insects with which kerosene emulsion has proved successful. The emulsion, diluted so that one part in ten is kerosene, will destroy the younger larvæ of the species, but upon the pupa and imagoes it has no effect. Again, even though the mature insects did succumb to the emulsion, great care would have to be taken in applying it, because of the danger of tainting the cabbages. Thus we see that a universal remedy for like insects is of but little if any value in this case. A simple and effective remedy for this insect consists in planting a row of mustard in the center of the cabbage-field at the time, or if possible, before the cabbages are set in the field. For the best results the mustard should be in bloom in April; it will then attract the insects when they first come into the cabbage-field, and they may be killed when gathered upon the mustard, with strong kerosene emulsion or pure kerosene. Sweeping with an insect-net is also good. So long as the mustard is in bloom it will act as an efficient bait for the bugs, and the cabbages will be free from them. At the Mississippi Experiment Station, about an acre of cabbages were set in the field early in last February, and at the same time a row of mustard-plants was set through the center of the patch. In April the mustard attracted large numbers of harlequin cabbage-bugs, which were killed off by undiluted kerosene emulsion. This field remained free from the pest throughout the entire season, whereas last year the entire crop was nearly ruined by it.—*Howard Evarts Weed, before the Society for the Promotion of Agricultural Science.*

Wintering Onions.—Mr. Gregory says: the cheapest and best way is to freeze them. Choose the northwest portion of some out-building, cover the floor with a foot or so of hay, on this spread a layer of onions to the depth of from $1\frac{1}{2}$ to 2 feet, leaving a vacant space of about 2 feet on the sides next to the building. Fill this with hay. Let the onions become thoroughly frozen, then cover them with 2 or 3 feet of hay. Here let them remain until the frost is entirely out in the spring, when they should be spread, well aired, and turned carefully and often until thoroughly dried. To store them largely for winter or spring sales is attended with much risk. A beginner ought rather to sell in the fall, and begin to store on a small scale.—*Wisconsin State Horticultural Society.*

Renewing Strawberry-Plants.—I set new beds every year, in order to secure good plants to use or sell. Strawberry-plants should never be taken from an old bed. On my new beds I allow no fruit or blossoms to grow. I never use or sell a plant from a bed that has borne a crop. By taking those that have borne nothing you secure extra-strong plants, and you will notice the difference in the roots themselves. In taking up roots, I usually prune them back to make them throw out little feeders, and always cut off old runners. I insert my finger in the center of plants so that in setting them the roots are fan-shaped, and I take great care to prepare the ground so that every portion of it is very fine. The Warfield I consider the best strawberry yet produced for money. I have fertilized for the last two or three years with Jessie. This year I have been trying Michel Early, which promises to be the best fertilizer known. I have found it a very good berry, of medium size, perhaps too soft for shipping, but remarkable for fertilizing.—*M. A. Thayer, President of Wisconsin State Horticultural Society.*

Some New Raspberries.—Palmer gave a fine crop on one-year-old plants; fruit glossy black, without bloom, of medium size; the canes are thickly set with briars, but form young plants readily. As an early black-cap, this is very promising. Winona and American Ever-bearing each bore a moderate crop of good-sized berries with a too-heavy gray bloom. Ada had too much bloom. Progress, a small, early blackcap, gave a fair crop of fruit, and plenty of young tip-plants. Muskingum bore a few berries of the purple type. As the bush roots from the tips, this might be called a red or purple-cap. Child's "Japan Wineberry" made a beautiful bush covered with red spines, and bore a few small, tart, orange-colored berries, that were covered with a mossy calyx until ripe. The berries separate from the calyx like the black-caps. The fruit ripened after all other raspberries. Unless the plants fruit better on full-sized bushes, they will have little value. Thompson Early Mammoth blackberry killed to the ground, even with winter protection, and is doubtless too tender here.—*From Report of Trial Stations, Wisconsin State Horticultural Society.*

Plants for the Poor.—The Massachusetts Horticultural Society stimulates a love of flowers among the

children of the poor by exhibitions of plants and flowers grown by children living in tenement-house districts. The exhibitors are not limited to this class of children, but the plants exhibited always come from tenement-house localities. Plants are given to the children at Easter time, and the exhibitions are held in September. Small prizes, sometimes of money and sometimes of books, are given to successful competitors, and results accomplished in the way of window-gardening among children of the very poor are surprising. The exhibitions are held in school-rooms or in churches on Saturdays. No admittance is charged, and there is always a good attendance of children and their mothers. At the last exhibition the writer attended, a little boy and a little girl of about eight and ten years came up to the school-house door with two pots of well-shaped and thrifty scarlet and pink geraniums, in a little wagon made of an old soap-box on two wobbly wooden wheels. These children lived on the third floor, in a tenement-house district noted for its filth and squalor. No one can say how wide an influence for good those two little plants exerted in the squalid home from which they came. A beautiful set of floral picture cards is given to every child exhibiting plants, and the children are instructed in the care of plants and encouraged to increase their collections. It is missionary work of a kind that will count for something in the future lives of these children, for flowers and plants are great teachers.—*MAX BEUNNER.*

Some Japanese Plums.—The following extract from an address by J. L. Normand, before the Louisiana Horticultural Society, gives an estimate of several kinds of Japanese plums which are now demanding much attention: "Of all fruits that I have tested on my experimental grounds, the oriental plums stand at the head of the list as the most profitable for us to plant, either for market or home use. I have sent them by mail and express as far as New York and Chicago, also to California, and they reached those distant markets in good condition. In northern cities they command fancy prices, and I predict that it is but a question of a very few years when the Gulf states will take the lead in supplying early plums to the north and west. We are at least 1,000 miles closer to the great markets of the United States than California, which gives us an advantage of cheaper freight rates, our fruits reaching their destination fresh and the first on the market.

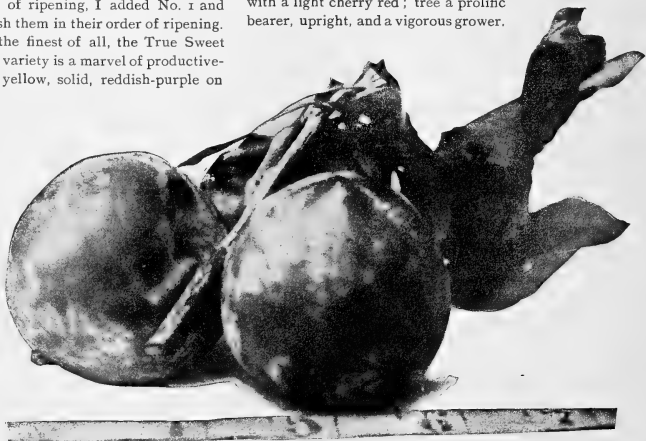
Bougoume and Japan Apricot are first to ripen, about the middle of May in Central Louisiana. Bougoume, like Kelsey, is sometimes caught by late frosts in full bloom; it blossoms a few days ahead of Kelsey, hence it would not be advisable to plant largely of that variety north of here. Japan Apricot is much later to bloom; this is the only Apricot that has ever succeeded with me here in Central Louisiana. It can be planted from the Gulf coast to Mason and Dixon's line. The above two varieties were imported by ex-Governor Hubbard, of Texas, while minister to Japan. Kume and Hanayume, catalogued by some nurserymen as Gold-Dust and Hubbard, bloom too early. I have discarded them, and

keep only a few trees to supply a few northern hot-houses. Bontonkio No. 1, another early bloomer, I believe would do well forced under glass.

Next comes, in rotation of ripening, Hattonkin No. 1, which ripens the first days of June, and sometimes the latter part of May. It is about twice the size of the Wild Goose fruit, beautiful golden and transparent in color. This variety was first imported by H. H. Berger, of California; it is not so prolific as Hattonkin No. 2. Hattonkin No. 2 ripens about 12 days later. The fruit of this variety resembles Kelsey in shape, but is a little more pointed and very prolific; it was first introduced by Frost & Burgess, of Riverside, California. The two above came to me under the name of Hattonkin, and when I saw that they were different in habit of growth, fruit and time of ripening, I added No. 1 and No. 2, so as to distinguish them in their order of ripening. Next comes probably the finest of all, the True Sweet Botan. The tree of this variety is a marvel of productiveness; fruit large, flesh yellow, solid, reddish-purple on the sunny side, practically curculio-proof. It would be well to state here, in answer to many inquiries and the prevailing impression that there is only one variety of Botan, that this is a mistake, as I have three varieties of Botans that are different in fruit as well as foliage and size. Abundance, or Yellow-fleshed Botan, Mr. Lovett, of New Jersey, has renamed. Mr. Lovett was right, as the introducer, in giving it a name. It

is a good variety, smaller than True Sweet Botan, and the shape of the fruit is a little pointed, whereas True Sweet Botan is round, and White-Fleshed Botan has white flesh. The leaves of Abundance are lanceolate, and not so broad as those of the other two kinds; these three varieties of Botan ripen about the same time. Then comes Normand Japan. This variety was imported by myself. It came without a label, and in the absence of a name I have named it Normand Japan. This is my choice of all the oriental plums, and it fruited the last two seasons for the first time in this country. The fruit is a beautiful golden color, a little larger and better than Burbank; shaped like an apple and has a fine flavor; ripens just after Sweet Botan; tree of symmetrical growth, and very prolific. Next follows Burbank No. 1, much like Sweet Botan in shape and color of fruit; a fine variety. Burbank, which is different, and which ripens just after the above, was first introduced by the California experimenter, Luther Burbank. Chabot and P.

Simonii ripen next; the latter is a shy bearer, but has a fine fruit. Some years it bears better than others. Shiro Smomo, imported by Berckmans, of Georgia, is a fine, deep, purple plum, oblong and pointed in shape, with a beautiful lilac bloom—the brightest-colored plum of all, presenting an attractive appearance. H. H. Berger describes this plum as being white. Next is Bailey Japan (see illustration), which, like Normand, came to me without any name. I have called this variety after Professor Bailey, of Cornell University. It begins to ripen the first days in July, and is different from any of the 30 varieties I have on my experimental grounds. It fruited here twice, this and last season, for the first time, probably, in this country. The fruit is almost as large as Kelsey, nearly globular, and overspread with a light cherry red; tree a prolific bearer, upright, and a vigorous grower.



THE BAILEY JAPANESE PLUM.

Continuing in the rotation of ripening comes Satsuma Blood plum. This is a vigorous grower, with dark red bark and lanceolate leaves. It ripens fully two weeks before Kelsey. The flesh of the fruit is solid, clear purple from pit to skin, and a fine shipping fruit. It inclines to overbear, grows as well from cuttings as Marianna, and no doubt will be used largely as a stock on which to work other varieties, because of its deep-rooting propensity. Marianna roots too much on the surface of the ground, and its roots are torn by working the orchard, whereas Satsuma Blood strikes roots deep, like the Leconte pear. Lastly comes in Kelsey. This was the first variety imported into the United States. It came by way of California, and was received by Mr. Kelsey in a bundle of Japanese persimmon trees, with no name attached to it. It is the largest and latest of all the Japanese sorts. It is too much inclined to rot in wet seasons, and is not a sure cropper because of early blooming. Like Bougoume, it yields a full crop every other year."

HE THAT QUESTIONS

 QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists.

Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following.

Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write only on one side of the paper.

QUERIES.

3101. **Diseased Roses.**—After my large white rose-bushes bloomed they began to look sickly, and the under sides of the leaves turned the color of iron-rust and dropped off. New leaves have appeared, but the bushes still lack vigor. What can I do for them?—ADELE.

3102. **Hyacinths and Tender Bulbs in the Carolinas.**—How should cannas be treated in the eastern part of North Carolina? I have an *Amaryllis Johnsoni* in a pot; can I plant it outdoors and leave it there? How should hyacinths be treated in this latitude?—EASTERN CAROLINIAN.

3103. **Dwarf Cannas.**—A dwarf yellow canna growing last summer in Woodlawn cemetery, just north of New York City, impressed me as being particularly fine. Can you tell me the name of the variety, and suggest a dwarf scarlet-flowered one as a companion to it?—JOHN T. TOBIN, N. J.

3104. **Wintering Oleanders and Other Shrubs Outdoors.**—Can I winter oleanders, cake jasmine, *Camellia Japonica*, and Chinese azaleas outdoors successfully?—SOUTH CAROLINIAN.

3105. **Wintering Bulbs.**—What is the best way to winter dahlia and madeira tubers and gladiolus bulbs?

3106. **Potentilla and Alstroemeria.**—Are they hardy here? How should they be treated?—ST. LOUIS.

3107. **Amaryllis not Blooming.**—Have kept it in a pot for six years; planted it outdoors last year, but it still does not bloom. The roots are large and vigorous. How can I make it bloom?

3108. **Gloxinias and Begonias.**—Among a large number of gloxinias, only a few have bloom. My begonias have not done well either. On the leaves I found a minute, slender insect, white or yellow. What is it? Is it the cause of the trouble? How can I get rid of the pest?—L. B., Ind.

3109. **Myrtle on Lawn.**—Part of my lawn is becoming thickly covered with myrtle. How can I exterminate it without too much expense?—G. W. S., Conn.

3110. **Care and Propagation of Rhododendrons.**—What winter protection must I give my fine *R. grandiflorum*? It stands in a sheltered place, but the thermometer here falls to 30° below zero. How can I propagate the shrub next year?—C. R. B., Iowa.

3111. **Violets for Winter Bloom.**—How should I manage them.—E. K. L.

3112. **Treating Cattleyas for Bloom.**—My *Cattleya citrina* is growing on a block, but shows no sign of bloom. Would it do better in an orchid-basket? What soil, temperature, etc., should it have?—H. O. T., N. Y.

3113. **Poison Ivy.**—How can it be eradicated?—H. C. A., Mass.

3114. **Water-Hyacinth.**—What care should I give the water-hyacinth, both in summer and winter?—M. K. NOLIN, Kan.

3115. **Shade-Trees for Streets.**—What kinds would you recommend as best and quickest growing.—J. T. T., N. J.

3116. **Willow and Alder.**—Is the laurel-leaved willow useful for shade or only for ornament? Does the cut-leaved alder usually grow tall? Mine persists in spreading.—M. H., Iowa.

3117. **Trees for Cemetery Lot.**—My lot is square, having a pine on one corner, and a dogwood on another. What trees would you recommend for the other two corners?—S. W. H., Pa.

3118. **Greenhouse Heating.**—Is steam or hot water the most economical means, according to latest tests, for heating two greenhouses covering together 2580 feet?—P. P., Mo.

3119. **Gas for Greenhouse Heating.**—Chas. Earnard, in an earlier issue of AMERICAN GARDENING, tells of gas being manufactured at a cost of 20 cents per 1,000 cubic feet. Where can I get full information about the process?—E. R., Ont.

3120. **Zinc Clips for Glazing Greenhouses.**—Where can the zinc clips mentioned and illustrated in the June number of AMERICAN GARDENING be obtained? Do you know a better article for glazing the sides and ends of houses—something that will be sure to hold glass in place?—N. J. R., Ohio.

3121. **Portable Propagating Bench.**—I propose to make, for rooting cuttings, a bench of galvanized iron, to be heated by a lamp. What size should the bench be, and how high above the chimney-top? Is the plan practicable?—D. W. C., California.

3122. **Rooting Black-Raspberry Tips.**—Does this hurt the next crop?

3123. **Wintering Grape Seedlings.**—Do they need protection?—F. J. L., Mich.

3124. **Niagara and Duchess Grapes.**—Please give description. Two entirely different sorts for each grape are grown here by these names.—C. P. K., Pa.

3125. **Phylloxera on Grapes.**—I have been greatly troubled this year with what seems like a fungus on the leaves of 300 three-year-old vines. Have used Bordeaux mixture every three weeks, and am now using carbonate of copper. What disease is it?—Wm. A. S., Phila.

3126. **Geneva, Muscat and Carman Grapes.**—Are White Northern Muscat and Geneva grapes valuable? How much later than Concord is the Carman grape, and how does it compare with Concord in quality?—E. P. FISHER, Ark.

3127. **Propagating the Quince.**—What is the best root upon which to graft the quince? Will not a root-grafted quince be more apt to grow than a cutting?—C. C., Illinois.

3128. **Plum Stocks.**—Is the myrobolan plum a good stock for European and American plums?—F. G. H., Ont.

3129. **Plum-Curculio.**—What pest punctures my plums and makes them rot? I have only a half or a third of a large crop of plums left.—H. E. H., Canada.

3130. **Pruning Peach Trees.**—My trees have completed their second summer's growth, and are fine and thrifty. How much should I cut back?—K. B., Ky.

3131. **Peach on Marianna Plum Stock.**—For planting on high, rich virgin soil, will it be safe to bud Amsden, Elberta, Alexander, Heath Cling and Wonderful on Marianna stocks?—C. C. L., N. C.

3132. **Grafting and Budding Fruit-Trees.**—Will Japan and native plums make hardy, long-lived and prolific early-bearing trees when grafted on whole or piece-root plum-stocks, or is the budded tree much superior? Can pears be budded on quince-stocks successfully in spring? I want hardy, vigorous trees, that will bear early.—W. B. J., Ohio.

3133. **Root-Grafting Fruit Trees.**—Can cleft-grafting be used as successfully as whip-grafting in working on piece or whole roots? Should the whole roots be stored in the fall and grafted during the winter? Can cherries and plums be root-grafted as well as apples?—T. C. F., *Indiana*.

3134. **Pruning Pear Trees.**—When is the best time to do this? Is it safe to prune in fall?—Mrs. E. L., *N. J.*

3135. **Juneberry for Local Market.**—What kind is best? 3136. **Huckleberry-Plants.**—Where can I obtain nursery-grown plants?—J. A. S., *Pa.*

3137. **Ladies' Pine Strawberry.**—Where can plants be obtained?—J. C. W., *N. Y.*

3138. **Composting Stable Manure.**—I wish to use earth or muck as an absorbent in my stables. Should the compost be kept under shelter?—C. L. M.

3139. **Tarragon Culture.**—Will the plant winter outdoors in the latitude of New York, or must it be housed?—C. J. C., *Conn.*

3140. **Vermin in Mushroom Cellars.**—How can we dispose of mice, rats, snails, wood-lice, flies, etc., in our mushroom-cellars?

3141. **Preserving Mushrooms.**—Do you know of a simple method to keep mushrooms in good order for weeks or months?—W. W. M., *Long Island*.

3142. **Grasses for Permanent Pasture.**—What kinds, what proportion of each, and how much of the whole per acre, should be sown with rye in spring to make a permanent pasture?

3143. **Crops in Shade.**—What plants, flowers, and more especially vegetables, will do well in the shade? My garden has many fruit-trees?—K. L. S., *N. Y.*

3144. **Canning Sweet-Corn.**—How can we successfully put up sweet-corn in ordinary glass fruit-jars?—C. R. M., *Ont.*

3145. **Wintering Sweet-Potatoes.**—Please give best method.—G. W. Y., *Kansas*.

REPLIES.

2879. **Leached Ashes as a Fertilizer.**—I once knew a garden filled up 6 or 8 feet deep with leached ashes, and without other soil or fertilizers plants seemed perfectly at home there.—C. L. MANN.

2965. **The Carman Grape.**—This originated with me in 1883, and first fruited in 1885. It is a seedling of one of the best wild post-oak grapes *Vitis Lincecumii*, found by me in Grayson county, Texas, and hybridized with either Herbemont or Triomphe pollen, both having been used on the flowers. Vines of Carman tested in Missouri have endured a temperature of 27° below zero without injury, when Concord winter-killed badly in the bud. It ripens here directly after Concord, and four-year-old vines averaged this year over 21 pounds of fine fruit, without a speck of fungus or disease of any kind.—T. V. MUNSON, *Texas*.

2975. **Management of Marianna-Plum Cuttings.**—Here in North Carolina I cut them in 10-inch lengths not later than February, but preferably a month or two earlier. I bury them in sandy soil, where they will keep slightly moist till early in spring. Then I set them in good, moist soil 10 inches to a foot apart in the row, leaving only one bud above ground. Firm the soil well about the cuttings, and during dry weather keep them sufficiently moist for good growth.—CHAS. C. LINDLEY.

2991. **Asparagus Growing Crooked.**—Careless handling of the knife causes more crooked asparagus with us than anything else. If the knife slips enough to injure a shoot just coming through the soil, the flow of sap on that side will be checked and the other side of the shoot will grow much faster. Sometimes small grubs in the soil

eat a shoot on one side, and the effect is the same. I have also observed that if we have very warm weather, followed suddenly by a fall of temperature, the shoots will all bend in the direction from which the cold wind came. This, I think, shows clearly that if the sap is checked on one side more than on the other, the plant will grow crooked. Obstructions in the soil, such as old stems, stones or any other rubbish, may cause shoots to grow in a slanting position, but hardly ever to crook them.—C. AUSCHICKS, *Ill.*

3041. **Bulbs After Flowering.**—When it is necessary to use ground on which tulips or other Dutch bulbs have flowered, they may be taken up and heeled in in a partially shaded place, either immediately after blooming, or later, when the bulbs show signs of ripening, which is indicated by the leaves turning yellow. If they are lifted immediately after flowering, they should be handled carefully, so as not to injure the leaves, heeled in, and left until the foliage becomes quite dry, after which they should be lifted again and dried a few hours in the sun. When dry, clean and store them in paper bags in a cool dry place, until it is time to plant them again.

3042. **Is it a Sport?**—Bulbs formed entirely above ground are called bulblets, and are common among some varieties of bulbous plants (notably in *Lilium tigrinum*), where they form in the axils of the leaves. A bulblet will not produce a new variety, but will reproduce the same variety on which it grew; hence it is not a sport. Plant bulblets in flats or in a bed by themselves in the open ground. Thoroughly prepare the bed and keep it well cultivated. In winter cover it with coarse manure, leaves or straw. The tiny bulbs will grow fast and bloom in from one to three years, according to circumstances.

3052. **Red-Flowering Dogwood.**—Red-flowering dogwood is a reality, and is known as *Cornus var. fl. rubro*. The flowers are a rich rose-color.

3056. **Cutting Asparagus-Tops.**—Do not cut the tops off your asparagus until they have withered in the fall (except of those on which the seed-pods or berries have turned red; cut these to prevent them from seeding the ground). It is necessary that the tops be allowed to grow as long as possible, that the roots may gain strength for the next season's growth.

3068. **Seeds of Hardy Orange** may be bought of H. H. Berger & Co., Box 1501, San Francisco, Cal.—T. J.

3076. **Storing Apples for Winter.**—Cold-storage is probably superior to any other way, but in no way have we been able to preserve the original flavor and crispness of the fruit more perfectly than by burying it outdoors. Select a well-drained spot and make a depression, a few inches in depth, 3 feet wide, and as long as required for the quantity of apples to be stored. Pile up a pyramid of the fruit, using the utmost care to prevent bruising it, then cover it with a good thick layer of clean straw and four inches of soil well firmed down. Apples should not be buried as deep as potatoes. Finally, put on a roof of boards to keep the rain out. Stuff the ends of the shed with straw.

3089. **Asparagus Chicory.**—Give the same soil and cultivation that you do to dandelion or chicory. Whether this plant has any value as a vegetable, however, we do not know. Some of our readers may be able to give the information.

3090. **Growing Cannas from Seed.**—Carefully file or cut a corner off each seed before planting, and all will germinate more promptly.

3091. **Managing Palms.**—Palms do well in a soil of loam. Give good drainage, and use deep rather than wide pots. Palms can be transplanted at any time, but allow the roots to fill old pots before transplanting.

3092. **Chinese Sacred Lily.**—This is *not* hardy with us in Wisconsin.

3093. **Cinnamon-Vine.**—Tubers of Cinnamon-vine can be kept in the cellar over winter.

3094. **About Pinks.**—Assuming that the carnations are to remain in the house the entire season, I would plant them a foot apart. I do not think it pays to keep them in the house over summer, as other flowers are in greater demand. Would throw them out, and set young plants in fall. The pink should have all the light they can get. Fill up the benches with cuttings of all kinds of bedding plants.

3097. **Moss on Lawn.**—The cause of the trouble, probably, is lack of fertility. The soil used in grading may have been in part subsoil, and the manure applications to these spots insufficient to start a healthy growth of grass. Put a heavy dressing of rotted compost on the mossy spots, and re-seed them.

3098. **Hardy Hydrangeas from Cuttings.**—Make the cuttings in the fall, and treat them like currant cuttings.

3099. **Aphis on Chrysanthemums.**—Try the kerosene emulsion.

3100. **Amaryllis and Crinum.**—They require a temperature of from 55 to 60 degrees. *A. aurica* with me, blooms under the same treatment as given to *A. Johnsonii*, and others of that class. I do not think it requires any special treatment. All amaryllises must be given alternate periods of rest and growth, in order to produce satisfactory flowers. If *A. aurica* is resting in winter, keep it in a moderately warm place, and nearly dry.—E. E. REXFORD.

3101. **Diseased Roses.**—The dropping of the leaves, and the iron-rust-like appearance on their lower side would indicate the work of red-spider. The preventive and cure of this ailment is profuse moisture about the bushes. This should be provided by syringing the plants repeatedly each day, aiming to throw a stream of spray so light that it will thoroughly wet all parts of the foliage, without causing streams of water to run to the roots, soaking the soil to excess.

3102. **Hyacinths and Tender Bulbs in the Carolinas.**—There is no necessity for lifting cannas from the open ground in winter anywhere in eastern North Carolina. When frost kills the tops, cut them off at the ground and lay them over the bed and they will give all the protec-

tion needed. If the bed is an old one it may be best to take up the roots, thoroughly dig and manure the soil, reset the best roots, and cover them with coarse manure for the winter. The roots can be put into the cellar, and set in new arrangement in the spring, if desired, but we find fall planting much the best here. *Canna Ehemanni* is hard to keep over dry, but winters well here outdoors. If you plant your *Amaryllis Johnsonii* outdoors, set the neck of the bulb well under ground, and not as they are usually grown in pots, partly out of the ground. The amaryllises are all hardy here in Raleigh. How about hyacinths? Well, here comes the rub. Roman hyacinths usually begin to bloom here in the open ground about Christmas. Now and then a frost makes the blooms droop, and if you want them in fine order all the time, you had better plant them in a frame, so that you can slip a sash over them when the temperature happens to drop below the freezing point. Of Dutch hyacinths, select only the latest blooming sorts, and plant them about December 1, in a bed on the north side of a building or fence. In this way they will be satisfactory. The early blooming sorts *may* do well, and they may, and generally are, caught by returning cold, after warm January weather has brought them into bloom.—WM. F. MASSEY, N. C.

3103. **Dwarf Cannas.**—Mlle Crillon grows less than three feet high. The leaves are of a medium green color; that is, neither light nor dark. They are long but rather narrow. The petals are of lemon color, shading toward the base to light purple. It is a distinct strain, and beautifully odd. Alphonse Bonnier grows from three to four feet tall. The flowers are large, the petals broad and of a brilliant scarlet.—E. S. CARMAN.

3104. **Wintering Oleanders and Other Shrubs Outdoors.**—Oleanders may be kept in dwellings when there is room for them, in fireless out-houses with sunny windows, and one lady here winters hers on an open portico on the south side of the dwelling, but they are sometimes hurt by the sun striking them on frosty mornings. Another lady, whose place I pass daily in winter, pushes hers in under an evergreen tree in the yard. Only three doors from her place is an oleander growing in the open ground, in a position where the morning sun is shut off from it by the dwelling; it comes through the winter nicely, and as I write is a mass of bloom. Near my house is a large mass of oleander growing near where a dwelling was burned two years ago and never rebuilt. This is in an open field, and these clumps came through last winter, a more severe one than usual, with only a scorching of the outer leaves. On my own lawn I have four oleanders planted where the morning sun is shut off by the dwelling. These are fine varieties, and I expect to protect them by sticking pine boughs thickly around them. The cape jasmine, *Gardenia florida*, had best be kept in its pot all winter, and planted out where you wish it to remain in the spring. Take care to plant all these tender, broad-leaved evergreens where they will not have the early morning sun on them, as they are injured more frequently by sun when frozen than by the actual cold. Cape jasmines stand our ordinary winter

weather perfectly when not fully exposed to cold winds and sheltered from the sun. In all our eastern coast country they grow to a tree-like size, and give a wonderful profusion of bloom. In clay lands they are more frequently injured than in the sandy pine-woods country. The practice of putting tender plants in an open southern exposure has led to the supposition that gardenias will not stand cold here in Raleigh as they do east of us, and they are commonly kept in tubs by our ladies. I planted one on the east front of our college building three years ago, a tiny little plant just struck from a cutting. It was planted on the sunny front, but in a position where a massive porte cochère shades it early in the morning. The plant thrives, is now well established, and bloomed freely the past summer. In any such position they will do well, and the South Carolina inquirer will have no trouble with them as dooryard shrubs. In the same position with reference to sun and wind can be grown, without trouble, the single-flowered *Camellia japonica*. The double-flowered sorts, particularly the double white, are usually more difficult to handle. They live and grow, but are apt to lose their buds. Chinese azaleas, in the sandy, dark-colored soil of South Carolina, and in a shaded situation, will do finely, but on clay soils, exposed to summer sun and drouth, they are apt to succumb sometimes in midsummer. They do best in the shade of buildings.—WM. F. MASSEY.

3109. **Vinca or "Myrtle" on Lawn.**—Yours is a bad case. We see no complete remedy but to turn under the affected sod, and give it absolutely clean culture until the vinca is killed, then re-seed to grass.

3113. **Poison Ivy.**—We have killed a small lot of this growth in our grounds, by destroying the young shoots as fast as their tips appeared above the surface. The work was done by a person not susceptible to the poison.

3116. **Willow and Alder.**—The laurel-leaved willow is a useful tree for shade, but reaches its best conditions in soil that is moist. It sometimes grows to the height of 40 feet, and its head is quite dense. The cut-leaved alder is of spreading pyramidal habit, reaching a height of from 50 to 60 feet. As the growth of your tree proceeds, it will no doubt send out a leader that will tend to draw the head to the desired form.

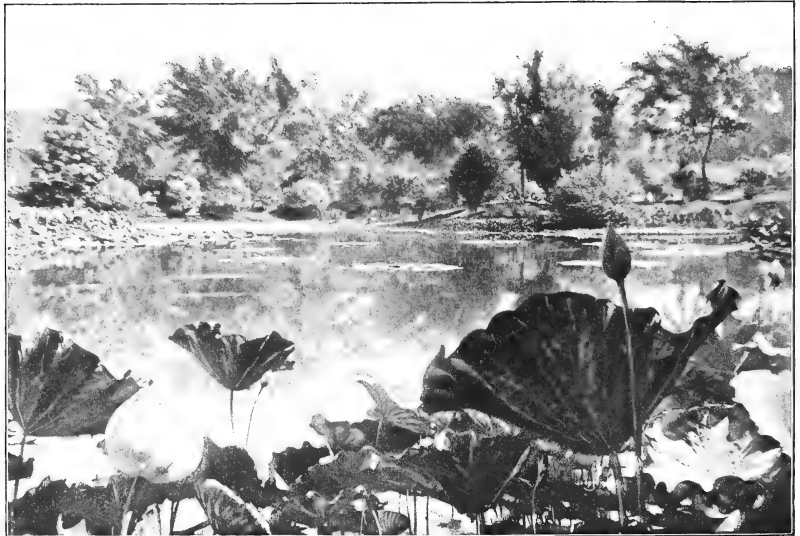
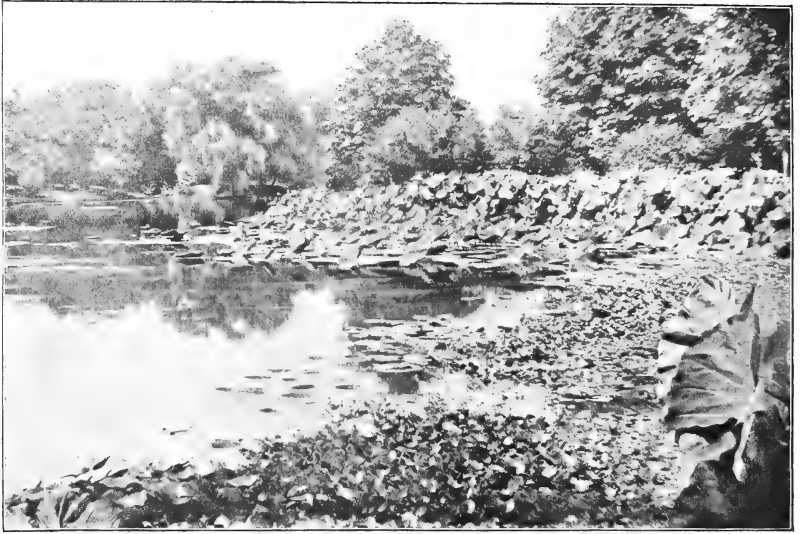
3118. **Greenhouse Heating.**—A house covering an area of 25 x 80 feet can be heated successfully with hot water or with steam. We would prefer the former method, as requiring the least attendance, although first cost of construction will be somewhat larger. If the circuit is rather crooked, or makes many bends and twists, use steam. The tests for the purpose of settling the mooted question as to which of the two systems is the more economical, have given contradictory results, so that definite conclusions cannot yet be drawn. Probably there is not much difference in this respect between the two systems.

3120. **Zinc Clips for Glazing Greenhouses.**—The clips mentioned and illustrated in the June issue of AMERICAN

GARDENING seem to answer their purpose admirably, but where they can be obtained we are unable to say. We should think, however, that so good an appliance need only be brought to the attention of our manufacturers in order to induce them to supply it to the trade without delay. For the sides and ends of houses we would recommend permanent sash-bars and butted glass. This will do away with all slipping or sliding of the glass.

3123. **Wintering Grape Seedlings.**—You can saefly leave them out during winter. Vines spread out over the ground are hardy enough to winter.

3145. **Wintering Sweet-Potatoes.**—My experience was a rather costly one. When I went into the potato-trade I was told that the tubers must be packed in dry sand in well-ventilated boxes, and kept at a temperature of about 50° degrees. So I spent a great deal of money in building boxes with ventilators running through at short intervals, procured a great lot of sand and kiln-dried it, to pack them in. I built a house with double walls filled in with sawdust, after the manner of an ice-house, put a furnace in the cellar, and thought I had everything in fine trim. I did succeed very well for a few years but then came disasters. Sweet-potatoes must be dug at a certain time, as they will bear no frost, if they they are to be kept. But the weather was not always favorable. Sometimes it rained continually and the tubers could not be put in dry; sometimes in cold, wet seasons the potatoes wens not well ripened—the texture was watery, and I do not think any method would keep them well. At last I became satisfied that most of my expense in the way of ventilating boxes, dry sand, etc., was money thrown away. Then I just piled the tubers in large boxes or bins in a cellar, with fire-heat sufficient to keep the temperature steadily above 40°. One point, I think, is not sufficiently considered in keeping sweet-potatoes, or trying to account for frequent "bad luck." A potato that is not well grown will not keep well by any method; while a potato with just the right structure will bear a surprising amount of ill usage, provided the mercury never goes below 40°—that is always fatal. The wrong soil, or cold, damp weather when the tuber is forming, are very unfavorable, and if I had a crop of potatoes raised under such conditions I would act the part of the prudent man, and sell them as soon as I could. Here we plant sweet-potatoes on dry and very poor land, with little or no alluvium in it. Our yellow clay subsoils, with the surface soil all removed, give the finest potatoes, both as regards yield and quality. The next best soil, I have found, is clear sand. Then, with a good high ridge and good cultivation, and an ordinary run of luck, you can get a potato that will keep. The tuber of the yellow Nansemond, our standard variety of sweet-potatoes, should be short, smooth and a bright yellow. I can tell by their looks whether they can be kept. Our rich bottom lands do not grow good sweet-potatoes—they require totally different land from corn or Irish potatoes.—C. H. CUSHING, Kansas.



VIEWS OF THE LILY-POND IN WASHINGTON PARK, ALBANY, N. Y.

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TREES IN WINTER.

AN OUTLINE STUDY OF THEIR TRUNKS AND TWIGS.



WE MAY study trees in winter with quite as much pleasure and profit as in summer. You will never guess exactly how a tree is put together for strength and beauty so long as the foliage covers it. What does nature aim at? What is the first idea of a tree? To meet winds and resist storms, to get well up into the air with fruit or nut-bearing power, or to exhibit beauty and grace of outline and motion? Possibly all of these in combination; but any one of them is a task to try the forces in the air and in the soil.

A fine *Magnolia acuminata* just before my window has a shaft as nearly perpendicular as a carpenter could set it. But nature did that work by an upward push, all by cells and inch after inch. You could not see this marvel of tree-building well in summer. The taper of the trunk is perfect, and the set of all the limbs is almost exactly at an angle of forty-five degrees. This arrangement gives every limb and leaf on the tree a chance to get its share of sunshine. The formality is broken by the distribution of the limbs, and of the twigs upon them. The latter are easily and gently thrown out of the fixed angle; while the former are sent out without rigid rules. Formality is deserted whenever it can be done without enfeebling the tree. The magnolia is an ideal tree of the rather rigid sort.

Near this magnolia is a cut-leaved weeping birch, now forty feet high or more. Its arrangement is a striking contrast to that of the magnolia. The first idea here is not strength, but grace; yet the birch is an enduring tree. Every point about it is supremely informal. See the wind, after sweeping through the magnolia without causing a tremor, now swing and sway every tendril of this lacinated structure. From tip to root the birch is pliant, and is among trees like lace among fabrics; yet

I do not know that we have a stronger tree, less liable to break, on the lawn. I am curious to know why these birches almost always lean at a very equal slant, a trifle to the north. You will see without my noting it that while the trunk of the tree is very white, and shows its brilliancy to fine effect in winter, it now has a tinge of color that you will not find in summer. The twigs are all slightly reddish—more so than when the leaves are on. But this is not characteristic of this birch alone. It is true of all trees that the young wood grows slightly or strongly warm-hued in winter. An extreme case is the red-barked dogwood, which just now is a deep rich



A NORWAY MAPLE.

scarlet. When its leaves put forth, this color will change to a dull green. So you see there is little real rest in nature; even tree-bark undergoes changes of color, as the seasons change.

The Kentucky coffee-tree is a unique affair, well worth studying. It has a very marked individuality. The elbows of the limbs are as angular and strong as the croches themselves. You will see better in this than in any other tree how the limbs turn about at sharp or right angles to fill up all open spaces where they may get the light, but they never infringe upon each other's rights. The coffee-tree is both symmetrical and unsymmetrical. In winter the female or fruit-bearing tree is hung with great fat leguminous pods full of large, handsome beans. These, when roasted, are sometimes used for coffee, and that is how the tree gets its name. Many of the trees are males, bearing no fruit.

My own summer favorite among all shade-trees is the Norway maple. It is the most rapid-growing of all maples and of almost all trees. Its limbs sweep downward close to the ground, like those of our English elm. The juice is gummy and not fit for sugar. The color in fall is

show with remarkable effect. I have taken my boys out on still nights, when snow brought out the limbs in fine relief, and said: "Now tell me which trees are handsomest in winter;" and invariably they have singled out the big-armed butternuts. Generally near butternut trees in winter you will see or hear red squirrels. Those which



OLD APPLE TREE.

I have in mind stand about a little old-fashioned red cottage, and the squirrels have found a hole into the attic, where I doubt not they have laid up a rich store of butternuts.

There are a few trees that are bare of leaves nearly half the year. They serve the good purpose of warding off monotony. The butternut is one of them, with the ash and some of the oaks to keep it company. They do not put on their spring dresses until three weeks after the lilacs and elms, and in fall always seem in a hurry to doff their drapery.

An apple tree is a prince of the best tree-blood. Any one who can have an apple tree in his yard and yet cuts it away to set out such a fancy affair as a weeping ash or a cut-leaved birch is foolish. I cannot describe any one apple tree as a type of its kind, because there is great individuality in apple trees; yet the tenants of an orchard all have a general likeness. Right in line of my window I see first a Fall Pippin, with its limbs spreading over and touching the ground. What a wise provision,



CUT-LEAVED BIRCH.

KENTUCKY COFFEE-TREE

always pure canary-yellow. I wish it were as interesting for a winter study; but while it is a fine tree, in its naked outline you will discover no remarkable beauty or oddity.

I study the butternut with great pleasure. In summer or winter it is a grand tree. After a light snow its limbs

for this Pippin is an enormous apple, and the nearer the ground it hangs the safer it is from bruises. A Northern Spy, on the contrary, runs its limbs all out like a fan, and from one point. You see now how easily this tree may split and break down when loaded with fruit. But

that robins love apple trees; but birds, as a rule, do not select a tree that they learn is to be climbed over for fruit-gathering. There are more nests by far in those young maples. What a host of bird-homes there are in the trees! We could not see a tenth of them until the



APPLE TREE LOADED WITH SNOW: EVERGREENS IN THE REAR

most apple trees are, as you see, built to carry heavy burdens. They have an abundance of short pliant twigs that can bend over, each one with its own apple or pair of apples. Spreading apple-boughs always suggest to me a hammock. Some nests among the boughs prove

leaves were off. Now it seems from the dark disks dotting tree-boughs that some of them contain bird-villages.

The willow is, unfortunately, a brittle tree, and easily broken in a storm; otherwise nothing could be finer than a clump of old willow trees. A superb group of great

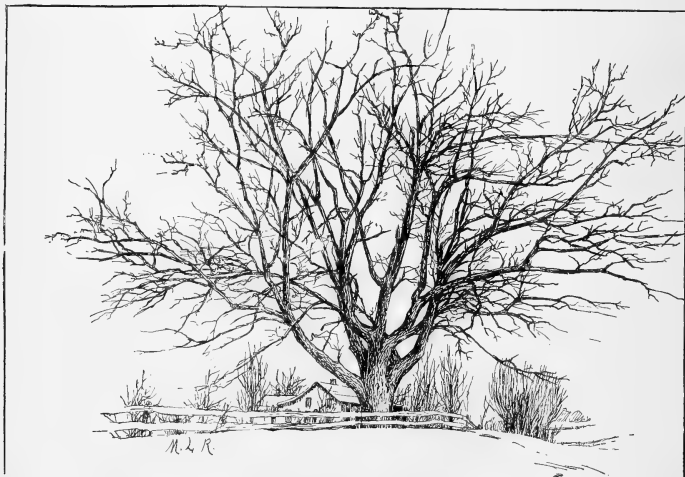
yellow willows is massed in front of a neighbor's lot, and he has appropriately named his home "The Willows." The chief beauty of these trees is that they show such a rich gold bark in early spring. A willow grove is to be recommended, because it can be grown in half the time of a maple and one-third the time of an oak grove.

The beech makes as fine a study now as it did in summer. It always has pleasant and warm associations, and is well loved by the children; and its wood, too, is fragrant while burning. Beeches are rarely ever quite bare.

They hold their dry, rich brown foliage well into the winter; the purple beeches often hold their foliage till spring. A beech-park in Buffalo is worth a long journey to see. In autumn, while the leaves are falling, it is a garden of sweet odors. I do not wonder that the English love beech-woods. We have never fully appreciated them in America, and now the trees are growing scarce. They should be headed quite low, just high enough to allow one to walk beneath the limbs.

Oneida Co., N. Y.

E. P. POWELL.



AN ANCIENT BUTTERNUT. (8½ feet spread; trunk 4½ feet in diameter 4 feet from ground.)

ROADSIDE FENCES.

THEY MAY BE NEAT AND ATTRACTIVE, AS WELL AS STANCH AND SERVICEABLE.



ARM roadsides present as numerous and widely contrasting conditions as do the tastes and dispositions of the owners of the farms. In riding over the country, one still meets with the ancient and picturesque stump fence, stretching its arms wildly in air. This fence, if not as enduring as the hills, certainly has endured so long that "the mind of man runneth not to the contrary." Stone walls, too, are plentiful, and, like the stump fence, owe their existence to the necessity of making some use of superfluous material at hand.

Perhaps the most common relic of early times, however, is the "worm" rail-fence. This, in its extravagant use of timber and land, offers most convenient "corners" for the accumulation of rubbish and stones cleared from

the land, so that there gradually grows up a stony hedge from four to ten feet wide wherever these fences stand. These hedges are still to be seen everywhere throughout many parts of the country, running through fields, and often forming a more effectual barrier to stock than the fences themselves. As the scarcity of material necessitates the replacing of these old-time fences by straight wire or boards, the hedgerows become particularly troublesome and wasteful.

In contrast to these picturesque extravagances, two especially neat and attractive fences came under my observation last summer. The first consisted of two or three strands of wire, with an embankment of earth drawn up steeply underneath. If there were any stones in this ridge they were deeply covered. The ridge was well sodded and a wide, shallow ditch lay between it and

the track of the roadway, so that all except just the embankment itself could be readily mowed with a machine. This roadside presents as neat and trim an appearance as any other piece of meadow land; and to judge from indications, the yield of hay had been sufficient to pay a very good interest, at least, on the cost of putting the roadside in shape.

The other plan of fence was a plain, rough, board structure, with the ground around it perfectly level and

well cultivated. Black-cap raspberries grown from directly beneath it were trained in and out among the boards for support, the canes being allowed to grow quite tall and spreading. On a much-traveled highway such berries would doubtless be somewhat injured by dust, but this fence was on a quiet road, where little dust arose, and the result was a neat roadside, with an abundance of easily accessible fruit for family use.

Cornell University.

FRED. W. CARD.

WATER GARDENS.

GROWING POND-LILIES FOR PLEASURE AND PROFIT.



NYMPHÆAS or pond-lilies have always and everywhere been great favorites. The youngsters search diligently for them in the spring-time, and the peddlers in the street sell them in enormous quantities. But with the exception of Boston, there is no flower market where pond-lilies are regularly quoted in the market-reports. In New York, to most people the fact that our pond-lily is wild is against its adoption as a fashionable flower. But the moment you call it nymphæa instead of pond-lily, you elevate it, and it is no longer too common.

From time to time AMERICAN GARDENING has illustrated wonderful effects wrought with pond-lilies in water gardens, both public and private; and this month in our frontispiece some fine views of the lily-pond in Washington Park, Albany, N. Y., are given. Think what a refreshing bit of beauty this pond must be on a hot August day!

But the beauty of all lily-ponds and tanks does not wane with summer. Many of them are protected with glass roofs, and hot-water pipes running through them keep the water warm so that the lilies and other aquatic plants bloom on indefinitely. To float around on such a pond among the lilies on a December day seems like parodying and defying nature. And yet people who have more money than they know what to do with sometimes gives themselves this pleasure. In some tropical countries I suppose it would be possible to gather water-lilies in December with no roof but the sky.

Before a recent florists' meeting a specialist in water-gardening gave some interesting notes upon hardy aquatic plants, which people of moderate means may enjoy, and upon some rare sorts for market-growing.

"The Cape Cod pink pond-lily is the grandest of all our hardy aquatic acquisitions. There are other varieties of the *Nymphaea odorata* that are also well deserving, and that only require to be known to be appreciated, such as *N. o. superba*, *N. o. carnea*, *N. o. sulphurea*, and others. These and also some European varieties are perfectly hardy, and are the earliest flowering aquatics.

"Next in order are the nelumbiums. The Egyptian and Japanese species are the best of all. For cut-flowers and as decorative plants for ponds and basins, their gorgeous flowers and bold, massive leaves are admirable. Later on comes the *Nymphaea Zanzibarensis* in many



TWO OLD WILLOWS: LOMBARDY POPLARS AND MAPLES IN BACKGROUND. (See p. 707.)

varieties, and the various night-blooming kinds. The number of night-flowering varieties is small, but valuable additions to the list may be expected. The height of their bloom comes in the latter part of August and September in northern latitudes."

To grow nymphæas for the market the essayist recommended that odorata varieties be placed in tanks with

some arrangement to protect them from severe weather in early spring, as by this means the flowers could be obtained as early as April without artificial heat. Other kinds might be grown in tubs, but in tubs the night-blooming kinds, being naturally large-growing varieties, would be cramped for room, and would give much smaller leaves and flowers than where planted out. Planted out, he has had some flowers measuring nearly a foot across. In a tank with hot-water pipes run through

it, and glass protection, the time of flowering is prolonged. A tank two feet in depth will be sufficient. Japanese nelumbiums are very slow and shy to flower, and *N. speciosum* was recommended as much the best.

One does not wonder, while looking at a cool, pure, waxen-white water-lily, at the old stories and beliefs about the witchery of mermaids. The family name of nymphæa must have rightfully descended to water-lilies from these sprites of the old fables.

PICTURESQUE SPOTS IN FLORIDA.

TAMPA BAY AND VICINITY.

IT IS not to be wondered at that Tampa Bay has long been the admiration of visitors, even when means of access were uncomfortable and inadequate. An arm of the great gulf of Mexico, its pellucid waters, always of genial warmth, reveal myriads of finny denizens to the

eye, and wash shores of peculiar attractiveness to the traveler from the colder north. The beautiful islets or "keys" here and there, covered with rich tropical growths, afford superb camping places, while the broad, estuary-like rivers leading from the main bay are sailing

and fishing grounds hard to match elsewhere.

The modern traveler steps into a Pullman car in Jersey City, and need not leave it until he is a mile into Tampa Bay, for the terminus at Port Tampa is a pretty station built on piles in the deep water required to float the sea-going steamers, which are ready to take one right from the car-step to Cuba.

A few of the beauty spots of this picturesque region are lightly touched by pen and camera in the following paragraphs.

A GARDENER'S HOME.

Not far from the large and magnificent Tampa Bay hotel, at Tampa, Florida, is the residence of Charles J. A. Knowles, an English gardener. The contrast between the two places is great, but every lover of the beautiful will find as much to admire in the simple, inexpensive and natural adornments of Mr. Knowles' home as in the expensive and costly grandeur of the hotel grounds. This gardener's home, a view from which is shown in our picture, is bordered on one side by a little bay-ou, with banks abounding



A GARDENER'S HOME IN TAMPA, FLORIDA.

in a dense growth of native shrubs and ferns, by reason of which Mr. Knowles has named his place "The Ferns."

The bayou (not shown in the illustration) is crossed by a rustic bridge, from which a stone-bordered path leads to the vine-clad house. This stone border, a rare thing in Florida, consists mainly of fossils, coral and curiously-shaped pieces of limestone that have been brought piece by piece from many distant places. The top of one of the pines, left from a forest that originally covered the place, is seen in the distance, also one of the larger orange trees. Behind the house is a beautiful China-tree, and a clump of ornamental grasses stands near by. Rows of gladiolus may always be seen in bloom here in March, and bright little phloxes, which have been sown broadcast, bloom here and there as if they were so many volunteers instead of cultivated flowers.

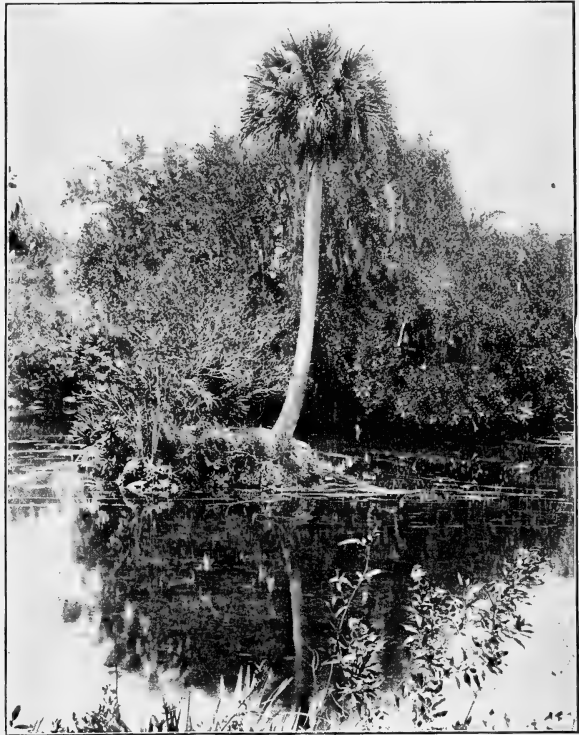
How much more attractive is such a home than one where the house is surrounded with nothing but orange trees and glaring white sand! The man who has given us this good example of how pleasing a humble home may be is standing in front of an agave plant. He is ever ready to welcome all lovers of nature. Many naturalists, including the botanist, Dr. Garber, have been guided by him to fields of research which otherwise they might not have found.

LONE PALM ISLAND.

Following the many curves of the beautiful Hillsboro river for about seven miles above Tampa, on the gulf-coast of Florida, we find in the middle of the stream a charming little island. Here some of our finest and rarest wild-flowers grow, sheltered only by a few bushes and a single palm, from which the island takes its name. This tree, so large in proportion to the bit of land on which it stands surrounded by brilliant waters, waves a thick cluster of great fronds from the summit of its graceful trunk, and marks a spot that is the most widely known of any place on the river.

A few rods above the palm De Soto Spring, or Crouse's Spring as it is sometimes called, mingles its sulphur water with that of the river. So clear and pure are these combined sparkling waters that the river bottom, the submerged vegetation and numerous large fishes, poised in the current, can be seen almost as plainly as if only air intervened between them and your eye.

This river-nook is a favorite resort for Tampa people,



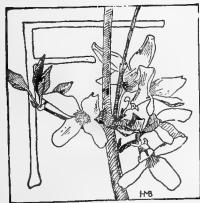
LONE PALM ISLAND, HILLSBORO RIVER, FLORIDA.

and by carriage-road is only about four miles from that city. In our picture the tiny island, with its lone, stately palm, is well represented, but black and white pictures can give only a cold idea of tropical vegetation; so that people who wish to form a correct idea of "Florida as it is" must visit such picturesque spots in person, not through the medium of writers and cameras. The trip will be a pleasant one!

JAMES SHEPARD.

TASTE AND TACT IN ARRANGING ORNAMENTAL GROUNDS—XXVI.

TREATMENT FOR A NURSERYMAN'S PLACE.



FLORISTS and nurserymen derive their income from selling trees and plants to the public, and it is fitting that they should make their own grounds object lessons in ornamental planting, using material more or less rare, yet worthy of wide dissemination. Appreciating this fact, the

writer found much pleasure in planning improvements for the grounds of a nurseryman in Illinois. The place, with the improvements suggested, is shown in the picture on the opposite page. As is it a new one, as yet little planted, there were few restrictions to the plan, and these are given in the following letter :

"My grounds contain about twenty acres, but three-fifths of the area will be used as a garden and for fruit plantations. The lawn contains about six acres, and is about twice as wide as long. It is in planning the arrangement of this that I wish your help.

"With the exception of the residence and tool-shed, nothing is permanently located. No walks are established and there are no trees or shrubs that need remain. I do not care for any distant views except those down street directly south and east of the house, so you can form tree or shrub masses wherever else you like.

"I think I should like a fence or screen from the back of the house southwest to my boundary line, and wish to plant small-fruits north of it.

"In the southwestern part of the grounds there is a fine spot for a lakelet."

In the plan on page 713, A is the residence, B the stable, C a vine-arbor, D a rustic bridge crossed by the west drive, E the highway, FFF fruit and nursery grounds. The drive-ways, approaching from the street at two points, and extending by graceful curves throughout the grounds, are designed to be 14 feet in width. The trees, shrubs and other features introduced are located chiefly about drive junctions and toward the margin of the area, leaving the centers of the respective lawn-plats quite open. Thus many delightful vistas are opened up throughout the grounds, and a fine opportunity given for showing off the large variety of ornamental trees and shrubs suggested for use in the place. That the owner has seen fit to devote as much as six acres to ornamental planting is most commendable. Too often in such cases there is a disposition to compress the pleasure and show grounds into such narrow quarters that fine effects are out of the question

In the quarter marked I, beginning with the flat directly east of the house and between it and the main drive, we locate on the north side of said plat a flower-

bed. The center of the bed can be planted with four lilacs in assortment, and these surrounded with miscellaneous hardy and other flowers. To the front or south part of the plat plant Norway maples, with two trees of the same species across the drive to the south, and two more across the drive from this plat to the northeast, overhanging the road that leads eastward to the highway, E. Directly south from where this drive leading from the house enters the highway, we would suggest planting a group of four more Norway maples.

Returning to near the house : In the plan a cut-leaved Norway maple is located directly south of the two maples across the drive from the plat just treated, and also one tree each of Schwedler's Norway maple and the purple-leaved Norway maple. This completes a group of five Norway maples south of this first lawn-plat.

East of the drive junction, and as part of the general group 1, we would plant the north mass of shrubs shown with 12 plicate-leaved Japan viburnums, and the other, also lying near the drive, with 15 forsythia shrubs in assortment, setting them 4 or 5 feet apart in the mass. Directly east and near to these shrub-beds would be a suitable spot in which to group 6 plants of Douglas dwarf arbor-vitæ, setting them 3 or 4 feet apart. In the other shrub-bed here, set 6 or more Japanese maples, choosing the hardier kinds. Toward the lawn center east of these masses, a tree of European cork-barked maple is shown, a worthy ornament for any American lawn. Directly north of this and near the east and west drive a mass of dwarf spruces is indicated.

Proceeding now along this lawn-plat toward the south and beginning in the vicinity of 2, we show the following shrubs, trees, etc., in about the order named. The circular bed above 2 consists of geraniums, cannas and other summer growths ; the elongated bed east of and near to the latter is planted centrally lengthwise with 9 blood-leaved Japan plums (*Prunus Pissardii*) surrounded by 24 plants of variegated-leaved cornelian cherry, set 3 or 4 feet apart. The shrub-bed to the southwest, near the drive, should contain 15 weigelas in assortment, setting strong-growing kinds like candida and arborea centrally. Of trees in the heavy mass let the first 12 be sycamore-maples, following these to the southward with groups in the following order : 2 butternuts, 4 hickories, 3 American lindens, 2 European white-leaved lindens, 4 American chestnuts, 4 Lombardy poplars, 5 Carolina poplars, 3 grey poplars and 2 golden poplars, with west of the heavier group, about midway between 3 and 4, 2 white spruces and 1 weeping tooth-leaved poplar. In the part now reached (4) there might be, as shown on the plan, 3 European larches, 3 pyramidal spruces, 5 European

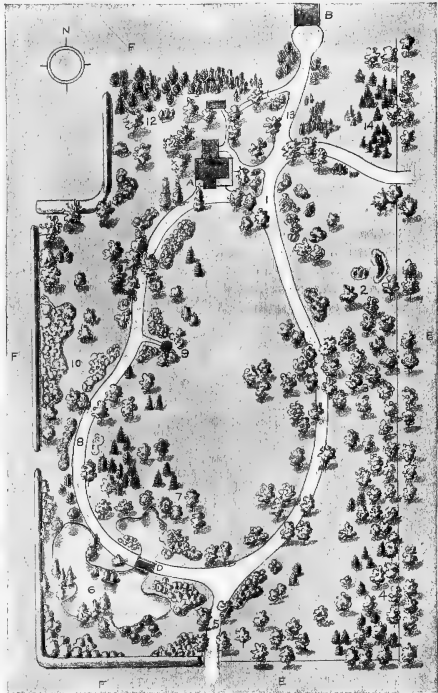
larches, 1 Cilician silver fir, 9 white oaks, 1 golden oak at inner margin of the oak group, 6 red or scarlet oaks, 1 chestnut-leaved oak, and 1 pin-oak. These extend to the southeast corner of the place and into the street.

Beyond the slight opening in the group, towards the entrance, plant 2 trees of mountain ash, 2 of European bird-cherry, 1 double white-flowering cherry, 1 amelanchier or snowy mespilus, and directly around the entrance, with a few specimens to the west of it, as shown, 9 sugar or rock-maples. Northward from here in the same plat, the following trees are set in succession: 1 Tartarian maple, 18 Japan quinces, assorted varieties in a mass, 3 *Exochorda grandifloras* in a clump, 2 double white-flowering horse-chestnuts, several common horse-chestnuts, these extending across the drive. Near this drive, in the central lawn-plot midway toward the residence, the following trees are to be planted in the order named: 1 red fern-leaved linden, 5 European lindens, 2 European white-leaved lindens, 3 trees of *Tilia dasystyla*, 1 Wier's cut-leaved silver maple and 1 purple-leaved sycamore-maple.

Proceeding to the vicinity of the lake, we will name the trees, etc., to be planted around and near to the shore, beginning at the drive to the southwest, and passing first eastward and then entirely around the lakelet. Next to the drive plant 1 cut-leaved beech, 2 tulip-trees (liriodendron), 1 River's blood-leaved beech toward the center of the lawn, 1 weeping birch near to it, 2 Norway spruces, 6 hemlock-spruces, 3 European larches, 1 Wisconsin weeping willow, 1 golden weeping willow, 2 common weeping willows, 1 red-flowered horse-chestnut, 3 double-flowering plums centrally in a large shrub bed northeast of the bridge, and 12 mock oranges (assorted) around the plums in the same mass. Crossing the drive southward, the large mass may consist of 18 lilacs in assortment, planted 4 or 5 feet apart, and there may be 3 Josika's lilacs in a small group toward the bridge. The 6 small trees to the southwest on the lake bank are thorns in assortment, among which should certainly be included the double scarlet variety. The mass in the corner of this plat, near the entrance, should consist of 18 viburnums in assortment, set about four feet apart; that in the other corner may include the following trees and shrubs, locating them from the eastern end in the order named: 4 plants of assorted elæagnus, 3 silver-leaved poplars in the background, 6 sumachs, assorted, planted near the edge of the group and 6 feet apart, 2 Russian mulberries, 9 common dogwood shrubs, assorted, and at the further or north end of the group 6 clethras, assorted. Out from this group on the lake bank, beginning at the cape, plant 1 European cut-leaved alder, 3 common European alders, 5 Norway spruces, 2 European white birches, and near where the lake meets the drive, 1 rosemary-leaved willow and 1 ring-leaved willow. Between lake and drive plant 3 royal willows, 3 tricolor willows, and on the small isles 3 laurel-willows.

Starting now from the lake along the extreme western plat, we set, just beyond the 2 willows on the shore, 3 spruces in assortment, 12 altheas, planted about 5 feet apart in the mass against the hedge, 1 tulip-tree, a rose-bed, containing 30 hybrid perpetual plants, and back of this bed several sweet-chestnut trees. Across the drive from this rose-bed is another devoted to a mass of rugosas and other hardy kinds.

Leaving the large rose-bed in the western plat, and turning to the right, we plant first a chestnut-leaved oak,



PLAN OF A NURSERYMAN'S GROUNDS.

and beyond it a large group of 30 panicle-flowered hydrangeas, set 4 feet apart. To the left there is indicated the largest mass of shrubbery in the place, and it is planted as follows, beginning at the south end: 12 privets, assorted, set 4 feet apart; 12 flowering currants, assorted; 12 *Coletea arborescens* near the edge, 12 shrubs of silver-leaved corchorus three feet apart, and, back of them, 12 other sorts of corchorus, 5 Judas-trees, 2 large-flowered white dogwoods and 3 ailantus in the back part of the bed, finishing along the edge with 9 purple-leaved

barberries, 9 barberries in assortment, 6 aralias, 12 ornamental elders, including the cut-leaved and golden sorts. A little to the east of the large mass of shrubbery, are single specimens each of the Kilmarnock willow and the beautiful weeping Russian mulberry. Near the drive here is a mass of shrubbery comprising 12 assorted bush-honeysuckles, 6 plants of double *Spiraea prunifolia*, and 6 *Daphne Mezereum*. To the north of this mass is a clump of Huntington and other elms.

Northward from the large shrub mass there is shown, toward the center of the lawn plat, 1 maiden-hair tree, and to the left several birches and elms in assorted kinds. Toward the corner opening in the hedge are several white pines and one mugho dwarf pine, with an American elm at a point in the direction of the house. Against the curve in the hedge is a mass of hardy shrubs, containing 12 dogwoods (elegantissima and the red-twigged species), 12 snow and wax-berries, and 9 tamarisks of several kinds. Directly out from the last mass, and near the drive, is a group of 18 assorted deutzias, *D. gracilis* being planted near the edge.

Turning now across the driveway, there is a large clump devoted entirely to spiræas. North of the spiræa bed are several cut-leaved weeping white birches. Southeast of the same bed is a specimen or two each of Colorado blue spruce and Nordmann's silver fir. South from the bed are two crab-apple trees.

Around the arbor, beginning at the northwest, near the

drive and going around it, are situated shrubs and trees as follows: 18 assorted weigelas, 2 white fringe-trees, placed centrally in a bed with 8 choice sumachs about them. South from the arbor are the following trees: 1 yellow birch, 1 paper-birch, 3 assorted spruces, 1 black walnut, 1 cut-leaved oak, 1 American beech.

Directly west and northwest from the house are, first, about 8 American elms, 1 honey-locust, 1 Camperdown weeping elm, and back of these, to form a screen which extends toward the stable (B), the following evergreens, beginning to name them from the west: 18 white pines, 18 Austrian pines, 18 Scotch pines, 3 dwarf pines, 12 red cedars, 12 Irish junipers, 12 Swedish junipers, and, near the barn, 6 Austrian pines in a mass by themselves. In the plat northeast from the house are 2 American elms and a clump consisting of 12 *Mahonia aquifolia*.

Crossing the drive to the plat eastward from here (13 and 14), and entering from the southwest, groups of the following trees are supposed to be planted: 12 globe pyramidal arbor-vites, 9 Siberian arbor-vites, 9 American arbor-vites, 3 conical spruces, 18 white spruces and 12 Norway spruces, with American elms along the highway at this point.

It should be mentioned that in locating the clumps of various kinds named in the large groups, the edges should intermingle somewhat. All the groups indicated are to have the soil above their roots cultivated for some years to come.

LAWN GRADING.

SUGGESTIONS ON SHAPING THE PLAT BETWEEN THE HOUSE AND THE STREET.



HERE one can have his own way in deciding on the relative position of the house to the street-grade, he should select a lot having something of a rise from the street backward, a chief reason for this being that an elevated house site is always a comparatively dry one. On farms or in country villages such spots are

easily obtainable. In larger towns and cities where streets are systematically graded to engineers' lines, there is usually little choice as to where the home shall be located, the rule of the street as to the distance of the house-line back from the grade, and the narrowness of the lot governing. Under such circumstances, where one chooses a lot with a good elevation above the street, it often becomes a puzzling question as to how the lawn-grade between the house and the street shall be treated. Where the difference between house and street-levels is not

more than three feet, with the house 30 or more feet back from the fence-line, a simple rounded slope from the house to the sidewalk would be more satisfactory than any other treatment. Where there is a difference of ten feet between the levels named, the terrace and

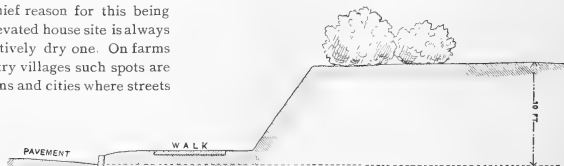


FIG. 1.—LAWN WITH TERRACE AND SHARP SLOPE.

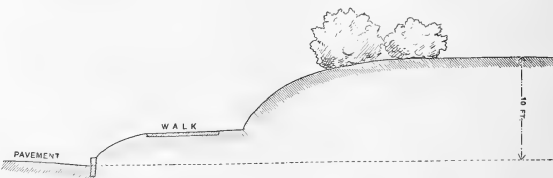


FIG. 2.—LAWN WITH ROUNDED SLOPES.

sharp slope shown in fig. 1 are often used. But such grading is more suggestive of a railroad embankment than of lawn gardening, and during our frequent protracted droughts the exposed point or angle of earth at the junction of the slope and terrace lines is subject to such severe drying that it is with difficulty kept green, even when hydrant water is available.

As a substitute for the terrace and slope in places of this kind, we would recommend the rounded slopes shown in fig. 2. Such a contour has not the stern abruptness of fig. 1, and instead of the exposed angle alluded to, there is a well-sloped surface not specially subject to injury from drouth, and easily traversed in any part by the lawn-mower. Besides, these easy curving slopes do not shut out all view of the lower part of the house from the street, or vice versa, as does the stiff 8-foot embankment.

Again, let us suppose that the height of the lots at the house-line is the same on both sides of the street. Here it is easily understood how much better would be the appearance of the street and of the surroundings, as seen from verandas and windows of houses, if rounded slopes instead of terraces were used in lawn grading. Not only is there a gain in the beauty of curved lines, but also in the relief which they afford from the straight lines and angles predominating in city boundaries.

Figs. 3 and 4 show an intermediate condition of things. Here the house may be supposed to stand about five feet above the edge of the street pavement. Assuming that the height is too great to admit of a simple curved outline of the lawn from house to curb, a short slope, either in connection with terraces, as in fig. 3, or with rounded outlines, as in fig. 4, is in order. In fig. 3 the short slope appears midway between the fence-line and the house. In fig. 4 it is much nearer the street. Although the central position is often assigned to such a slope in cases of this kind, still that is not the best place for it.



FIG. 3.—LAWN WITH SLOPE IN CENTER.



FIG. 4.—LAWN WITH SLOPE NEAR STREET.

In conclusion, we must remember that in lawn-grading of any kind, an inflexible rule is to cover with fertile earth, before sodding or sowing, all surface that is to support grass life.

It is impossible to establish a satisfactory sward on a sterile subsoil. The thickness of the fertile earth may depend somewhat upon the after-treatment to which the lawn will be subjected. If water will be supplied regularly through dry weather to keep the grass vigorous, then a four-inch layer of fertile earth may answer fairly well; if profuse summer watering is impracticable, then the fertile layer of fresh earth that is added should be fully twice the depth named.

GROWING GRAPES UNDER GLASS.

FINE RESULTS EASILY OBTAINABLE.



RIPE GRAPES all out of season, when, of course, they taste the best, will cease to be exclusively a rich man's luxury as soon as the majority of our wide-awake amateurs find out how cheaply and easily they may be grown. At first thought the proposition to grow exotic grapes will be scornfully rejected by the average home-grower, even if he be well aware of the superior deliciousness of the fruit and its great commercial value. Yet there are absolutely no difficulties in the way of success that should discourage any man having a few square rods of land, a town-lot or

a little, well-protected garden spot, from making the attempt. Indeed, it would be hard to find a more promising field of intensive fruit-production for a large number of amateurs.

The great enemies of exotic grapes are the phylloxera and powdery mildew. When these can be overcome—the former, perhaps, by grafting upon resistant stocks of American species, the latter by applications of dry sulphur or by spraying with fungicides—grapes of the vinifera class may be grown here, even in the open air. Henry Pafford, of Niagara-on-the-Lake, Canada, has made a signal success of growing Black Hamburg, Chas-

selas, Alexandria, etc., on vines trained along the rather high walls which enclose his village garden. Where a regular grape-house is out of the question, a wall facing the south or east is really the first thing we want, and while a stone wall may be preferable, a tight board fence will answer. The preparation of a border in the elaborate fashion recommended by English and German writers can be dispensed with, but it is not a difficult or expensive job, and thoroughness in all undertakings is advisable. As we expect from this border an enormous growth of vines and enormous yields of fruit for years, an abundance of lasting plant-food should be provided. The drainage, also, should be perfect. To do a really handsome thing by these grapes, the rows for the vines may be dug out to the depth of several feet, and four to six feet in width, then filled with rubbish of all sorts, such as brush, old bones, old boots, old mortar, old sods, cow-dung, soil from rich old pastures or cattle-yards, etc. But if this preparation involves so much labor as to become a bugbear, the grower may feel perfectly safe and sure of reasonable success in selecting ordinary rich, well-drained garden soil.

Plant the vines not less than two feet from the wall, say four feet apart, and protect them by a row of hotbed sashes, set up slantingly against the wall, somewhat in the manner shown by fig. 1. Train the vines to single wires, fastened just under the sashes, parallel with and only a few inches from the glass.

A trifle more elaborate, involving a little more space, material and expense, is the cold-house represented in fig. 3. Two walls, one about two feet and the other about nine feet from the ground, and consisting under ground of arches for the free passage of the grape-roots, a glass roof, constructed in any manner desired; with ends boarded up or

made of glass, and good chances for ventilation provided—that is all. The vines are planted preferably, but not necessarily, in a prepared border near the lower wall, while peach, fig or other fruit-trees may be planted near, and trained to the taller wall.

In the construction and heating of grape-forcing houses the same general principles are applicable as in ordinary greenhouses. Water-heating will be preferable for small houses, and steam-heating for very large ones. There should be abundant chances for ventilation. Even an ordinary vegetable-forcing pit, such as

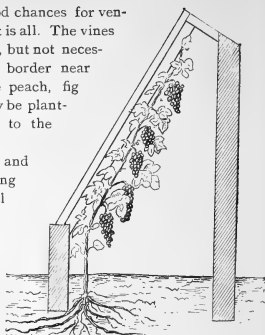


FIG. 1.—EXOTIC GRAPES UNDER ORDINARY HOTBED SASHES.

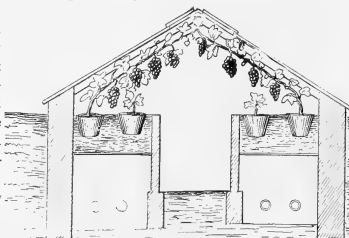


FIG. 2.—POTTED VINES IN WARM HOUSE.

is shown in fig. 2, having produced some earlier forced crops, such as lettuce, radishes, etc., may be utilized from February to July or August as a grape-forcing house. The amateur will find pleasure and substantial results in trying his luck with a few potted vines.

W. Hampe, in his "*Handbuch der Frucht und Gemüse-Treiberei*," recommends the following plan of starting the young vines: Select year-old, well-ripened wood, with well-developed eyes. Make single-eye cuttings, leaving about one-third of an inch of wood above and below the eye. Split them through the center, and place the pieces containing the eye with the eye upward in boxes filled with a mixture of loam and leaf-mold, pressing the cuttings down firmly, then sifting sand over them until the eyes are entirely covered. In January start them in bottom heat. A light layer of moss on top of the sand will serve to keep the soil moist. Apply water as needed. When well rooted, pot the young plants in 3-inch pots, in good soil; encourage growth by reasonable bottom-heat, and shift into larger pots as needed. This treatment, continued until fall, will produce plants suitable for fruiting in pots the next season. Cut them back to not more than eight eyes, let them rest until February, and then start them in the benches, as shown in fig. 2.

The following communication is from a highly successful grower of forced foreign grapes:

FORCING GRAPES IN SPECIAL VINERIES.

My vineries are of the "lean-to" style; this I consider more satisfactory than the "span-roof" for northern climates with sudden changes of temperature. I build

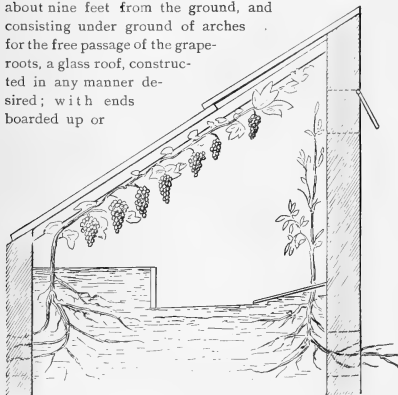


FIG. 3.—SIMPLE COLD-GRAPERY.

the houses 18 feet wide and of various lengths. The preparation of borders, method of planting, and general care and culture of vines under glass has been so thoroughly gone over from time to time that it seems unnecessary to repeat it. Certainly, no one can expect to succeed in this work without first giving the subject careful study and attention, and there must also be a large amount of enthusiasm and love for the work, to insure the continued care and culture absolutely necessary if satisfactory results are attained. In this country, with its great advantages of longer days and more sunshine in the early part of the year, grapes can be grown under glass much easier than in England. I find elaborate preparation of borders not at all necessary here, as vines will do well in any good, well-drained garden soil, provided they are abundantly fed from the surface during their period of growth.

My first vinery was started in 1884, and was 28 feet in length, giving room for 6 vines; and I selected 6 different varieties of grapes, as follows: Grizzly Frontignan, Royal Muscadine, Muscat Hamburg, Barbarossa, Black Hamburg and Muscat of Alexandria.

Grizzly Frontignan is a beautifully mottled pink grape—quite a deep pink when grown to perfection—and its long and slender clusters often weigh two pounds. In quality and flavor it is unsurpassed by any other grape; is early, following closely on Black Hamburg, but unlike that variety, it will not hang upon the vine for any length of time after it is ripe without shriveling. One vine of it is almost indispensable where early grapes are desired.

Royal Muscadine.—An early white grape of fair quality and good habit, but on account of the superior quality of other varieties, I do not regard it with high favor, and intend to replace it with a cane of Muscat Hamburg now growing beside it.

Muscat Hamburg (fig. 4) is in great favor with me, on account of its bountiful crops of fruit of the best quality. It is a black grape, having beautiful, tapering clusters, almost always heavily shouldered and often weighing three or four pounds. It requires careful and attentive treatment, first to get it to set fruit well, and then to bring it to perfection without shanking or shriveling. One of my vines is carrying 19 clusters—about 60 pounds of fruit—on 20 feet of cane, and is still throwing out vigorous laterals. This is a heavier load than I care to give a vine with this length of cane, but the vigorous condition of this one has caused the clusters to grow much larger than we expected. Fully three-fourths of the clusters were removed, and three-fourths of the berries were taken

from the clusters that remained. For several years the vine has produced crops quite as heavy as this one, but



FIG. 4.—A MUSCAT HAMBURG AT MR. DUNNING'S.

hereafter I shall not allow any of my vines to bear more than two pounds of fruit to a foot of cane. By thinning

we gain in improved quality and earlier maturity, and there is less risk of permanent injury to the vines. Muscat Hamburg does not keep so well after ripening as Black Hamburg.

Barbarossa (figs. 5 and 6) is a very strong-growing, late black grape of excellent quality. On my vine there

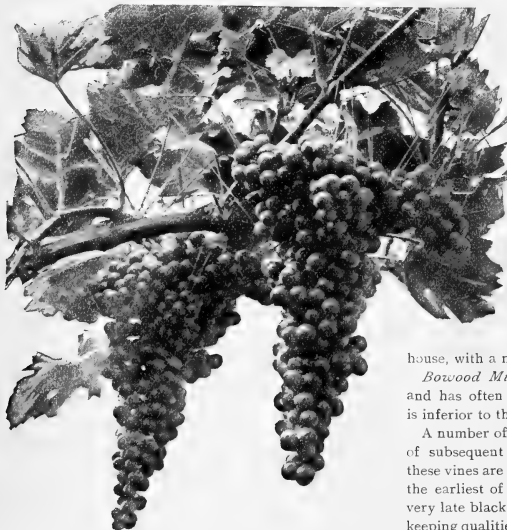


FIG. 5—BARBAROSSA.

Showing five clusters at upper end of vine; eleven clusters in all; average weight, 6 pounds.

are clusters from 18 to 20 inches in length, and almost as broad across the shoulders. Such clusters often weigh 6 or 8 pounds. This grape requires a season a month or two longer than Black Hamburg, but the ripe fruit can be easily kept in perfection until the holidays or later. When well grown and ripened, the fruit is of fine quality—better than that of Black Hamburg.

Black Hamburg (fig. 7, page 720) is the old stand-by for culture under glass, and is undoubtedly, all things considered, the best grape grown for this purpose. When well grown, so that the berries are an inch or more in diameter and present a hammered appearance, its quality is about as good as the best, and it can be depended upon to give fair crops when other kinds fail. Its clusters will keep in good condition for a month or more after having ripened.

Muscat of Alexandria (fig. 8, page 721) is altogether the best white grape in my collection. It ripens about a month later than Black Hamburg, but will keep well until the holidays. When well ripened it has a clear amber color, and is of the best quality and flavor. It is also a steady, even bearer, and will carry heavy crops to perfection better than some kinds. Complaint is often made by grape-growers that this variety does not set fruit well unless given a house by itself, and a high temperature, but by keeping the vines in a vigorous condition, I find no difficulty in getting good crops from it when grown in a mixed

house, with a moderate temperature.

Bowood Muscat is a seedling of the above variety, and has often of late years been substituted for it. It is inferior to the parent in every way.

A number of other grapes have been tested in vineries of subsequent erection. Among the most valuable of these vines are Rose Chasselas, a beautiful red grape, and the earliest of all; and Lady Downs and Alicante, two very late black grapes, especially valuable for their good keeping qualities. Early in December I cut all the grapes left, so as to give the vines a rest of at least two months before starting them again. A piece of the vine six or eight inches long is left on each cluster. This is inserted in a quart-bottle of water secured in a frame at an angle of 45°, and placed in a cool room. The best-keeping grapes can thus be kept perfect for several months, and the vines started again in February, so that the earliest kinds will be ripe about July 1. This gives grapes nine months of the year without any extensive heating of houses.

New York.

D. M. DUNNING.

CHANGES IN OUR FRUITS.

ARE THEY CAUSED BY POLLINATION OR THE INFLUENCE OF STOCKS?

ALL through a long and observant life I have made a study of fruits, and have failed to see a single instance where the stocks upon which varieties of fruit were grafted had in any way changed their quality, except in cases where such changes could plainly be traced to an excess or a want of nutrition. Otherwise how could we place any dependence on the quality of grafted or budded fruits? That varieties grafted, and especially top-grafted, on

dwarfing or uncongential stocks, with which they do not form a perfect union, as peach on plum, pear on quince, apple on paradise stock, etc., should produce larger, higher colored and flavored, and earlier ripening fruit, is natural. These changes are easily traced to an extra amount or a lack of nutrition and moisture. Lack of moisture results in astringency; insufficient heat and evaporation result in a lack of sugar. Here in California, fruits, especially peaches and apples, which ripen with-

out sufficient moisture are markedly bitter; while peaches ripening near the coast, where the air is constantly cool and moist, are lacking in sweetness.

At a recent meeting of the Northern Iowa Horticultural Society, Professor J. L. Budd told of an instance where the Bethlehemite apple, having been worked on American wild-crab stock, had all the astringency of wild-crab fruit. This astringency was probably caused by pollination of the graft's flowers from wild-crab bloom, although common apple trees do not usually bloom at the same time with crabs.

I have seen, though rarely, instances where such pollination resulted in complete changes in the variety polli-

variety with which it is pollinated. In our Illinois orchards, however, pollination of Rambo with Maiden's Blush only resulted in change of color and shape, the true Rambo flavor remaining. We had numerous examples of these changes in Rambo, as it was top-worked on many trees, and growing near a number of other varieties; hence we had summer, autumn and winter Rambos. The Rambo bears but little fruit if isolated from other varieties of apples. The same is true of Willow Twig; or at least these were the facts noted in my Illinois orchards. I found Willow Twig to be a very poor bearer when planted in solid blocks of its own sort only, but enormously productive when growing near other varie-

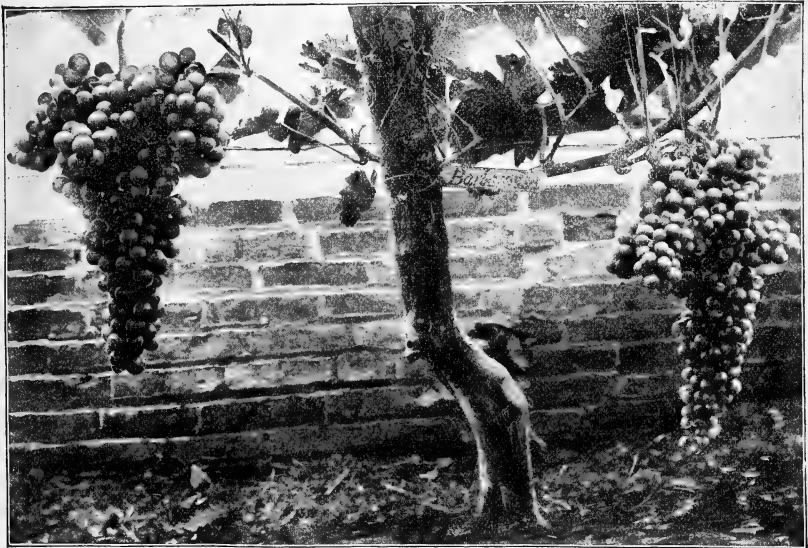


FIG. 6.—MR. DUNNING'S BARBAROSSA.

Showing two lower clusters: eleven in all; average weight, 6 pounds. (See page 717.)

nated; sometimes the changes were but partial ones, affecting only color and size. In cases where there was no possibility of mistake, I have seen such changes effected by pollination in the fruit of apples, native plums, native grapes, strawberries, etc.; they are more frequent and more marked in apples and native plums.

Any one may see this change in apples by top-grafting a portion of the head of a Willow Twig or Rambo with Maiden's Blush, or Rambo with almost any variety of apple which will bloom at the same time with the stock. The Rambo will be changed in every characteristic except color—that it usually retains—but its shape, size, flavor and keeping quality all vary according to the

ties of apples. In one tree in a block of Willow Twigs I set a graft of a large, fine, early autumn (French Russet) apple. When this graft began to flower, it caused nearly every apple on the Willow Twig in which it grew to be more or less russety. Some of them were in all particulars as perfect russets as the apples growing on the russet graft. The second year, when the graft was larger, it flowered and fruited profusely, and all the apples on that tree were russety. The same russet showed on the fruit of six trees directly around it, and on five trees more than 100 feet from the French Russet graft.

Some of my native plums (I have fruited more than 5,000 varieties) were extra-fine when pollinated by certain

sorts, and of no value when pollinated by others. Many of them would bear either none or very poor fruit without other pollen than their own.

The same principle I found to be true with strawberries, though with them the shape of the fruit is seldom changed, while their productiveness and quality are greatly influenced by the pollen. I find Captain Jack to be the best general pollinator. Changes in grapes, at least in some varieties, are ruled by the same facts, though such changes are exceptional rather than general.

But the facts stated fully account for the almost complete failure of certain varieties when fruited in certain environments. My observations have proven, to me, at least, that many of our fruiting trees and plants must have an abundance of congenial pollen to bear good fruit, and usually this pollen must be from other flowers than their own. Further application and tests of these facts can be made at will by any fruit-grower, and I shall be glad to hear from them.

California.

D. B. WEIR.

CHRYSANTHEMUMS AND ORCHIDS AT HOME.

NOTES FROM THE FLOWER SHOW AT SHORT HILLS, N. J.

"WILL you make notes of them all?" jocularly asked the guide who was doing the honors of the chrysanthemum and orchid show at the United States Nurseries.

Shades of Japan and China! Make notes of 38,000 seedlings and 15,000 plants in several hundred named varieties? Yes, in a lump—not otherwise.

Imagine yourself ushered into the presence of 33,000 "Queens of Autumn," all new to the public! What would you say? where begin to do homage? how select?

After all, the public has a choice, and would start at once, as did the reporter, toward those new chrysanthe-

This Short Hills firm reports this year about 200 hairy sorts of their own raising, comprising pinks, whites, yellows, bronzes, fawns, etc. As a matter of course, the year's seedlings are as yet all known by numbers. No. 439 is a pale, pinkish cream of the hairy type, with deeper center. The flower is full, and better colored than the pioneer, Louis Boehmer, with which all pinks are for the present compared. No. 440 is a pale bronze or fawn-yellow, with a slightly reddish tinge. Its petals are broad, incurved and nearly full. No. 448 is a deeper rose-pink, almost solid in color; its petals also are incurved and nearly full. No. 450 is a pale yellow variety,

well haired, nearly full, and very slightly blotched with red. All these are of the hairy type.

"Those seedlings which we select as worthy of propagation will be sold by number until after further trial," observed the cicerone.

"But why don't you name them? People feel more interest in a flower with a name. Do you get short of names?"

The guide laughed and hesitated. "No-o, but it really is hardly worth while to name them until they have been well tested. Now, last year we got several grand sorts, but the great majority are thrown away."

Some especially good forms noticed were Nos. 23, creamy pink, lined deeper; 101, a combination of recurved and incurved, yellow, slightly shaded with red at the center; 64, pure white, with very broad petals; 134, yellow, with whorled center, similar to that of Mrs. E. D. Adams; 35, similar to the last, but in color cream-white, faintly streaked with pink on the outside of the petals. No. 325 deserves special notice as a golden-yellow form of Harry May—the last

year's bronze seedling which took 14 first prizes. This new yellow is a seedling of Ada McVickar, also a very fine sport. It is of pure color and almost spherical in shape. Superiority begets superiority, is the tenet of the firm.



FIG 7—BLACK HAMBURG GRAPES. (See page 718)

ments of the hairy type. Who could bring himself to believe that already almost every shade and class is represented in this be-whiskered form, and that the raisers are ready so soon to go on and perfect them?

"What are the best six sorts for general growers?" asked the AMERICAN GARDENING representative. "That is the point that will interest our readers most."

"Mrs. W. S. Kimball (creamy blush), A. G. Ramsey (Indian red), Mrs. J. Hood Wright (pure white, reflexed, twisted), Harry May, Dr. H. A. Mandeville (chrome-yellow petals, twisted and whorled), and Miss Annie Manda (the improved Mrs. A. Hardy), which is a very fine grower."

"But these are all new sorts," objected the reporter. "Why not select some older ones?"

"Because we strive for better habit of growth as well as better form and color, and the new ones are really the best."

A very suggestive point as to the value of the chrysanthemums Hicks Arnold and Mrs. E. D. Adams is found in the fact that these are the chief reliance for standard and trellised plants for the New York show. These and some selected seedlings were reserved from the show as seen by the public at large, and the seedlings will no doubt speak for themselves at New York.

In the orchid-houses were found 1,500 cypripediums in flower, in 115 varieties. Prominent among these was one of the firm's new seedlings, a cross between *C. Spicerianum* and *C. Fairieanum*, named, distinctively, *C. Niobe Shorthillense*. The broad upper sepal is of precisely the same form as in *Spicerianum*; the general coloring and striping is much like *Fairieanum*, but the former parent has given the seedling a deep border of white, making it a prettier bloom than that of either of the old plants.

Of the more showy orchids, there were about 400 plants in flower, mostly the usual fall sorts. Some handsome blooms of the fall-flowering *Cattleya gigas*—mauve, with purple and yellow fluted lip—and the scarce *Cattleya labiata vera* were noted. *Cattleya Bowring-*

iana was referred to as one of the most useful orchids, blooming from August till December, and being the last of the fall-flowering cattleyas before *C. trianae*.

"Now, that cluster," said the guide, pointing to a beautiful *Dendrobium formosum giganteum*, "is so last-



FIG. 8.—MUSCAT OF ALEXANDRIA. This vine has 13 clusters, averaging 3½ pounds. (See page 720.)

ing that a lady might wear it to a ball to-night, and to every other ball she might attend for half the winter." Isn't this an instance of the highest-priced being the cheapest, fair ladies?

"I suppose you won't want to miss seeing the 'baby orchid?'" There was a twinkle in the eye of the guide as from a group of gushing young women in the next room floated out: "Oh, mamma! do look at the dear little baby in the middle; isn't he too cute?"

"I make it a point never to refer to the baby orchid," replied the AMERICAN GARDENING reporter, "but I think I shall have to break my rule this time."

Like a cool breeze came the remark from a well-poised young woman: "How can they make such a fuss over that thing? I think it is simply hideous—those ugly browns and greenish yellows, and that sprawling infant, if they choose to call it by that name!"

All the halls were filled with boxes of seed-packages and bulbs and pots of hardy perennials in bloom. Every bench and alley was bordered with *Asparagus plumosus nanus*. A plant that will take the place of maidenhair ferns and smilax, and that is more lasting than either, is

indeed a "find," and 50,000 fine specimens of this asparagus attest the firm's belief in it.

This year's importation of Australian tree-ferns is the finest ever noted. If anything in green can be prettier than two of the fine houses, 25x100 feet each, filled, the one with *Araucaria excelsa*, the other with *Adiantum Farleyense*, it must be in the imagination of the beholder. The latter is called the finest of all the ferns, and this house is claimed to contain the finest lot in the whole world. The araucaria forms a miniature Christmas tree, with frond-like branches. It is perfect in form, and will stand a very low temperature.

Merely mention of even all the specialties in the 21 orchid-houses and 27 exotic and chrysanthemum-houses is impossible. Suffice it to say that the mammoth Short Hills establishment is a show in itself at any time of the year, and always worthy a visit.

New Jersey.

C. S. VALENTINE.

THE WINDOW-GARDEN.

HOW TO KEEP IT BRIGHT.



WINDOW-ANNUALS.—In potting plants that have been bedded out all summer, it frequently happens that seeds or tiny plants of annuals are taken up in the soil, and the way they thrive and bloom if left to grow in the pots is something wonderful. For enterprise and adaptability, annuals take a first premium. It is hard to pull them up and throw them away, when you see how faithfully they are striving to make your window bright. And some of these annuals are really very fine for the window. The blue phacelias are charming pot-plants, not so much on account of their neat little flowers as for their abundant fern-like foliage. They need an abundance of water, however, and appropriate for themselves moist corners in window-boxes that are too cold for the greenhouse plants. Browallias seem to spring up from seed in every window-box I have. They come into flower very quickly, and it is impossible to pull them up after their cunning little blue and white flowers begin to nod at you from the window-sill.

Sweet alyssum makes a pretty, snowy fringe for bordering large pots containing other plants; and mignonette—whoever had too much of it, in winter or summer? Seeds scattered over the top of pots and boxes any time in winter will come up and bloom in a few weeks.

I shall not recommend cobæas for the window, much as some people like them. They grow all over other plants, and almost smother them before any purple cobæa flowers are produced. One winter's affliction with an exuberance of cobæa was enough for me. Cypress vines and

morning glories are much prettier for window drapery.

WINTER ROSES.—Some of us are quite proud when we can coax fine roses into bloom in winter. It can't be done unless the plants have a warm, sunny southern window, good soil, plenty of fresh air, and enough moisture in the air to keep the buds from drying up after they begin to unfold. If roses stand in an east kitchen window, where they can be sprayed regularly, window and all, little danger threatens them from either insects or blighted buds. Sometimes when choice rose-buds sulk and refuse to expand, they may be coaxed into full blossoms by gently breathing into them, carefully manipulating the calyx, or spraying and watering with water a little warmer than usual. A really fine, fragrant tea-rose is well worth all the trouble. The polyanthas do not require so much coaxing for winter flowers as the teas, nor so warm a temperature.

FOLIAGE PLANTS.—A fine foliage-plant, clean and healthy and well colored, is quite as beautiful as a flowering plant, and it has the advantage of being bright all the time. The mottled beauties do well in north windows, where carnations, geraniums, callas, etc., find it too dark and cold. In such windows one can group crimson-streaked dracænas, farfugiums with shining-leathery, yellow-dotted leaves, aspidistras, some of the smaller brightly-painted caladiums, and others, according to taste and fancy. Cyclamens have leaves as beautiful as any of these, and cyclamens bloom well, too, in north windows. Their flowers always remind me of cunning little rabbits with the ears buttoned back. The snail's favorite feeding-ground is just on top of cyclamen bulbs, where all the young leaf and bud-stems spring up. They must be watched for and removed, or they will sadly mutilate fine plants. The housekeeper's foliage-plants, like her light bread, are always on hand and ready for any emergency.

YELLOW LEAVES.—They are plant moans. Whenever you see them in your window, be sure that the plant which shows them is suffering. It has had too much water and the pot is poorly drained, or the air is dry and hot, and you have not sprinkled its leaves or washed the dust from them lately, or its roots are dry and thirsty, and the soil hard and baked about them, or insects are

sucking its life away, and it is blooming itself to death on insufficient plant-food. Oh, plants suffer from a score of ills! Find out the cause of the yellow leaves, and put an end to the trouble; then pick off the yellow leaves and burn or bury them in the soil contained in the pots, so that when decayed they will add to its fertility.

North Carolina.

K. E.

ROSES FOR THE SOUTH.

SOME FINE YELLOW VARIETIES FOUND PROFITABLE IN SOUTHERN GEORGIA.



IN THIS semi-tropical climate of Southern Georgia, where excessive drouths often prevail, we must select varieties of roses that have deep, far-reaching roots capable of gathering moisture from a good depth. To test all the new and old sorts with reference to this quality would require from amateurs any amount of time, patience and expenditure that might well dismay them, if old cultivators did not occasionally lend notes of experience. The roses named below all rank high for beauty, fragrance and profuse bloom, and all are hardy, vigorous growers in this southern climate.

All the yellow teas grow readily and luxuriantly here in the open air, requiring only a suitable soil and reasonable amount of moisture; thus we are saved the necessity of span-roofed houses or good brick pits. Madame Honore Defresne, one of the new yellow teas, has proved so satisfactory in every respect that I feel justified in giving it the first place. It is globular in form, and in color a deep golden yellow, with coppery shadings. The foliage is beautiful and abundant, and free from blight and mildew. Both bud and blossom are deliciously fragrant and of perfect form. My first plant is four years old, and from it I have rooted spring cuttings, all of which give good flowers.

I beg Etoile de Lyon's pardon for placing her second, but in justice I could not do otherwise. This, also is a vigorous grower, and while it has not all the grace and beauty of the first, is still a magnificent rose. It is globular in form, with exquisitely folded buds. Its color is clear lemon-yellow, deepening toward the center. Ellwanger, in his book on roses, calls Etoile de Lyon a rival of Perle des Jardins. Under the most favorable circumstances it might possibly prove a rival of Honore Defresne, but in this sunny southland they are both far ahead of Perle des Jardins.

Mad. Caroline Kuster, during its first year of bloom was a lovely pale yellow, with a faint shade of pink at the base of the petals; now in its fourth year it has changed in color to tawny-rose and is double its former size. The cuttings from this rose root very readily, and give flowers of a tawny-rose color. This is a good bedding rose.

Safrano is a beautiful and satisfactory tea of a Jersey-cream color, shading to apricot-yellow. It has



beautiful buds, and should be a prime favorite with all who love loose-petaled roses; this also is a good bedder.

Madame Margottin, color citron-yellow, with coppery shadings, is a good, thrifty rose for every month in the year, but it has, alas, the grave fault of many malformed flowers; still, in view of the wonderful beauty of its perfect ones, these faulty blossoms might almost be forgiven. La Pactole has smaller pale yellow flowers, and delicately beautiful buds. Comtesse de Barbantane, a Bourbon, is in cooler climates a lovely bluish color, but here it is tawny yellow with rosy markings. It is a constant bloomer, and very fragrant.

Many rose-growers give to Maréchal Niel the first place among golden beauties. It is a true Noisette, representing the highest qualities of the race. Some rosarians assert that it cannot be raised on its own roots, but according to Shirley Hibberd, the English authority on this subject, there is not another rose in cultivation which will do better on its own roots. It is here not a vigorous grower at first, but when once coaxed and

petted to the blooming stage, it amply repays any expenditure of time and trouble. Yet why should we waste our energies over this freakish aristocrat, when with winsome freedom Chromatella (cloth of gold) and Solfaterre send their graceful stems, laden with clusters of golden buds and blossoms, as high as the legendary Jack's beanstalk; or with a little training, make for us bowers of Arcadian beauty? The climbing tea rose, Gloire de Dijon, is also very satisfactory as grown here. Its color is clear apricot, shaded with yellow and rose. It is a free bloomer, and has fine, healthy foliage.

It is curious to observe the changes produced by climate in the size and coloring of many roses; a chapter might be written on this subject alone. These are only some of the yellow roses which have given me great satisfaction. Later I will write of the pink-shaded teas, which here are brought to great perfection in the open air.

Georgia.

M. C. H.

TWO PRETTY PENTSTEMONS

NATIVE IN THE ROCKY MOUNTAINS.

TO any one who has learned all his botany on the prairies of the Mississippi valley, the flora of the Rocky mountains is a surprise and a delight. Every flower is new and novel, and brings to the prairie-bred collector the two-fold pleasure of a new discovery, with the added gratification of finding in each new specimen the relative of an old acquaintance. So that, while collecting among the mountains is ever presenting something strange, it is always reviving something old, and

it would be hard to tell which gives the greater pleasure. Life for the botanist has here among these mountains a fresh and ever varying charm.

Among these interesting plants, the pentstemons are moderately well represented. *P. cristatus* grows plentifully along the mountain sides and over the foot-hills, being often most profusely scattered where the surface is otherwise most barren. It much resembles in general appearance *P. cobaea* of the plains, but is smaller, less coarse and more pubescent; the corolla is light purple. One of the most conspicuous characteristics of this species is the excessively heavy yellow beard on the lower lip. In every way the species is very interesting, and specimens are much sought after in exchange. They make good mounts.

But the finest of the pentstemons is *P. confertus*, var. *cæruleo-purpureus*. Whereas the other species are generally coarse and harsh in appearance, this is delicate and graceful, with foliage a bright, glabrous, fresh green that is altogether pretty. And when its whole spikeful of deep blue-purple blossoms has opened, this plant rivals many cherished exotics. The plant is small and slender, growing



PENTSTEMON CRISTATUS.



PENTSTEMON CONFERTUS.

usually from ten inches to a foot high. It prefers for location little ravines between the mountains, where it has shade and moisture, but it does not avoid sunlit mountain-slopes. Take it altogether, you will seldom find a prettier, more delicate and captivating wild-flower. If it proves successful under the new conditions

which it must endure in cultivation, it ought to be given a good place in gardens. The pentstemons are all perennial, and their white or purple flowers are borne in pretty panicles. Almost all the family is native among mountains and foothills of America.

Montana.

F. A. WAUGH.



GARDEN NOTES FROM ENGLAND.

NEW DAISIES, CHRYSANTHEMUMS AND CALLAS.



OME MICHAELMAS DAISIES.—An interesting trial being made in the gardens of the Royal Horticultural Society this year is that of the perennial aster, or Michaelmas daisy, as the flower is familiarly called in England, because it blooms near the feast of Michaelmas. The aster was frowned upon until recent years, and the wild,

weedy kinds were not likely to command attention; but a judicious selection now includes many beautiful varieties, free, graceful and with flowers individually of fine form and size, whilst representing a charming graduation of refined and tender shades. When a large collection, as at Chiswick, is brought together, the great difference in habit of the various kinds is conspicuous. Some are but a few inches from the ground, others towering high, even to eight feet.

The aster is a delightful autumn flower, a relief and a contrast to the prevailing yellow color of the autumn-blooming perennials, and charming effects may be produced by planting them among shrubs, over which they fling their graceful flower-laden shoots. The usual plan is to plant them in the borders, and for giving rich coloring nothing is more suitable than such varieties as *A. levigatus*, which is the same as *A. longifolius formosus*. A few notes upon some of the finer kinds of asters grown at Chiswick may be of value to the American readers of this magazine. One of the most conspicuous is a beautiful variety of *A. Novi-Belgii*, named Robert Parker. It is a splendid aster, fully six feet in height; the flowers are large, and pale lavender in color. It is a fine variety for the background of a large border. The

following forms of this type are also noteworthy: Harpur Crewe, tender rosy white; Archer Hind; Ravenna, rich lilac; Purity; and Psyche, light blue. *A. laevis*, a Harvard variety, is one of the most beautiful starworts I have seen. The habit of the plant is free and graceful, and the flowers are of a delightful pink color, as tender as on a Marie Van Houtte rose. Of the forms of *A. Nova-Anglicae*, the two most conspicuous are *A. roseus* (flowers rich rose) and *A. pulchellus* (deep violet-purple,) a well-named variety. *A. densus* is very dwarf, at least for a variety of Novi-Belgii; the plant is about three feet in height, and smothered in flowers. *A. amellus* is too well known to need description. The early September-flowering *A. acris* only grows about 2½ feet in height, and every vestige of its leafage is hidden by a wealth of violet flowers. One of the most distinct asters in the collection is *A. Arcturus*. It presents a splendid contrast in color, as its leafage is deep green and the flowers a deep violet-purple. Very different from this is *A. tenosyrus*, with yellow flowers and no ray-florets—simply the raised disc; the habit of the plant is dense and bushy. This is a very showy border kind, its distinctive coloring adding to its value. I may also note *A. horizontalis*, with small, white flowers thickly set on wiry, spreading, dark-colored shoots; *A. Shortii*; *A. puniceus*, the flowers very large, white, touched with lilac; *A. ericoides*, *A. Tradescanti*, *A. cordifolius* and the beautiful *A. Lindleyanus*.

EARLY CHRYSANTHEMUMS are gaining much attention in England. The first flower show of great importance was held at the Royal Aquarium, Westminster, by the National Chrysanthemum Society, in October. Each year the list of new early-flowering kinds grows larger. The

finest novelties of this season are named below, every kind having some distinctive merit. Unfortunately the names are of inordinate length. There is a great deal in a simple name, and the rule should be to make the names of plants as short and sweet as possible. M. C. Ministre Develle is a remarkably distinct variety, which is a noteworthy point, as many of the so-called new sorts bear much resemblance to each other. It belongs to the Japanese class. Its flowers are creamy white, the petals tipped with carmine; the plant does not grow more than four feet in height. A delightful sort for cutting is Madame Marie Robert, which bears a profusion of small pure white flowers of Japanese character. Also worthy of remark are Madame Rene Chandon de Briailles, a rose-colored Japanese variety, with petals long and drooping; M. Gayon, blood-red—a deep, unusual color; M. J. Graff, rosy lilac, the reverse of the forets silvery; Madame Gabrielle Fontaine, salmon shaded with yellow, large and somewhat reflexed, of the Japanese class; Andre Faillieres, a Japanese of splendid color, intense and distinct. The subjoined also belong to the Japanese section: Madame Marie Contains, flowers very large, the petals ribbon-like in character and of great length, while in color they are soft primrose; M. Paul Lemoine, flowers not unlike those of Criterion, and rich buff shaded with yellow; Madame Raone Chandon de Briailles, creamy white, the petals arranged in whorls; Gloire de Mejin, deep bronze shaded with red, the reverse of the forets buff color; M. Massicault, magenta; Madame Bigare, rose-lake; and Madame Alexandrie de Bernont,

terra-cotta. A charming pompon variety is Mdlle. Eugene Klien, flowers creamy white, beautifully frimbriated and of excellent shape. It will not be long before the early or October-flowering varieties rival those of November—the great month of the year for the autumn queen.

THE YELLOW ARUM LILY OR CALLA is one of the recent sensations in the list of novelties. *C. Pentlandi* is a form of the well-known *C. Æthiopica*, but there is a great difference between the two, the new acquisition having spathes of a pure golden yellow color, clearer and larger than those of *C. Elliottianum*, which is allied to *C. hastata*, as shown by the white-spotted leafage. *Calla Pentlandi* has an interesting history. It is most probably, like the type, a native of South Africa, but we are not told the district from whence it came. Some tubers were given by a friend to Mr. Whyte, of Pentland House, Lee, England, about two years ago, and it was remarked that possibly one would bear a yellow and another a rose-colored spathe. When the yellow-spathed form flowered, it was shown at a meeting of the Royal Horticultural Society, and at once given a first-class certificate. We look forward with interest to the flowering of the other tubers. It is reasonable to expect a rose-colored form, as conjectures were correct in regard to *C. Pentlandi*. No small flutter of excitement will be created by an arum lily with a rose-colored spathe; it is something to devoutly wish for. *C. Pentlandi* seems to be as vigorous and easily grown as the white species so familiar to us all.

Chiswick, England.

ERNEST T. COOK.

THE WHITE POPPY OF CALIFORNIA.

A WILD FLOWER WORTH CULTIVATING.



DIVE as deeply as you will into the bewildering flora of the Pacific slope, you can find no flower that eclipses *Romneya Coulteri*. This white poppy is the finest of California's wild flowers. It is not a new flower, but was re-discovered, as it were, when California became a state.

Romneya Coulteri is well known in southernmost Europe and in Asia, and has always been considered a choice wild flower. It is a large perennial poppy, with snowy white petals, lightened in the center by a tuft of golden stamens. In the famous gardens of Kew, London, it is deemed one of the choicest and rarest border-flowers.

The genus was named *Romneya* in honor of T. Romney Robinson, a noted astronomer of Armagh. It is a shrub from 5 to 15 feet in height, half woody at the base. It does not die down entirely, but needs to be pruned back well in the fall. In early spring vigorous shoots start from the dormant roots, and grow from 6 to 10 feet high. The large, hairy flower-buds open at daylight, the crimped petals slowly unfolding from over the huge bunch of stamens (as large as a walnut), until they meas-

ure from 6 to 9 inches across. They last several days, the buds opening well in water. There is a delightful harmony between the *Romneya*'s much-divided glaucous foliage and the waxen white flowers, which make it so much admired as a decorative plant.

From Santa Barbara county southward, the *Romneya* is indigenous. It is found in San Bernardino and San Diego counties, and below the Mexican boundaries nearly to San Quentin Bay, in Lower California. In San Diego county and in Lower California this beautiful white poppy is seen at its best. It is found growing along the borders of streams in rich and fertile portions of valleys, on dry mountain or hillsides and in sheltered cañons on the warmest, driest and most unapproachable slopes, but is mainly confined to the foothills and valleys near the coast. It is easily domesticated as far north as San Francisco, and even at this altitude is quite a hardy shrub, requiring only a sheltered position to protect the flowers.

A rich, sandy loam suits the shrub best. The species may be increased by seeds sown in spring, but only the most careful and painstaking growers are usually successful with this method. The seeds do not germinate till from four to eight months after planting. With care,

the roots may be readily transplanted, and cuttings may also be made to grow. Single plants in cultivation do not seem to mature seeds, but when plants are grouped, as in the wild state, the seeds mature abundantly. The stems multiply rapidly from the roots, until a single plant will occupy a considerable area.

There is now quite a demand for this handsome shrub, and for California homes there is no plant more desirable from every standpoint than this big white poppy, with its great satiny, fleecy blossoms and beautiful foliage. For California lawns or gardens it is very desirable, and as a pot-plant for Europe and the east it is eminently successful. When quite small it blooms profusely, and though

it cannot be grown as large in pots as in its native soil and climate, it will amply repay all the labor and care bestowed upon it.

No picture does full justice to this beautiful flower. Pencils cannot portray the waxen, delicate texture of the petals, or the airy grace of the plant itself. One must go to the cañons of Lower California in order to see the Romneya in all its glory. There, far up the mountain sides, away from the reach of any but the most enthusiastic botanist, the numerous large, white flowers of the California poppy show with startling beauty in the morning sunlight.

California.

WILL M. CLEMENS.

THE ECONOMIC PLANTS OF JAPAN*—XVI.

LEGUMINOUS PLANTS.



THE SOY BEAN (*Glycine hispida*, Moench); Jap., *O-mame*, *Diadzū*. A bush-bean extensively cultivated in all parts of Japan. The plant varies from 1½ to 3 feet in height, according to variety and soil, and the varieties, which are numerous, differ much in size, color, time of ripening and the general appearance of their

beans. The plant is stocky, stands up well, and is usually branched. The shape and size of the trifoliate leaflets vary much in the varieties; the whole plant is rough, being covered with short, bristly hairs. The flowers are white or reddish; sepals acutely pointed, hairy; banner large, emarginate; wings small, boat-shaped; keel small; pods short, thickly covered with rough hair and growing in clusters, each pod containing from two to four beans. The beans are usually more or less lenticulate, some almost globular.

This vegetable is always grown in rows about two feet apart, and usually as a second crop, the early beans being planted between the rows of wheat and barley, and the late ones immediately after these crops are harvested. After the beans are well up, they are cultivated with the hoe once or twice, and if the soil is poor, enriched with liquid manure, but otherwise they receive no special care. The beans are, for the most part, not used until ripe, when they are prepared for food in a multitude of ways. Occasionally the green pods, containing nearly full-grown beans, are boiled, and the beans shelled and eaten from the pod. The early varieties mature in from 80 to 100 days, and the late ones in from 100 to 120 days.

Varieties of this bean are numerous. Probably more than a hundred can be found in the country. Beans of all varieties of this species are in shape intermediate between peas and our common beans. Many of them are nearly round, many are somewhat flattened on two sides, or lentil-shaped, and some are oblong, but never to the same degree that our common beans are elongated. As

to size, they vary from that of duck-shot to a little above very large peas. The size of the hilum and its markings are in many cases characteristic.

The beans are easily classed, according to color, as white, yellow, black, brown, green and spotted varieties. About 38 sorts that came under special observation I noted down as being worthy of more general culture. Some of these were sent from the Japan Imperial College of Agriculture to the French Exposition in 1889. Four of the varieties have been grown successfully at the Kansas Agricultural College for several years, and may be trusted to mature seed in this latitude. Two other kinds tested here proved failures, because they ripened too late. The successful kinds yielded under field culture last year from 16 to 18 bushels of beans an acre. They promise to become quite valuable in this country, not only for the table but for stock-feed. Soy beans are more nutritious than any other known species of bean. They yield as much nourishment as good beef—pound for pound. Most of the housekeepers who have tried those grown here pronounce them fully equal to the navy bean for table use, and some think them superior. They contain more albumen and less starch than the navy beans, and so do not cook quite so mealy as the latter, but they are fully equal to them in flavor. Their rough and rather tough pods render them unsuited for use in the green state, hence they will not come in competition with wax beans; but they can compete with the navy beans, and they have doubtless a great future as stock-feed. Not only is the bean itself nutritious, but the entire plant is rich in nitrogen. The Japanese as yet consume but little meat; with them the soy bean takes the place of meat, especially with the middle classes. One of their favorite uses of this bean is in the form of

BEAN-CHEESE, OR TOFU.

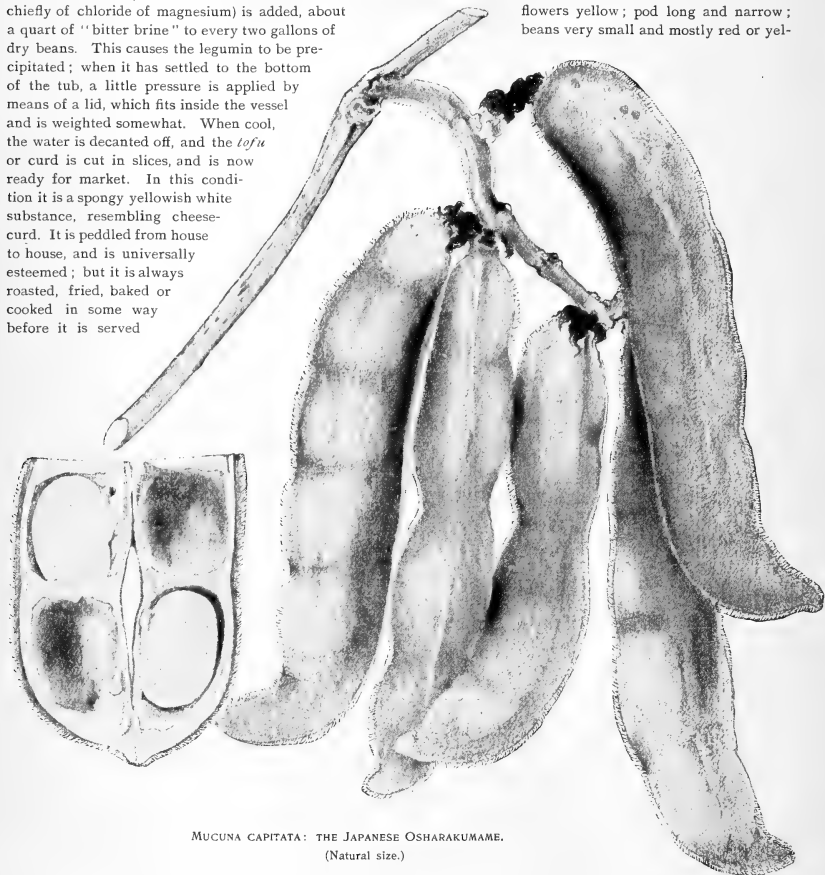
For making bean-cheese the *Shiro-mame*, or white soy bean, is commonly used. The beans are soaked in cold water for 24 hours, then while still wet they are ground between two small millstones turned by hand, the product being not flour but a thin paste, which is collected

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in a tub below. To this more water is added, and it is then boiled in a large kettle for an hour. On being removed from the fire it is strained through a bag to remove the hulls, the filtrate running into a tub or vessel of suitable size. Water is stirred into it, and a small quantity of "bitter brine" (refuse from the salt-works, consisting chiefly of chloride of magnesium) is added, about a quart of "bitter brine" to every two gallons of dry beans. This causes the legumin to be precipitated; when it has settled to the bottom of the tub, a little pressure is applied by means of a lid, which fits inside the vessel and is weighted somewhat. When cool, the water is decanted off, and the *tofu* or curd is cut in slices, and is now ready for market. In this condition it is a spongy yellowish white substance, resembling cheese-curd. It is peddled from house to house, and is universally esteemed; but it is always roasted, fried, baked or cooked in some way before it is served

4.87; non-nitrogenous substances, 4.35. Americans eat many things less nourishing than this bean-cheese.

PHASEOLUS RADIATUS, L.; Jap., *Adzuki*. This is another bean largely grown. It is not a native, but was in all probability introduced from India. It is a bush-bean, about two feet tall; leaflets oval, often sinuate or lobed; flowers yellow; pod long and narrow; beans very small and mostly red or yellow.



MUCUNA CAPITATA: THE JAPANESE OSHARAKUMAME.
(Natural size.)

It has been my privilege to eat it on many occasions, and I can testify that it is both palatable and satisfying. The only scruple one need have about eating it is concerning the purity of the water used in its preparation. According to Professor Kinch, *tofu* has this composition: water, 89.29; ash, .48; fiber, 1.01; nitrogenous substances,

lowish green, square at the ends and very short—in fact, they resemble a hand-satchel in shape. They are used mostly for grinding into flour, from which a sort of bean-cake is made. They are also boiled with rice, producing a dish called *aka-meshi*, which is served on festive occasions. They have the reputation of being the best-

flavored beans in existence, but much depends upon their preparation. Doctors of the Chinese school attribute medicinal properties to this bean, and order it as an exclusive diet for *kake* patients, a disease sometimes attacking people who live largely or exclusively on rice. These beans are cultivated like soy beans, as a second crop, in rows two feet apart. Most varieties ripen in three months from the time of planting. Japan produces annually from a million and a half to two million bushels of this bean. I imported a little seed of two varieties two years ago, along with the soy beans already mentioned, and they have yielded very satisfactorily, producing last year twelve bushels to the acre. They ripen earlier than soy beans, and are not such robust growers.

MUCUNA CAPITATA, Wright and Arnold; Jap., *Oshara-kumame*. *Hasshomame*. An excellent and prolific pole-bean, which is often cultivated, though it is by no means as common as the soy or the *adzuki*. It is not a native—was probably introduced from India. The vine is vigorous, and should be supplied with tall poles. The

leaves are large, the terminal leaflet being smaller than the two basal ones, and the latter unequally divided by the midribs; petiole six inches to one foot long. The flowers are large, purple, a dozen or more in a spike; pods large, bristling all over with stiff and thick hair, resembling the pods of the horse bean. The beans also large, approaching Lima beans both in appearance and quality, but are less flattened. There are from four to six beans in each pod. On the opposite page is shown a cluster of the pods, natural size, a portion of one being split open to show the beans.

This bean requires a long season, and I doubt if it will mature north of Washington. The Japanese use it as a shell bean when it is nearly full grown, and in the fall it is quite often seen in the baskets of peddlers and at green-grocers'. The beans sometimes develop a peculiar astringent taste, which I believe all good Japanese cooks remedy by putting a piece of soda in the water when the beans are boiled.

Kansas Agricultural College. C. C. GEORGESEN.

FIELD NOTES.

ABOUT WEEDS, RAINS, BERRIES, AND VEGETABLES.



NE of the most important jobs of late fall is getting out the perennial weeds from matted rows of strawberries. This is often neglected entirely, while annual weeds—those that the frost kills—are sedulously weeded out, almost up to the time when their career would

naturally be cut short. The worst perennial weeds, with me, are sorrel, white clover and dock. The frost checks the dock a little, but it makes a good deal of growth in the intervals between frosts before winter sets in, and by spring has such a strong root-growth that to kill it one must cut at least two inches below the surface. The sorrel and clover thrive amazingly in the cool, moist weather of autumn, and soon occupy all the ground if left to themselves. The removal of these, and such other perennial weeds as may happen to spring up, is in September and October our catch-job, to be worked at when there is nothing else to do. Mulleins, thistles, horsetail and blue-grass are the weeds I find most troublesome, in addition to the ones before mentioned. Chickweed, in two or three varieties, is troublesome on some farms; but, fortunately, I have none. Perennial weeds thrive amazingly under the raspberries, and it is not easy to uproot them after midsummer if a catch-crop is growing between the raspberries.

This year I grew Ford Early sweet-corn among the blackcaps planted in the spring. Because of the wet weather I could not plant the corn until June; consequently it could not be cut up and removed until after September 1, and by that time it was necessary to get the raspberry-tips in the ground as fast as possible; so there was no time to do any hoeing. Although the season was unfavorable for sweet-corn, so that this year it was not

very profitable, I like it better than potatoes for planting with blackberries and raspberries, and I shall hereafter plant the earlier varieties, that in ordinary seasons will be out of the way by August 10. This will give me a couple of weeks to clear up and hoe the ground before it is necessary to bury the raspberry-tips.

One of the tasks that is always in order on a berry-farm, especially where blackberries are grown to any extent, is clearing up. This year of wet weather has given great luxuriance to everything in the way of weeds and brush, and with 24 acres in orchards and berry-patches, it has been no small job to even mow down growths that we do not want. I generally cultivate blackberries thoroughly previous to May 20, going eight times over the seven-foot spaces, and doing the work at two jobs, about two weeks apart. This mellows the soil and leaves the ground tolerably clean if we have a reasonably dry June. About August 1 I have the spaces mowed to make picking the berries pleasanter; but this year, having a market for plants, and not wishing to injure the suckers by mowing in midsummer, the mowing was omitted. It was so wet when we cultivated that stirring the soil killed very little of the perennial growth, and by August 15 there was a fine show of golden-rod, fire-weed and quill-weed, from four to eight feet high, with plentiful lower growths of ragweed and horsetail. I thought to cut these out with a grass-hook before beginning to pick blackberries, but help was scarce, work interfered, and the cutting was neglected. Altogether, the briar-patches present a very untidy appearance, but I had a good crop of berries, which sold at high prices, so I can put up with the untidiness, especially as this season's planting of blackberries, raspberries, etc., is reasonably clean and shows a luxuriant growth.

T. B. Terry, in a recent address referred to Prof. Shaw, of the Ontario Agricultural College, as a man whose specialty is weeds. There are a good many farmers in Ohio who seem to have the same specialty this season. Even the pastures are a mass of ragweed. I have had a man working by the day all summer, and in looking over his account I find that in April and May he lost more than half his time because of rain, and in spite of the fact that I gave him some rainy-weather work in the way of setting glass, etc. The rain not only deprived farmers and gardeners of half their time, but made much of the work done during the other half very ineffective.

Late in September many of my Prizetaker onions, transplanted from June 6 to 14, were still growing, and

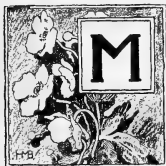
only a portion of them were content to stop and ripen. Of the 6,600 transplanted onions, probably less than 600 are too small to sell, and many are quite large, weighing over half a pound, and averaging 110 onions to the bushel. Late in August I pulled 55 specimens that filled a half-bushel, and sold them to a grocer for 60 cents, or more than a cent apiece. This is twice the price oranges brought in Florida last year, so I ought to be content. October 1, I pulled the bulbs that gave signs of stopping growth, and let the others grow a week or two, then pulled them up and put them under shelter to dry. I pulled up some onions to eat in August, and one that was not used lay around the kitchen for two weeks, and cured out dry and solid, with little shrinkage.

Summit County, O.

L. B. PIERCE.

GARDENING FOR PLEASURE AND PROFIT.

NOTES FROM THE EDITORS' GROUNDS.



MONKSHOODS.—The autumn monkshood, *Aconitum autumnale*, shown in our illustration, blooms in outdoor borders until the very close of the flower season. At that time of year few of its companions, save the Japan anemones, can vie with this plant in attractiveness. Figure 1

shows a spike of monkshood flowers in outline, at half the natural size, and a full-sized leaf and flower. Each plant throws out from near the root from 6 to 12 flower-spikes about three feet in height. There is an indescribable neatness, beauty of texture and fineness of form about the bloom which, added to its exquisite dark blue color, renders it at once charming and distinct. The plant does not begin to bloom until October, but its finely-cut deep green leaves make it a mound of beauty all summer. Early frosts do not hurt the flowers of the monkshood; long after other species of plants hang withered and blackened they still are bright. English gardeners tell of a monkshood with large lavender-blue flowers. This would be a fine companion for *A. autumnale*.

Other monkshoods common in cultivation are *A. napellus*, growing about two feet high and bearing blue flowers in summer; *A. versicolor*, blue and white; *A. anthora*, a curious Pyrenean species, bearing large yellow flowers, and *A. variegatum*, a much-branched variety, with white-edged blue flowers. All the monkshoods grow well in a good soil and partially shaded location. As a class they are handsome, stately plants, that remain in bloom a long while and have no appearance of weediness. Being tall and robust, they may be planted some distance from the margins of beds or in shrubby borders with no fear of dwarfing them or hiding their bloom.

But one fault can be found with monkshoods; they are poisonous when taken into the system, though per-

fectly harmless when merely handled. The root is more virulent than other parts of the plant, and has been known to cause death when eaten. But such handsome plants need not be rejected from garden culture because of this property. Let them only be planted so far from the vegetable-garden that there can be no chance of digging up the roots by mistake, along with those that are to be eaten. The roots bear some resemblance to those of horse-radish.

In October and November we have many weeks of pleasant weather that tempts us outdoors, and during this time we feel very friendly toward the hardy after-frost flowers that help to extend the blossom season over eight months of the year.

A HANDSOME AUTUMN BED.—October 25 there was not a flower in sight upon this bed, but it was as beautiful as at any time during the season. The bed is about 40 feet in length and averages 12 feet in width, being somewhat irregular in its outline. It lies in a somewhat oblique direction as seen from the house, and is about ten rods away from it. At the left end of the bed are small masses of dahlias, dwarf arbor-vitæ, and myrtle-leaved box-tree. Next to these, along the front of the bed as seen from the house, are successive masses of silver-edged corchorus, Thunberg's barberry, plicate-leaved viburnum, and the golden-leaved nine-bark. The silver-edged corchorus is as exquisitely bright and handsome in foliage as it has been at any time since spring, save that here and there is a tinge of gold along with the silver. Thunberg's barberry, always an attractive shrub, owing to its small, rounded leaves and dwarf, picturesque habit, is now enhanced in beauty by rich crimson and orange tints on its foliage and its abundance of red fruit. The upper leaves of the viburnum have assumed a deep purplish hue, while the lower ones are of the ordinary green color; and the golden-leaved nine-bark is more golden than ever. A mass of the purple-leaved barberry, its color richer than last summer, stands at the back of the silver-leaved corchorus, and forms a striking

ing contrast to it. Back of the clump of Thunberg's barberry is a mass of the taller European barberry, with foliage still as bright green as in summer, and bearing not coral-red berries like Thunberg's, but clusters of deep, dull crimson berries. Behind the dark-hued viburnums and golden nine-barks is a mass of the common nine-bark, taller than the golden, its light green foliage giving still another pretty contrast. A bush of *Robinia hispida grandiflora* and two of Judas-tree or red-bud also stand in this bed. They take on golden hues distinct from those of other leaves, and enliven the whole bed. Thus we have a mass on the lawn which, handsome as it was all summer, attracts special attention all through these autumn days, and makes us pity the gardeners who solemnly but mistakenly conclude that all garden beauty ends when frost comes. Not one of the shrubs occupying the bed described is famous for autumn beauty, simply because none of them are well known. They are all dwarf-growing shrubs that suit lawns too small to sustain trees noted for fine autumnal coloring.

PLANTING FOR AUTUMN EFFECTS.—Walking through our grounds on October 25, we found much beauty besides that already described. Maples, oaks and liquid-ambers were brilliant colors. The rhuses, staghorn, cut-leaved and *R. copallina* were a rich crimson, the latter a very dark shade. Japan blood-leaved plums, large-flowered dogwoods, privets, weigelias and forsythias were of a strongly contrasting green color, and the variegated weigelia was as handsome as at any time in the season. Golden oak gleamed here and there, and the strawberry-tree was gay with its bright rose-colored fruit. Some of the spiræas were decked in gold and crimson, *Spiræa prunifolia* and *S. Thunbergii* being especially beautiful. In the flower borders the four eulalias still were handsome, and Maximilian sunflowers standing in bold clumps about 9 feet high supported hundreds of rich golden flowers. The rose and white-flowered Japan anemones are perhaps the most effective of all autumn bloomers, the autumn monkshood ranking as next best. *Chrysanthemum lacustre*, verbenas, petunias, *Phlox Drummondii*, pansies and sweet-peas, all were still in bloom.

We suggest to our readers a lawn-mass planted especially for autumn show. In the center plant several roots of Maximilian sunflower at from 4 to 6 feet apart, for they love roominess. Around the sunflowers set from 6 to 12 clumps of autumn monkshood 5 feet apart, for it is not desirable that the clumps form a connected band. Measuring across the sunflower center, the monkshoods should not stand closer than 8 or 10 feet. Just outside the monkshoods set a heavy band of Japan anemones, using about two plants of the white variety to one of rose-color, but massing them somewhat irregularly. These anemones may be set from 2 to 3 feet apart. Outside of the anemones plant a line of verbenas, *Phlox Drummondii* and petunias arranged in respective masses.

What would it cost to stake such a bed? The expense would be light. Japan anemones can be bought for from \$1.50 to \$2 per dozen, the sunflowers at \$2 a dozen and

the monkshoods at \$2.50 a dozen, these prices being taken from the catalogue of a leading American nurseryman. Verbenas, phloxes and petunias can be cheaply grown from seed which might be sown in May directly where the plants are to stand.

A NEW BOLTONIA.—Usually the boltonias have been classed with their near relatives, the perennial asters, in point of desirability for garden culture. One of the



FIG. 1.—AUTUMN MONKSHOOD (*Aconitum autumnale*).

newer species that has been tried at Woodbunk is *Boltonia latisquama*, and it is certainly a fine September-blooming plant for any place except in the foreground of fine borders. The flowers are between one and ten inches across, and composed of many ray florets of a delicate rose-color, very agreeable to the eye. The plant grows about 4 feet in height, and has about the same diameter, and bears hundreds of blossoms. We think it would naturalize well along with the golden-rods and native asters.

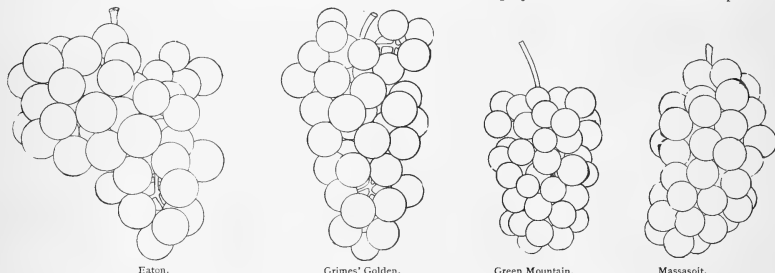
THE JAPAN HONEYSUCKLE.—This admirable twiner now finds a friend in every beholder of its rich autumn foliage, which, indeed, is held until January. The foliage may be frozen stiff, but a few hours of warmth suffices to thaw it out again, and it has the appearance of being none the worse for the freezing. This quality in the foliage, so conspicuous during the autumn season, finely supplements the extreme attractiveness of the plant during its extended season of bloom.

THE VINEYARD.—Our vines are now in their fourth year from planting, and have borne their second full crop this season. They have again made a vigorous growth of wood, but while perfectly healthy last year, this year many of them have suffered greatly from various forms of mildew and rot. Thorough treatment will now be required to keep these diseases in check, and we intend to prune the vines at once, and burn all wood and accumulated rubbish. In early spring part of the vines, with their trellises and the ground under them, will be given a thorough drenching with a one per-cent. solution of crude sulphuric acid; another part of the vines, etc., a drenching with a solution of sulphate of iron, and still

joyable, notwithstanding the fact that we know there are other grapes of a higher grade in this respect. Our ConCORDS gave us some of the finest clusters we had, and they were eaten with a relish.

The Delaware gives small clusters and small berries, but it makes up for this by its large number of clusters and comparative freedom from disease. Its "sugar-and-water" quality suits us and other consumers quite well. Of the Niagara little need be said. It is at home in this country, and has found its way into the affections of every grape-grower and eater, far and near.

We have said many a good word for the Green-Mountain-Winchell grape. After another season's experience



TYPES OF GRAPE-CLUSTERS: REDUCED TO $\frac{3}{8}$ OF NATURAL DIAMETER.

another part of the vineyard, for the sake of comparison, will be left without treatment. Possibly we may try gypsum (sulphate of lime) dusted freely on a few vines. In our comments on varieties we will not go over the whole list again. With most of the leading sorts, last season was only a repetition of our experience in 1891, except in so far as some kinds were greatly injured, if not ruined, by mildew and rot. Thus it was for instance, with the delicious Brighton, which at least attempted to give us a good crop. Most of our labruscas are not yet effected by disease; the thick-skinned Rogers hybrids also escaped unharmed. Our last season's favorite, El Dorado, again leads in quality. There is no vine that can compare with it in this respect among the more than 100 varieties on our grounds. But while our vine of El Dorado was heavily laden with fine clusters in 1891, it gave us only a meagre crop this year. Nevertheless we deem it worth growing, and willingly forego the advantage of quantity for the sake of enjoying its delicious quality.

The season's outcome proves once more in an especially striking manner the great value of some of the old standard sorts for general planting. If we were asked which three sorts among all our many varieties, some of them introduced with high claims and great expectations, have shown themselves most suitable for general planting and most indispensable, we would be compelled to name (1) Concord, (2) Delaware, and (3) Niagara. If we plant Concord, we are reasonably sure of perfect fruit, plenty of it and fruit of a quality that is quite en-

with it we have much to add in its favor. Indeed we believe the variety is fully as valuable as any of the sorts already mentioned. It appears to be a vigorous grower, free from disease, and a free bearer of handsome clusters of good quality. Besides, it ripens earlier than any good grape we have, and it will soon be found as indispensable in commercial vineyards as Niagara, Delaware, or even Concord.

Among other varieties that gave us fair-looking clusters are Grimes' Golden, Eaton and Massasoit. A cluster of each of the four last-named sorts, as grown on our grounds, has been sketched, and is shown in figure 2. Grimes' Golden, which seemed to be rather late last year, came to full maturity this season, and could be eaten with a relish, its flavor being a pleasant subacid. Eaton gives by far the largest berries of any variety in the picture, and fairly good clusters. This, however, is about all that can be said in its favor. It is not quite equal to Concord in quality. Massasoit is enveloped in a thick, tough skin, which renders it suitable for long keeping. Its color is a fine dark red; the flesh is pulpy, but the flavor is pleasant and sweet. One the whole, we get a large amount of satisfaction out of this experimental vineyard.

SOME NEW TOMATOES.—Our interest in testing new tomatoes has flagged somewhat of late, because we are conscious of having such fine sorts already. Really excellent varieties have been introduced during the last three or four years, and yet we had apparently just as good ones before. No new tomato will be apt to create

anything like a sensation now, unless it is something entirely out of the old lines.

Of the first-earlies, we yet retain Early Ruby as the best, notwithstanding its dwarf growth. It gave us nice, smooth, well-ripened fruit continuously from July 18 until the close of the season. All other first-early sorts, like Vaughan Earliest, King of the Earlies, Atlantic Prize, Early Advance, etc., although some of them ripen as soon as Early Ruby, and all are much thriftier growers than that sort, have deficiencies in size, shape, or texture, which must rule them out as varieties for general planting. Early Ruby is the only tomato of that class which gives smooth, solid fruit.

Para Grove was sent us from Louisiana. It is a large, round, red, smooth variety, resembling Chemin, and, like it, not so solid a tomato as is now required. Ponderosa again produced a fair but not large crop of its enormously heavy fruit. It is surely the most solid tomato we have, being almost all clear meat, and having but few seeds. It will be valuable as a parent of new

sorts, but in its present shape it is not smooth enough to catch the popular taste. Baltimore Prizetaker is a good tomato, yet perhaps not superior to many of the best older ones. Picture Rock seems to have a future. It is a fine, prolific red sort. Moneymaker belongs to the first-earlies, but has shown no qualities which would render it preferable to Early Ruby. Matchless seems truly hard to match, unless Majestic, which somewhat resembles it, should prove to equal it. Tuerkenbund (Turk's Cap) produces a large crop of small tomatoes, which in shape resemble a miniature Turk's cap. It is curious but not useful. We also had some red and purple sports of Mikado, seed of which was sent us by a grower in southern Niagara Falls. They resemble Potato Leaf in shape and texture, and are well worth growing in the home-garden.

The Fig (Yellow Gage) tomato is still interesting. It is an extremely vigorous grower, producing great clusters of small, handsome, yellow, plum-like tomatoes, of a peculiar fruity flavor.

ELECTRO-HORTICULTURE.

IMPORTANT EXPERIMENTS MADE AT CORNELL UNIVERSITY IN 1891-1892.



ELECTRIC LIGHT profoundly affects many plants, some injuriously, and a few beneficially. Lettuce appears to be greatly assisted by the light, and some ornamental plants produce earlier and brighter flowers under its influence. The earlier experiments were all made with an arc-lamp,

which hung inside the house, and it was found that better results were obtained when the arc was screened by an opal globe, or even by a pane of window-glass. The question at once arose, if this screen could not be afforded with equal advantage by the glass roof itself if the light were hung above it; and if this were true, it must then be determined how far the beneficial effects of the light would extend, or, in other words, how much glass one light can cover. It is this particular point which the following paper considers.

The experiments which we shall now consider were made in order to determine what are the effects upon a few common plants of an electric street-lamp suspended above a greenhouse. The arrangement of the experiment will be understood at a glance from the cross-section of the houses under discussion, on page 735. It will be noticed that there are two parallel houses; each is divided in the middle into two compartments. These houses are 60x20 feet. In the valley between the houses the lamp was hung, and the arc was six feet above the nearest glass. The lamp was hung in front of a large, blackened sheet-iron screen, which, in connection with the partition in the house and a series of curtains, completely excluded the light from the compartment be-

hind the lamp. By moving the screen to the other side of the lamp and rearranging the curtains, we were able to throw all the light into the other compartment; this change was made during the experiment. The lamp was attached to an ordinary street-lighting system, and it seldom burned after 11 o'clock, while it often ran but an hour or two, and on moonlight nights not at all. The lighted house was exposed to sunlight during the day, and in addition received this small and varying amount of electric light. The other, or so-called dark house, was lighted by sun during the day, and received no light at night. The lamp carried a clear glass globe, so that the light passed through two panes of glass—the globe and the roof—before reaching the plants.

The upper house—comprising the compartments A and B—is what we term a coolhouse, and it was used for lettuce, endive, radishes, beets, spinach, cauliflower, violets and daisies. This is the house in which the experiments were mostly conducted, because the two compartments of the other house have unlike roofs, and are, therefore, not comparable. These houses, A and B, are the ones which were used in the experiments reported last year. Lettuce was grown on benches 1, 3 and 4; radishes upon the same, mostly between lettuce-plants; beets upon 2; cauliflowers upon 3; and the other plants upon 2. Bench No. 1 is not shown in the illustration. The lower houses, C D, were used for tomatoes, cucumbers and beans; and, as I shall not refer to those houses again, it may here be said that I was unable to detect any influence whatever of the light upon these three sorts of plants.

LETTUCE.—Our main crop was lettuce, for in previous experiments we had found a decidedly beneficial in-

fluence of the light upon it. This benefit was fully as apparent this year. There can no longer be any doubt as to the advantage of the electric light in the forcing of lettuce. The light was started October 19, 1891. At that time Boston Market lettuce four weeks old was set on bench 4, and seedling plants of Landreth Forcing were just showing on bench 3. The transplanted plants (bench 4) in the light compartment soon began to excel those in the dark compartment, and as early as October 27, or a week after the starting of the light, they were perceptibly ahead of the others. In this time forty hours of electric light had been expended upon the plants. The plants directly under the light, from seven to ten feet from the arc, were the first to improve. November 1 the lighted plants were a fourth larger than the others, and they showed a marked tendency to turn toward the light. The plants, even to the farthest extremity of the light department, gained steadily throughout the experiment, and were ready for market from a week to ten days earlier than in the dark house. In quality and all other characteristics this lettuce was distinguishable from that grown under normal conditions.

The lettuce on bench 3, which had been sown there, behaved differently. For the first week or ten days the plants under the light were stunted, notwithstanding the fact that they were farther from the lamp than those on bench 4, which did so well from the first. After some days of lingering, when the plants began to develop three or four leaves, these seedlings began rapidly to recuperate, and they finally overtook their companions in the dark house; but these plants never showed the superiority which the transplanted ones on bench 4 exhibited. We were prepared for this behaviour, for we had observed it before, and Deherain has reported similar results with other plants in his experiments in Paris. The reason for this injury to very young plants I shall not now attempt to discuss; it is sufficient for our present purpose to say that it appears to be better to sow lettuce under common conditions, and when the plants are well established to transplant them under the light.

Lettuce was also transplanted into the upper bench, No. 1, in order to determine how far the influence of the light extends. The extremity of the light compartment was forty feet distant from the lamp, and the roof is so low that much of the light was reflected, yet at this distance, where there was only diffused light, the plants a month after the light started were much better than those in the dark house.

The experiment was repeated with second and third crops of several varieties of lettuce with similar results. February 9, Simpson lettuce was transplanted upon bench 4, and the customary increase under the light took place. March 22, when the lettuce was nearly large enough for market, the light was transferred to house B, and thereafter the poorer plants received the light. These poorer plants soon showed the effect of the new conditions, and the time between the maturity of the two crops was considerably lessened.

Perhaps the best illustration which we found of the

influence of the light upon the lettuce was afforded by a crop upon bench 1, on which radishes were also planted. The interception of the light by the radish-leaves had a most marked effect upon the lettuce-plants which stood behind them, the adjacent plants, which chanced to be exposed to the full light being much larger. The bench therefore presented a very uneven appearance when the radishes were removed, and the shadows from the radish-leaves could be traced in the lettuce. Similar results were observed where the dense shade of a rafter lay across the plants.

As already told in the August number of *AMERICAN GARDENING*, W. W. Rawson, of Arlington, near Boston, now uses the electric light in the commercial forcing of lettuce. Mr. Rawson calculates that he receives a gain of five days in a crop of lettuce by the use of these lamps, and, as he grows three crops during the winter, the total gain is over two weeks of time. The gain from one crop is estimated to pay the cost of running the lights all winter. The effect of the light is said to be marked at the distance of one hundred feet.

ENDIVE.—Plants of endive five weeks old were transplanted into bench 2 November 11. The plants in the two compartments were much alike throughout the experiment, and it is impossible to say if the light exercised any beneficial influence, but it is certain that there was no injurious influence. In the 1890 test, under the naked light, inside the house endive was injured, but other plants which are known to be benefited by a modified light also suffered under those conditions.

RADISHES.—Radishes of various kinds were grown on benches 1, 3 and 4, between young lettuce-plants. The first crop—which alone is considered here—was sown a week before the light started, so that the plants were well up when the test began. Before the crop was harvested, December 3, two hundred and twenty-nine and one half hours of electric light had been expended upon the plants, or an average of five and one-tenth hours per night.

The plants in the light house were best in every feature. The proportion of tops to the entire plant in this house was greater than in the dark house, the difference being that between 55 per cent and 49 per cent. All these results are interesting when compared with our former experience, for they show how much the simple interposition of plain glass may modify the influence of the light. In 1890, under the naked light, radishes were uniformly injured, the loss ranging from 45 to 65 per cent. The same year, under a light protected by an opal globe, the injury was still apparent, but the loss in tubers was only from 1 to 5 per cent. of the crop, yet at the same time the weight of leaves was increased. Now this year, under light strained through a globe and a glass roof, there was an increase of both tubers and tops. In no case have radishes been sufficiently benefited to pay the cost of the light; but our results seem to show that a well-protected light is some assistance to them.

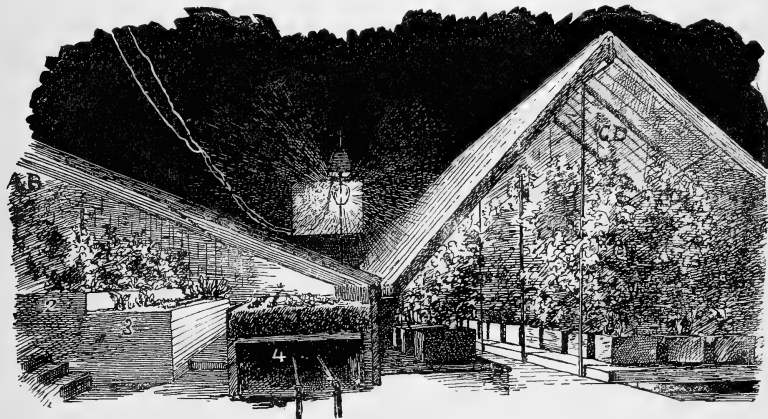
BEETS.—Four days before the light started, October 15, seeds of Early Egyptian beet were sown in both compart-

ments, on bench 2. A month later, after 160 hours of light had been expended upon them, the beets in the light compartment were at least one-third larger than those in the dark house. Five months after sowing the beets were removed, when it was found that 57 per cent. of the plants in the light house gave marketable tubers, against only 33 per cent. of those in the dark house; and the total average weight of the plants in the light was about half an ounce greater than in the dark house. It must be said, however, that the test with beets was hardly a fair one, from the fact that the plants in the dark house received more bottom heat than the others. But as the results corroborate those obtained from radishes, the figures may be of value.

SPINAGE—When the light was started, spinage was transplanted into bench 2 in both compartments. This

in the dark house were noticeably stouter and more stocky than those in the light house, and two of the plants were forming heads, while those in the other house showed no sign of heading. A week later four good heads were growing in the dark house, one of them reaching a diameter of $3\frac{1}{2}$ inches, while none were visible in the light house. It was a week later that heads began to appear in the light house, or two weeks after they had been observed in the other plants; and at this time it was plain that the lighted plants were running to length, while the others were stocky.

Decidedly better results were obtained in the dark house, and it should also be said that more heads were obtained in that house. These results are unequivocal, but the plants under experiment were so few that general conclusions cannot be drawn. It is expected that this



CROSS-SECTION OF ELECTRIC-LIGHT HOUSES.

spinage was Round Dutch. A month after the light started, there having been an average of about five hours a night of electric light, all the spinage in the light house was from 10 to 15 per cent larger than in the dark house, and there was no greater disposition to run to seed; the advantage was maintained, if not augmented, throughout the experiment. This result was unexpected, for in our first experiment spinage was very much injured by the light; but in that experiment the light was naked and was inside the house, and the results are, therefore, not comparable with the present ones.

CAULIFLOWER.—January 8, 1892, two dozen good cauliflower-plants, four inches high and bearing four or five leaves, were placed in 6-inch pots and divided between the two houses, on bench 2. The plants in the light house were ten feet from the lamp, and almost under it, so that they received the full glare of light. A month later, 93 hours of light having been expended, the plants

experiment will be repeated upon a much larger scale the coming winter.

FLOWERS.—Violets and daisies were grown upon bench 2. In both instances, strong plants were set in the beds a few days before the light started. The violets (Marie Louise) were all set in the light house near the partition—12 to 16 feet from the lamp, and they received the full benefit of the light. Half of the bed of root plants was covered each night with a black enamel-cloth box, provision being made for ventilation, and the other half received the light. Three weeks after the light started the exposed plants began to bloom, while no buds could be found in the darkened portion. It was not until five weeks after the starting of the light that a flower appeared in the darkened plants, while the others had continued to bloom. At this point the obscure violet-blight appeared, and the experiment with the light ceased.

Fifty strong plants of the low daisy (*Bellis perennis*)

were divided between the two houses. Those in the light compartment were from 15 to 18 feet from the lamp, in rather weak light. The first bloom appeared just four weeks after the starting of the light, and in the light house. For a month or six weeks thereafter the lighted plants bloomed more profusely; but at that time the dark-house plants began to surpass the others, both in number and size of flowers and vigor of plants. In other words, the lighted plants bloomed earlier, did not make such stocky plants, and they soon exhausted themselves. It is possible that they would have endured longer if they had been established in the beds for a longer period before the light was put upon them.

WHEN DO THE PLANTS GROW?—It is thought that plants grow mostly at night, using the material which they have manufactured during the hours of sunlight. The question then arises when the lighted plants grew. Did they grow more rapidly than the others during the few hours of darkness, or did they grow when the electric light was burning? We have made many tests with auxanometers—instruments which measure and record the periodical growth of the plants. The most important fact which these readings have shown is that lettuce-plants, under normal conditions, grow about as much in daylight as in darkness; and the periodicity of growth was very irregular. Lettuce-leaves were found to grow more rapidly in the light house for the first week or so, at which time growth became greater in the dark house. That is, the leaves matured more quickly under the light.

SUMMARY.

1. The influence of the electric arc-light upon greenhouse plants is greatly modified by the use of a clear

glass globe or the interposition of a glass roof. Plants which are much injured by a naked light may be benefited by a protected light.

2. As a rule, plants are earlier under the electric light than when grown in ordinary conditions.

3. The light can be suspended above the house with good effect.

4. Lettuce is greatly benefited by the electric light. An average of five hours of light a night hastened maturity from a week to ten days, at the distance of ten and twelve feet. Even at forty feet, in only diffused light, the effect was marked. The light appeared to injure young newly transplanted plants.

5. Radishes were also benefited by the light, but not to a great extent. When the light was hung in the house, however, whether naked or projected by a globe, radishes were injured.

6. Beets and spinage appeared to be slightly benefited by the light.

7. Cauliflowers under the light tended to grow taller than in ordinary conditions, and to make fewer and smaller heads.

8. Violets and daisies bloomed earlier in the light house. This corroborates results obtained with other flowers in our earlier experiment.

9. The electric light does not appear to determine or modify the hours of growth of lettuce and some other plants which have been studied in this particular. Plants which are benefited simply grow more rapidly during the customary period.

10. I am convinced that the electric light can be used to advantage in the forcing of some plants.—L. H. BAILEY, in *Bulletin 42, Cornell Exp. Station.*





Holly Leaves

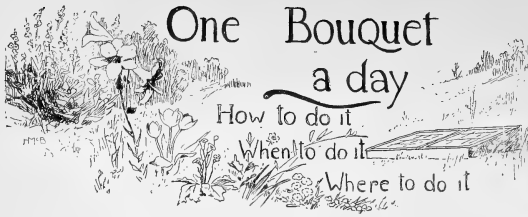
Jovial Christmas-tide is here—
Crowning feast of all the year!
Spread the board with Christmas cheer;
Let your heart be jolly.
At the joyful season's call,
Deck with green the oaken hall;
Round about and over all
Hang the Christmas holly.

Though the world be centuries old
Since the Story first was told,
Yet when centuries more have rolled
Shall that wondrous Story
Live in Christmas hearts, I ween,
Like the holly, fresh and green,
Through a withered cheek be seen—
Though the head be hoary.

Better than the Age of Gold,
Oft in ancient legends told,
Is the never-growing-old
Age of Christmas holly.
Jovial Christmas-tide is here—
Crowning feast of all the year!
Spread the board with Christmas cheer;
Let your heart be jolly.

Massachusetts.

—WALTER STORRS BIGELOW.



GOOD CHEER FOR CHRISTMAS-TIME.

The big winter bouquet that all children love best, and I suspect some grown folks too, is the Christmas tree. We gardeners are all children compared with Santa Claus, and some time he ought to give us in AMERICAN GARDENING a chapter on Christmas-tree forcing, telling all about how he grows such wonderful flowers and fruits in winter, up in frost-land. But besides Christmas trees, tiny, well-stuffed stockings, and pantries full of toothsome and indigestible eatables, the good cheer of Christmas everywhere finds expression in bright wreaths and decorations.

EVERGREENS.

Hemlock and cedar, so plentiful everywhere, usually form the ground-work of Christmas decorations. Making "green ropes" is somewhat monotonous work, but the best way to do it is to stretch the stout-cord foundation between stationary objects, clip the evergreen into small branches, and with small, dark-colored twine wind the stems of these about the cord. Such wreaths should not be large and heavy, as this gives a gloomy appearance, but light and airy, with a few flowers or bright leaves and berries woven in for an enlivening effect, especially if the evergreens are dark and sombre, as they are apt to be in winter. Some of the pretty wild everlastings, with white push-like flowers, look pretty woven in; or they are fine for covering letters cut from strawboard, if you wish some mottoes scattered about among the evergreens.

In some localities a much prettier material for making Christmas wreaths and bouquets is found carpeting the ground. This is the lycopodium in two sorts, ground and running-pine. Look for them on hillsides that are partially shaded and somewhat sterile. Excepting smilax, they make prettier Christmas wreaths than anything else I can think of. If you cannot have the fun of gathering armfuls of lycopodium yourself, florists will sell it, the ground-pine for 25 cents a pound, and running-pine in packages of ten yards for 50 cents apiece.

BRIGHT LEAVES AND BERRIES.

Holly and mistletoe are given good space in Christmas decorating. Hold them up together, and see what a fine contrast they make against their shining, dark green leaves—the mistletoe's pearly, milk-white berries and the gleaming scarlet ones of the holly. Be careful of the holly-leaves when you are decorating; they have sharp points along the edge that scratch cruelly. I like to use generous branches of holly by themselves, thrusting the stems behind large pictures in such a way that the rich leaves and berries shall stand out in light, sketchy clusters

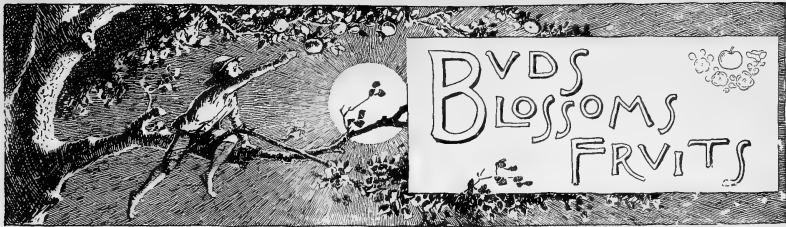
beyond the frames. In the folds of portieres and window-curtains they may be arranged in a similar way, and small branches laid about on the white cloth of a Christmas dinner-table make turkey and plum-pudding look more appetizing. There are not half enough berries on holly branches that our artists draw. At the south the twigs are so thickly set with them that in the distance the scarlet is quite as noticeable as the green. Robins feast upon the berries all winter, and I have a memorandum of some beautiful holly branches gathered April 4. The winterberry, *Ilex verticillata*, abounds in northern woods, and in the west grows *Ilex laevigata*, the smooth winterberry.

Euonymus berries, perhaps the most beautiful in the world, bitter-sweet, snow-berries, mountain-ash and barberries all are bright, and if branches of them are cut before the winter's cold blackens them, placed in water in a cool damp cellar, they will keep until the holidays.

Galax aphylla leaves are plentiful in woods and are as bright-hued as any of our berries about Christmas time. Their colors range through golden green, yellow and scarlet up to dark maroon, and their stiff, shining surfaces keep bright as long as the holly. They have long wiry stems that are easily managed in any kind of work, and for wreathing in with the holly, or arranging loosely in bowls and baskets, they are bright and pretty.

FLOWERS.

In the tropical atmosphere, which most of us think essential to holiday cheer in our dwelling-rooms, cut-flowers are apt to wither quickly. In a few hours feathery sprays of stevia and astilbe begin to droop languidly, and even the waxen, thick-petaled flowers do not keep bright long. So the owners of blooming plants in presentable pots will do well not to cut the blossoms, but to use them as they grow for decoration. Even then the leaves and petals of hyacinths, lilies-of-the-valley, ferns and other plants that grow in a cool or medium temperature will often wither or curl if left too long in heated dining-rooms or parlors. Give the roots all the water they can drink, and it is a good plan, when the arrangement is not too elaborate, to set the plants back in their old growing quarters during the night, using them to decorate heated rooms only in the daytime. The same rule applies to bowls of cut-roses, carnations, etc. Cut-flowers should be given fresh water daily, and cutting the ends of their stems off also helps to keep them fresh. Sprinkling lightly with tepid water is good for them as well as for the growing plants.



INVITATION TO REDERS.—We want short, practical notes on cultural methods and devices, and sketches and photographs of choice plants, fruits, flowers, vegetables, garden-scenes, implements, etc. Therefore, for any available article occupying a half-column or so of space, or for any sketch or photograph from which an acceptable engraving can be made, a year's subscription to this magazine will be given. Please always so specify when contributions are sent in under this offer.

I. LITTLE TWIGS.

TO KEEP SEEDS.—Keep the mice away.

PLANT-GROWTH now needs plenty of light.

PLAN WELL NOW, that you may plant well later.

THE BEST SCIONS are those cut before solid freezing.

DECEMBER is the best month for sending in subscriptions.

NOTES OF EXPERIENCE from subscribers are always welcome.

NAME YOUR HOME; a good name will give both dignity and individuality to a farm.

SWEET ALYSSUM sown in pots now will be white with bloom during the early spring months.

A GOOD EDGING for a large clump of mixed shrubs is the low and neat *Deutzia gracilis*.

WINTER COVERINGS for plants, etc., should be provided this month, if they are to be of any service.

A CHRISTMAS PRESENT.—Some friend of yours who grows green things would appreciate a year's subscription to AMERICAN GARDENING.

FLOWER-POT STAINS upon window-sills may be removed by rubbing them lightly with fine wood-ashes and rinsing with clear water.

IT IS A MISTAKE to bring forcing bulbs into rooms having a high temperature. Nature flowers them outdoors in cool spring weather.

TOO LITTLE HEAT is less injurious to the health of plants than too much, especially with regard to hardy and half-hardy sorts.

THE GOOSEBERRY MILDEW can now be overcome by cheap applications. Plan to make a new trial of the fine English sorts. Gooseberry culture can be made to pay.

FEMININE NAMES FOR PISTILLATE STRAWBERRIES, and masculine names for staminate ones, is a new and good idea suggested in *The Rural New-Yorker* by our venerable friend, E. Williams, of New Jersey.

FINE DECIDUOUS TREES must not be slighted for evergreens in planting a place, much as the beauty of the latter is appreciated during winter. In England the planting of evergreen masses is overdone.

A GARDEN NOTE-BOOK.—If you did not note down all the changes which you wish to make in your garden this summer, do it now, or you may forget what they were when the time for attending to them comes.

AN ENTERPRISING WOMAN.—A London woman advertised her wish to take care of valuable plants while their owners were out of the city. She managed to secure many patrons, and although she charges only small fees, from this source she derives quite a comfortable income.

WINTER CHEER.—A new carnation, with this pretty and appropriate name, is now making its appearance in florists' windows. The blossoms are bright scarlet, with firm calyxes, and the habit of the plant is dwarf and sturdy and free-flowering.

ANTS ON OAK TREES.—A number of our authorities believe that the galls on an oak, by attracting ants, lead to the slaughter of quantities of caterpillars and other insects, which are its natural enemies. He illustrates the value of this protection by the statement that the inhabitants of a single ant's nest may destroy in a single day upwards of 100,000 insects.

GRAY'S FIELD, FOREST AND GARDEN BOTANY is now being revised by Prof. L. H. Bailey, of Cornell University. This is the second book of Gray's given out for revision by the Board of Corporators of Harvard. His "Manual" was revised by the late Sereno Watson, Gray's colleague, and J. M. Coulter, Pres. of University of Indiana. Gray's will specified that the copyrights of his books should go toward keeping up the botanical library at Harvard, and that his books should be revised from time to time.

TWO FINE AQUATICS.—*Potamogeton perfoliatus* is one of the handsomest of our pond-weeds, and a fine plant for aquariums, artificial lakes, or carp-ponds. The bright green leaves are rather closely arranged in two ranks, and heart-shaped at the base; the border is beautifully waved. *P. lucens*, shining pond-weed, is another handsome species, growing from three to four feet high, in the deep water of rivers and lakes. The leaves are quite broad and from four to six inches long.—*W. A. Brotherton, Mich.*

A Good LIQUID STIMULANT.—I have found that a liquid prepared from compressed sheep-manure makes a wonderful change in the growth of plants. It should be used as weak as weak tea, and never allowed to touch foliage. It certainly brings plants into bloom better and quicker than any other fertilizer I have ever used. This fertilizer can be procured from the Messrs. Pitcher & Manda, of Short Hills, N. J. It is perfectly free from wild seeds, and is sold for five cents a pound.—FERN LEAF, *Illinois*.

A PROFITABLE BLACKBERRY.—We have 1½ acres in Early Wilson blackberries. Our crop for 1891 netted \$350; the '92 crop \$510. The bushes are covered with soil for winter protection. After this we haul coarse manure to the fields for an additional covering and for a mulch during summer. In this way we secure a heavy growth of bushes and a heavy crop of large berries. It is an expensive mode of culture, but is the only way to produce first-class fruit in this climate. Even Snyder winter-kills here.—T. W. BLACKMAN, *Iowa*.

II. THRIFTY SAPLINGS.

More About Huckleberries.—Huckleberries here command a higher price than any other berries, and excel all others for shipping. Although found growing in low, marshy ground, the plants grow well, and produce as much fruit as on uplands. In any good garden soil they thrive under the treatment given to raspberries. They appear to adopt themselves to various circumstances. Seed sown in the open ground in November will germinate the following spring, and the seedlings may be transplanted when large enough to handle. Set them about four feet apart, in rows six feet apart. We obtained wild plants, and find that they well repay the care given them by bearing fruit every season, improving under cultivation.—E. L. P., *Pa.*

Aid for the Cemetery.—A writer in *The Modern Cemetery* makes a pithy suggestion concerning the improvement of burial-places. He says: "Get out your will, some of you people with fathers, mothers, or other near and dear relatives buried in the old graveyard, and add a codicil, leaving \$100, \$500 or \$1,000 in trust for the old ground. You can't do a more useful act than that as long as you live. Or if you prefer, pay the money over before you die". If this suggestion were to be widely followed, it would result in a great and needed evolution in cemetery improvement. Then beautiful burial-places would not necessarily be so exclusively an adjunct of our cities and towns.

Poison Hemlock.—A schoolboy recently asked the editor what kind of hemlock it was that Socrates poisoned himself with. This inquirer was only acquainted with the hemlock known otherwise as hemlock-spruce, the branches of which are much used for garlands in decorating churches, halls, etc. There are several plants known as hemlock or "poison hemlock." One of these is the common hemlock (*Conium maculatum*), a member of the natural order umbelliferae. It is a herbaceous native plant of Europe, but has become naturalized

throughout North America, growing by waysides, on heaps of rubbish and in like places. The root resembles a small parsnip. Another poisonous hemlock is the water-hemlock (*Cicuta virosa*), also known as cow-bane. This, like the other, belongs to the umbelliferae order, and is herbaceous in character. Still another poisonous hemlock is *Cicuta maculata*, a native of North America, growing in marshy places.

A Word for Native Trees.—Let us free ourselves from the notion that in order to have fine lawn-trees we must pay high prices for specimens from foreign countries. Two trees that attract the attention of every observing visitor to the editor's grounds are a common American hemlock and a black or mahogany-birch, both natives of this section. Neither of them, however, are very abundant in this region, so that they appear quite as rare as any of the far-fetched trees on the place. From a considerable experience in seeking out and planting choice native trees, shrubs and plants in ornamental grounds, we are satisfied that scarcely a kind can be named, unless it be one of rapid-spreading habit, likely to become a nuisance, that is not well worthy of transplanting to our pleasure-grounds.

Spot Diseases of Currants.—Our currant crops have for several seasons been greatly reduced by premature loss of the leaves owing to the attacks of spot diseases. We have not made any efforts to combat these fungous enemies, but it is probable that much of the injury can be prevented by early and thorough sprayings with fungicidal solutions. On the grounds of the Iowa Agricultural Experiment Station, experiments have been made in fighting these and similar diseases, and at least partial success is recorded. Three applications of Bordeaux mixture (June 9, June 16 and July 3) were made on some White Dutch currant-bushes, and seven applications of ammoniacal carbonate of copper solution (June 6, 8, 20, 29, July 9, 21 and August 13) on another lot of plants of same variety. In either case the treated bushes retained their leaves in healthy condition much longer than the untreated ones. Still, this treatment has not proved a complete protection.

Autumnal Grasses.—With some idea of places and seasons, one can make up a very charming collection of grasses, seed-receptacles, etc.—the aftermath of the flowers. Many of them may be harvested as late as November. Soft, gray, feathery heads of broom-grass nod to each other along wet lands, in most localities. They harmonize finely with rich brown seed-clusters, such as the lecheas, and with the brilliant scarlet berries of winter. One of the prettiest of our native grasses is the cotton-grass, often found in the vicinity of cedar-swamps, its copper-colored tufts bending a stalk 3 or 4 feet high. It attains perfection in September, but is very retentive of beauty. Wild yam is found about thickets of low lands, the frost of late autumn days only more clearly defining the silver and brown of its three-winged pods. The long festooning vines are very pretty for decorative purposes. Plumy clusters of wild clematis may be gathered in October. Many of these floral treasures are the

better for being garnered before they are fully matured. Capture the snow-white filaments of the silkwed for light effects, and the frosted, blue-tinted berries of the green-brier or smilax for various combinations.

Several kinds of purple grasses, lingering late, are common about the fields. Innumerable seed-pods, burs and berries, bronzed and tinted with the September sun, and others ripened into richer brown by late frosts, are offered as rewards for delightful strolls and are reminders of summer for the winter fireside.—KATE CLEMENT.

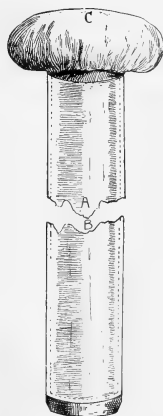
My University.—It is 100 feet long and 50 feet wide. A high fence shuts in three sides, and the house the fourth. Inside the fence there are long beds with walks between, and here I took my summer course. I began with weak lungs and a disposition to headache. At the end of the term I was as brown as a bun, my lungs were sound, and I had not the slightest fear of cholera or grippe. (This was a successful hygienic course, and would have well paid for the two hours a day of regular work. But there were more lessons. I had a grand study of the clouds, and the soil was a part of the practical instruction. With light spade and hoe, I worked out plenty of problems. But my greatest delight and despair were the rose-buds. It seems as if there isn't a noxious bug or worm in heaven above or earth beneath, but will feed upon rose-leaves or buds. Hand-picking, syringing, digging about, all these come into the daily lessons, and the rule to be learned by heart is, "The price of lovely roses is eternal vigilance." A course of hydropathy came with four weeks of dry weather. Every day the gallon water-pot was filled and emptied on the beds, and once a week there was a grand review with a 50-foot hose. What were the pleasures of any summer university career? I had lots of pleasant chats with other plant-students over the fence. I rescued some exquisite roses from their many enemies, and graced many of our humble feasts with them. I gave away quantities of flowers, and later, supplied all who asked for them with seeds and cuttings. I had such an amount of quiet happiness during my university course that I shall hope for another next year.—SISTER GRACIOUS.

Useful Garden Tools.—The illustration represents two implements which we have found very useful in the berry-patch and garden. We had them made by a country blacksmith, after models of our own. They cost little, as we put the handles on ourselves. We have used the hook to cut out old canes from several acres of raspberries, and think it is just

the thing to use as a pruning-hook for briars. It makes a long, drawing cut, and the work is very easy, as the blade, being thin, slips nicely through the canes. The handle was made from an old hoe-handle.

The other implement is a spud for cutting thistles. It is made of steel, about one-fourth of an inch thick, and the edges are left of that thickness coming to a point about an eighth of an inch below the cutting edge. This prevents the spud from slipping off large roots.—A. E. BARNES, *Indiana*.

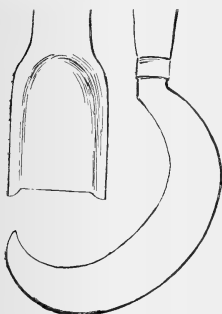
Planting Bulbs in Lawns.—Have you ever planted small early spring bulbs right in the sod? Perhaps



CROCUS AND SMALL BULB PLANTER.

the labor of taking up sod, setting the bulbs, and replacing the sod was too great for planting extensively in this manner. Yet nothing can make a brighter and more picturesque appearance in early spring than crocuses, scillas, snowdrops, &c., scattered promiscuously over the lawn. Their flowers will all be gone before the grass needs cutting, and these bulbs once planted are good forever, increasing in beauty from year to year. Good mixed crocus bulbs can be had for about 50 cents a hundred, so the cost is trifling. My device for planting them is shown in the accompanying cut. It is a piece of brass or iron pipe, $\frac{1}{8}$ of an inch in diameter and 18 inches long. B, marked by dotted lines is a piece of wood $\frac{3}{8}$ of an inch in diameter and about 20 inches long. The lower end of A is sharpened, as shown in cut. C is a round wooden top for B. The rod B is taken out of the pipe, which is driven into the ground the required depth, 2 to 2 $\frac{1}{2}$ inches, and pulled out with a core of sod in it. Drop the bulb into the hole, set the pipe in, and press sod back in place with the rod. This is a simple and truly "labor-saving" device.—HUGH C. McLEAN.

Twenty Against Five.—In riding through a good-sized village the other evening, we counted 20 farm houses with great, staring, sun-swept verandas, and only five that had any pretensions to shade from trees or vines. Now, if there is a class that needs a cool, pleasant place to sit in, it is the farmers' wives and daughters; but you rarely see them outdoors just for rest. "But," said a lady, "we have no money to spend on vines or trees. We all have a mortgage on the house, you know, and no time to sit outdoors, even if we were so inclined." Well! there is something wrong in having to work from dawn till dark. Perhaps, if you took the time, the added rest would brighten your eyes and brains, and the mortgage would be cleared off. But why should anyone say



TWO USEFUL GARDEN TOOLS.

he cannot afford vines or trees? One of the prettiest of the five houses with shaded verandas was twined with bitter-sweet vine dug from the woods near by. It is a dainty, pretty thing, much more so than many of those named in the florists' catalogues. Another piazza had morning-glories. Surely we can all afford a five-cent package of these seeds! The wild cucumber-vine on the third was not very pretty, but better than nothing. The fourth house had woodbine. Probably it did not cost the owner a penny, for it grows so luxuriantly that folks are glad to give away some of the numerous shoots. The fifth house was the prettiest of all, for close by the veranda grew a large sumac, also brought from the woods. It makes a dense shade, almost like a wall, and is beautiful from spring till late fall. Yes, buy plants if you can! but don't go without trees and vines. Scour the woods and fields; you'll always find something suitable and pretty there.—SISTER GRACIOUS.

Pears for Kentucky.—For some time I have been studying multitudinous conflicting statements about the immunity of certain pear trees from blight. Being anxious to plant and to see others plants commercial orchards in my neighborhood, I made inquiries in numerous directions, but replies received one day would inevitably clash with those received the next. The futility of begging for information at last dawned upon me, and I resolved to work up statistics on a small scale for myself.

In the spring of 1889 I planted an assortment of nursery stock, including 110 pear trees. Exact results with the latter I tabulated for convenient reference. Here is the table:

	Living.	Blighted.	Growth.	Killed.
20 Le Conte	20	7 slightly.	Strong.	
20 Kieffer	20	None.	Very strong.	
20 Bartlett	18	11 badly.	Medium.	2 by blight.
10 Jefferson	9	None.	Strong.	1 " rabbit.
10 Lawson	10	1 slightly.	Delicate.	
10 Clapp's Favorite . . .	8	None.	Strong.	2 by rabbits.
10 D. d'Angouleme . . .	9	"	"	1 " "
10 Vicar of Winkfield . .	8	All badly.	Stragglng.	2 " blight.

For my own guidance I have summed up matters thus: For a healthy commercial orchard, select in the following order: Kieffer 1, Jefferson 2, Lawson 3, Le Conte 4, Clapp Favorite 5, Duchess 6. Bartlett I might accept as a present. Vicar I would not have on the place. I only intend growing the 4 pears first-named, in addition to Idaho and Garber, both of which I hear highly eulogized.—G. D. C. ELLIS, *Kentucky*.

Cactus Notes.—Some three years ago the *Revue Horticole* recommended grafting epiphyllums upon *Cereus nycitcalus* instead of the more generally used pereskia. Acting upon the suggestion, I grafted a number of different epiphyllums as directed, with the result that plants grafted in the spring made a vigorous growth during the summer, and bloomed profusely the succeeding winter. Some advantages of this method are that the scion does not rot at the graft, as is so often the case with pereskia, scaly bugs are much less troublesome, and *C. nycitcalus* seldom branches off below the graft.

Other species of cactus do equally well on *C. nycitcalus*, so I have echinopsis, echinocereus and some of the smaller mammillarias on that stock, and they all make a vigorous growth.

Of all the semi-scandent sorts of cereus, there is not one that is more satisfactory or less known than *C. Cavendishii*. It is a very rapid grower, and will bloom the second year from a cutting. Moreover, it is a constant bloomer during the summer months. I have a specimen now before me that has been almost constantly in bloom since June 1. It is two years old, and about five feet tall. The flowers, 4 inches in diameter, are borne upon a tube four inches long. They are pure white, and very double. The petals are lacinated, and have a delightful, jasmine-like fragrance.

Among all the cactuses that I know, none are so easily raised from seed as *Astrophytum myriostigma*. The fruit-pod ripens a few days after the flower has wilted, and the seeds do not often require more than a week to germinate. In order to ripen its seed, the plant should be kept exposed to the hot sun, and liberally watered early every morning. The drainage, however, must be perfect. No cactus should ever be potted in any but standard pots.—H. TALLICHET, *Texas*.

Early History of the Potato in France.—Potatoes were supposed to have been introduced into England about the year 1586, after which time they soon found their way into France and other European countries. Previous to the year 1783 they were considered by the French as dangerous food, and, according to the popular belief, would produce leprosy and other diseases. Notwithstanding the fact that northern countries cultivated them, France rejected their use as pernicious. In order to combat this prejudice, Parmentier, a French cultivator, applied to Louis XVI. for permission to plant potatoes on some acres of sterile ground. Although they were believed to be difficult to cultivate, Parmentier wished to prove that this belief was unfounded. His potatoes succeeded admirably, and he awaited with great anxiety the time of their flowering. The first blossom that appeared was presented to Louis XVI., who placed it in his button-hole, regardless of the sneers of his courtiers. Parmentier's efforts were crowned with success, though for some time afterward the potato was cultivated more as a curiosity than as an article of food.—R. C. J., *Pennsylvania*.

Prickly Lettuce, a pestiferous weed (*Lactuca Scariola*), introduced from Europe, and first seen in Ohio in 1878, is spreading quite rapidly in various parts of the state. Prof. Aug. D. Selby, secretary of the Columbus Horticultural Society, gives the following description of it: "It is a composite, as are the ox-eye daisy, ragweed, thistle, etc., and grows from 4 to 6 feet in height. It is biennial, sometimes annual, with a very leafy stem. The lower part of the stem and the lower surface of mid-rib of the leaves are beset with prickles. The leaves are alternate, 5 to 8 inches long, rarely exceeding $1\frac{3}{4}$ inches in width at the widest part, clasping at the base with conspicuous ears extending backward, and are

wider toward the end. The edges are irregular and prickly-toothed. The leaves, though not so large, in shape and color, strongly resemble the Cos varieties of cultivated lettuce. The plant is closely related to the cultivated lettuce (*Lactuca sativa*). The remedy for it is simpler than in the case of wild carrots and burdock. Consecutive cuttings with scythe or hoe when the plants are at a good height and not yet blossoming ought to eliminate them wherever started. One cutting at the proper time will destroy the plant's growing, but the liability to find others the succeeding season must be remembered. Begin to fight this weed while it is yet confined to roadsides and waste grounds. It is not likely to be very troublesome in tilled lands, but there is danger that it may invade all pastures and fence-rows, and become a veritable thief.

Raspberry Notes.—Shaffer Colossal is one of our best berries, but in market it often goes begging for buyers at five cents a quart. Marlboro and Hansel need high culture to be of any value, and Turner is worthless for general culture here. Our plantings for market must be confined chiefly to Golden Queen and Cuthbert. The popular taste inclines to the former, but the main crop must still be red. For success in raspberry-culture we must adopt a simple method of caring for the canes. I have learned to tie mine to wires, or rather in small bunches above or below wires. If the string is tied directly to the wire it will be sawn in two pieces by the wind. In September we cut old canes; while these lie under foot we tie the new canes as described, and after the new canes are fast we fork out the old ones and burn them. We dig out all extra canes that come up outside the rows, heel them in, and sell them. Not earlier than November we top off the new canes to stand five or six feet high. I never cut back red raspberries any earlier, as it tends to start dormant buds, and to cause autumn flowering. The raspberry bears on new wood, and this will be formed abundantly in spring. I do not run the cultivator in the fall, but I top-dress with rotted compost. Raspberries are always better for a mulch. The rows should run north and south, if convenient, and should stand close enough to barely allow the use of the cultivator in spring. The intermediate ground should be well shaded. The red raspberry must either have frequent showers in the ripening season, or be well mulched, and if possible, irrigated. Among black raspberries I am looking for a thoroughly hardy Gregg. Not one of the other good sorts, such as Ada, Hilborn and Palmer, equals the Gregg.—E. P. POWELL, *Oneida County, N. Y.*

Tropical and Semi-tropical Fruits in America.—Perhaps the extent of our resources in tropical fruits and nuts, as reported by the Census Bureau, will be something of a surprise to many. At the time of the last census there were, exclusive of orchards intended only for private use, 13,515 acres of almond, 677 of banana, 169 of citron, 9,864 of cocoanut, 4,477 of fig, 550 of guava, 1,362 of kaki, 7,256 of lemon, 495 of lime, 12,180 of Madeira-nut, 7,097 of olive, 184,003 of orange, 2,189

of pineapple, 171 of pomelo, and 27,419 of pecan trees; a total acreage of 271,068 given to tropical and semi-tropical fruits and nuts. The reports on valuation of crops for the same year amounted to \$14,116,226.59, divided as follows: almond, \$1,525,109; banana, \$280,653; cocoanut, \$251,217; fig, \$307,271; lemon, \$988,099; lime, \$62,496; Madeira-nut, \$1,256,958; olive, \$386,368; orange, \$6,602,099; pine-apple, \$812,159; pomelo, \$27,216; pecan, \$1,616,576. As in nearly every case the number of non-bearing was double the number of bearing trees, these values must certainly be greatly increased in future. Of all these products, oranges now take the lead by a long distance, but it is thought highly probable that in the course of a few years the olive, fig, Madeira-nut and lemon crops of California will rival her orange crop in value. Pecan-culture is recommended as an industry from which future developments of a wonderful nature may be expected, at least so far as northwestern Florida and the other gulf states are concerned; and the possibilities of the pineapple crop in southeastern Florida, and for 100 miles north of Key West, place that among the most promising productions. Of course, California and Florida are the chief centers of tropical fruit-culture. However, figs, pecans, oranges and kaki are found more or less in all the gulf states. Scattered trees of pomegranate, kaki, fig, guava, pecan, pomelo, lemon, lime, date and banana were found as far north as Charleston, on the Atlantic coast, and to the thirty-first parallel along the gulf coast. Figs, almonds, and some other sorts of fruits are found in Washington and Oregon, and olives in southern Nevada. Arizona has recently been planting quite extensive orange groves.—WILDER GRAHAME.

Overshaded Homes.—Now and then somebody declares that there should be no trees near enough to the dwelling-house to intercept a single one of the solar rays at any time. This is sheer nonsense. It is true that even so good a thing as planting the home grounds may be overdone. We frequently see dwellings hidden in a dense growth of large trees. Damp, overshaded rooms and piazzas cannot be healthful. We want the great healers, sun and pure air, to have free access to our houses. Trees should not stand so near nor so close together as to keep the house in continual shade. If they stand so near your home, plan now to thin them at the earliest opportunity. You can safely leave one large overhanging tree on each side of the dwelling, and at a little distance from it, so that the free passage of pure air between and the full sunshine for at least part of the day will not be intercepted. Some large, thrifty growths not too far from the house are really desirable, apart from their cool shade. With their far-reaching roots they absorb filth and dampness, and, in a measure, are serviceable substitutes for drains. Overshading alone, which intercepts sunlight and the passage of air, has given trees the reputation for creating dampness. In reality, all plant growth absorbs and dispels it. Windows closed by blinds and curtains often are the real mischief-makers.

Some Fine New Flowers.—Among the beautiful new chrysanthemums are the Japanese Vailed Prophet (fig. 1), with many large, white, tubular rays six inches long, having pale yellow, canoe-shaped openings at the tips; and Mrs. A. Blanc (fig. 2), pink, with the reverse of the strap-rays, which turn over prettily in the center, ivory-white; the flower is eight inches across. Queen Isabella (fig. 3) is a pure white globular flower, and the rose-colored, criss-cross "Newport" (fig. 4) has strap-rays serrated at the tips, crossing each other in all directions. "Autumn Master" (fig. 6, p 746) has deep crimson-ribbed strap-rays with a yellow reverse. It is grown in San Francisco, by Joshikii, who shows also fine varieties of dwarf pæonies.

The orchids, new

Lapageria alba (fig. 5) hang its large, white lily-bells in wreaths upon conservatory walls here in California during September. It would probably thrive outdoors, climbing over shrubs and piazzas in southern California and other southern states, and can be easily propagated by layers. It needs a deal of earth-room and careful drainage. The flowers are $2\frac{1}{2}$ or 3 inches long, with six petals, six stamens and one pistil, and hang closely together with a pretty three-veined leaf for company to each one, as it swings. The deep crimson *L. rosea* is similar, but I do not like it so well; the mottled and spotted varieties, I think, should not be allowed to bloom at all.

My own favorite shrub, *Eugenia myrtifolia*, is two feet high, and delights me every year through August, September and October with an abundance of delicate white, faintly sweet-scented tubular flowers, the softly-ciliate centers tinged with mauve. It lives out-doors all the year here in San Francisco, retaining its profusion of opposite myrtle-shaped leaves. The four stamens of the flower are inserted on the corolla, two of them near the lip-dimples, the others with the pistils on filaments half an inch long, on the tiny saccate spur at the top of the ovary.—K. P. S. BOYD, California.

Winter Gardens for the South.

There is much yet to be learned in regard to floriculture in this peculiar climate, a sort of compromise between north and south. All winter battle is waged between the two, with a general advantage for the south; but now and then we have a sharp reminder that there is very cold weather not far north of us. It

seems to me that in winter there is much to be done here in the line of conservatory work in houses with no artificial heat except that which the sun gives us. I think that our most enjoyable season by far would be winter gardening in such a structure, when all the plants would be set in beds with not a flower-pot in sight. There is a long list of plants

that would give us a profusion of bloom here in such a structure. True, we usually have some flowers outside all winter, but there are times when the north is in the ascendency, and even our violets are spoiled by frosts,



FIG. 2.—MRS. A. BLANC.

and old, never show to better advantage than when displayed as if growing upon the trunk of a tree-fern. One yellow *Odontoglossum grandis* that I saw lately had bars of deep chocolate color across its sepals, and upon one panicle there were five blossoms, each six inches across from the tip of the dorsal sepal to that of either of the lateral ones. One leaf five inches long rose from the pseudo-bulb. In the same coolhouse grew a pure white brassavola with yellow column, yellow tips of petals and sepals, and linear, reed-like leaves, half white. *Stanhopea oculata* sends its blossoming shoots straight down through its log-cabin floor, so that the wonderful dull yellow flowers hang beneath the channeled pseudo-bulbs and broad, bright green leaves. The flowers are triangular in shape and three or four inches across. They are curiously waved, fluted and twisted, and their coloring, pure gold, red and salmon, is strange and beautiful. *Cattleya Eldorado* is rose pink, with gold and purple tips. *Oncidium incurvum* has greenish white petals a foot in length.

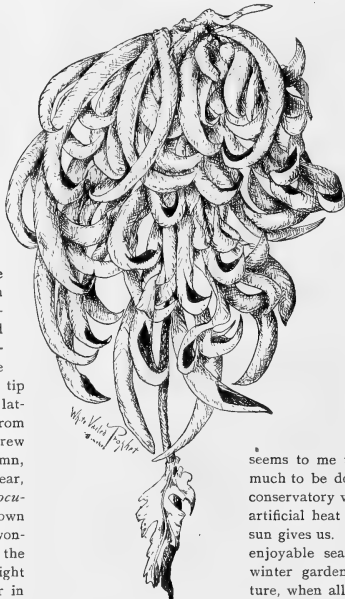


FIG. 1.—VAILED PROPHET.

which the shelter of glass would ward off. Often the flowers of hyacinths and daffodils are wilted and drooping from the effects of a freeze which a sash would have prevented. True, we can grow all these flowers, with pansies, sweet alyssum, mignonette, candytuft, *Phlox Drummondii*, verbenas, etc., in simple cold-frames, but it is often cold comfort enjoying them. If some of our winter-resort hotels would only put up big glass winter gardens, and have them stocked and planted by some one who knows plants and their needs, they would find them paying investments. Such houses would be peculiarly attractive and beneficial to the invalids who are their most numerous winter guests, and who often wish for some such place when it is too inclement to sit or walk outdoors. We throw out the hint to some of these men, and hope there may be among them some shrewd enough to put this idea in practice.—W. F. MASSEY, N. C.

Plants Need Rest.—Those who appreciate the unity of vegetable and animal life when traced back in evolutionary lines to the cell, know that not the animal alone needs rest. It is a curious study for those who honor nature to watch the prompt obedience paid by trees and plants to sanitary laws. In 1891 there was an enormous development of fruit. This country has rarely even seen so large a crop of all sorts of fruits of the rosacea family. In vegetables we were somewhat stunted owing to general drouths; but of fruits we had an enormous overflow. I do not remember that there was a deficiency in a single species. There were apples, pears, cherries, plums, apricots, peaches, quinces, and

oranges, small-fruits, berries of every sort, grapes and currants enough for the million. So great was the harvest that glass jars gave out, and the factories for the first time could not meet the demand. No one was too poor to eat Crawford peaches, Niagara grapes, B u b a c h strawberries, Northern Spy apples and Sheldon pears. It was a great year for educating the taste of the people. They learned to reject a good many poor sorts of fruit that they had been accustomed to eat without complaint. This education has gone on for some years,



FIG. 3.—QUEEN ISABELLA.



FIG. 4.—NEWPORT.

but more particularly last year. The Wilson strawberry finds critics now in very poor homes.

This immense overbearing of our orchards and gardens had causes and consequences. Trees and vines had not borne heavily for a couple of years, and after the comparative rest were full of vigor. But it is well known that if you check growth you stimulate fruit production. The drouth of 1891 was almost universal. It was not severe enough to spoil any crop, except in some sections the strawberries, but it checked the development of wood-growth, and left the fruit-buds for 1892 stimulated for premature unfolding. So it came about that in the late autumn there was an extraordinary display of second flowering and second crops in our gardens. I never saw so many November raspberries. Had the frost held off for a couple of weeks longer I should have been able to pick several crates of Cuthberts, Shafers, etc., but the frost nipped most of them. Here was the first consequence—half-grown canes and forced flowering. Flowers are always developed in proportion as you check vitality. Girdle a barren orchard or prune the roots, and you will get good crops, but

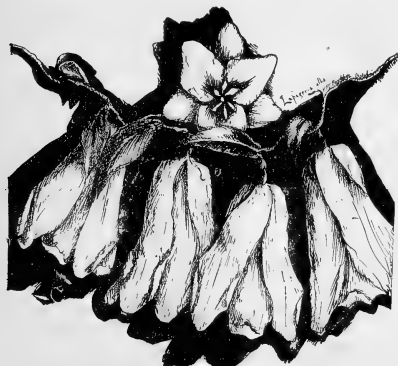


FIG. 5.—LAPAGERIA ALBA.

you will shorten the lives of the trees. The year 1891 was poor preparation for 1892, and much of the stored-up vitality of fruit-trees, etc., was used up in the autumn effort at producing a second crop. When the spring opened the canes and scions very much resembled those that have just yielded a crop, or are near the close of a harvest. Only that this has been a year of abundant showers, we should have had, especially with berries, a most meagre yield. The growth of trees was also severely checked in the summer of 1891, and forced in the autumn. In the spring of '92 the bearing wood and blossoming buds were alike inferior, and the anthracnose found them favorable to its attacks. All around the fruit-crops of this year have been poor. But the wood-growth, on the contrary, has been excellent. I have never seen better strawberry rows, or shorter raspberry canes than are now ready for 1893. But so great was the exhaustion of some kinds of fruit-trees in 1891 that they could not fairly battle with anthracnose, and lost foliage this year a month

barn, and can, at any time, supply them with water through troughs from the barn well. Many fruit-growers have unfailing springs which they can utilize cheaply. Another lesson is that we should thin our fruits, and not allow any tree to exhaust itself by fruit-bearing. It is a dead waste to syringe our apple trees to prevent the codling moth from thinning the fruit, and then decline to do the work ourselves. With proper irrigation no danger results from heavy bearing in our berry-gardens. But our plum trees show their weariness very grievously. Nature's plan has been to alternate good crops with poor ones on some sorts of fruits, so that we cannot look for two good crops in succession. This we can modify if we choose, by irrigation, ditching, feeding and thinning. Nature invariably sends mildews, anthracnose and insect scavengers when foliage is enfeebled. This doubles our work, for we must not only try to keep our trees from becoming enfeebled, but must fight off the insects. The use of coppers is entirely successful against anthracnose and the arsenites against moths. I have, this year, the handsomest, cleanest apples I ever saw, after two sprayings with London purple.

The conclusion of the whole matter is that our trees and bushes must not be overworked any more than animals. They must be fed and watered with as much care as our cows, and must be allowed natural rest. Indeed, they will have rest or die. Not one farm in ten has a healthy, productive orchard. Trees everywhere are starved and worked to death, while horses are groomed and fed. The plant world and animal world are



FIG. 6.—AUTUMN MASTER.

or more ahead of time. Some varieties of apples, such as autumn strawberry and Jonathan, and some of the plums, such as Washington, stood bare of foliage in September, before touched by frost. The fruit on all these trees was a failure. A few of the grapes, such, notably as Jessica, set full of fruit, but the foliage gave up the struggle before the ripening season, and the grapes were worthless.

I have gone over this study of the subject because it is necessary for us as horticulturists to become masters of the situation. Our New York and New England hillsides and valleys lose, year in and year out, one-fifth of the estimated crops because of the lack of irrigation. Our potatoes are, one year in four, seriously impaired by dry weather. For the same reason, two years ago, the farmers of Jefferson county had not enough hay and other feed to keep their stock, and at heavy loss sold half their dairy cows. Much of this trouble is needless. A good well, furnished with a windmill, will go a long way in saving a crop. I have my strawberry-beds for '93 below my

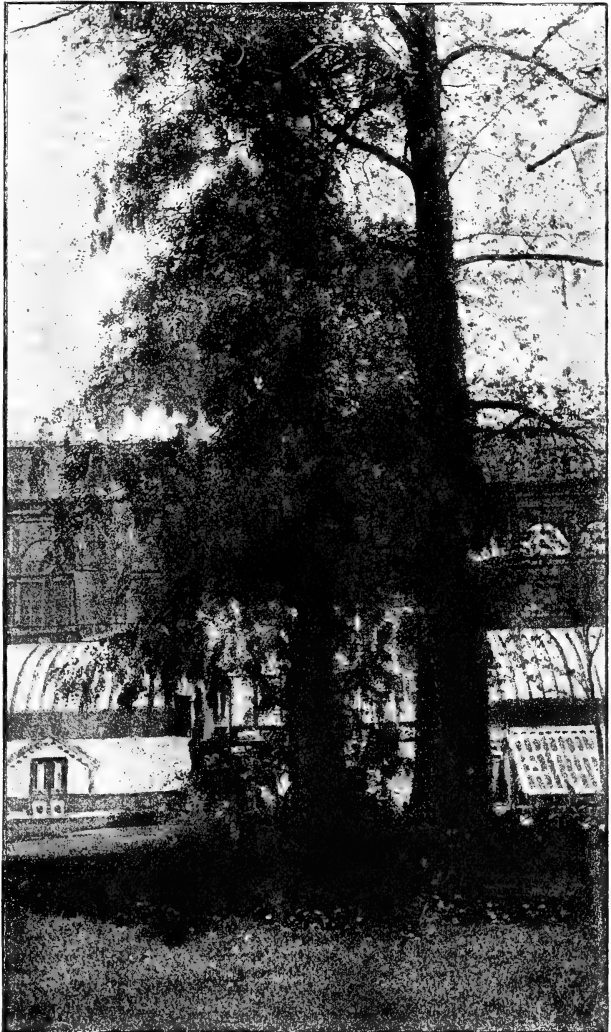
branches of a common life, and require much the same consideration and care. We must learn to sympathize with our fruit-trees.—E. P. POWELL, *Oneida Co., N. Y.*

The Chinese Wistaria.—The illustration of wistaria given is from a photograph of a specimen growing close to Horticultural Hall in Fairmount Park, Philadelphia, and conveys an excellent idea of the beauty of this remarkable Asiatic climber. If its presentation here should lead a multitude of our readers, with whom it is not already a favorite, to plant the vine, we shall be glad of having thus called attention to it. We do not know why this fine vine is not more popular; one reason may be that it is somewhat slow coming into bloom—the clematises, which usually flower the first season after planting, suiting impatient Americans much better. But this is not sufficient reason for such general neglect of one of the handsomest vines in our catalogues. It may take a few years for the Chinese wistaria to reach a flowering age, but when the blooming period does come, from that time on we are certain to have in it one of the grandest

and most picturesque ornaments known for covering trees, arbors and buildings. No other climbing vine is more vigorous in growth when once it gets fairly under way. Its flowers, of a delicate lilac color, appear in long, loose, pendulous racemes, and, as our engravings show, are much the most conspicuous part of the plant when it is in bloom. They appear in May and June, and again in midsummer. The foliage is composed of long pinnate leaves of many leaflets, which, together with the peculiar twining habit of the plant, give it an air of picturesqueness that is quite unique. Planted at the side of a tree, in a few years the wistaria ascends high into its top. Still, there is one objection to having the vine assume a decidedly vertical style of growth, namely, that next to the ground it, in time, is quite certain to lose its foliage. The better way of growing it is to provide a horizontal trellis or arbor for its support. A single vine has been known to cover a trellis 60x120 feet.

A Small Conservatory, and What I Grow in It.—My observatory is built adjoining the dining-room, and is entered through an archway hung with curtains that can be drawn at will. It faces the southeast, and so has sunlight almost all day, and it is heated by a register from the hot-air furnace which heats the dwelling. When the sun shines I keep the register closed all day, sun-heat being all that is required. The ther-

ometer ranges from 70° to 80° during the day and from 50° to 60° at night. There are two ventilators, and I am



A CHINESE WISTARIA IN FAIRMOUNT PARK, PHILADELPHIA.

particular to air the plants every day. A zinc basin supplies both hot and cold water for the plants. They are syringed freely with luke-warm water every morning; this keeps the air moist, so that the red-spider cannot get a foot-hold. In one corner of the conservatory is a stand of 50 cactus plants. *Epiphyllum truncatum* is the only one which blooms in winter; it grows in a hanging basket, and flowers at Christmas time. Upon the back wall of the conservatory hang about a dozen orchids, some in rafts or baskets, and some on pieces of wood or bark. They look thrifty, grow finely and I find them as easily cared for as any of my plants. One of them gave a crop of fifty flowers. Begonias are my favorite plants, as they are never infested with insects, and remain in bloom many months at a time. I find that rubra is the only one which needs the sun; the rest all do better in the shade. I have one much like rubra, only the flowers are satiny pink instead of red. Both bloom well all winter. *B. metallica* is a fine plant even without its downy pink flowers. The thorny euphorbias and bright-bracted poinsettias are also favorites of mine. One corner of the apartment is devoted to ferns and rex begonias; they group well together, and are always attractive. *Imantophyllum miniatum* is a showy plant when in bloom, and its flame-colored flowers are sure to appear the latter part of winter. Heliotropes, *Olea fragrans*, rhynchospermum, eupatoriums, jasmines and tabernamontana fill the conservatory with fragrance.

Some of my plants are curious as well as beautiful; anthuriums or "flamingo-flowers," with grotesque, brilliant blossoms, that remain perfect for two or three months; *Streletzia Reginae* with oddly-shaped blue and orange Bird-of-Paradise flowers, and *Bryophyllum calycinum*, with small plants growing from its leaves. My *Streletzia Reginae* blooms all winter, and is set out on the lawn during summer.

Roses, violets, carnations and camellias need a cooler atmosphere than that of my conservatory, but I think that without them one could make a good selection from the plants I have mentioned. Mealy bugs and green aphides are the only insects that trouble plants in my conservatory. For destroying them I use tobacco-soap and snuff, and put sal-soda in the water used for them sometimes. These remedies are very effectual, and insects do little harm to my collection.—GLENWILD, New York.

How to Manage the Chinese Primrose.—*Primula Sinensis* and its varieties are extensively grown as pot-plants for the sitting-room or greenhouse, as well as for cut-flowers in winter. To get strong plants, sow the seeds in March or April in shallow-boxes, about two or three inches deep, containing good, mellow, finely-sifted loam. Press the loam down with a smooth board, till it is perfectly level. On this smooth surface sow the seed, pressing them well down into the soil level with the surface. Next, take some dry sphagnum and pass it through a fine sieve over the seeds, just thick enough to cover them, about one-sixteenth of an inch. Dry refuse hops or leaf-mold will do, but moss is best, as it forms a

light, spongy covering, and aids in prompt germination. Cover the box with a pane of glass, and place it in the open sunlight, in the window of the dwelling house, in the hot-bed or in a greenhouse without shading, in a temperature of 55° or 65° at night, and about 10 degrees higher during the day. A light sprinkling once a week will give sufficient moisture. After the plants have fully developed the seed-leaf, they are transplanted into other similar boxes, about half an inch apart. In about five weeks more they will be large enough to be transplanted into thumb-pots. When the weather is warm enough place them outside in the coolest place obtainable and in partial shade. Unless absolutely necessary, do not shift them till September, as it is better to have their roots a little cramped in hot weather. As soon as cool weather comes they will begin to grow better, and will need larger pots; they will flower from November until May. Most double varieties are raised by cuttings or by division. About half of the seed will come up single. The simplest way to divide plants is to fill pots containing them up to the plants' lower leaves with moss, which induces each crown to send out roots. When well rooted, the plants are pulled apart and each division potted separately. This is generally done in April or May. The best compost for primroses consists of rich light loam and peat soil in equal parts. Pots that contain primroses of any kind must be well drained.—H. L. ADAMS, Mass.

The Best Hedge in America.—A. S. Fuller claims to be the happy possessor of such a hedge. As he states in *N. Y. Tribune*, it is a hemlock hedge of 20 years standing. "Norway spruce and American arbutus," he says, "must ever take second place below that of the common hemlock, which, with its dark rich green leaves and fine, flexible branchlets, gives to a well-pruned hedge a denseness as well as softness of surface such as cannot be produced with any other native evergreen tree. In the spring of '71 I had on hand a few hundred small but stocky seedling hemlocks averaging perhaps 15 inches high. I set out a hedge to separate my flower-garden from the ground used for vegetables. A trench 4 feet wide and 2 feet deep was dug the entire length, the first foot of yellow, loamy soil was thrown on the south side and the next foot, nearly pure sand, was spread over the roadway; then enough of good black soil, from the low land on the place was hauled to make good the part thrown aside. The loam and black soil were then thrown into the trench, well mixed during the operation, and when the trench was filled and the soil well packed, the plants were set out 2 feet apart on a line in the center, with earth well firmed about their roots. With hedge-shears they were then trimmed into shape; that is, merely cutting back the terminal shoots and the longer lateral branches just enough to show that this row of plants was intended for a hedge. Not a plant died, all made a moderate growth, and the next April they were pruned again, but only sufficiently to bring them into line and force out lateral shoots, which were necessary to fill up and give compactness to the hedge.

The form of hedge proposed and since completed was

what may be called an ovate-pyramidal, with a sharp point—the better to prevent the lodging of snow upon it in winter. The broad base of a hedge of this form affords shade to the roots as they extend outward, as well as sturdiness and strength to the entire structure; besides, the curved line from base to apex is the most graceful that can be adopted for any kind of hedge, whether it be of deciduous or evergreen trees or shrubs. To prevent injury from heat and drouths in summer, a strip about 4 feet wide on the south side of the hedge is kept constantly covered with some kind of mulch, and the roses and other kinds of plants in the flower-garden are not allowed to encroach upon this mulched border. The road on the north side is of course kept free of weeds, so that the hedge has the ground all to itself. No tree has ever been permitted to grow near enough to cast its shade over the hedge or have its roots enter the original trench. These conditions are quite the reverse of those of fully 90 per cent. of ornamental hedges; for as a rule they are set on a line with a row of shade trees, the plants set between and even on top of their roots, and then their owners wonder why the hedge dies out in patches, or fails altogether. For the first few years, in pruning my hedge I left about 4 inches of the previous season's growth, but as it increased in size it was pruned closer until about the tenth year, and since that time we aim to cut as close as possible, and in no place leave more than one inch, and try to keep it down to a half inch, because the hedge is as tall and broad as is desired for appearance and for convenience in pruning. It is 8 feet high, and about the same in breadth at the base without a spot, break or fault as large as a man's hand in the entire length—a wall of green, straight as a line and graceful as the feathered branchlets of a hemlock know how to be when on their good behavior. Our rule is to prune only once a year, and that in early spring, before the new growth appears; at all other times—hands off with knife or shears.

The New York Chrysanthemum Show.—The premium list for the chrysanthemum show of the New York Florists' Club called for cut-flowers in vases, and these in many of the classes added greatly to the beauty of the exhibit. An immense quantity of cut-blooms of fine quality were shown most effectively by a low staging. Roses and carnations in large display, Griffin's tuberous begonias, cyclamens, lilies-of-the-valley, cannas, groups of palms and brilliant foliage-plants added in the general effect, and increased the pleasure of the public; while object lessons in the use of the flowers exhibited, as wedding decorations, florists' piece-work and dinner table decorations, gave much pleasure to the sight-seers.

Chrysanthemums, of course, took first place. On the first day the general exhibit was staged and judged; on Wednesday, roses; on Thursday, carnations, and the entry for Young Bros.' grand prize of \$200 for the best two hundred blooms in forty varieties (awarded to E. Asmus); on Friday, seedling chrysanthemums; on Saturday, dinner-table decorations, and duplicates of the best earlier exhibits, in the interest of freshness.

E. Asmus, West Hoboken, N. J., exhibited many fine plants, and took firsts enough to turn any man's head. Special mention should be made of his exhibits of bush-chrysanthemums, on which he took first premium in a half-dozen classes. As a whole, they were the most even, stocky, well-grown plants ever noted; no weak shoots to fill spaces, as is too commonly the case, but every bloom elbowing its neighbor, and every one on a stiff, vigorous shoot, with heavy, thrifty foliage.

Pitcher & Manda made a fine exhibit of new and rare plants, and new forms of the hairy type of chrysanthemums. Peter Henderson & Co. swept off several of the best prizes with their mammoth "Golden Wedding" chrysanthemum; while Siebrecht & Wadley reigned supreme in the orchid field. The exhibit of orchids was notable for an autumn show. *Cattleya gigas*, *C. Bourringiana*, *C. Dowiana* and quantities of *Oncidium varicosum* added grace to the display. The group of foliage-plants shown by this firm was especially fine, containing sorts not usually shown. An odd thing noted in this collection was *Tillandsia Lindenii vera*, in bloom. A pale pink, flat, quill-like blade, strawy in texture, is thrown out from the root. From either side of this projects a tripartite violet-purple bloom. First premiums were awarded the Messrs. Siebrecht & Wadley for the best collection of orchids, best group of palms and decorative plants, best collection of ornamental and flowering plants (other than chrysanthemums), on a new and rare plant in flower, and on nepenthes. Araucarias, now making a push as decorative plants, tree-ferns, dracenas, and many other fine forms of foliage stuff, were noted. The well-known specialties of this firm are orchids and decorative plants, and here they easily take front rank. A pretty plant noted in one group was *Phyllanthus rosea picta*. It forms quite a tall, bushy plant, and is thickly set with small, oval leaves, notably spotted with pale pink. No more graceful addition to a group of decorative plants need be asked.

The exhibit of new and rare foliage-plants from the United States Nurseries included *Maranta Lageriana* (plum colored), *Adiantum cuneatum variegatum*, *Dracaena desmetiana*, with reddish midribs and pink central growth; *Agleoneuria picta*, with low closed-lapped foliage, deep green, blotched pale silvery green, and *Tillandsia argentia*. This last bears little resemblance to our well-known native tillandsia, the Spanish moss. It grows in a grass-like tuft, and the entire plant is covered with a pale, pinkish bloom. It is very pretty, and the pretty price is \$15.

But the great buzz of the week among the growers was when the seedling chrysanthemums appeared upon the stage. The judges grumbled because the heavy class, perhaps two hundred entries, was not divided. And, although, in the opinion of experts, there was nothing startling among the new sorts, the uneasy twos and threes who hung about the table before the awards were placed, showed that there was enough to be anxious over, at least. The prizes for the best seedlings were won by J. N. May, F. S. Waby (Cincinnati, O.), F. T.

Underhill, John Keane, E. G. Hill and Pitcher & Manda. There were several good whites, two of which received certificates of merit. One of these, "Miss Francis Thorley," was very much like the winner. It was large, pure white, broad-petaled, and just touched with hairs. "The Queen," which received the award, is quite pure as to tint, incurved, with broad, loose petals, and is slightly more refined in appearance than the former. "Mrs. F. L. Ames," the winning yellow, is of a clear golden shade, and has a rather flat, open form, with many spoon-shaped petals. The bronze, "Rob. McInnes," is near the color of "Harry May;" perhaps not so good in form, but with more breadth of petal. "Emily Ladenburg" came forward again in the seedling class, and won in "any other color." This plant is quite likely to be popular when well introduced, being so dark, so good in form, and of wearable size. "John Keane," the premium pink chrysanthemum, is so dull in color as to hardly attract a second look, but is very good indeed as to shape. Among the many which received certificates of merit may be mentioned Pitcher & Manda's "Mrs. Leslie D. Ward," and J. N. May's "Gloriana" and "Portia." It is somewhat again that although in exhibition-blooms great size is an important factor, if combined with good form, the growers themselves lean towards a medium-sized flower of fine form. "Gloriana" is scarcely medium in size, very broad of petal, slightly fluted and loose and graceful. In color it is pale, creamy yellow.

"Do you know, I think that is what we must come to, at last," said one grower, referring to this graceful bloom. "M—m; that's good!" exclaimed another, as he singled out "Portia" from the scores of candidates for honors. The whole gamut of adjectives on the lips of the general public could not have meant more. This dainty sort of the dramatic name, is of fine shape and size, and of a transparent, pale, sea-shell pink color.

"Mrs. L. D. Ward" deserves notice as being a striking example of the advance in color of the hairy forms; its color is extremely odd and pretty, a pale, pinkish apricot, lined deeper. It is medium-full, medium-sized and medium as to the plush-like surface. "Creole," somewhat in the style of "E. Ladenburg," is still darker, but also duller in tint than the winner.

Chrysanthemum "Geo. W. Childs," over which Philadelphia waxed so enthusiastically two years ago, and which last spring sold for \$1.50 a plant, created no great sensation at New York. Many other kinds have broader petals, are larger, and have better shapes. "Geo. W. Childs" is yellow, with pure dark red lining, and when perfectly reflexed no other red equals it in color and velvety brilliancy.

The exhibit of cannas by The F. R. Pierson Co., of Tarrytown, N. Y., was superb. Backed by a smilax-wreathed mirror, it showed to perfection, and "perfection is no trifle."

"Mad. Crozy," of course, was there, and some new sorts, "Capitaine de Suzzoni," clear yellow, flecked with orange, and "Paul Marquant," very large, with broad but

pointed petals, color a combination of orange and yellow, called apricot-red. The gem of the collection, "Alphonse Bouvier," was very large, broad-petaled, thickly-clustered, and of rich blood-crimson, the finest color ever observed in cannas. "Madame Crozy" was dulled to indifference, and would rate but medium in size beside it as here shown. This is to retail next spring at \$1 per plant.

The number of good carnations was perhaps not so noticeable as last year. The award for the best seedling went to Jahn Bros., New Bedford, Mass., for a large new white stiff-stemmed carnation of good substance. "Josiah Eaton, Jr." The most striking plant on exhibition in this class was a seedling from the same firm, mottled and flaked in pale apricot-yellow and red, the yellow, perhaps, predominating. The bloom is very large, and seemed to be of unusual substance, and the calyx showed no sign of bursting. The growers shook their heads, or laughed incredulously when speaking of Mr. Thorpe's ideal carnation, for the nearest approach to which a silver cup was offered. As none of them could show blooms up to the requirement of "over three inches in diameter," there was no entry in this class. "We are not in sight of that yet," said one.

Several new roses were shown, among them "Mrs. W. C. Whitney" (American seedling), "Madame Caroline Testout" (European seedling), and "Empress Augusta Victoria." The last is ivory-white, of fine shape, looser and more graceful than "The Bride," and was declared the most promising forcing rose of recent introduction. "Madame C. Testout" is clear pink, at times seeming even prettier than "La France" in color. In shape it is quite different, however, being more globular, loose and graceful, but not quite perfect. It is distinct and large, and has the tea fragrance. As exhibited, the stems seemed not quite stiff enough. Both these winning roses were shown by E. Asmus, and were not exhibited here previous to 1892.

After all, nothing prettier was seen than "Bridesmaid," for which the prize for the best twelve blooms went to F. R. Pierson. This rose was in large display for a new sort, and was exquisite in every case. As shown, it was more even and pure in color than "Mermet," with longer buds, loose, of perfect shape, and upright as to stem. Need we ask anything better in pink roses?—MYRA V. NORYS.

A Verbena Bed.—There is no finer bedding plant than the verbena, and it is easy to start plants from seeds early, so that they may begin their mission of brightening the world early in June. This was our plan last year: About March 1 an old salt-box was sawn in two pieces horizontally, the cover fitted in for the bottom of one of the new boxes, and this filled with good garden soil that had been put in the oven and heated just enough to destroy whatever insect-life it might contain. As soon as this soil was cool enough to feel simply warm to the hands, a package of verbena-seeds was sown in it, the seeds being placed about an inch apart and carefully covered with soil. The box was then set in a warm,

light place where the sun did not shine, sprinkled with warm water, and left a week or two undisturbed, except for a daily sprinkling to keep the earth from getting dry. At the end of two weeks young plants began to appear, and the box was set in a sunny window. When the seedlings were about an inch tall, half of them were transplanted into the other box filled with earth, similarly prepared and of the same temperature as that in which the seeds had been planted. The other plants were transplanted in their own box, using the room left by their departed sisters. Another generous sprinkling, shading from too hot sun for a day or two, not even a leaf wilting, and the plants resumed the business of growing, making stout little bunches of leaves before the time came to put them in the open ground. A warm after-

noon was selected, when the soil felt warm to the hands, and after a good watering and a night's rest, each plant was covered with a thumb-pot until afternoon, this being repeated two or three days. The pots were then carried into the house, and the plants left to take care of themselves. In a few weeks the branches were long enough to peg down, an old bunch of rusty wire hairpins, bought for almost nothing, being just the thing to keep the runners in shape. That bed was a mass of bloom from June until October, some of the colors seeming to mix before fall, so that it was not unusual to find a bunch of flowers half white and half crimson, or purple, with spots or flakes of white on the colored corollas. An occasional watering with liquid manure did the plants much good.—DORA LAWRENCE, *Maine*.

COMMENTS BY READERS.

[*Readers are invited to contribute to this department. If your experience, observation or well-founded opinion differs from that recorded in any recent article in this magazine, or if you can add anything of special interest to the statements of other writers, the Editor will welcome your contributions.*]

Begonia Evansiana.—(Page 561.) I have often written favorably of the old *Begonia Evansiana*. In Maryland I used to grow it in beds with tulips. The begonias did not appear between the rows of tulips until the latter were out bloom, and then the large begonia-leaves soon hid the dying tops of the tulips and allowed them to ripen fully without being an eyesore. This begonia is hardly almost anywhere.—W. F. MASSEY.

Amaryllis Johnsonii.—(Page 560.) I can hardly agree with Mr. Falconer in his estimate of this amaryllis. With me it ranks about as high as any variety. If he could see the great masses of it blooming on one lawn here, he would have a better opinion of it. We lift some of the bulbs for early flowering under glass, but the finest blooms are from bulbs left in the open ground until they form a mass of flower-stems; there they make a superb show. I have now a bed of various colored sorts, from which I expect a fine show next spring.—W. F. M., *N. C.*

Chinese Sacred Lily.—Some one writing of Chinese lilies blooming in water says they can be brought into bloom in from four to six weeks. I grew a great number of these lilies last winter, and had them in full bloom in just three weeks from the time they were placed in water. I put them in water and set the dishes in a dark closet for three or four days, then brought them to the light and heat in a south window. I also filled the dishes to overflowing with pure very warm water three times a week. On stems from only two bulbs I counted one morning forty fragrant flowers.—FERN LEAF.

Watering Evergreens.—(Page 492.) I have a method of watering evergreens similar to Mr. Estes', but cheaper. I simply bore a hole about a foot deep near the tree, with an ordinary post auger. I fill this hole to within about an inch of the top with old weeds or any kind of mulch, and fill in soil to make it even with the surrounding surface. It is easy to fill the mulch with water from

a pail, and moisture is retained for a long time. While watering well-set evergreens is not absolutely essential here, I find good results follow my practice. The newly set trees I screen from the hot summer sun by bunches of wild grass tacked on laths which are set in the ground on the south side of the trees.—JOHN E. MOHLER, *Johnson Co., Mo.*

Strawberries in Wisconsin.—(Page 389.) Although we are fruiting 60 varieties of strawberries, we have not yet found the variety that will give the very best results. Nothing yet takes the place the old Wilson filled in its best days. In some places it is still planted, for pollen, with Crescent, but we have many other perfect-flowering kinds which do better on most soils. At our state meeting in June we gave the following list of fine perfect-flowering kinds: Earle, Wood, Enhance, Jessie and Crawford; and as the best five pistillate varieties, Warfield, Haverland, Eureka, Crescent and Bubach. Location, soil and climate have much to do with the success of varieties. Michel Early is claimed to be a profitable early kind in the south. With us after three years' fruiting it is good for nothing but to grow worthless plants by the million. If any one wants to try the berry we will furnish plants free for cost of postage and packing. Another error made and commended is replanting old beds for many years with strawberries. In small gardens, where there is no chance to rotate, there is no alternative, but, when ground is plenty, we would never do it. Last season we plowed up two acres of strawberries, and the ground seemed so good we did venture to replant it, but the white grub has ruined the plantation. The only safe way is to enrich the ground thoroughly, grow hoed crops upon it for two years, and follow then with strawberries for one or two years. Fresh stable-manure made during the winter and spring will do to use on new beds, if plowed in before the May beetle has time to deposit her eggs. Any manure kept over summer is liable to be

full of white grubs, which take three years to come to full development. For the same reason avoid freshly-plowed meadows for strawberries.—GEO. J. KELLOGG, *Wis.*

An Old City Garden.—(Page 577.) The trees and vines in this garden are even larger than represented. I brought the apple tree from Chautauqua in 1864. It is of the Westbrook or Blodgett variety, and is 35 feet high, 33 feet in diameter of top, and the trunk is 20 inches in diameter. I intend to have an engraving made that will show its full magnitude. I have never seen a larger apple tree, though I have seen those the Indians planted near Geneva, N. Y., which are supposed to be 100 years old. My father was the first orchardist to cultivate improved varieties of apples. That was in Ontario county, New York, 1800 to 1813, and in Chautauqua, 1814 to 1836. At Chautauqua I took up the work where he left it. From Washington, in 1864, I brought to the "old city garden" many grape-vines. Rogers No. 9 grew quite rapidly, and its trunk is now five inches in diameter. The branches extend 70 feet eastward, and rise to a height of 35 feet on the back of the house. They cover all that portion of the house, 30 or 40 feet by 25 feet, and their whole length east and west is 130 feet. This is the largest grape-vine I ever saw. In 1890 it bore 450 pounds of grapes. It has twice been figured in Meehan's *Gardener's Monthly*, and I intend to have more complete illustrations of it made. On this place, in 1865, I planted pits for several groups of peach trees, and in three years from time of planting the seeds the young trees began to bear. I had 30 trees that bore fruit for nearly 15 years, and harvested from 50 to 70 bushels of peaches yearly, but in 1884 the trees failed, and not a peach have they yielded for eight or ten years.

The locust tree at the lower gate is fairly represented in the picture; it is 18 inches in diameter, 30 feet high and perfect in shape and symmetry.—LORIN BLODGETT, *Washington, D. C.*

Why Our Wild Flowers Disappear.—Flower-collectors and dealers are among those most frequently blamed for the disappearance of our native wild-flowers and plants. I have spent my life in the fields and forests as an earnest student of botany, and have collected and dealt in wild-flowers since 1883. I am familiar with their native haunts in a large portion of five counties in Michigan, and I know that they disappear just as fast where no plant-collector ever comes as in localities frequented by him. I have also found that such reproductive powers are given to plants that even the various species of cypripediums can be profitably collected from the same ground every three years, and most plants every one or two years, provided the real destructive agencies are not set to work. Now, the only ways to destroy by human agency wild-flowers in a given locality are to remove every particle of root and every seed from the soil, or by some process to change the condition of the soil so that a particular species can not live there, or to denude it of foliage during its entire growing season. I have found that such is the abundance of seed produced, that even if the collector could remove every root in the

soil he could not exterminate any species of plant I am familiar with, for the land is sure to be well seeded.

Who, then, is really responsible for the disappearance of rare native plants? I have known wild-flowers to disappear wholly from a piece of land in a single season. I have had good reason to note this, for the failure of the supply of some choice flowers has often caused me much embarrassment. Some flowers need partial shade for their growth, hence cutting down trees or shrubs destroys them. Others require a certain amount of moistures, so that if you drain or flood the land they will die. Few plants can stand burying, so that to plow them under is to destroy them; and no plant can live if constantly deprived of foliage during its growing season. So turn the land into a sheep-pasture for a season, and you effectually destroy foliage and roots, and prevent further seeding. The real forces at work in exterminating our native flora are the woodman's axe, the drainer's spade, the farmer's plow, and the herder's sheep. Of all these agents the sheep are most destructive. They even effectually prevent young trees from growing up to replace the old ones that die. Now, I suggest these remedies: (1) Encourage the study of botany in every school, and thus create an interest in native plants. (2) Show the farmer the great injury he does his forests by pasturing sheep in them. (3) Encourage the preservation of forests upon every piece of land not readily adapted for cultivation, urging that its flora be not destroyed by the causes I have previously mentioned. It is better by far to preserve our wild plants than to give the land over to foreign weeds. (4) Urge the necessity of parks in the vicinity of every city and village, and fill these parks with our wild plants. (5) Cultivate wild-flowers in your own flower-gardens. Get any plant you fear will become extinct, and plant it where it will be protected. All the choice plants of our gardens are but the wild-flowers of other lands. All over the world men are collecting flowers to adorn our gardens and greenhouses.—WILFRED A. BROTHERTON, *Mich.*

The Virginia Creeper.—(Page 655.) The festoons illustrated in this article are far less graceful and luxuriant than some we find in woodlands where this ampelopsis grows wild. Its leaves turn scarlet about the same time that the light blue and purple wild asters bloom, and anything prettier than the light, airy tendrils of this scarlet ribbon runner, trailing over banks of feathery, cool blue asters, can hardly be imagined. Some of the prettiest and most graceful vases of flowers that I ever saw were made up of these two wildings.

After the leaves turn crimson, often one can collect sprays of Virginia creeper a yard long with perfect foliage, and perhaps several clusters of the dark blue berries at the base of the spray where the leaves are larger. These sprays, if pressed and lightly glazed with wax or coated with shellac, form the brightest, most graceful winter ornaments, for using in a multitude of ways, you can imagine. The Virginia creeper to me seems quite as beautiful for all purposes as the Boston ivy, and is much more hardy.—L. GREENLEE, *North Carolina.*

DICTIONARY OF SEASONABLE GARDEN WORK.

I. PLEASURE-GARDENING.

Achimenes.—Give plants now at rest a dry place, and a temperature of about 50°.

Amaryllis Bulbs.—Keep the deciduous kinds quite dry, and give a very moderate supply of water to the evergreen sorts.

Annuals.—If you want a good supply of flowers with little trouble, sow a few pots of mignonette, ten-week's stocks, candytuft, etc., now, and a few pots a month or so later.

Ardisias retain their ornamental red fruit longest when kept rather cool, say from 45° to 55°.

Astilbe Japonicas.—For earliest bloom start them into growth some time this month.

Azaleas.—Keep resting plants moderately cool and dry; but young, early plants in good heat.

Begonias now in bloom like a sunny position, and a temperature of about 55° to 60°.

Box-plants used for edging flower-beds, etc., may be divided and replanted deeply and firmly so long as the ground remains unbroken.

Bulbs may be planted until the ground freezes. The beds may be protected with a covering of litter, provided you are sure that there are neither field-mice nor moles about. These little animals are quite apt to make beds thus protected their winter quarters. The mice fatten on the bulbs, and find the burrows made by the moles in search for earthworms, etc., quite convenient for hiding and traveling about. A. S. Fuller says that his first experience in mulching beds of bulbs cost him about \$80, for out of several hundred bulbs planted in a finely prepared bed, only eight remained to bloom in spring; all the others had been eaten up by mice; the ground, to a depth of a foot, was like a honey-comb from their burrowing. As house-plants, bulbs have the advantage of being sure bloomers. When you buy a bulb you buy a flower. Do not hurry them into bloom; allow the roots to be well in advance of the top growth before being forced.

Cactus-plants.—Keep them dormant and almost dust-dry until February or March. The more delicate ones may be kept under a glass case.

Callas approaching bloom require plenty of light, space and water, in order to produce stocky growth and fine flowers. Frequent applications of liquid manure or of soot-water are beneficial.

Camellias need plenty of air, an even temperature, and light syringings twice a week.

Carnations in the window keep near the glass, in a cool and airy place. Let the soil be just moist, never really wet.

Century-plants.—Keep them rather dry and the leaves free from dust. They winter well in heated cellars.

Chrysanthemums.—When the plants are out of flower cut down most of the branches, leaving only one or two of the growing ones. If all were removed, cuttings would not be produced freely, and weak or tender sorts would be liable to succumb entirely. In taking out the stakes, fill the holes up with soil in order to prevent the water running into them without being distributed through the soil. Strike cuttings now, if any are desired.

Cinerarias.—Plants started from seed in June need a final shift to encourage bloom in January. Guard against green-fly. Keep the temperature at 45°, set the plants in a light place, and give air on all suitable occasions.

Cold-pits containing half-hardy plants need to be aired freely.

Cyclamens.—Keep growing plants near the glass in a temperature of 50°. Give manure-water to plants in bloom. For early young plants, sow seed in pans near the glass.

Evergreen Shrubs liable to sun-scald and injury by winds should be given protection by setting up evergreen boughs around them, especially on the windward and south sides, lightly tying the boughs with a cord near the top.

Fergeries.—Give air daily, remove decayed leaves, etc., and apply water moderately when it is needed.

Foliage-plants cannot well be wintered over in a cellar. Coleus, crotons, achyranthes, and alternantheras must have light and warmth. A temperature of 60° will be warm enough, if they are kept rather dry. In a moist air they need more heat, or they will rot. Fancy caladium bulbs should be dried off, packed in sand, and stored in a quite warm place.

Forget-me-nots.—For winter flowering, keep the plants in a cold-frame until the holidays, then bring them into heat.

Freesias.—Start the bulbs into growth at intervals for a succession of flowers. Increase the supply of moisture as growth advances.

General Greenhouse Management.—Clean and rearrange the plants, giving all the light possible. Water judiciously and syringe only on bright mornings, allowing the foliage to become dry towards night. Look out for insects. Remove dead leaves and mildewed twigs.

General House-plant Management.—For wintering over many plants until another season, the cellar or any other place free from frost will answer very well. Geraniums and fuchsias, for instance, unless wanted for blooming, are as well off in the cellar, and are infinitely less troublesome than in a dwelling-room. Geraniums should be cut down nearly to the ground, and then set close together in a box of earth. They will even live if tied in a bundle and suspended from the ceiling in cellars where the air is not too dry. Give such plants

just water enough to keep them alive, and no more. Azaleas, camellias, sweet-bay and English laurels do not mind a little frost. They may be placed outdoors in a sunken pit from which frost is kept. If they freeze slightly, let them thaw out in the dark, and they will not be harmed. And in the same place orange and lemon trees can be kept, instead of cumbering the dwelling rooms. Heaters in the cellar make it possible to keep many other plants there. The bulbous or fleshy roots of dahlias, caladiums and cannas require a rather dry place. If damp they rot in a cool cellar, and they start to grow in a warm one. Cover the roots with sand or earth, that they may not shrivel up and lose vitality.

Geraniums.—Keep plants near the glass, and rather dry, thus avoiding spot diseases.

Green-fly.—Precautionary measures should not be neglected. Burn tobacco-stems regularly, or strew them thickly over the ground about plants.

Heliotropes.—Give liquid-manure to plants in bloom.

Heaths need a moderate temperature, and careful watering and airing.

Hyacinths.—When the pots are well filled with roots, bring them into heat, in succession. Increase the moisture supply as growth proceeds.

Hydrangea hortensis keeps well in a warm cellar. Its bloom will only be hastened if it pushes into growth toward spring.

Lawn Management.—This is a good time for draining, making walks, drives, etc. To keep lawns in good condition, fertilizers should be applied every year. Wood-ashes, bone-dust, guanos, well-rotted compost—all can be applied liberally now. Pile the dry leaves together in fence corners and depressions, and haul them under shelter. They will come handy for bedding and absorbents, for mulching purposes, and also for composting in the preparation of leaf-mold. Gather and store stakes and other plant-supports for next season's use.

Lilies-of-the-Valley for early forcing may be brought into heat the last of the month.

Mirabilis.—Roots taken up and stored in dry sand away from frost, may be used for another season.

Oleanders and similar plants kept in cellars require only enough water to keep them alive. There is but little evaporation from leaves not in active growth; but they like some light. If possible place them near the window.

Orchids.—Cypripediums, dendrobiums and most other orchids are now ready for rest. Let the house get cooler, and keep it rather dry. Oncidium, zygotetals, and others flowering this month, or having not yet completed their growth, put by themselves in a shady, somewhat dry and only moderately warm situation. Give plants at rest a temperature of 50° by night and 60° by day.

Oxalis Bulbs that show signs of sprouting must be reported and given water freely.

Pelargoniums.—When new growth is an inch long report plants that were cut down, using pots of the old size or smaller ones, but giving fresh soil.

Poinsettias.—Keep in brisk heat, with heads near the glass.

Pittosporums.—Treat as directed for oleanders.

Propagation.—Pot young cuttings as soon as they show roots.

Rhododendrons.—Give them a mulch of coarse, partly rotted leaves.

Rockerries.—Some plants, especially delicate Alpine sorts, often suffer from superfluous moisture during winter. Pot such plants, and set them in frames until spring.

Roses.—Give all beds a dressing of half-decayed manure. Protect the more tender kinds by winding and tying straw around them, or by bending them over and covering them with soil or sods.

Seed-sowing.—In locations having mild winters many annuals, such as mignonette, larkspur, sweet-pea, candytuft, etc., can be sown outdoors for early spring flowering.

Shrubs.—Mulch them with a thick layer of leaves, or better, fine compost.

Pruning.—We believe in a free use of the knife on all soft-wooded plants that were lifted. Remove yellow leaves and old flower-stems wherever they appear.

Verbenas.—Keep them cool and well aired. Guard against over-watering and mildew.

Violets.—Air freely in all suitable weather. Remove dead and decaying leaves. Parma violets are a treasure when their surroundings suit them, and they bloom well in autumn, winter and spring. They like a cool, rather shady situation.

Watering is easily overdone in these dark days. To water only just enough to keep the plants from wilting is a safer way than to keep the soil soaked all the time. Be sure that the drainage is perfect.

II. GARDENING FOR TABLE AND MARKET.

Asparagus-Forcing.—Lift old roots and store them in any place easily reached when they are wanted during winter. For very early use a few plants may now be started under the greenhouse benches.

Blackberries.—Sorts not hardy in one's locality should be laid down, and covered with just enough soil to hold them in place. Apply a top dressing of manure, or of bonedust, ashes, etc.

Cabbages.—Plants in cold frames should be aired freely and kept cool. Heads intended for winter and spring use, if not yet taken in or protected from severe freezing, must now be cared for. Do not cover them too deeply, nor store them in too warm a place.

Carrots.—Store them in cellars or pits. If in cellars, keep the roots covered with sand or sod, to prevent wilting.

Celery.—Store the late crop in cellars, root-houses, or trenches. If in the cellar, leave some soil adhering to the roots of the plants, and stand them close together upon the moist earth of the cellar floor. Keep the tops dry and out of reach of frost and the roots moist.

Drainage.—Water should not be allowed to stand in the orchards. Trees cannot endure cold feet. In level clay soils, surface drainage may be provided by well-made furrows in the center between each two rows of trees, but the best way to drain is to lay lines of tiles several feet deep.

Fertilizers.—Most fruits need high feeding, and must have it if best results are looked for. Ashes and bone-dust are superior orchard and small-fruit fertilizers. Old compost is also good. Be sure to use enough. There is little danger of applying too much. In the garden, success depends largely on your liberality in manuring.

General Orchard Management.—Keep fences and ditches in repair. Cattle and other stock are more apt to injure young trees now than at any other time of the year. Stake newly-set trees. Purchase and heel in any fruit-trees you may wish to plant next spring.

General Garden Management.—Begin now to make your plans for next season's work. Carefully study up the matter of rotation, also that of feeding your crops in the most effective and economical manner. Repair frames, sashes and tools. Clear up the garden and premises. Underdrain where needed. Beds for early vegetables should be thrown up in high, narrow ridges, with deep furrows between. This will enable you to plant them several days or weeks earlier than otherwise.

Grape-Vines.—Prune now in all suitable weather. The good wood cut off may be used for propagation. Tie the cuttings in bundles and pack them in dry sand or in moss in the cellar. Apply fertilizers as they are needed.

Grafting.—Cut all scions that will be needed during winter or spring, tie them in bundles, label them carefully, and pack them in sand or damp moss.

Labels.—Look after labels on newly-planted trees before winter sets in. Be sure they are substantial and properly fastened. The best label we have yet seen is a good-sized wooden one with a large loop of heavy copper wire. The writing is put on with a soft pencil, and the label then dipped in thin white paint.

Kale.—In very exposed or northern locations cover it lightly with coarse litter.

Lettuce-Forcing.—Air the plants freely. Scatter tobacco-stems among them as a protection against green-fly.

Mushrooms.—Start beds under the greenhouse benches.

Onions.—For winter storage select only well-ripened, perfectly dry bulbs. Store them in a dry, airy place, not in the cellar. They may be spread out thinly on the floor, away from the walls, allowed to freeze solid, and then covered several feet deep with hay or straw.

Parsley.—For winter use take up some of the outdoor grown roots, and plant them in a coldhouse or frame.

Parsnips.—Take up some roots for winter use and store them in sand in the cellar.

Raspberries.—Treat as advised for blackberries.

Rhubarb.—Apply a heavy coat of good compost; take up plants wanted for winter forcing; some of them may now be set under the greenhouse benches for the earliest forced crop.

Seed-nuts and Pits saved for spring planting stratify with sand, and subject to freezing.

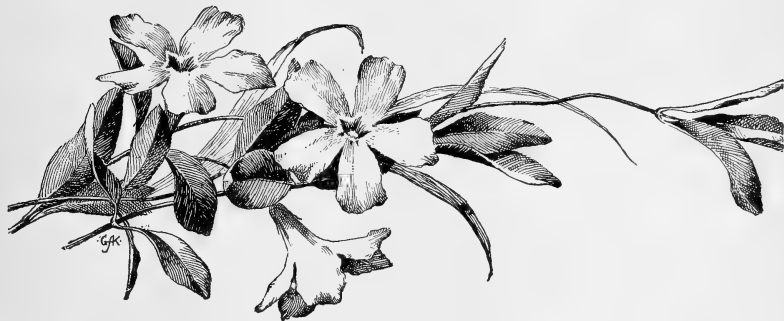
Stocks for root-grafting must be taken up this month, and stored for use later.

Strawberry-beds should be given their winter covering of marsh-hay, etc., as soon as the ground is frozen solid.

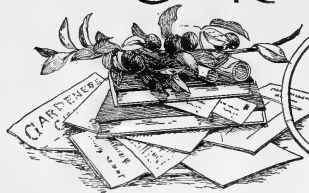
Strawberries in Pots should now go into coldframes, plunging the pots to their rims in earth or coal-ashes, in order that the roots may not freeze. Water sparingly; about January bring them in to be forced.

Spinage.—Cover it lightly with litter.

Turnips and other roots in pits will now need additional winter covering.



CURRENT



GARDEN LORE

GATHERED WORLD-WIDE.

Business First, Then Pleasure.—Of all the things which *must* be done, do those which are most distasteful first. Then you will have the others to look forward to with pleasure.—*Rural New-Yorker*.

Improved Early Ohio Potatoes.—J. M. Smith tells the *Ohio Farmer* that he is somewhat proud of his Early Ohio potatoes. He procured the seed fifteen or more years ago, and has been selecting the large, smooth and finest potatoes for seed from that time till this. They have not been allowed to mix with samples from any other source. The result is that they have improved, and for some years have been large, smooth and beautiful potatoes of excellent quality.—*Rural New-Yorker*.

The Freeman Potato.—The plants set more potatoes than they can grow to a good size, and the result is that there are more small ones among them than I like to see. They are so much scattered in the ground, that it costs more to dig them than it does Early Ohio, or any other of the close growers. Still, after allowing fully and fairly for all the defects of this potato, after two years of experimenting with it, I cannot but believe that it is a valuable acquisition to our list of desirable potatoes.—*J. M. Smith, in Practical Farmer*.

Storing Sweet-Potatoes.—In Virginia and further south sweet-potatoes are generally kept through the winter in pits covered with earth. In states further north better protection is required, and, therefore, cellars and sweet-potato houses are used for the purpose. We illustrate a style of sweet-potato house common in New Jersey. A dry, well-drained spot is selected, a cellar about 3 feet deep excavated, and a wall of rough



STORING SWEET-POTATOES.

stone about 6 feet high built. On this a roof is placed and the earth banked up to the top of the wall. The roof and ends should be double, to keep out the cold. It is better also to have double doors, as indicated in cut. The house should face the south-east, and the chimney be placed at the cold end. The size of the house will, of course, depend on the crop to be stored. Bins are made to hold 20, 50, or 100 barrels. Rough boards and a layer of straw are generally placed in the bottom and against the wall before

putting potatoes in the bins. A small cast-iron cylinder coal-burning stove is the kind in common use for heating. The fire should be started a few days in advance of storing, to dry out the house, and a little be kept burning for a week afterward to dry off the potatoes, as they invariably go through a sweating process. During this time ventilation should be freely given. Afterward just enough fire should be maintained to keep the temperature between 60° and 70°. Sweet-potatoes, to keep well, must be stored before heavy frosts kill the vines.—*Samuel C. Moon, in Farm Journal*.

Liquid Manure for Plants.—I have seen some very striking examples of the happy effect of liquid manure on plants. In one instance droppings from the fowl-house were used with water. Such geraniums, begonias, gloxinias, epiphyllums, phyllocactuses, stapelias, bryophyllums and other exotics I have not seen elsewhere. Such quantities of strong liquid manure as were used here would frighten the ordinary grower, but the effect proved conclusively the wisdom of the procedure.—*Florida Agriculturist*.

A Convenient and Durable Label.—The accompanying engraving represents a label now adopted in the botanic garden at Washington for the rockery and herbaceous plants. It is made of zinc, $3\frac{1}{4} \times 1\frac{1}{2}$ inches, the legs which keep it firm being soldered on the back of the label. The label is first painted white, using the best white lead and linseed oil, and allowed to get thoroughly dry. Then it is painted with ivory or drop-black, mixing it with a small quantity of coach-varnish. While this coat is still fresh, with the back of a broad-pointed steel pen write the name on the label. This makes a very distinct white lettering, looks well, hasn't the glare of the white painted one, and is therefore not so conspicuous; but attracts attention, and lasts longer than the white painted labels. They cost \$2 per 100 ready for painting, and can be made by any tinner. With the proper material at hand they could be made by any one who can use a soldering-iron. The legs are made of galvanized wire in one piece turned on the back of the label and soldered firmly in place.—*C. L. Reynolds, in American Florist*.



A CONVENIENT LABEL.

Willow-Hedge.—In answer to the question, what time of the year is best for setting out a willow-hedge, the *Country Gentleman* says: The best time to set the cuttings is in spring. They may be of any size up to two or three inches; about an inch is a convenient length. They may be placed upright or sloping. The accompanying cut represents a willow-fence made some years ago at Cornell University. The sticks were about four years old, two inches in diameter, cut four feet long,



WILLOW-HEDGE.

and sharpened at one end. A double furrow was plowed and manure placed in it, and then a sub-

soil-pow run through it several times. The sharpened willows were driven in the furrow seven inches apart. A strip of board was placed on their even tops. If the sticks are of different sizes, sort them and place the same sizes together. This fence may be changed to a hedge by allowing side-shoots to come out at the ground. The willow must be of a kind that sprouts rapidly.

Ready Made Kerosene Emulsion.—Why does not some one put up for sale in pint or quart packages a good kerosene emulsion for spraying trees and plants in village dooryards? When one has the pump and is fitted out for the work, it is but little trouble or expense to make emulsion by the barrel, but it is quite a task to make a pint. Village residents, and small poultry keepers too, would like to use it in small quantities, if it is sure death to insects. Somebody can make a little money out of this suggestion.—*American Cultivator*.

Plant Some Chestnuts.—Plant them now. Fill your pockets with good, fresh nuts. Take a hoe and go to your stump-land, or to the lot you are to cut off next winter. Poke away the leaves to the bare earth, put two or three nuts in a place, and cover them with leaves or other light material. Don't expect every one to grow, so plant liberally. Five years from now you can look over your lot with satisfaction, if your venture turns out as mine has. You will find a sprinkling of chestnut trees from 5 to 8 feet high. My only regret is that I did not plant more. I have planted the black walnut in the same way, but have not looked for the trees yet.—*J. Bartlett, in Farm and Home*.

Making Fruit-Trees Productive.—The manner and especially the time of pruning has much to do with making trees productive. Pruning only when the trees are dormant promotes thrift, but at the expense of the more important matter of fruitfulness. It is no check to a tree to prune its top severely when not in leaf. If only a few buds are left to grow, they will be all the more vigorous for having the entire sap which the roots supplied before to the entire tree. But old trees deficient in vigor are often made more fruitful by severe pruning when dormant, and for precisely the same reason that such pruning on young and thrifty trees is inadvisable.—*American Cultivator*.

The Seneca Pear.—The *Rural New-Yorker* is in receipt of a specimen fruit of a new pear named Seneca, from Wm. Parry, of Parry, N. J. The following are notes made of it, when perfectly ripe, Sept. 13:

Seneca Pear.—Large, obovate-pyriform. Stem nearly two inches long, rather stout, flattened at the junction, where the union is made with a curious fleshy ridge.



SENECA PEAR.

Calyx open, basin rather large and uneven. Color light yellow, marked with bright green mottlings and black dots. Bright blush on sunny side. Flesh white, fine-grained, very vinous and sprightly, melting and delicious. Good to best in quality, desirable for either home or market.—*Rural New-Yorker*.

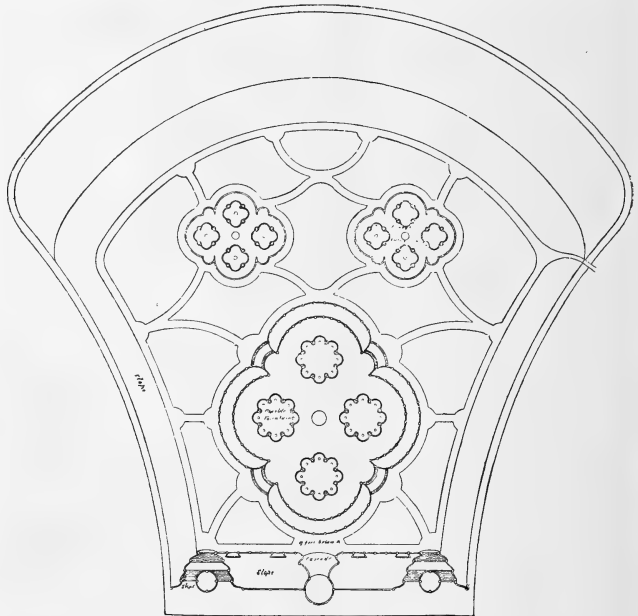
Old Age in Varieties.—Black Hamburg and Muscat of Alexandria grapes are as good as ever they were. There has been no falling off of the good qualities of the Jargonelle pear, Green Gage plum, or Crown Bob and Whitesmith gooseberries. These fruits were cultivated in England more than a century ago. Some of our best American fruits are nearly as old. Good culture and favorable treatment will retain the vigor of fine old varieties. Among the pears which have become of little value

from scab and cracking, there are quite as many of comparatively modern origin as there are old varieties. Disease is not old age.—*Country Gentleman*.

Delivering Plants in Cold Weather.—A Chicago florist has a wagon fitted up in such shape that he can deliver plants in almost any sort of weather. The box is eight feet long by three feet eight inches wide, and supplied with a wooden cover five feet high. A heavy curtain divides the driver's seat from the rest of the interior, and the back is closed with a wooden shutter, but there is a curtain inside the shutter. The object of the curtain is always to keep the interior partially enclosed, even when the shutter is open. When a plant is taken out it is drawn out from under the curtain, which immediately falls back into place. In very cold weather all the inside surfaces of the cover are hung with carpeting, which is suspended from hooks placed along the top of each side. The curtains at front and rear are also lined with carpet. This is to prevent any part of the plants from coming into direct contact with the cold wagon-cover. The bottom of the wagon is also covered. Before the plants are loaded the wagon is well warmed by jugs of hot water placed therein, and fresh jugs of same are used to keep up the heat afterward. With two three-gallon jugs of hot water in the wagon the driver can safely transport decorative plants any ordinary distance in ordinary winter weather, and with six jugs of this size he can safely deliver plants the coldest winter days we have.—*American Florist*.

Ivy on Walls.—A writer claimed not long ago that ivy grown on walls tends to make them dry, rather than damp. The statement was disputed by a correspondent, who cited what he thought was an instance to the contrary. On investigation, however, the ivy he referred to (*Ampelopsis Veitchii*, *Japan Ivy*,) was found growing over the shingle roof of the house some four or five feet from the gable end, and the spouts and other water conduits were completely choked by this growth of vine,

and filling up with leaves. It is no wonder that a house should be damp under such circumstances. Vines on walls must never be allowed to reach the roof or clamber in the gutters, but be confined entirely to the vertical surface of the walls on which they grow. The innumerable number of small rootlets continually absorbing moisture generally make a wall so dry and hard that in the Old World it has been found at times, when necessary to take down a building, almost impossible to do so on account of the extreme hardness of the mortar, kept dry for so many years through the agency of these roots. The case we have referred to shows how often a good idea may be spoiled by reason of the thoughtless manner in which it is carried out.—*Meehan's Monthly*.



PLAN OF A PORTION OF AN INDIAN TERRACE GARDEN. (See page 760.)

Freezing Peach and Plum-Stones.—A great many farmers and fruit-growers are in the habit of saving their peach, plum and cherry-seeds to sow to raise stocks for grafting purposes. Just how to treat these pits to succeed with them is often a puzzling question. Even the most experienced men often fail with them. It is a popular fallacy that these stones need freezing, and that without it they will not grow. The fact is that these seeds will and do grow well in many a northern state without encountering the slightest freezing. They need

only plenty of moisture to make them crack open well. Many a fruit-grower buys his pits in early fall, before they become dry, mixes them with damp sand and places them in some cave or cellar until spring. If the earth has been very moist and the cellar rather warm, he finds his stones cracking open fast, sometimes too fast when spring comes. Sometimes the pits get too dry at first; then nothing seems to bring them round again. Keep them moist from the start. They can be sown outdoors as soon as procured, or kept in boxes of damp earth, and will grow very well either way. They generally grow exceedingly well when they lie under a heavy coat of snow all winter where, while free from the

changes of weather, they are kept moist all winter long.—*Joseph Meehan, in Practical Farmer.*

The Vine-Cactus in Mexico.—In the coarse gravel on Mexican hillsides is found the vine-cactus (*Fouquieria splendens*). This is not a true cactus; its appearance led to the name. The plant consists of from one or two to half a dozen stalks, about an inch in diameter, nearly straight, and about five feet tall. The stalks are gray in color, armed with abundant spines, and bear comparatively few small green leaves. At the top of the stalks are one or more clusters of orange-colored flowers or fruits. These plants, as insignificant in appearance as the mullein-stalks of the east, serve many useful purposes. Set up in a line close together, they make a living hedge that even a jack-rabbit cannot pass, and many yards and gardens are fenced in this manner. Set more closely in line around a rectangle five feet wide and ten feet long, with an opening at one end and a covering of brush over the top, they make a complete house for a family of Mexicans of the poorest class.—*Report of Department of Agriculture.*

Flowers of *Ficus elastica*.—A correspondent sends us some buds taken from the axils of the leaves of an india-rubber, which he took to be an abortive flower-bud, but which, on being cut open, appeared more like an immature fig. This is not a freak, because the plant usually known as india-rubber is really a fig. These little buds frequently appear in india-rubber plants, but we have not known them to perfect themselves in our country. We should be glad to know

whether this does occur at times under cultivation. An examination of these buds is very interesting to those who understand the structure of the fig. We may say, in common language, that the fig is a bunch of flowers turned inside out. The flowers of the fig are all on the inside of this bud—some of them are purely staminate and others pistillate. We are quite sure,

notwithstanding the opinion of some botanists, that we have found both barren and fertile flowers in the same fig. And they will be found occasionally in the fruit of *Ficus elastica*. When examined with the lens, these little flower.



CANDLEWOOD (*Fouquieria splendens*.)

inside the fig will be found very beautiful and well worthy of study.—*Meehan's Monthly*.

There is here (Tynninghame, England) an old plant of *Ficus elastica* kept for propagating purposes, which, in most cases, brings a crop of fruit to maturity.—*Journal of Horticulture*.

Profitable Elder-Bushes.—We have spent many an hour digging out clumps of them from the old fence-corners, where they had long held possession, when we wanted to remove the fence and turn two fields into one. Now we are almost ready to wish we hadn't worked so hard. The common despised "elderberry" was found to be valuable in a scarcity of other fruit a few years ago, and now mixed with sour apples, or something to give it more tartness, it is frequently used for pies, even when fruit is plentiful. It sells well, too, in cities, many having learned the old-fashioned country way of making elderberry-wine.—*American Cultivator*.

Indian Terrace, or Sunken Garden.—We reproduce on page 758, from the *Gardeners' Chronicle*, an illustration of a sunken terrace in the Makurpura Palace-garden, India. This terrace is laid out in gracefully-designed beds and walks. Beds are planted with cannas and other plants capable of producing a strong and varied effect as seen from an upper level. If there be any merit in a sunken garden, it is that its contents are thus viewed in a measure from above. We all know that a garden scene is generally enhanced by being viewed from some higher point.

Abnormal Forms of the Arum Lily.—Double-spathed forms of the arum lily, as in the illustration, oc-



DOUBLE-SPATHED ARUM LILY.

cur frequently with those who grow very strong plants. Four years ago I was engaged in working up a stock of arum lilies. All the suckers as they appeared were taken

off and rooted in small pots. By the middle of June they were gradually hardened off and planted outside in a trench prepared similar to those used for celery. In



THREE-SPATHED ARUM LILY.—Engraved from a photograph by the Rev. C. C. Harper.

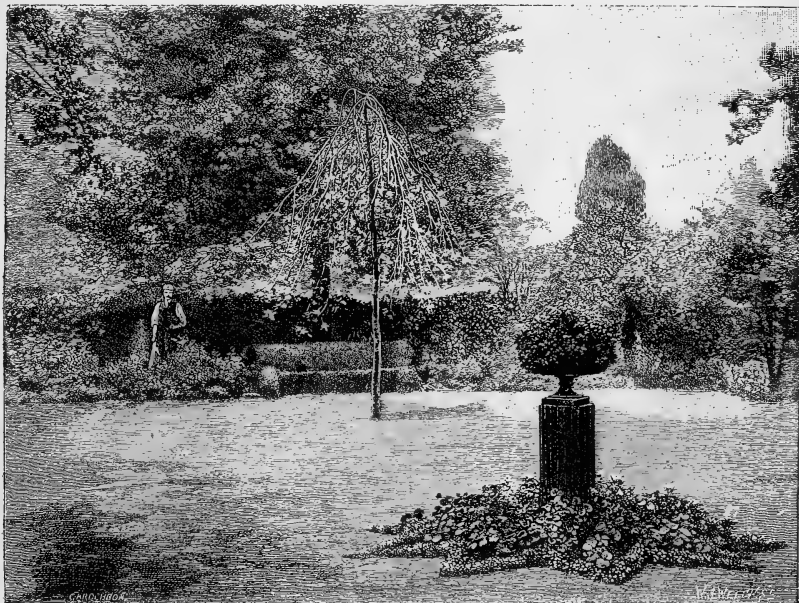
September the plants were lifted and placed in 12-inch pots. After lifting, the plants were placed behind a north wall, kept well soaked with water, and syringed until they were again established. On the first appearance of frost they were housed and kept cool until Christmas. Toward the close of January and all through February more than half the plants produced abnormal spathes. This was attributed to their remarkable strength and the liberal feeding which they received. They not only produce a solitary double spathe or two, but many in succession during the whole season. The same thing has occurred with the strongest callas every year since, but the same plants, when not strong, only produce single spathes.—*The Garden*.

Big Squash Yield.—Yesterday a man brought me a load of Hubbard squashes. I paid him \$7.61 for what he had on his light spring buggy. Then he informed me that they grew on four square rods of ground—just one-fortieth of an acre. A neighbor let out the secret. He cleaned out an old "chicken roost," and got so much manure he did not know what to do with it; so he spread it cut on the four rods of ground. He worked it in after a fashion, and planted potatoes. The ground was too rich, and he did not get any crop. Last spring he plowed up the same ground very thoroughly, so as to get more dirt mingled in with the manure, and then planted potatoes again. He put a squash seed in every other hill of

every other row of those potatoes. The bugs never touched those squashes. I do not know how much the man got for the potatoes on those four rods of ground. I understand there was a good crop, and that the squashes did not hurt the potatoes a speck, and vice versa. Of course, they didn't. You can grow two crops on the same ground, without a bit of trouble, if there is food enough for both. I am not sure but that the shading from the hot sun was a benefit to both. Here is an instance of two crops grown on the same ground. One of the crops yielded at the rate of \$304.40 per acre. Returns from the other have not yet come in. Is there not a

thorn, or Japanese quince; or it may be of evergreen that will bear cutting back, and which will thicken under the operation. Three wires, around which the hedge will grow and hold in place, would make a strong combined fence through which intruding animals would not attempt to pass.—*Country Gentleman*.

Elm Lodge, Beckenham, England.—The accompanying illustration represents one of the many pretty gardens which abound in and around Beckenham. As is usual in suburban districts, the garden at Elm Lodge is rather small, but notwithstanding the smallness of the area, the arrangement is very effective during the

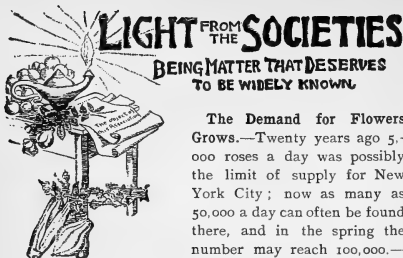


A VILLA GARDEN AT ELM LODGE, ENGLAND.

little bit of daylight streaking through the clouds when we consider these facts.—*Gleanings in Bee Culture*.

Barbs and Bushes.—A neat and handsome form of the barb fence, with its conspicuous line, is made by inclosing it in an ornamental hedge. Stretch the galvanized wire lengthwise along the center of the hedge when it is half grown, and again in subsequent years, successively, till it is completed. The hedge may be of some plant not forming a sufficient fence of itself, but rendered amply so to resist any animal through the additional aid of the barb wires—a small deciduous tree that has a hedgy growth, like the buckthorn, privet, haw-

summer months, as may be seen in the engraving. The portion depicted is situated in the rear of the residence, and by the judicious planting of shrubs and trees, Mr. Wilson, the owner, has managed to produce a rural effect, in what is really a thickly-populated district. A few hardy plants are grown, but ordinary bedding plants and annuals form the bulk of the summer display. It is the tasteful arrangement of the plants and shrubs used, not merely the material, which gives to this villa garden such a quiet, secluded, "lodge in the wilderness" effect, alluring to every one who may chance to pass near it.—*Gardeners' Chronicle*.



The Demand for Flowers Grows.—Twenty years ago 5,000 roses a day was possibly the limit of supply for New York City; now as many as 50,000 a day can often be found there, and in the spring the number may reach 100,000.—

J. N. May, before the Massachusetts Horticultural Society.

Grapes Grown in the Dark were submitted by the Messrs T. Rivers & Son to the Scientific Committee of the Royal Horticultural Society some time ago. The portion of vine exhibited was furnished with a well-shaped and good-sized bunch of white grapes. The berries were pale in color, and evidently unable to ripen, and the lateral appeared not to have formed any leaves, the whole shoot having been developed in total darkness.

Horticulture in Schools.—The culture of trees and flowers develops a permanent love of the spot where they grow. The man or woman is not living who can go back to the dreamy days of childhood and call up the scenes in that long ago, and not remember lovingly the flowers his mother used to tend by the side of the path that led to the front gate. We can help our own boys and girls to appreciate the good, the true and the beautiful, by teaching them to love plants and flowers. We can do more than plant a tree, We can plant in the school system of this nation a custom of tree-culture and flower-culture and home-culture.—*Prof. Chester W. Smith, before the Wisconsin Horticultural Society.*

A Flower-Girls' Guild was established in London not long ago by certain charitable ladies, with a view to improving and cheering the lives of the many girls who sell flowers in the streets at all times of the year. The first step was to provide the often half-clothed girls with thick warm dresses and bonnets. Water-proof cloaks for stormy weather were also provided, and in a building set apart for their use they find dressing and washing-rooms, and a cool, well-ventilated place in which to store their flowers at night. In the future a sick-relief fund will be established, as well as evening classes and entertainments.

Carnation Disease.—At the last meeting of the American Florists' Association, L. Armstrong said that by applying what is called a sulphur compound, he had been successful in checking the disease. The compound is made by boiling together sulphur and quicklime, or rather, subjecting them to an intense heat. Use a gill of this sulphate of calcium to two gallons of water, and syringe the plants heavily with the solution twice a day; the sick plants revive and those nearly dead seem to receive new vigor. This compound seems to act directly in the way of promoting healthy root-action. In cases where it is stated that sulphate of ammonia gave good

results in its use on flowers, the good may be due to the sulphur acting as a fungicide, and thus increasing the vigor of the plants, instead of having much value as a fertilizer.

Peach-Rosette in the South.—P. J. Berckman, President of the American Pomological Society, and the most experienced fruit-grower of the south, says that rosette, that dreaded enemy to peach and plum trees, has of late years appeared throughout many sections of the south, and unless the utmost vigilance is practiced, disastrous results to the peach-growing industry will follow. The disease appears in spring, and in affected trees the leaves assume a yellow and sickly appearance, are small, and crowded in a bunch. The trees seldom survive the first summer, and to prevent the rapid contamination of other trees, immediate uprooting and burning must be resorted to. The disease is violently contagious, and no preventive has yet been discovered. All wild plums should be destroyed, as the disease first appears among these, and rapidly spreads to cultivated trees.

Hippeastrum aulicum.—To a recent meeting of the Massachusetts Horticultural Society the Harvard botanical garden sent a flowering specimen of *Hippeastrum aulicum*. This species was introduced to cultivation from Brazil in 1810, and is interesting chiefly as being one of the plants employed to produce by hybridizing and crossing the splendid varieties of this genus now in cultivation. The flowers of *Hippeastrum aulicum* are red, green and purplish, between six and seven inches across, with the edges of the segments more or less incurved. When compared with those of some recent varieties they show clearly the improvement which has been made in these plants. The flowers of the variety John Ruskin, for instance, measure from eight to nine inches in width, with broad, flat, imbricated segments. The shades of color have been increased in recent forms to a wonderful extent, and in most cases these shades lack that coarseness which is found in many of the original types.

California Fruit Exhibits.—At a summer meeting of the California State Horticultural Society some excellent samples of fruit were shown. Mr. Coates exhibited a dozen specimens of Elberta peach. He has fruited the tree for several years, and regards it as a good variety.

Mr. Onstott showed some large bunches of the Thompson seedless grape, and a sample of raisins made from this variety. Both the green fruit and the cured product were of excellent quality and flavor. The only apparent drawback to this grape is its small size, it being but little larger than Sultana, though a richer grape, making a sweeter raisin; it is said to be very prolific. The bunches exhibited would probably weigh 2 pounds each, and were each about a foot in length.

Professor Allen exhibited some red fall apples, a seedling variety for which the name "Romie" (that of the originator) was suggested. This is a beautiful apple, unusually aromatic and of fine flavor; it ripens in August.

Mr. Chapin showed samples of Susquehanna peaches dried; one sample cured when fully ripe, the other when in the condition in which fruit is usually picked for east-

ern shipment. That cured from the ripe fruit was in every way much superior to the other, both in appearance and taste.

A Serviceable Tree-Protector.—In figure 1 the protector is shown in position about an apple tree. Figure 2 shows a convenient and rapid method of making the protector. The laths may be cut

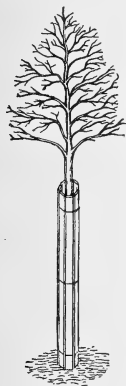


FIG. 1.

TREE-PROTECTOR.

either two or three feet long, according to the height of the trunks of the trees for which they are intended. Seven or eight laths are sufficient for one protector. The wire used is about No. 18 in size, and may be of iron, brass or copper. Brass and copper are more durable than iron, but their greater cost may overbalance this advantage. As a rapid means of measuring off the wire, it may be wound lengthwise about a piece of board 18 inches long for an eight-lath protector, or 16½ inches if seven laths are to be used. The wires may then be cut at one end of the board with the cold chisel or tinner's shears. The protectors may be rapidly put together on a common work-bench by means of the simple device shown in the second drawing. Procure a piece of strong elastic wood about four feet long, and three-fourths of an inch thick, to serve as the spring shown at the upper part of the drawing. Then tack two blocks to the top of the bench near the rear side to serve as a support for the spring. Now drive three nails into the bench near the front side, at the distance apart at which the wires are to be placed on the protector. The end wires should be about three inches from the end of the laths. Next twist the ends of the wires together for a short distance, beginning about three inches from the end, and place one of the wires about each of the nails

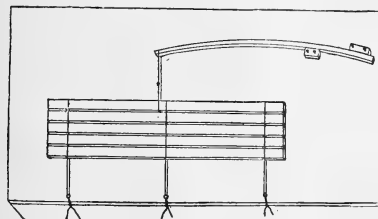


FIG. 2.—MAKING THE TREE-PROTECTOR.

in the front of the bench, as shown. Place another shorter wire, having the ends bent into hooks, about the outer end of the spring, and slip the first lath through the four wires, as shown in the drawing, bending the spring sufficiently to make this possible. The spring

now acts as a tension to keep the wires taut. Insert the second lath, lifting up the lower strand of wire and slipping the lath beneath that, and over the other strand, thus crossing the two strands. Then with a hammer gently drive up the second lath toward the first until the two are about one-fourth of an inch apart. Insert the other lath in the same manner, after which unhook the wire connecting the spring with the first lath and loosen it from the protector. In placing the protector about the tree, simply bend it around and insert the free ends of the wires beneath the wire of the first or second lath, clinching it enough to hold securely. The protector is to be left on summer and winter, until the tree outgrows it, or the wires rust off. The protector not only prevents sun-scald on the trunk, but is an effectual preventive against injury from rabbits and other rodents, as well as from whiffle-trees used in cultivation.—*Prof. E. S. Goff, before the Wisconsin Horticultural Society.*

Pruning Deciduous Fruit-Trees.—First, select good strong young trees. One year old from the bud, if well grown, is the proper age. With the exception of the apple and pear and cherry, I would not accept trees over one year old from the bud. The plum, peach and apricot trees, if properly grown and not too crowded in the nursery-row, should be 3½ to 5 feet high, stocky and well-branched. Lay off your block of ground in squares from 15 to 20 feet each way—15 I believe enough for the peach and plum and 20 for the apricot. When the trees are set, go carefully over each one and cut all side-shoots close to the main stem, after which cut that down also within 18 inches of the ground. Set your trees as a rule very little, if any, deeper than they were in the nursery-row. Sift the soil carefully among the fine and fibrous roots, but leave them in as natural a position as possible. After the roots are all covered, firm the soil solidly with the feet; in fact, plant the trees as solid as posts, drawing some mellow soil about the stems as a mulch when finished. If all is well, your 18-inch stub in due season will put forth many shoots all along the stem. Rub all off as soon as they get an inch or so in length, except, say three; leave these on opposite sides near the top. Allow these to grow the first season at will, rubbing off all others, from time to time, as they grow. The second pruning should be performed, if possible, just previous to the pushing of the next season's growth, as, indeed, all pruning should be. This allows but a short time for the severed points to dry back before the uprising sap supplies the wounded part with moisture, when the healing process at once sets in. While this is not of much importance where only small branches are removed, it is of vast importance where large wounds are made, especially on older trees, or varieties that are sensitive to the pruning-knife.

The branches that have grown from two to four feet each in the first season should again be cut back fully two-thirds, and each branch in turn allowed to make from two to three branches each; these, at the end of the season, will average three feet or more, and your trees will have from six to nine strong branches. Each

of these branches will have many side or fruit-bearing shoots, and the trees, if properly cared for, will be strong enough to ripen their first fruit the first season after setting. These growths in turn should be cut back from one-third to one-half, according to strength, and the stronger side-shoots accordingly, always bearing in mind that to maintain a pyramidal shape for the head it will be necessary to shorten in the upright branches more severely, for as our trees get older the tendency of sap is to go to the extremities. This rule for pruning will apply more particularly to the peach, prune or plum and the apricot, and if followed up with reasonable perseverance the first three or four years, our trees will become so compact, the main branches so rigid, and the bearing branches so close to the strong wood, that we will suffer small losses from our trees blowing to pieces or splitting down. Trees when once in full bearing will not often require severe pruning, as the rampant wood-growth will be very much lessened; however, a careful cultivator will look over his orchard every year, shorten in the stronger growth, remove dead branches and thin out such as are becoming too thick, as well as unnecessary suckers. The apple, pear and cherry, however, during their first and second seasons will not yield so readily to severe cramping as the other kinds named, nor will it be necessary. The cherry, especially bigarreau or heart varieties, should be shaped in the nursery-rows the first summer by pinching out the leaders when a couple of feet high, as they do not break readily from old or ripened wood like the peach or apricot.

Summer pruning, if done at the proper time, has some advantages, and on the right kind of subjects brings fine results, but should be confined to the more vigorous sorts. The shortening of the summer growth tends to check the plant in what may be called the unnecessary develop-

ment of wood-growth and the more perfect development of fruit-buds, by arresting the excess of sap or checking it in the wild career of wood-making, which we see in the strong-growing apple, pear, plum, cherry and some varieties of the apricot. Root-pruning will accomplish the same results, or in some soils slack-cultivating may tend to the same end, as the object is to check excess of wood-growth; but in most cases this excess may be confined to individual trees or varieties in the orchard, while others need every encouragement in the way of good culture; therefore, it may be better to summer-prune and thus check wood-growth, and encourage fruitage by the encouragement of fruit-buds.—*I. C. Wood, before a California Farmers' Institute.*

Cemetery Rules.—The proprietor of each lot may erect any proper monument thereon, but to prevent excessive or unsightly crowding, not more than one monument will be allowed on any lot. Vaults or tombs are not recommended, but will be permitted upon lots which, by the natural slope of the ground, are peculiarly adapted therefore, provided that all but their fronts and roofs are below ground, built of durable materials, and fitted with catacombs in a tight and substantial manner, and the entrance provided with one or more metal doors. With the view of preserving the sylvan effect so essential in rural cemeteries, no enclosure of lots of any kind will be allowed. No grave, after having fully settled, will be allowed to remain over three inches above the general surface of the lot, and no abrupt sides will be allowed. Foundations for all monuments must be of stone and laid in Portland cement, and built by the association at the expense of the lot-owner. The depositing of shells and tin vessels will not be allowed.—*Extracts from the By-Laws of the Chillicothe, Missouri, Cemetery Association.*



"Fill soft and deep, O winter snow!
The sweet azalea's oaken dells,
And hide the bank where roses blow
And where swing azure bells.

"O'erlay the amber violet's leaves,
The purple aster's brookside bome.
Guard all the flowers nature gives
A life beyond their bloom."

—J. G. W.

HE THAT QUEYRIONETH

QUESTIONS
 ASKED AND ANSWERED.
 MUCH SHALL LEARN MUCH
 BACON.

It is the privilege of subscribers to ask questions about gardening in any department. All will be answered by specialists. Correspondents are urged to anticipate the season. Questions received before the fifth of any month will probably be answered in the next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name belong to name next following.
 Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write only on one side of the paper.

QUERIES.

3146. **Celery Fertilizer.**—Please give the analysis of some complete fertilizer for celery.
3147. **Home-made Hose for Irrigating.**—Please tell us how it is made.—G. E. K., *Ohio*.
3148. **Soil for Garden Vegetables.**—Is red clay mixed with sand good for such vegetables as lettuce, cabbage, tomatoes, onions, rhubarb, and spinach?—A. Y., *Montana*.
3149. **Drying Blood.**—I can get a large quantity of fresh blood. How should I treat it to make a good fertilizer of it?—M. N., *Indiana*.
3150. **Culture of Sisal.**—Will the sisal of Yucatan succeed in the climate of the southern states? Where can roots or seed be obtained?—C. H. D., *Georgia*.
3151. **Sawdust as a Mulch.**—Please tell me whether sawdust can be safely used as a mulch for strawberries.—J. M., *Pa.*
3152. **Ginseng Culture.**—Where can I get seed or plants of ginseng? What culture, soil and climate does it require?
3153. **Growing Mangels.**—Does a light frost hurt mangels? J. W. W., *Washington*.
3154. **Russian Mulberry.**—Is the fruit of the Russian mulberry desirable for market? How does it compare with the American native mulberry in quality?
3155. **Blackberries for Northern Ohio.**—Please name two or three of the best hardy sorts.
3156. **Muskmelons for Market.**—Is there any good market variety with salmon-colored flesh that will grow large enough to weigh from 4 to 6 pounds each.—G. E. K., *Ohio*.
3157. **Alpine Strawberries.**—Years ago we used to grow a monthly strawberry as a house-plant. Two or three of the ripe berries would perfume the whole room. We have lost the plant; can you tell us where to get another?—M. F. S., *Montana*.
3158. **Grape-vine Leaf Hopper.**—A small, light-colored insect, about 1/8 of an inch long, active, and hopping like a tree-hopper, has been feeding on our grape and ivy-leaves nearly the whole summer. What remedy do you recommend?—A. S.
3159. **Moyer Grape.**—Please tell us about its hardness, size, quality, etc., as compared with Delaware.—H. P., *Michigan*.
3160. **Bowood Muscat and Muscat of Alexandria Grapes.**—What is the difference between them?—F. W., *New York*.
3161. **Brilliant Grape.**—What is its season of ripening?—W. H. W., *Massachusetts*.
3162. **Salt for Fruit-Trees.**—What are the effects of salt when applied to fruit-trees? What kind of salt should be used?—J. W. P., *Kansas*.
3163. **Cherry Queries.**—Where in the United States can I obtain heart and bigarreau cherry trees, in dwarf form, double grafted; that is, the common morello budded on the mahaleb, and after two years grafted with the varieties desired?—G. W. S., *Connecticut*.
3164. **Dwarf Pears for Profit.**—Will a dwarf pear orchard be likely to be a financial success on loam that is not very retentive? What varieties would you advise me to plant? How does the Bartlett succeed when dwarfed?

3165. **Quinces on Light Loam.**—Will a quince orchard be likely to pay here?—W. T. B., *Pennsylvania*.
3166. **Gooseberry Worm.**—Many of my gooseberries last season were wormy. Can I prevent this?—W. H. M., *Ohio*.
3167. **Currants and Gooseberries in Northern Ohio.**—What varieties are most satisfactory for market purposes?—G. E. K., *Ohio*.
3168. **Sowing Huckleberry-Seed.**—When is the proper time for sowing seeds of huckleberries, and what soil do they require?—R. J. H., *Washington*.
3169. **Tree Injured by Salt-Water.**—What treatment should be given a tree injured by pouring salt water on the ground near its stem?—J. A. S., *Kansas*.
3170. **Verbenas and Zonal Geraniums in the South.**—How should verbenas be treated here during fall and winter? My zonals, planted out last spring, did not bloom well in summer. What can all them?—W. M. N., *Georgia*.
3171. **Sweet-Peas Planted in Fall.**—Will sweet-peas planted six inches deep in fall survive the winter in the latitude of Boston, and bloom well next summer?—W. H. W., *Massachusetts*.
3172. **Flower Seeds and Bulbs.**—Where can I get seeds of perennial galliardia, and bulbs of *Nerine Japonica*?—S. E. R., *Nebraska*.
3173. **Starting a Hop-Arbor.**—When should seed be sown, and what kind of soil is required?—R. J. H., *Washington*.
3174. **Evergreens for Shelter-Belt.**—What sorts would you recommend for planting on a north boundary. I want to have nice evergreens, and also a quick protection for lilies and narcissuses.—C. L. M., *Wisconsin*.
3175. **Passion Flowers.**—I have a passiflora that comes up regularly every spring and grows like Jack's bean-stalk, but gives never a blossom; also a passiflora Arc-en-Ciel that grows thrifflily, but will not bloom. What shall I do for them to secure flowers?—FERN-LEAF, *Illinois*.
3176. **Kerria Japonica.**—Is the enclosed twig and flower that of a *Kerria Japonica*? Is there a variegated variety of this shrub?—C. W. A., *Illinois*.
3177. **Marchal Niel Rose in South Carolina.**—Does it need winter protection?—W. R.
3178. **Eleagnus Reflexa.**—There is near here a climbing shrub that entirely covers a large tree. The stems are rusty brown; leaves smooth and green above and white beneath. The stem has a few thorns. What is it?—M. R., *North Carolina*.
3179. **Magnolia Fuscata.**—Is it hardy here?—SOUTH CAROLINA.

REPLIES.

2933. **Blackberries for Michigan.**—If they are to be grown without winter protection, we have nothing better than Snyder, Taylor and possibly Erie. Wilson and Wilson Jr. prove profitable if laid down and covered before severe cold weather comes. Lincoln blackberry has not yet been properly tested in Michigan.—T. T. LYON.

3068. **Seed of Hardy Orange.**—I procured my supply under the name of *Citrus trifoliata*, from Rademaker, Mueller & Co., 234 Second Street, Louisville, Ky.—G. D. C. ELLIS, *Kentucky*.

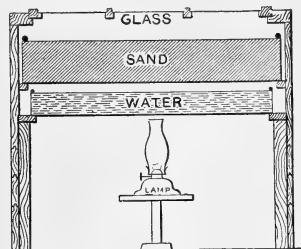


FIG. 1. SIMPLE PROPAGATING-OVEN.

3089. **Asparagus-Chicory.**—Give the same soil and cultivation that you do dandelion or chicory. Whether this plant has any value as a vegetable, however, we do not know. Some of our readers may be able to give the information.

3090. **Growing Cannas from Seed.**—Carefully file or cut off a corner of every seed before planting, and they will germinate more promptly.

3091. **Managing Palms and Cycads.**—These plants like a soil composed of two-thirds loam and one part of unsifted leaf-mold, or if this is not at hand, of sand. Protect them from the sun's direct rays, and keep the temperature at about 70°. Water them only when the soil is really dry. They can be transplanted at any time.—K. K., *New York City*.

3121. **Portable Propagating-Bench.**—Several good devices are described in Bailey's Nursery Book, published by the Rural Publishing Co., New York City. One of the simplest and best of these devices is the propagating-oven shown in figure 1. It is a glass-covered box about two feet deep, with a tray of water which is heated by a lamp, beneath the soil. A similar but somewhat complicated

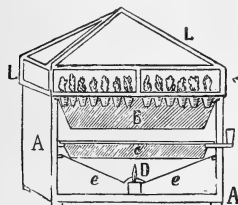


FIG. 2. ANOTHER PROPAGATING-OVEN.

apparatus is illustrated in figure 2. This is an old form of oven, which has been variously modified by different operators. The box AA, is made of wood, and is usually about three feet square. L is a movable glass top. B represents a zinc or galvanized-iron tray, which is filled with earth in which seeds are sown or pots are plunged. C is a water-tray, to which the water is applied by means of a funnel extending through the box. A lamp, D, supplies the heat. A funnel of tin, e e, distributes the heat evenly. Holes

should be provided about the bottom of the box to admit air to the flame. There are various tanks designed to rest upon the pipes in a greenhouse. The principle of their construction is essentially the same as of those described—bottom heat, a tray of water, and a bed of soil. Earthenware tanks are commonly employed, but a recent English device, figure 3, is made of zinc. It is about seven inches deep and holds an inch or two of water in the bottom. A tray five inches deep sets into the tank. The water is supplied through a funnel at the base.

3122. **Rooting Black-Raspberry Tips.**—This is no particular strain on the plant. It is the production of the long branches which draws on the vitality of the plant and diminishes the yield. Clip them back in summer.

3125. **Phylloxera on Grape-Vines.**—The vineyard in question is not infested by a fungus, but by the notorious *Phylloxera vastatrix*, and Bordeaux mixture will have no effect whatever on this pest. I would recommend the uprooting of the infested vines. Replace them with resistant varieties, or at least graft the same varieties on resistant stocks. The use of resistant American stocks is the only thing that has saved the grape-industry to France. There they also use bisulphide of carbon and sulpho-carbonate of potassium, injected into the soil, as a

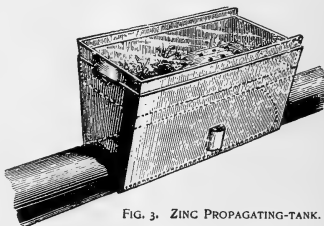


FIG. 3. ZINC PROPAGATING-TANK.

remedy, with fair success, though the method is troublesome. The forthcoming report on the Paris exposition, of which nearly the whole is now in type, will contain a fairly complete account of the phylloxera in France, with a general discussion of the remedies employed by French viticulturists. The report is expected to be ready for delivery soon.—C. V. RILEY, *Entomologist of the Department of Agriculture*.

3126. **Geneva, Muscat and Carman Grapes.**—The Northern Muscat has not yet fruited at our experiment grounds. Geneva is an early white grape of promise. The berry is large, slightly oblong, juicy, and sub-acid, with some pulp. The seeds, which are few, separate readily from the flesh. The bunches are large and showy—the vine healthy. It is not known whether Carman is later than Concord or not. We fancy it will ripen at the same time. It is far better than Concord in quality, free from foxiness, sweet and sprightly.—E. S. CARMAN.

3127. **Propagation of the Quince.**—Use stocks of Angers or any of the other strong-growing sorts. But

we cannot see what you would gain by grafting, as stocks must be either imported, or grown from seeds or cuttings. Cuttings of two or three-year-old wood, with or without a heel, usually strike root quite readily. Some varieties only, on some soils, are slow to take root, and these may be propagated by layering, or by root-grafting, as you suggest.

3128. **Plum Stocks.**—The horse-plum, a variety of *Prunus domestica*, makes one of the best of stocks. Myrobolan is largely used, especially on the Pacific coast, but in the east it rather dwarfs the tree. Marianna has now become quite popular as a stock for any of our plums.

3129. **Plum Curculio.**—The culprit, undoubtedly, is the curculio. The simplest way of fighting it is by jarring the trees every morning during the curculio season, in spring, gathering the insects in sheets spread under the trees, and killing them. Spraying in early spring, with Paris-green water, in which a little lime has been dissolved, will kill at least a portion of them.

3133. **Root-Grafting Fruit-Trees.**—There is nothing that we know of to prevent the success of cleft-grafting when the stocks used are large enough. Whip-grafting, however, is the usual method employed in making apple and pear root-grafts. Plums and cherries are usually propagated by budding into one-year-old seedlings in August, but root-grafting, by the ordinary "whip" method is also practiced.

3134. **Pruning Pear Trees.**—Prune apple and pear trees whenever your saw and chisel are sharp, whether in fall or spring.—J. O. BRONSON, *New York*.

3134. **Pruning Pear Trees.**—If the trees were started right, and no more branches than enough to form a good head were allowed to grow from the beginning, little pruning will be required afterward. Diseased or injured limbs and twigs, of course, must be removed promptly. Ordinary pruning, so far as required, may be done after the leaves have fallen.

3135. **Juneberry for Local Market.**—This fruit has not yet outgrown the experimental stage. Varieties are not freely offered. Try "Success."

3136. **Huckleberry-Plants.**—We are not aware that they are offered by any nurseryman.

3138. **Composting Stable-Manure.**—Dry muck is one of the best materials you can use as an absorbent. The compost will be all the better if you can keep it under shelter. If kept in open air, pile it up in square heaps, 3 or 4 feet deep, so that rains cannot leach through. It will then be all right, but don't expose it to washes from the eaves.

3139. **Tarragon Culture.**—The plant is perfectly hardy and need not be housed during winter.

3139. **Tarragon Culture.**—Tarragon will winter quite well outdoors in the latitude of New York. We have cultivated it for ten years here in Dutchess County, and find it perfectly hardy.—J. O. B.

3143. **Crops in Shade.**—If the trees are large enough, or stand close enough to give a dense shade, it will be best to let them have sole possession of the ground. It will be better for the fruit, and save you much labor of

planting which ordinarily gives only indifferent results. Among young trees, and in half shade, you can plant currants, gooseberries, strawberries, raspberries, blackberries, etc. There are but few of our vegetables which will give a fair crop in a shady position. Try cabbage, cauliflower, lettuce, turnips, perhaps cucumbers. As to flowers, plant early spring bulbs, pansies, violets, or any of our woodland beauties.

3144. **Canning Sweet-Corn.**—The process is simple. Cut the corn from the cob, fill the cans as full as you can crowd them, and screw the tops on tight. Then wrap towels or cloths around the cans, put them into a boiler containing water enough to cover them, and boil them from 3 to 5 hours. Then take them out, tighten the tops where needed, and set the cans away in a dark place.

3146. **Celery Fertilizer.**—Any of the high-grade complete fertilizers offered under various names as special potato, special fruit-tree, special vegetable manures, etc., will answer as a celery-fertilizer. The latter should contain from 4 to 5 per cent. of nitrogen, 8 to 10 per cent. of phosphoric acid, and 6 to 8 per cent. of potash.

3147. **Home-Made Hose for Irrigating.**—The following directions were given us by Mr. H. A. Marsh, of Washington: "Take a piece of 12-ounce duck and cut it lengthwise into three pieces; this makes 90 feet of hose about 2½ inches in diameter. Place the edges together, double them once over, and with a sewing-machine sew through the four thicknesses twice. This makes a hose that will stand a 6 or 8-foot pressure. To make it waterproof, we use five gallons of boiled linseed oil and half a gallon of pine-tar melted together. Place the hose in a wash-tub, turn on the oil hot (say 160°), and saturate the cloth well with the mixture. Now run the hose through a clothes-wringer screwed down rather tight and it is ready to be hung up to dry. Blow through it to keep it from sticking together as it dries. For this purpose I use an elder-sprout about a foot long with the pith punched out. Tie a string around one end of the hose, gather the other end around the tube and fill it with wind. Then hang the hose on a line, and it will dry in a few days and be ready for use. It will last 5 or 6 years."

3148. **Soil for Garden Vegetables.**—If the "mixture of clay and sand" is rich enough, we can see no reason why it should not be suitable for growing garden stuff. Have the land well drained, put in plenty of good manure, and you will have all chances of success.

3149. **Drying Blood.**—Blood is usually dried over steam-heat in shallow pans. W. S. Powell & Co., whom we asked about the process some time ago, replied that they hardly know how to give directions for farmer's use. It might do to make a tight, shallow, wooden box and pour the blood about an inch deep in this, exposing it to the rays of the sun. After it has thickened to the consistency of heavy molasses, or what is known as caramel, build a platform about two feet high, covering the same with flat stones closely fitted together, and put the blood on these, building a hot fire underneath and keeping the blood stirred until it turns to a granular or powdered form. Better still, have sheet-iron pans made, and use them in place of the wood or stone.

3151. **Sawdust as a Mulch.**—We prefer marsh-hay to all other materials for mulching strawberry-beds. It is clean, affords no harboring places for insect and other foes, and lies loosely enough upon the plants to keep them from choking out, yet snugly enough to protect them from heaving. Sawdust can be used when you have nothing else; but, if possible, use it previously for bedding in the stables, and let it get as well rotted as possible.

3152. **Ginseng Culture.**—The plant is found growing wild in mountainous regions over a large part of the United States. It thrives in shady places and loamy soil or woods earth. It does not seem to be so very particular as to climatic conditions, or easily adapts itself to them. On the other hand, it is not a grateful subject for cultivation. The roots of wild ginseng, when dug up and planted, or seed of it when sown, usually refuse to come up or grow. Further trial should be made to find the conditions that promise success in cultivating this crop; but we would not advise anyone to pay much money for the "secrets" of the business, nor for seed or plants.

3153. **Growing Mangels.**—Beets of all kinds can bear light frost, but should not be exposed to a severe one.

3154. **Russian Mulberry.**—The fruit of all the Russian mulberries we have ever seen is not desirable for market. Of course, being seedlings, the trees vary greatly; but the berries are almost always of small size and inferior flavor.

3155. **Blackberries for Northern Ohio.**—Try Kittatiny, Snyder and Taylor.

3157. **Alpine Strawberry.**—For plants address Ellwanger & Barry, Rochester, New York.

3158. **Grape-Vine Leaf-Hopper.**—This insect makes its first appearance on the leaves in June, being then in the larva state. The little hoppers insert their beaks into the leaves, sucking the juices, and remain perfectly quiet most of the time. When disturbed they leap from one leaf to another. They arrive at maturity during August, and are then provided with wings, flying and hopping about when disturbed. The infested leaves at length turn yellow, sickly, and dry up prematurely. The leaf-hoppers hibernate beneath fallen leaves, among tufts and roots of grass, etc. The pest may be effectually fought early in the season by dusting the vines with insect-powder or tobacco-dust. They may also be caught on a sheet saturated with kerosene and stretched on a frame which is carried along on one side of the row, while somebody goes along the other side frightening the insects toward the sheet.

3159. **Moyer Grape.**—This is early, and is sweet just as soon as it begins to color. But both berry and bunch are unreasonably small, and the vine is quite weak in growth. It cannot take the place of Delaware, which it somewhat resembles.

3160. **Bowood Muscat and Muscat of Alexandria.**—See page 748.

3162. **Salt for Fruit-Trees.**—We would put very little dependence in ordinary salt as a fertilizer for fruit-trees or any other crop. It may help to render insoluble plant-foods in the soil available, but it will do this

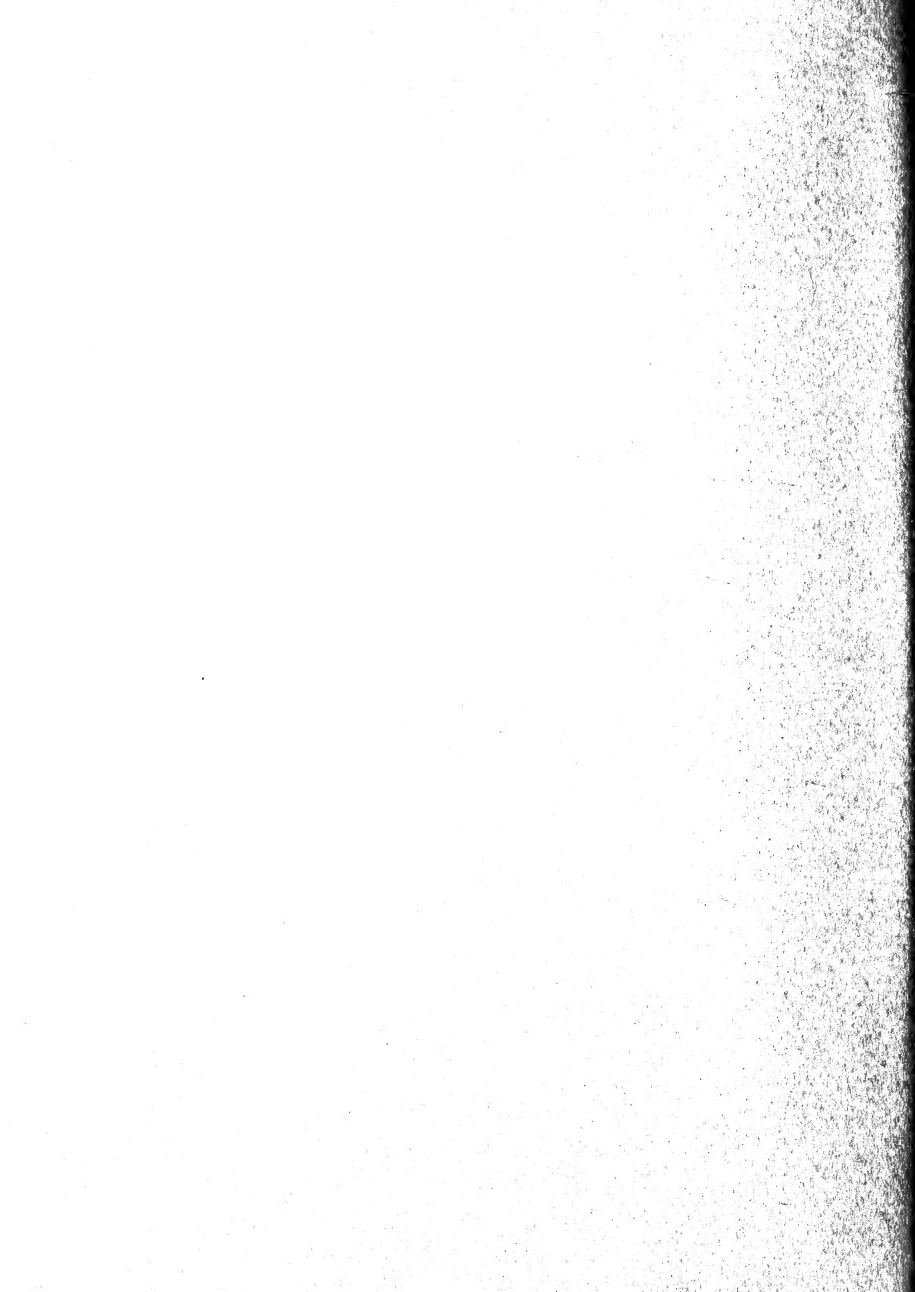
only in a limited way at best. Use wood-ashes, or wood-ashes and bone-meal. Such applications are trustworthy and effective.

3164. **Dwarf Pears for Profit.**—To growers in this vicinity we would say plant mostly standard Bartlett and dwarf trees of Duchess. We would not take the risk of advising growers in sections having climatic and soil conditions with which we are not familiar.

3166. **Gooseberry-Fruit Worm.**—The adult of this worm is a spotted, pale gray moth, which deposits its egg on the small green fruit. Soon after hatching the larva bores into the berry and feeds upon the pulp. After it has eaten one berry, it fastens another to it by silken threads, and devours its contents, continuing the process until by the time it is fully grown it has formed a cluster of 6 or 8 injured berries. At this time it is a pale green caterpillar $\frac{3}{4}$ of an inch long, with a small, brown, horny-looking head. Shortly before the fruit ripens it descends to the ground by a silken thread and, concealed among the fallen leaves and rubbish, spins a thin silken cocoon, within which it changes to a brown chrysalis. It remains in this condition until the following spring, when it comes forth as a moth. Consequently there is only one brood of the larvæ each year. The fruit injured by these caterpillars is so conspicuous that hand-picking is a practical remedy. This must be done rapidly, as the larvæ wriggle out of the cases and drop to the ground quickly when disturbed. If chickens are allowed to run over the ground after the fruit is gathered, they will scratch up and devour many of the pupæ. So also, will many be destroyed if the fallen leaves and rubbish are raked together and burned in autumn.—*Clarence M. Weed, in Insects and Insecticides.*

3168. **Sowing Huckleberry-Seeds.**—Huckleberry-seeds are small and somewhat difficult to grow. They should be washed from the fruit and stored in sand in a cool place until late in winter. They are then sown in pans or flats on the surface of a soil made of equal parts of sand and loam. Cover with fine sphagnum and keep in a coolhouse or frame, always keeping the seeds moist. Seeds treated in this way may be expected to germinate in a month or two, although they may lie dormant a year. Transplant the young plants frequently, and keep them shaded until they are large enough to shift for themselves.—*L. H. Bailey, in the Nursery-Book.*

3170. **Verbenas and Zonals at the South.**—Mulch the soil around the verbenas with a good coat of manure, and as the weather grows cold, lay evergreen boughs over the bed. In spring cut back the old tops to within a few inches of the root, and they will soon break into fine growth. Zonal geraniums, although they are the finest of bedding plants north of the Potomac, are about the poorest and most unsatisfactory of bedding plants in this climate. Our deluges of rain, when it rains at all, spoil their bloom, and our suns burn their foliage off. We have bedded them outdoors this year we think for the last time. As pot-plants on stands in sheltered porticos they grow and blossom finely, but don't bed them out in the southern Atlantic states.—*WM. F. MASSEY.*



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